

City of San Diego

CONTRACTOR'S NAME: OHL USA, Inc.
ADDRESS: 1920 Main St, Ste.310, Irvine, CA 92614
TELEPHONE NO.: _____ **FAX NO.:** _____
CITY CONTACT: Stephen Samara, Principal Contract Specialist, Email: SSamara@sandiego.gov
Phone No. (619) 533-3619
J. E. Bermudo / M. Jirjis-Nakasha / M. L. Wenceslao

FINAL

BIDDING DOCUMENTS

e - Bidding



FOR

MORENA CONVEYANCE NORTH

BID NO.: K-21-1848-DBB-3
SAP NO. (WBS/IO/CC): B-15141
CLIENT DEPARTMENT: 2000
COUNCIL DISTRICT: 1, 6
PROJECT TYPE: BP, JB, JA

THIS CONTRACT WILL BE SUBJECT TO THE FOLLOWING:

- PROJECT LABOR AGREEMENT (PLA)
- PHASED-FUNDING
- FEDERAL EQUAL OPPORTUNITY CONTRACTING REQUIREMENTS
- ELIGIBLE FOR JOINT VENTURE PREQUALIFICATION STATUS (see Instructions to Bidders)
- PREVAILING WAGE RATES: STATE FEDERAL
- SKILLED AND TRAINED WORKFORCE
- THIS IS A CLEAN WATER STATE REVOLVING FUND (CASRF) AND ENVIRONMENTAL PROTECTION AGENCY (EPA) FUNDED CONTRACT THROUGH THE STATE OF CALIFORNIA AND UNITED STATES ENVIRONMENTAL PROTECTION AGENCY UNDER THE FEDERAL WATER INFRASTRUCTURE FINANCE AND INNOVATION ACT (WIFIA), PROP 68 AND BUREAU OF RECLAMATION (BOR).

BID DUE DATE:

2:00 PM

OCTOBER 6, 2020

CITY OF SAN DIEGO'S ELECTRONIC BIDDING SITE, PLANETBIDS

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

ENGINEER OF WORK

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

Shapiro,
Alan

Digitally signed by Shapiro, Alan
DN: cn=Shapiro, Alan,
ou=USSDG1
Date: 2020.08.04 14:36:59 -
07'00'

08/04/2020

Date

Seal:



1) Registered Engineer

Nabil Samih Batta

2) For City Engineer

8/11/2020

Date

Seal:



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REQUIRED DOCUMENTS SCHEDULE DURING BIDDING AND AWARDING

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

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

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

FEDERAL DOCUMENTS SUBMITTAL REQUIREMENTS

ITEM	DOCUMENT TO BE SUBMITTED	WHEN DUE	FROM
1.	Bid Bond (PDF via PlanetBids)	At Time of Bid	ALL BIDDERS
2.	Contractors Certification of Pending Actions	At Time of Bid	ALL BIDDERS
3.	Mandatory Disclosure of Business Interests	At Time of Bid	ALL BIDDERS
4.	Debarment and Suspension Certification (PRIME CONTRACTOR)	At Time of Bid	ALL BIDDERS
5.	Debarment and Suspension Certification (SUBCONTRACTORS/SUPPLIERS/MANUFACTURERS)	At Time of Bid	ALL BIDDERS
6.	Disclosure of Lobbying Activities	At Time of Bid	ALL BIDDERS
7.	Form 4500-3: DBE Subcontractor Performance Form	At Time of Bid	ALL BIDDERS
8.	Form 4500-4: DBE Subcontractor Utilization Form	At Time of Bid	ALL BIDDERS
9.	Pipe Material For Combined Waste (CW) Pipeline	At Time of Bid	ALL BIDDERS
10.	Proof of Commitment to Comply with Skilled and Trained Workforce Requirements	At Time of Bid	ALL BIDDERS
11.	Bid Bond (Original)	By 5PM, 3 working days after bid opening.	ALL BIDDERS
12.	Phased Funding Scheule Agreement	Within 10 working days of receipt by the bidder of the Notice of Intent to Award (NOI)	APPARENT LOW BIDDER
13.	Federal Good Faith Documentation	By 5PM, 4 working days after bid opening.	ALL BIDDERS

ITEM	DOCUMENT TO BE SUBMITTED	WHEN DUE	FROM
14.	Form AA61 – List of Work Made Available	By 5PM, 4 working days after bid opening.	ALL BIDDERS
15.	Form AA62 – Summary of Bids Received	By 5PM, 4 working days after bid opening.	ALL BIDDERS
16.	Form AA63 – Good Faith Effort List of Subcontractors Solicited	By 5PM, 4 working days after bid opening.	ALL BIDDERS
17.	Escrow Bid Document (See Attachment H)	By 5PM, 4 working days after bid opening.	ALL BIDDERS
18.	OCIP Credit Worksheet	Within 2 working days of Bid Opening	ALL BIDDERS
19.	OCIP Enrollment Forms	Within 15 working days of NOI	AWARDED BIDDER
20.	Payment & Performance Bond; Certificates of Insurance & Endorsements; and Signed Contract Agreement Page	Within 10 working days of receipt by bidder of contract forms and NOI	AWARDED BIDDER
21.	PLA Forms, See Attachment I	Within 10 working days of NOI	AWARDED BIDDER
22.	Form UR-334: California State Revolving Funds (CASRF)	Annually. See Attachment D requirements.	AWARDED BIDDER
23.	Form 4500-2: DBE Subcontractor Participation Form	See attachment D requirements.	AWARDED BIDDER
24.	Skilled and Trained Workforce Certification Forms	Monthly. See NIB Section 8	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 **Morena Conveyance North**. 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 **\$99,000,000**.
4. **BID DUE DATE AND TIME ARE: OCTOBER 6, 2020 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**
 - 6.1. **ADDITIONAL LICENSE REQUIREMENTS:** See Appendix K - Long Term Maintenance and Monitoring Agreement for **C-27** requirement.
7. **ESCROW BID DOCUMENTS APPLY TO THIS CONTRACT:** Refer to Attachment H.
8. **SKILLED AND TRAINED WORKFORCE LABOR REQUIREMENTS:**
 - 8.1. The Contractor and its subcontractors at every tier shall use a skilled and trained workforce to perform all work on the project or contract that falls within an apprenticeable occupation in the building and construction trades, as set forth in 8California Public Contract Code section 2601, including the exceptions in sections 2601(d)(5) and 2601 (d)(6). Contractor shall provide to the City a report demonstrating compliance with this section on a monthly basis, to be included with monthly pay requests. The City may withhold progress payments or retention in accordance with California Public Contract Code section 2602(b) if the Contractor fails to provide the monthly report required by this section, provides a report that is incomplete, or provides a report that does not demonstrate compliance with this section. Payment may be withheld until the Contractor provides a plan to achieve substantial compliance with this section prior to completion of the contract that is acceptable to the City, with respect to the relevant apprenticeable occupation.

This section references provisions of the California Public Contract Code for convenience only. The City is not electing to incorporate other provisions of Chapter 2.9 of the California Public Contract Code not referenced herein, including but not limited to provisions for State enforcement. Instead, failure to comply with this section is considered a material breach of this contract which could affect the Contractor's ability to perform future work for the City pursuant to Chapter 2, Article 2, Division 8 of the San Diego Municipal Code regarding debarment.

8.2. Submittal Requirements

Contractors must submit proof of a Commitment to Comply with Skilled and Trained Workforce Requirements with their bid. Contractor and its subcontractors at every tier will use a skilled and trained workforce to perform all work on the project or a contract that falls within an apprenticeship occupation in the building and construction trades in accordance with Chapter 2.9 (commencing with Section 2600) of Part 1 of Division 2 of the Public Contract Code. City will monitor Contractor's compliance with these requirements and Contractor, on behalf of itself and its subcontractors at every tier, shall provide on a monthly basis a Skilled and Trained Workforce Certification Form and Skilled and Trained Workforce Monthly Compliance Report demonstrating compliance. If the monthly Skilled and Trained Workforce Certification Form and Monthly Compliance Report are not provided within 30 days or if Contractor provides a report that is incomplete, City shall withhold further payments until a complete report is provided. If the Skilled and Trained Workforce Certification form does not establish compliance with Section 132354.7, City shall withhold further payments until Contractor provides a plan to achieve substantial compliance with the skilled and trained workforce requirements, with respect to the relevant apprenticeable occupation, prior to the completion of the project. Any withholding will be released for payment on the monthly estimate for partial payments next following the date that all the satisfactory compliance of the requirements for which the retention was made are submitted.

9. VETERANS OUTREACH:

Military veterans bring unique skills to City projects due to their mission-oriented training and experience, and dedication to the job. The City desires to facilitate the entry into the building and construction trades for veterans interested in careers in the industry. Within (30) days after notice that the Contractor is the apparent low bidder. Contractor shall contact "Helmets to Hardhats" or "UA Veterans in Piping" on behalf of itself and its subcontractors, for potential job referrals and employment of veterans on the project. Contractor may contact other veterans programs in its discretion, but if neither of the above referenced programs are contacted, the Contractor must receive prior written approval from the City that it is an equivalent veterans program. Contacting multiple veterans programs is highly encouraged, but not required. Within ninety (90) days after issuance of a Notice to Proceed for construction of the project. Contractor shall provide the City with a written report detailing the veterans programs contacted, opportunities offered by the Contractor and its subcontractors, applications received and for what construction trades, and how many veterans were hired through the programs. Hiring veterans to work on the project is not mandatory, but information received from the Contractor may be used by the City in the future to develop a veteran's outreach program for City contracting.

10. BUSINESS COOPERATION TAX PROGRAM:

You must exercise your right to obtain a California State of Board of Equalization (BOE) sub-permit for the jobsite and allocate all eligible Bradley-Burns Uniform Local Sales and Use Tax (Use Tax) to the City. In addition, you will ensure that all eligible subcontractors will exercise their right to obtain this BOE sub-submit and allocate all eligible Use Tax to the City. The City will not issue a notice to proceed unless you and your eligible subcontractors have obtained this sub-permit from the BOE. More information on obtaining this permit can be found by contacting the local BOE office.

11. Project Labor Agreement. As a condition of final contract award, the Apparent Low Bidder must sign and execute a Letter of Assent to the Project Labor Agreement that the City has negotiated

which is listed as Attachment A to the Project Labor Agreement. A copy of the Project Labor Agreement (PLA) is attached as Attachment I of this Agreement.

12. SUBCONTRACTING PARTICIPATION PERCENTAGES:

- 12.1.** The City affirms that in any contract entered into pursuant to this advertisement, DBE firms will be afforded full opportunity to submit Bids in response to this invitation.
- 12.2.** This Federally assisted project includes subcontracting participation percentages for DBE participation. DBE goal commitments and Good Faith Efforts (GFE) shall be made prior to bidding. DBE commitments and GFE made after the Bid opening will not be considered for the Award of Contract.
- 12.3.** This project is subject to the federal equal opportunity regulations and the following requirements. The City reserves the right to audit the Contractor’s compliance with the federal requirements set forth below.
- 12.4.** Following are federally subcontracting participation percentages for this contract. For the purpose of achieving the subcontractor participation percentage, Additive or Deductive, and Type II Allowance Bid Items will not be included in the calculation.
- 12.5. Environmental Protection Agency (EPA)** - In accordance with EPA’s Program for Utilization of Small, Minority Disadvantaged and Women Business Enterprises in procurement under Federal assistance programs, the Contractor agrees to the applicable “fair share” objectives negotiated with EPA as follows:

12.6. California State Water Resources Control Board - Clean Water State Revolving Fund (CWSRF):

		MBE*	WBE*
1.	Construction	2%	1%
2.	Supplies	1%	1%
3.	Services	1%	1%
4.	Equipment (combined in above)	1%	1%

Note: MBEs and WBEs must be certified by EPA, SBA, DOT or by state, local, Tribal, or private entities whose certification criteria match EPAs in order to be counted toward MBE/WBE accomplishments. MBEs and WBEs are a part of the larger universe of DBEs.

- 12.7.** Bid **SHALL** be **declared non-responsive** if the Bidder fails any of the following conditions:
 - 12.7.1.** Submission of GFE documentation, as specified in Attachment D.
 - 12.7.2.** Attending one of the Pre-Bid Meetings.

- 12.7.3.** Submit Good Faith Effort (GFE) documentation, saved in searchable Portable Document Format (PDF) and stored on a Universal Serial Bus (USB) Type-A, Compact Disc (CD) or Digital Video Disc (DVD), demonstrating the Bidder made a good faith effort to outreach to and include DBE Subcontractors required in this document by 5 PM **4 Working Days** after the Bid opening if the overall mandatory participation percentage is not met.

Due to circumstances related to Covid-19, until further notice, all submittals in searchable PDF shall be submitted electronically within the prescribed time identified in the contract documents via a File Cloud link provided by the Contract Specialist to all bidders.

13. MANDATORY ONLINE PRE-BID MEETING VIA GOTOMEETING:

Bidders are **required** to attend a Pre-Bid Meeting. Two mandatory online pre-bid meetings will be held.

The **First** Meeting will be on: **Tuesday, September 1, 2020 at 10:00 AM** at GoToMeeting.

Please join the pre-bid meeting from your computer, tablet or Smartphone
<https://global.gotomeeting.com/join/664404277>

You can also dial in using your phone.

United States: [+1 \(872\) 240-3311](tel:+18722403311)

Access Code: 664-404-277

The **Second** Meeting will be on: **Thursday, September 3, 2020 at 10:00 AM** at GoToMeeting.

Please join the pre-bid meeting from your computer, tablet or smartphone.

<https://global.gotomeeting.com/join/923450677>

You can also dial in using your phone.

United States: [+1 \(312\) 757-3121](tel:+13127573121)

Access Code: 923-450-677

New to GoToMeeting? Get the app now and be ready when your first meeting starts:

<https://global.gotomeeting.com/install/883640213>

Please Note: You will need to join the meeting with a computer, tablet or smartphone with the GoToMeetings App in place 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 meetings is to discuss the scope of the project, submittal requirements, the pre-qualification process, the Project Labor Agreement requirements, OCIP requirements, and Equal Opportunity Contracting Program requirements and reporting procedures. Failure to attend **ONE** of the Mandatory Pre-Bid Meeting may result in the Bid being deemed non-responsive.

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

The GoToMeetings will open thirty minutes prior to the start times listed above to allow the attendees the opportunity to sign in by the deadline.

Bidders may not be admitted after the specified start time of the mandatory Pre-Bid Meeting.

14. AWARD PROCESS:

14.1. 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.

14.2. 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.

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 by the City Attorney's Office.

14.4. The low Bid will be determined by the Base Bid.

15. SUBMISSION OF QUESTIONS:

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

Stephen Samara, Principal Contract Specialist at: SSamara@sandiego.gov

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

15.2. 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.

15.3. 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.

16. SUPPLEMENTAL AGREEMENTS: Supplemental agreements attached to this contract for items of Work such as revegetation maintenance/monitoring or Rubber Polymer Modified Slurry shall be signed by the BIDDER at time of award of the primary BID. The signed agreements shall be accompanied by the proper bonds and insurance as specified in 2-4, "CONTRACT BONDS," 7-3 "INSURANCE," and 7-3-11 WORKERS' COMPENSATION INSURANCE. Bonds shall be in the amount of the total Contract Price for all Work including the supplemental agreements

- 16.1. Partial Release of Performance Bond and Labor and Materialmen's Bond:** For information regarding partial release of bonds for this Contract, see Supplementary Special Provisions, **Appendix K**.
- 17. PHASED FUNDING:** For Phased Funding Conditions, see Attachment B.
- 18. INDICATE PIPE MATERIAL FOR COMBINED WASTE (CW) PIPELINE:** See Technical section 330501.10 – High Density Polyethylene (HDPR) Pressure Pipe and Fittings and 334101.09 Fiberglass Reinforced Mortar Pipe. Indication of pipe and additional documentation to be submitted as part of the "Electronically Submitted Forms".
- 19. OWNER CONTROLLED INSURANCE PROGRAM (OCIP):** The City has implemented an Owner-Controlled Insurance Program (OCIP) for its Pure Water Projects. In this OCIP, the City furnishes Workers' Compensation, General, Excess, Pollution Liability and Builder's Risk insurance associated with construction of the Work, as detailed in Section 7- Responsibilities of the Contractor. Bidders, as well as all of their subcontractors, with a subcontract amount of greater than one half of one percent of the Contractors bid amount shall complete OCIP credit worksheets.

Bidders shall submit their OCIP credit worksheets and the OCIP credit worksheets from all their applicable subcontractors by 5:00 PM two business days after bid opening. Failure to comply with this requirement shall render the bid non-responsive and ineligible for award.

INSTRUCTIONS TO BIDDERS

1. PREQUALIFICATION OF CONTRACTORS:

- 1.1. Contractors submitting a Bid must be pre-qualified for the total amount proposed, including all alternate items, prior to the date of submittal. Bids from contractors who have not been pre-qualified as applicable and Bids that exceed the maximum dollar amount at which contractors are pre-qualified may be deemed **non-responsive** and ineligible for award.
- 1.2. The completed application must be submitted online no later than 2 weeks prior to the bid opening.
- 1.3. **Joint Venture Bidders Cumulative Maximum Bidding Capacity:** For projects with an engineer's estimate of \$30,000,000 or greater, Joint Ventures submitting bids may be deemed responsive and eligible for award if the cumulative maximum bidding capacity of the individual Joint Venture entities is equal to or greater than the total amount proposed.
 - 1.3.1. Each of the entities of the Joint Venture must have been previously prequalified at a minimum of \$15,000,000.
 - 1.3.2. Bids submitted with a total amount proposed of less than \$30,000,000 are not eligible for Cumulative Maximum Bidding Capacity prequalification. To be eligible for award in this scenario, the Joint Venture itself or at least one of the Joint Venture entities must have been prequalified for the total amount proposed.
 - 1.3.3. Bids submitted by Joint Ventures with a total amount proposed of \$30,000,000 or greater on a project with an engineer's estimate of less than \$30,000,000 are not eligible for Cumulative Maximum Bidding Capacity prequalification.
 - 1.3.4. The Joint Venture designated as the Apparent Low Bidder shall provide evidence of its corporate existence and furnish good and approved bonds in the name of the Joint Venture within 14 Calendar Days of receipt by the Bidder of a form of contract for execution.
- 1.4. Complete information and links to the on-line prequalification application are available at:
<http://www.sandiego.gov/cip/bidopps/prequalification>
- 1.5. Due to the City's responsibility to protect the confidentiality of the contractors' information, City staff will not be able to provide information regarding contractors' prequalification status over the telephone. Contractors may access real-time information about their prequalification status via their vendor profile on [PlanetBids™](#).

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

- 2.1. **BIDDERS MUST BE PRE-REGISTERED** with the City's bidding system and possess a system-assigned Digital ID in order to submit 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 Engineering & Capital Projects Department Contract Specialist listed on the cover of this solicitation at least five (5) working days prior to the Bid/Proposal due date to ensure availability.

3. ELECTRONIC BID SUBMISSIONS CARRY FULL FORCE AND EFFECT:

- 3.1.** The bidder, by submitting its electronic bid, acknowledges that doing so carries the same force and full legal effect as a paper submission with a longhand (wet) signature.
- 3.2.** By submitting an electronic bid, the bidder certifies that the bidder has thoroughly examined and understands the entire Contract Documents (which consist of the plans and specifications, drawings, forms, affidavits and the solicitation documents), and that by submitting the eBid as its bid proposal, the bidder acknowledges, agrees to and is bound by the entire Contract Documents, including any addenda issued thereto, and incorporated by reference in the Contract Documents.
- 3.3.** The Bidder, by submitting its electronic bid, agrees to and certifies under penalty of perjury under the laws of the State of California, that the certification, forms and affidavits submitted as part of this bid are true and correct.
- 3.4.** The Bidder agrees to the construction of the project as described in Attachment "A-Scope of Work" for the City of San Diego, in accordance with the requirements set forth herein for the electronically submitted prices. The Bidder guarantees the Contract Price for a period of 120 days from the date of Bid opening. The duration of the Contract Price guarantee shall be extended by the number of days required for the City to obtain all items necessary to fulfill all conditions precedent.

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

5. CONTRACTOR REGISTRATION AND ELECTRONIC REPORTING SYSTEM:

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

<http://www.sandiego.gov/purchasing/bids-contracts/vendorreg>
- 5.2.** The City may not award the contract until registration of all subcontractors and suppliers is complete. In the event this requirement is not met within the time frame specified in the Notice of Intent to Award letter, the City reserves the right to rescind the Notice of Award / Intent to Award and to make the award to the next responsive and responsible bidder / proposer.

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

7. INSURANCE REQUIREMENTS:

- 7.1. All certificates of insurance and endorsements required by the contract are to be provided upon issuance of the City’s Notice of Intent to Award letter.
- 7.2. Refer to sections 7-4, “Owner Controlled Insurance Program” of the OCIP 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/	2015	PWPI070116-01
City of San Diego Standard Specifications for Public Works Construction (“The WHITEBOOK”)* https://www.sandiego.gov/ecp/edocref/greenbook	2015	PWPI070116-02
City of San Diego Standard Drawings* https://www.sandiego.gov/ecp/edocref/standarddraw	2016	PWPI070116-03
Citywide Computer Aided Design and Drafting (CADD) Standards https://www.sandiego.gov/ecp/edocref/drawings	2016	PWPI092816-04
California Department of Transportation (CALTRANS) Standard Specifications – http://www.dot.ca.gov/des/oe/construction-contract-standards.html	2015	PWPI092816-05
CALTRANS Standard Plans http://www.dot.ca.gov/des/oe/construction-contract-standards.html	2015	PWPI092816-06
California Manual on Uniform Traffic Control Devices Revision 5 (CA MUTCD 2014 Rev 5) http://www.dot.ca.gov/programs/traffic-operations/camutcd/	2014	PWPIO42220-09
<p>NOTE: *Available online under Engineering Documents and References at: https://www.sandiego.gov/ecp/edocref</p> <p>*Electronic updates to the Standard Drawings may also be found in the link above</p>		

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

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

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

12. SUBCONTRACTOR INFORMATION:

12.1. LISTING OF SUBCONTRACTORS. In accordance with the requirements provided in the "Subletting and Subcontracting Fair Practices Act" of the California Public Contract Code, the Bidder shall provide the **NAME** and **ADDRESS** of each Subcontractor who will perform work, labor, render services or who specially fabricates and installs a portion [type] of the work or improvement, in an amount in excess of 0.5% of the Contractor's total Bid. The Bidder shall also state within the description, whether the subcontractor is a **CONSTRUCTOR, CONSULTANT** or **SUPPLIER**. The Bidder shall state the **DIR REGISTRATION NUMBER** for all subcontractors and shall further state within the description, the **PORTION** of the work which will be performed by each subcontractor under this Contract. The Contractor shall list only one Subcontractor for each portion of the Work. The **DOLLAR VALUE** of the total Bid to be performed shall be stated for all subcontractors listed. Failure to comply with this requirement may result in the Bid being rejected as **non-responsive** and ineligible for award. The Bidder's attention is directed to the Special Provisions - General; Paragraph 2-3, "Subcontracts", which stipulates the percent of the Work to be performed with the Bidders' own forces. The Bidder shall list all SLBE, ELBE, DBE, DVBE, MBE, WBE, OBE, SDB, WoSB, HUBZone, and SDVOSB Subcontractors for which Bidders are seeking recognition towards

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

12.2. LISTING OF SUPPLIERS. Any Bidder seeking the recognition of Suppliers of equipment, materials, or supplies obtained from third party Suppliers towards achieving any mandatory or voluntary (or both) subcontracting participation goals shall provide, at a minimum, the **NAME, LOCATION (CITY), DIR REGISTRATION NUMBER** and the **DOLLAR VALUE** of each supplier. The Bidder will be credited up to 60% of the amount to be paid to the Suppliers for materials and supplies unless vendor manufactures or substantially alters

materials and supplies, in which case, 100% will be credited. The Bidder is to indicate within the description whether the listed firm is a supplier or manufacturer. If no indication is provided, the listed firm will be credited at 60% of the listed dollar value for purposes of calculating the Subcontractor Participation Percentage.

- 12.3. LISTING OF SUBCONTRACTORS OR SUPPLIERS FOR ALTERNATES.** For subcontractors or suppliers to be used on additive or deductive alternate items, in addition to the above requirements, bidder shall further note "ALTERNATE" and alternate item number within the description.
- 13. SUBMITTAL OF "OR EQUAL" ITEMS:** See Section 4-1.6, "Trade Names or Equals" in The WHITEBOOK and as amended in the SSP.
- 14. AWARD:**
- 14.1.** The Award of this contract is contingent upon the Contractor's compliance with all conditions precedent to Award.
- 14.2.** Upon acceptance of a Bid, the City will prepare contract documents for execution within approximately 21 days of the date of the Bid opening and award the Contract approximately within 7 days of receipt of properly executed Contract, bonds, and insurance documents.
- 14.3.** This contract will be deemed executed and effective only upon the signing of the Contract by the Mayor or his designee and approval as to form the City Attorney's Office.
- 15. SUBCONTRACT LIMITATIONS:** The Bidder's attention is directed to Standard Specifications for Public Works Construction, Section 3-2, "SELF-PERFORMANCE" in The GREENBOOK and as amended in the SSP which requires the Contractor to self-perform not less than the specified amount. Failure to comply with this requirement shall render the bid **non-responsive** and ineligible for award.
- 16. AVAILABILITY OF PLANS AND SPECIFICATIONS:** Contract Documents may be obtained by visiting the City's website: <http://www.sandiego.gov/cip/>. Plans and Specifications for this contract are also available for review in the office of the City Clerk or Engineering & Capital Projects Department, Contracts Division.
- 17. ONLY ONE BID PER CONTRACTOR SHALL BE ACCEPTED:** No person, firm, or corporation shall be allowed to make, file, or be interested in more than one (1) Bid for the same work unless alternate Bids are called for. A person, firm or corporation who has submitted a sub-proposal to a Bidder, or who has quoted prices on materials to a Bidder, is not hereby disqualified from submitting a sub-proposal or quoting prices to other Bidders or from submitting a Bid in its own behalf. Any Bidder who submits more than one bid will result in the rejection of all bids submitted.
- 18. SAN DIEGO BUSINESS TAX CERTIFICATE:** The Contractor and Subcontractors, not already having a City of San Diego Business Tax Certificate for the work contemplated shall secure the appropriate certificate from the City Treasurer, Civic Center Plaza, First floor and submit to the Contract Specialist upon request or as specified in the Contract Documents. Tax Identification numbers for both the Bidder and the listed Subcontractors must be submitted on the City provided forms within these documents.

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

- 19.1.** For bids \$250,000 and above, bidders shall submit Bid Security at bid time. Bid Security shall be in one of the following forms: a cashier's check, or a properly certified check upon some responsible bank; or an approved corporate surety bond payable to the City of San Diego for an amount of not less than 10% of the total bid amount.
- 19.2.** This check or bond, and the monies represented thereby, will be held by the City as a guarantee that the Bidder, if awarded the contract, will in good faith enter into the contract and furnish the required final performance and payment bonds.
- 19.3.** The Bidder agrees that in the event of the Bidder's failure to execute this contract and provide the required final bonds, the money represented by the cashier's or certified check will remain the property of the City; and the Surety agrees that it will pay to the City the damages, not exceeding the sum of 10% of the amount of the Bid, that the City may suffer as a result of such failure.
- 19.4.** At the time of bid submission, bidders must upload and submit an electronic PDF copy of the aforementioned bid security. Whether in the form of a cashier's check, a properly certified check or an approved corporate surety bond payable to the City of San Diego, the bid security must be uploaded to the City's eBidding system. By 5PM the next business day after the bid opening date, the first five apparent low bidders must provide the City with the original bid security.
- 19.5.** Failure to submit the electronic version of the bid security at the time of bid submission AND failure to provide the original by 5PM, 3 days after bid opening date shall cause the bid to be rejected and deemed **non-responsive**.

Original Bid Bond shall be submitted to:

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

20. AWARD OF CONTRACT OR REJECTION OF BIDS:

- 20.1.** This contract may be awarded to the lowest responsible and reliable Bidder.
- 20.2.** Bidders shall complete ALL eBid forms as required by this solicitation. Incomplete eBids will not be accepted.
- 20.3.** The City reserves the right to reject any or all Bids, to waive any informality or technicality in Bids received, and to waive any requirements of these specifications as to bidding procedure.
- 20.4.** Bidders will not be released on account of their errors of judgment. Bidders may be released only upon receipt by the City within 3 Working Days of the bid opening, written

notice from the Bidder which shows proof of honest, credible, clerical error of a material nature, free from fraud or fraudulent intent; and of evidence that reasonable care was observed in the preparation of the Bid.

- 20.5.** A bidder who is not selected for contract award may protest the award of a contract to another bidder by submitting a written protest in accordance with the San Diego Municipal Code.
- 20.6.** The City of San Diego will not discriminate in the award of contracts with regard to race, religion creed, color, national origin, ancestry, physical handicap, marital status, sex or age.
- 20.7.** Each Bid package properly signed as required by these specifications shall constitute a firm offer which may be accepted by the City within the time specified herein.
- 20.8.** The City reserves the right to evaluate all Bids and determine the lowest Bidder on the basis of the base bid and any proposed alternates or options as detailed herein.

21. BID RESULTS:

- 21.1.** The availability of the bids on the City's eBidding system shall constitute the public announcement of the apparent low bidder. In the event that the apparent low bidder is subsequently deemed non-responsive or non-responsible, a notation of such will be made on the eBidding system. The new ranking and apparent low bidder will be adjusted accordingly.
- 21.2.** To obtain the bid results, view the results on the City's web site, or request the results by U.S. mail and provide a self-addressed, stamped envelope. If requesting by mail, be sure to reference the bid name and number. The bid tabulations will be mailed to you upon their completion. The results will not be given over the telephone.

22. THE CONTRACT:

- 22.1.** The Bidder to whom award is made shall execute a written contract with the City of San Diego and furnish good and approved bonds and insurance certificates specified by the City within 14 days after receipt by Bidder of a form of contract for execution unless an extension of time is granted to the Bidder in writing.
- 22.2.** If the Bidder takes longer than 14 days to fulfill these requirements, then the additional time taken shall be added to the Bid guarantee. The Contract shall be made in the form adopted by the City, which includes the provision that no claim or suit whatsoever shall be made or brought by Contractor against any officer, agent, or employee of the City for or on account of anything done or omitted to be done in connection with this contract, nor shall any such officer, agent, or employee be liable hereunder.
- 22.3.** If the Bidder to whom the award is made fails to enter into the contract as herein provided, the award may be annulled and the Bidder's Guarantee of Good Faith will be subject to forfeiture. An award may be made to the next lowest responsible and reliable Bidder who shall fulfill every stipulation embraced herein as if it were the party to whom the first award was made.

- 22.4.** Pursuant to the San Diego City Charter section 94, the City may only award a public works contract to the lowest responsible and reliable Bidder. The City will require the Apparent Low Bidder to (i) submit information to determine the Bidder's responsibility and reliability, (ii) execute the Contract in form provided by the City, and (iii) furnish good and approved bonds and insurance certificates specified by the City within 14 Days, unless otherwise approved by the City, in writing after the Bidder receives notification from the City, designating the Bidder as the Apparent Low Bidder and formally requesting the above mentioned items.
- 22.5.** The award of the Contract is contingent upon the satisfactory completion of the above-mentioned items and becomes effective upon the signing of the Contract by the Mayor or designee and approval as to form by the City Attorney's Office. If the Apparent Low Bidder does not execute the Contract or submit required documents and information, the City may award the Contract to the next lowest responsible and reliable Bidder who shall fulfill every condition precedent to award. A corporation designated as the Apparent Low Bidder shall furnish evidence of its corporate existence and evidence that the officer signing the Contract and bond for the corporation is duly authorized to do so.
- 23. EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE OF WORK:** The Bidder shall examine carefully the Project Site, the Plans and Specifications, other materials as described in the Special Provisions, Section 2-7, "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 in the herein and in the Notice of Award. Failure to provide the information as specified may result in the Bid being rejected as **non-responsive**.
- 25.2.** The decision that bid is non-responsive for failure to provide the information required within the time specified shall be at the sole discretion of the City.

PERFORMANCE BOND, LABOR AND MATERIALMEN'S BOND

FAITHFUL PERFORMANCE BOND AND LABOR AND MATERIALMEN'S BOND:

_____, a corporation, as principal, and _____, 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 _____ for the faithful performance of the annexed contract, and in the sum of _____ 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 Principal in completing the improvements and work specified in the Agreement, nor shall Surety accept a bid from Principal for completion of the improvements and work specified in the Agreement if the City of San Diego, when declaring the Principal in default, notifies Surety of the City of San Diego's objection to Principal's further participation in the completion of the improvements and work specified in the Agreement.

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

Dated _____

Approved as to Form

Principal

By _____

Printed Name of Person Signing for Principal

Mara W. Elliott, City Attorney

By _____
Deputy City Attorney

Surety

By _____
Attorney-in-fact

Approved:

Local Address of Surety

By _____
Mayor or Designee

Local Address (City, State) of Surety

Local Telephone No. of Surety

Premium \$ _____

Bond No. _____

ATTACHMENTS

ATTACHMENT A
SCOPE OF WORK

SCOPE OF WORK

- 1. SCOPE OF WORK:** The Morena Conveyance North project includes the installation of 48" wastewater forcemain pipeline (approx. 20,870 LF) and 30-inch Welded Steel Pipe brine centrate/conveyance pipeline (approx. 20,870 LF) north along Genesee Ave, east along Nobel Dr., north along Town Center Dr., east along Executive Dr., and underneath I-805 to the North City Water Reclamation Plant. The work involves tunneling underneath San Clemente Canyon, Rose Canyon, and I-805.

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

- 1.1.1.** The Notice Inviting Bids and Plans numbered:

- 40067-01-D through 40067-09-D,
- 40067-56-D through 40067-82-D,
- 40067-129-D through 40067-170-D,
- 40067-177-D through 40067-181-D,
- 40067-183-D,
- 40067-185-D through 40067-200-D,
- 40067-202-D through 40067-205-D
- 40067-209-D,
- 40067-210-D,
- 40067-216-D through 40067-218-D,
- 40067-235-D through 40067-242-D,
- 40067-261-D through 40067-270-D,
- 40067-289-D through 40067-297-D,
- 40067-313-D through 40067-325-D

- 1.1.2.** General Requirements as detailed in DIV 01 of CSI shall support equivalent sections as defined in the Whitebook.

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

The project construction begins on Genesee Ave at Forcemain Station 368+00 and proceeds along Genesee until it turns east on Nobel Drive. The alignment will turn north on Towne Centre Drive and east on Executive Drive under the I-805 to its terminus at the North City Water Reclamation Plant's Influent Pump Station Raw Sewer Pipeline.

- 3. CONTRACT TIME:** The Contract Time for completion of the Work, including the Plant Establishment Period, and overall Pure Water Phase 1 commissioning, shall be **800 Working Days**.

Activity	Working days from Start of Contract
Notice to Proceed	0 Days
I-805 Tunnel	380 Days
Intermediate Substantial Completion	744 Days
Substantial Completion	760 Days
Final Completion	800 Days

ATTACHMENT B
PHASED FUNDING PROVISIONS

PHASED FUNDING PROVISIONS

1. PRE-AWARD

- 1.1.** Within 10 Working Days of the Notice of Intent to Award, the Contractor must contact the Project Manager to discuss fund availability for each phase and shall also submit the following:
 - 1.1.1.** Construction Cost Loaded Schedule in accordance with 6-1, "CONSTRUCTION SCHEDULE AND COMMENCEMENT OF THE WORK" and 9-3, "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 9-3.6, "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
RESERVED

ATTACHMENT D

FUNDING AGENCY PROVISIONS

**CALIFORNIA STATE REVOLVING FUND (CASRF), METROPOLITAN WATER DISTRICT 2014
LOCAL RESOURCES PROGRAM, AND ENVIRONMENTAL PROTECTION AGENCY (EPA)
REQUIREMENTS:**

CLEAN WATER STATE REVOLVING FUND (CWSRF)

DRINKING WATER STATE REVOLVING FUND (DWSRF)

WATER INFRASTRUCTURE FINANCE AND INNOVATION ACT (WIFIA)

PROP 69

BUREAU OF RECLAMATION (BOR)

IN THE EVENT THAT THESE REQUIREMENTS CONFLICT WITH THE CITY'S GENERAL EOC REQUIREMENTS, THE FUNDING AGENCY'S REQUIREMENTS WILL CONTROL.

1. WATER INFRASTRUCTURE FINANCE AND INNOVATION ACT (WIFIA) PROGRAM, 2014 LOCAL RESOURCES PROGRAM, AND CALIFORNIA STATE REVOLVING FUND (CASRF) REQUIREMENTS.

The City anticipates receiving financial assistance from the Federal Government, the Metropolitan Water District of Southern California, and the State of California for this project. The following requirements are conditions of the receipt of financial assistance from the United States Environmental Protection Agency under the Federal **Water Infrastructure Finance and Innovation Act (WIFIA)**, the **Metropolitan Water District** under the **2014 Local Resources Program**, and the State Water Resources Control Board under the **California Water State Revolving Fund (CASRF)** program. The firm contracting with the City (Contractor) shall comply with all of the following requirements. If there are other provisions in the Contract Documents that address the same subjects as this exhibit, Contractor shall comply with both provisions, with the more stringent requirements controlling. If there is a direct conflict between the Agreement and this exhibit, the requirements of this Exhibit shall control in order to preserve the City's eligibility to receive financial assistance.

- 1.1. RECORDS.** Contractor shall maintain separate books, records and other material relative to the Project. Contractor shall also retain such books, records, and other material for itself and for each subcontractor who performed or performs work on this project for a minimum of thirty-six (36) years after Project Completion. Contractor shall require that such books, records, and other material are subject at all reasonable times (at a minimum during normal business hours) to inspection, copying, and audit by the State Water Board, the California State Auditor, the Bureau of State Audits, the United States Environmental Protection Agency (USEPA), the Office of Inspector General, the Internal Revenue Service, the Governor, or any authorized representatives of the aforementioned. Contractor shall allow and shall require its subcontractors to allow interviews during normal business hours of any employees who might reasonably have information related to such records. Contractor agrees to include a similar duty regarding audit, interviews, and records retention in any subcontract related to the performance of this Agreement. The provisions of this section shall survive the termination or expiration of this Agreement. (CWSRF Agmt. § 2.17(b); DWSRF Agmt. Ex. C § C.3.2(d)).
- 1.2. BONDS.** For construction contracts of \$250,000 or more, Contractor shall not begin construction until after it has provided the City with performance and payment bonds each for 100% of the contract value. (CWSRF Agmt. § 4.3; DWSRF Agmt. Ex. C § C.3.6).
- 1.3. COMPLIANCE WITH LAWS AND REGULATIONS.** Contractor shall, at all times, comply with and require its subcontractors to comply with all applicable federal and state laws, rules, guidelines, regulations, and requirements. Without limitation of the foregoing, to the extent applicable, Contractor shall:
 - a) Comply with and require its subcontractors on the Project to comply with federal DBE requirements.

- b) Comply with and require its subcontractors to comply with the list of federal laws in this **Attachment D**. (CWSRF Agmt. § 4.5; DWSRF Agmt. Ex. C § C.3.8).

1.4. INDEMNIFICATION.

- a) Contractor shall defend, indemnify and hold harmless the State Water Quality Control Board, the California Infrastructure and Economic Development Bank (Bank), and any trustee, and their officers, employees, and agents for the Bonds issued by the Bank, if any, to the same extent Contractor is obligated to defend, indemnify, and hold harmless the City under the Agreement. Contractor shall require its subcontractors to similarly defend, indemnify, and hold harmless the State Water Quality Control Board, the Bank, and any trustee, and their officers, employees, and agents for the Bonds issued by the Bank, if any, to the same extent its subcontractors are obligated to defend, indemnify, and hold harmless the Contractor. CWSRF Agmt. § 4.11; DWSRF Agmt. Ex. C § C.3.17).

- b) Except for the sole negligence or willful misconduct of the Metropolitan Water District of Southern California (Metropolitan), Contractor agrees at its sole cost and expense to protect, indemnify, defend, and hold harmless Metropolitan and its Board of Directors, officers, representatives, agents and employees from and against any and all claims and liability of any kind (including, but not limited to, any claims or liability for injury or death to any person, damage to property, natural resources or the environment, or water quality problems) that arise out of or relate to San Diego's approval, construction, operation, repair or ownership of the Project. Such indemnity shall include all damages and losses related to any claim made, whether or not a court action is filed, and shall include attorney fees, administrative and overhead costs, engineering and consulting fees and all other costs related to or arising out of such claim of liability, but shall exclude damages and losses that arise from the sole negligence or willful misconduct of Metropolitan. (LRP Agmt. § 8.2).

1.5. NON-DISCRIMINATION REQUIREMENTS.

- a) During the performance of this Agreement, Contractor and its subcontractors shall not unlawfully discriminate, harass, or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religion, religious creed, national origin, sexual orientation, mental or physical disability (including HIV and AIDS), mental disability, medical condition, age, marital status, denial of family and medical care leave, or genetic information, gender, gender identity, gender expression, or military and veteran status.

- b) Contractor and its subcontractors shall ensure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment.

- c) Contractor and its subcontractors shall comply with the provisions of the Fair Employment and Housing Act and the applicable regulations promulgated thereunder. (Gov. Code, §12990, subs. (a)-(f) et seq.; Cal. Code Regs., tit. 2, § 7285 et seq.) Such regulations are incorporated into this Agreement by reference and made a part hereof as if set forth in full.

- d) Contractor and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement. (CWSRF Agmt. § 4.15(e)-(h); DWSRF Agmt. Ex. C § C.3.21(e)-(h)).
- e) (CWSRF Agmt. § 4.15(e)-(h); DWSRF Agmt. Ex. C § C.3.21(e)-(h); LRP Agmt. § 2.2).

1.6. INSURANCE. For any policy of general liability insurance concerning the construction of the Project, Contractor will cause, and will require its subcontractors to cause, a certificate of insurance to be issued showing the State Water Quality Control Board, its officers, agents, employees, and servants as additional insured. (CWSRF Agmt. § 4.17; DWSRF Agmt. Ex. C § C.3.25).

1.7. EXCLUDED PARTIES. Contractor shall not contract with any party who is debarred or suspended or otherwise excluded from or ineligible for participation in any work overseen, directed, funded, or administered by the State Water Board program for which this funding is authorized. For any work related to this Agreement, Contractor shall not contract with any individual or organization on the State Water Board’s List of Disqualified Businesses and Persons that is identified as debarred or suspended or otherwise excluded from or ineligible for participation in any work overseen, directed, funded, or administered by the State Water Board program for which funding under this Agreement is authorized. The State Water Board’s List of Disqualified Businesses and Persons is located at:

http://www.waterboards.ca.gov/water_issues/programs/enforcement/fwa/dbp.shtm

(CWSRF Agmt. § 4.18; DWSRF Agmt. Ex. C § C.3.26).

1.8. PREVAILING WAGES. Contractor shall comply with all California State and Federal prevailing wage laws. Contractor shall include in its subcontracts the full the language provided in this **Attachment D** regarding federal prevailing wages. (CWSRF Agmt. § 4.19; DWSRF Agmt. Ex. C § C.3.28).

1.9. SIGNAGE. Upon the direction of the City, Contractor shall place a sign at least four feet tall by eight feet wide made of ¾ inch thick exterior grade plywood or other approved material in a prominent location on the Project site and shall maintain the sign in good condition for the duration of the construction period. The sign must include the following disclosure statement and color logos (available from the State Water Resources Control Board):



"Funding for this \$[insert value] million [insert name] project has been provided in full or in part by California State Revolving Funds through an agreement with the State Water Resources Control Board. California's State Revolving Funds are capitalized through a variety of funding sources, including grants from the United States Environmental Protection Agency and state bond proceeds."

The Project sign may include another agency's required promotional information so long as the above logos and disclosure statement are equally prominent on the sign. The sign shall be prepared in a professional manner. (CWSRF Agmt. Ex. A § 9; DWSRF Agmt. Ex. A § A.2.3).

See **Attachment E – Supplementary Special Provisions, Section 7-10.6.2.1, “Project Identification Sign”** for more information.

- 1.10. DISCLAIMER.** Funding for this project has been provided in full or in part through an agreement with the State Water Resources Control Board. California’s State Revolving Funds are capitalized through a variety of funding sources, including grants from the United States Environmental Protection Agency and state bond proceeds. The contents of this document do not necessarily reflect the views and policies of the foregoing, nor does mention of trade names or commercial products constitute endorsement or recommendation for use. (DWSRF Agmt. Ex. A § A.2.1).
- 1.11. FEDERAL AWARD CONDITIONS.** Contractor shall comply with the following federal conditions:
 - 1. American Iron and Steel.** Unless the City has obtained a waiver from USEPA on file with the State Water Board or unless this Project is not a project for the construction, alteration, maintenance or repair of a public water system or treatment work, Contractor shall not purchase “iron and steel products” produced outside of the United States on this Project. Unless the City has obtained a waiver from USEPA on file with the State Water Board or unless this Project is not a project for the construction, alteration, maintenance or repair of a public water system or treatment work, Contractor shall ensure that all “iron and steel products” used in the Project were or will be produced in the United States. For purposes of this section, the term “iron and steel products” means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials. “Steel” means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. CWSRF Agmt. Ex. E § A(1); DWSRF Agmt. Ex. C § C.4.3.i; WIFIA Agmt. §§ 12(j), 14(l))
 - 2. Wage Rate Requirements (Davis-Bacon).** Contractor shall include in its subcontracts the full the language provided in **Attachment D**, Section 9, regarding federal prevailing wages. CWSRF Agmt. Ex. E § A(2); DWSRF Agmt. Ex. C § C.4.3.ii; WIFIA Agmt. §§ 12(j), 14(l)).
 - 3. Reserved.**
 - 4. Copyright and Patent.** USEPA and the State Water Board have the right to reproduce, publish, use and authorize others to reproduce, publish and use copyrighted works or other data developed pursuant to this Agreement. Where an invention is made with Project Funds, USEPA and the State Water Board retain the right to a worldwide, nonexclusive, nontransferable, irrevocable, paid-up license to practice the invention owned by Contractor. Contractor must utilize the Interagency Edison extramural invention reporting system at <http://iEdison.gov> and shall notify the State Water Board when an invention report, patent report, or utilization report is filed. (CWSRF Agmt. Ex. E § A(5)(e); DWSRF Agmt. Ex. C § C.4.3.i)

5. **Credit.** Contractor agrees that any reports, documents, publications or other materials developed for public distribution supported by this Agreement shall contain the following statement (CWSRF Agmt. Ex. E § A(5)(f)):

"This project has been funded wholly or in part by the United States Environmental Protection Agency and the State Water Resources Control Board. The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency or the State Water Resources Control Board, nor does the EPA or the Board endorse trade names or recommend the use of commercial products mentioned in this document."

6. **Trafficking in Persons.** Contractor, its employees, its subcontractors and their employees may not engage in severe forms of trafficking in persons during the term of this Agreement, procure a commercial sex act during the term of this Agreement, or use forced labor in the performance of this Agreement. Contractor must include this provision in its subcontracts under this Agreement. Contractor must inform the City immediately of any information regarding a violation of the foregoing. Contractor understands that failure to comply with this provision may subject the State Water Board to loss of federal funds, and the loss of funding for this Project. (CWSRF Agmt. Ex. E § A(5)(h); DWSRF Agmt. Ex. C § C.4.3.xiii).

1.12. CIVIL RIGHTS OBLIGATIONS. Contractor shall comply with the following federal non-discrimination requirements CWSRF Agmt. Ex. E § B; DWSRF Agmt. Ex. C § C.4.3.xv; WIFIA Agmt. Ex. E):

- a) Title VI of the Civil Rights Act of 1964, which prohibits discrimination based on race, color, and national origin, including limited English proficiency (LEP).
- b) Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination against persons with disabilities.
- c) The Age Discrimination Act of 1975, which prohibits age discrimination.
- d) Section 13 of the Federal Water Pollution Control Act Amendments of 1972, which prohibits discrimination on the basis of sex.
- e) 40 CFR Part 7, as it relates to the foregoing.
- f) Executive Order No. 11246. Contractor shall include in its subcontracts related to the Project the following provisions (41 CFR § 60-1.4(b)):

"During the performance of this contract, the contractor agrees as follows:

"(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the City setting forth the provisions of this nondiscrimination clause.

- "(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
- "(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.
- "(4) The contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the City advising the labor union or workers' representatives of the contractor's commitments under section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- "(5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- "(6) The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- "(7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
- "(8) The contractor will include the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor

as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such, the contractor may request the United States to enter into such litigation to protect the interests of the United States."

- g) **Disadvantaged Business Enterprises (40 CFR Part 33).** Contractor agrees to comply with the requirements of USEPA's Program for Utilization of Small, Minority and Women's Business Enterprises. The DBE rule can be accessed at www.epa.gov/osbp. Contractor shall comply with 40 CFR Section 33.301, and retain all records documenting compliance with the six good faith efforts. The Contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 40 CFR part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the Contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or other legally available remedies. (CWSRF Agmt. Ex. E § D(2); DWSRF Agmt. Ex. A § A.2.2.5; WIFIA Agmt. Ex. E, 40 CFR 33.302(i))

- 1.13. PROCUREMENT PROHIBITIONS UNDER SECTION 306 OF THE CLEAN AIR ACT AND SECTION 508 OF THE CLEAN WATER ACT, INCLUDING EXECUTIVE ORDER 11738, ADMINISTRATION OF THE CLEAN AIR ACT AND THE FEDERAL WATER POLLUTION CONTROL ACT WITH RESPECT TO FEDERAL CONTRACTS, GRANTS, OR LOANS; 42 USC § 7606; 33 USC § 1368.** Except where the purpose of this Agreement is to remedy the cause of the violation, Contractor may not procure goods, services, or materials from suppliers excluded under the federal System for Award Management: <http://www.sam.gov/>.
- 1.14. Debarment and Suspension Executive Order 12549 (1986).** Contractor certifies that it will not knowingly enter into a contract with anyone who is ineligible under the 40 CFR Part 32 to participate in the Project. Suspension and debarment information can be accessed at <http://www.sam.gov>. Contractor represents and warrants that it has or will include a term or conditions requiring compliance with this provision in all of its subcontracts under this Agreement. (WIFIA Agmt. Ex. E, Debarment and Suspension, Executive Order 12549).
- 1.15. SECURE CONNECTION.** Contractor agrees that if its network or information system is connected to USEPA networks to transfer data using systems other than the Environmental Information Exchange Network or USEPA's Central Data Exchange, it will ensure that any connections are secure. (CWSRF Agmt. Ex. E § D(5); DWSRF Agmt. Ex. C § C.4.3.xxii).
- 1.16. GEOSPATIAL DATA STANDARDS.** All geospatial data created pursuant to this Agreement that is submitted to the State Water Board for use by USEPA or that is submitted directly to USEPA must be consistent with Federal Geographic Data Committee endorsed standards. Information on these standards may be found at www.fgdc.gov. (CWSRF Agmt. Ex. E § E; DWSRF Agmt. Ex. C § C.4.3.xxiii)
- 1.17. FEDERAL LOBBYING RESTRICTIONS.** Recipients of federal financial assistance may not pay any person for influencing or attempting to influence any officer or employee of a federal agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress with respect to the award, continuation, renewal, amendment, or modification of a federal grant, loan, or contract. These requirements are implemented for

USEPA in 40 CFR Part 34, which also describes types of activities, such as legislative liaison activities and professional and technical services, which are not subject to this prohibition. Upon award of this contract, Contractor shall complete and submit to the City the certification and disclosure forms in Appendix A and Appendix B to 40 CFR Part 34. Contractor shall also require all subcontractors and suppliers of any tier awarded a subcontract over \$100,000 to similarly complete and submit the certification and disclosure forms pursuant to the process set forth in 40 CFR 34.110. (WIFIA Agmt. Ex. E, Section 319 of Pub. L. 101-121).

2. NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246).

2.1. The goal and timetables for minority and female participation, expressed in percentage terms for the Contractor’s aggregate workforce in each trade on all construction work in the covered area, as follows:

	<u>Goal</u>
1. Minority Participation:	16.9%
2. Female Participation:	6.9%

2.2. These goals are applicable to all the Contractor’s construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs Work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the Work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both federally involved and non-federally involved Work.

2.3. The Contractor’s compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals.

2.4. The hours of minority and female employment and training shall be substantially uniform throughout the length of the Contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor’s goals shall be a violation of the Contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

2.5. The Contractor shall provide written notification to the Director the Office of Federal Contract Compliance Programs within 10 Working Days of award of any Subcontract in excess of \$10,000 at any tier for Work under the Contract resulting from this solicitation. The notification shall list the name, address and telephone number of the Subcontractor; employer identification number of the Subcontractor; estimated dollar amount of the Subcontract; estimated starting and completion dates of the Subcontract; and the geographical area in which the subcontract is to be performed. The “covered area” is the City of San Diego.

3. EQUAL OPPORTUNITY CLAUSES:

3.1. The following equal opportunity clauses are incorporated by reference herein:

1. The equal opportunity clause located 41 CFR 60.1.4(a), which specifies the obligations imposed under Executive Order 11246.
2. The equal opportunity clause located at 41 CFR 60-741.5, which contains the obligations imposed by Section 503 of the Rehabilitation Act of 1973.
3. The "Equal Opportunity Clause" (Resolution No. 765092) filed on December 4, 1978, in the Office of the City Clerk, San Diego, California and incorporated in the "Standard Federal Employment Opportunity Construction Contract Specifications (Executive Order 11246 - Document No. 769023, filed September 11, 1984, in the Office of the City Clerk, San Diego, California) is applicable to all non-exempt City construction contracts and subcontracts of \$2,000 or more.
4. Age Discrimination Act of 1975, Pub. L. 94-135.
5. Title VI of the Civil Rights Act of 1964, Pub. L. 88-352.
6. Section 13 of the Federal Water Pollution Control Acts Amendments of 1972, Pub. L. 92-5200 (the Clean Water Act).
7. Section 504 of the Rehabilitation Act of 1973, Pub. L. 93-112 (Executive Orders 11914 and 11250).
8. Women's Minority Business Enterprises, Executive Orders 11625, 12138 and 12432.
9. Section 129 of the Small Business Administration Reauthorization and Amendment Act of 1988, Pub. L. 100-590.

4. STANDARD FEDERAL EQUAL EMPLOYMENT SPECIFICATIONS:

4.1. The Contractor is required to comply with the 15 "Standard Federal Equal Employment Specifications" in section 4.2 below and also located in 41 CFR 60-4.3 for federal and federally-assisted construction contracts in excess of \$10,000.

4.2. Standard Federal Equal Employment Specifications.

1. As used in these specifications:
 - a) Covered area" means the geographical area described in the solicitation from which this contract resulted;
 - b) "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
 - c) "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
 - d) Minority" includes:
 - i. Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

- ii. Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
 - iii. Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
 - iv. American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
4. The Contractor shall implement the specific affirmative action standards provided in item 7, paragraphs "a" through "p", of this section below. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.
5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these

specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
 - a) Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities
 - b) Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
 - c) Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
 - d) Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
 - e) Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs

funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

- f) Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g) Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- h) Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
- i) Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
- j) Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
- k) Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR part 60-3.
- l) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

- m) Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
 - n) Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
 - o) Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
 - p) Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.
8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (item 7, paragraphs "a" through "p", of this section). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under item 7, paragraphs "a" through "p", of this section that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.
9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).
10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, or national origin.
11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
 13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in item 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.
 14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.
 15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).
- 4.3.** Segregated Facilities (41 CFR 60-1.8). The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensuring that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. This obligation extends to all contracts containing the equal opportunity clause regardless of the amount of the contract. The term "facilities," as used in this section, means waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, wash rooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees; Provided, That separate or single-user restrooms and necessary dressing or sleeping areas shall be provided to assure privacy between the sexes.

5. VIOLATION OR BREACH OF REQUIREMENTS:

5.1. If at any time during the course of the Contract there is a violation of the Affirmative Action or Equal Employment Opportunity requirements by the Contractor, or the Subcontractors, the City will notify the Contractor of the breach. The City may withhold any further progress payments to the Contractor until the City is satisfied that the Contractor and Subcontractors are in full compliance with these requirements.

6. MONTHLY EMPLOYMENT UTILIZATION REPORTS:

6.1. Refer to GENERAL EQUAL OPPORTUNITY CONTRACTING PROGRAM REQUIREMENTS, CONSTRUCTION CONTRACTOR REQUIREMENTS in The WHITEBOOK and the following:

1. Federal and Non-Federal Work in San Diego County. Submit an updated list only if work is complete or new contracts have been awarded during the span of this project.

7. RECORDS OF PAYMENTS TO DBEs:

7.1. The Contractor shall maintain records and documents of payments to DBEs for 5 years following the NOC. These records shall be made available for inspection upon request by any authorized representative of the City, funding agency, or both. The reporting requirement shall be extended to any certified DBE Subcontractor.

8. FEDERAL WAGE REQUIREMENTS FOR FEDERALLY FUNDED PROJECTS:

8.1. The successful Bidder's work shall be required to comply with Executive Order 11246, entitled "Equal Employment Opportunity," as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CFR chapter 60).

8.2. This Executive Order pertains to Equal Employment Opportunity regulations and contains significant changes to the regulations including new goals and timetables for women in construction and revised goals and time-tables for minorities in construction.

8.3. Minimum wage rates for this project have been predetermined by the Secretary of Labor and are set forth in the Decision of the Secretary and bound into the specifications book. Should there be any difference between the state or federal wage rates, including health and welfare funds for any given craft, mechanic, or similar classifications needed to execute the Work, it shall be mandatory upon the Contractor or subcontractor to pay the higher of the two rates.

8.4. The minimum wage rate to be paid by the Contractor and the Subcontractors shall be in accordance with the Federal Labor Standards Provisions (see below) and Federal Wage Rates (see Wage Rates below) and General Prevailing Wage Determination made by the State of California, Director of Industrial Relations pursuant to California Labor Code Part 7, Chapter 1, Article 2, Sections 1770, 1773 and 1773.1, whichever is higher.

8.5. A Contractor having 50 or more employees and its Subcontractors having 50 or more employees and who may be awarded a contract of \$50,000 or more will be required to maintain an affirmative action program, the standards for which are contained in the specifications.

8.6. To be eligible for award, each Bidder shall comply with the affirmative action requirements which are contained in the specifications

8.7. Women will be afforded equal opportunity in all areas of employment. However, the employment of women shall not diminish the standards of requirements for the employment of minorities.

9. **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.

9.1. **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.

9.1.1. 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.

9.1.2. 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.

9.2. **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.

9.3. **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.

- 9.3.1.** Contractor 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.
- 9.4. 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.
- 9.5. Working Hours.** Contractor and their subcontractors shall comply with California Labor Code sections 1810 through 1815, including but not limited to: (i) restrict working hours on public works contracts to eight hours a day and forty hours a week, unless all hours worked in excess of 8 hours per day are compensated at not less than 1½ times the basic rate of pay; and (ii) specify penalties to be imposed on contractors and subcontractors of \$25 per worker per day for each day the worker works more than 8 hours per day and 40 hours per week in violation of California Labor Code sections 1810 through 1815.
- 9.6. 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.
- 9.7. 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."
- 9.8. Labor Compliance Program.** The City has its own Labor Compliance Program authorized in August 2011 by the DIR. The City will withhold contract payments when payroll records are delinquent or deemed inadequate by the City or other governmental entity, or it has been established after an investigation by the City or other governmental entity that underpayment(s) have occurred. For questions or assistance, please contact the City of San Diego's Prevailing Wage Unit at 858-627-3200.
- 9.9. 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.
- 9.9.1.** 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.

- 9.9.2.** 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.
- 9.10. 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.
- 9.11. List of all Subcontractors.** The City may ask Contractor for the most current list of subcontractors (regardless of tier), along with their DIR registration numbers, utilized on this Agreement at any time during performance of this contract, and Contractor shall provide the list within ten (10) working days of the City's request. Additionally, Contractor shall provide the City with a complete list of all subcontractors utilized on this contract (regardless of tier), within ten working days of the completion of the contract, along with their DIR registration numbers. The City shall withhold final payment to Contractor until at least 30 days after this information is provided to the City.
- 9.12. 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:
- 9.12.1. Registration.** The Contractor will not be required to register with the DIR for small projects. (Labor Code section 1771.1)
- 9.12.2. 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).
- 9.12.3. 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 9.11 above. (Labor code section 1773.3).

10. DAVIS-BACON WAGE RATES AND PROVISIONS:

- 10.1. WAGE RATES** This contract shall be subject to the following Davis-Bacon Wage Decisions:
- 10.2. CWSRF DAVIS BACON PROVISIONS.** Contractor shall include the language in this section in all of its subcontracts for the Project. Contractor and all subcontractors working on the Project shall comply with any provisions herein applicable to contractors and subcontractors, respectively.

WAGE RATES: This contract shall be subject to the following Davis-Bacon Wage Decisions:

"General Decision Number: CA20200001 08/14/2020

Superseded General Decision Number: CA20190001

State: California

Construction Types: Building, Heavy (Heavy and Dredging),
Highway and Residential

County: San Diego County in California.

BUILDING CONSTRUCTION PROJECTS; DREDGING PROJECTS (does not include hopper dredge work); HEAVY CONSTRUCTION PROJECTS (does not include water well drilling); HIGHWAY CONSTRUCTION PROJECTS; RESIDENTIAL CONSTRUCTION PROJECTS (consisting of single family homes and apartments up to and including 4 stories)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.80 for calendar year 2020 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.80 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2020. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/03/2020
1	01/10/2020
2	01/31/2020
3	03/06/2020
4	04/17/2020
5	05/29/2020

Modification Number	Publication Date
6	06/05/2020
7	07/03/2020
8	07/17/2020
9	07/24/2020
10	07/31/2020
11	08/07/2020
12	08/14/2020

ASBE0005-002 09/01/2019

	Rates	Fringes
Asbestos Workers/Insulator (Includes the application of all insulating materials, protective coverings, coatings, and finishes to all types of mechanical systems).....	\$ 43.77	22.48
Fire Stop Technician (Application of Firestopping Materials for wall openings and penetrations in walls, floors, ceilings and curtain walls).....	\$ 28.92	18.73

ASBE0005-004 07/01/2019

	Rates	Fringes
Asbestos Removal worker/hazardous material handler (Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials from mechanical systems, whether they contain asbestos or not)....	\$ 20.63	12.17

BOIL0092-003 03/01/2018

	Rates	Fringes
BOILERMAKER.....	\$ 44.07	33.52

BRCA0004-008 11/01/2018

	Rates	Fringes
BRICKLAYER; MARBLE SETTER.....	\$ 38.21	17.44

BRCA0018-004 06/01/2019

	Rates	Fringes
MARBLE FINISHER.....	\$ 33.43	14.11
TILE FINISHER.....	\$ 28.23	12.65
TILE LAYER.....	\$ 40.07	18.36

BRCA0018-010 09/01/2018		
	Rates	Fringes
TERRAZZO FINISHER.....	\$ 31.25	13.41
TERRAZZO WORKER/SETTER.....	\$ 38.39	14.18

CARP0409-002 07/01/2016		
	Rates	Fringes
Diver		
(1) Wet.....	\$ 712.48	17.03
(2) Standby.....	\$ 356.24	17.03
(3) Tender.....	\$ 348.24	17.03
(4) Assistant Tender.....	\$ 324.24	17.03
Amounts in "'Rates' column are per day		

CARP0409-008 08/01/2010		
	Rates	Fringes
Modular Furniture Installer.....	\$ 17.00	7.41

CARP0547-001 07/01/2018		
	Rates	Fringes
CARPENTER		
(1) Bridge.....	\$ 42.34	19.17
(2) Commercial Building....	\$ 37.11	19.17
(3) Heavy & Highway.....	\$ 42.21	19.17
(4) Residential Carpenter..	\$ 29.69	19.17
	Rates	Fringes
(5) Residential		
Insulation Installer.....	\$ 18.00	8.16
MILLWRIGHT.....	\$ 48.71	19.17
PILEDRIVERMAN.....	\$ 42.34	19.17

CARP0547-002 07/01/2017		
	Rates	Fringes
Drywall		
(1) Work on wood framed construction of single family residences, apartments or condominiums under four stories		
Drywall Installer/Lather...	\$ 22.95	18.85
Drywall Stocker/Scrapper...	\$ 12.50	12.27
(2) All other work		
Drywall Installer/Lather...	\$ 32.00	17.63
Drywall Stocker/Scrapper...	\$ 12.50	12.27

ELEC0569-001 06/03/2019		
	Rates	Fringes
Electricians (Tunnel Work)		
Cable Splicer.....	\$ 50.81	3%+13.63
Electrician.....	\$ 50.06	3%+13.63
Electricians: (All Other Work, Including 4 Stories Residential)		
Cable Splicer.....	\$ 45.75	3%+14.88
Electrician.....	\$ 45.00	3%+14.88

ELEC0569-004 06/01/2020

	Rates	Fringes
ELECTRICIAN (Sound & Communications Sound Technician).....	\$ 33.95	13.55

SCOPE OF WORK Assembly, installation, operation, service and maintenance of components or systems as used in closed circuit television, amplified master television distribution, CATV on private property, intercommunication, burglar alarm, fire alarm, life support and all security alarms, private and public telephone and related telephone interconnect, public address, paging, audio, language, electronic, background music system less than line voltage or any system acceptable for class two wiring for private, commercial, or industrial use furnished by leased wire, frequency modulation or other recording devices, electrical apparatus by means of which electricity is applied to the amplification, transmission, transference, recording or reproduction of voice, music, sound, impulses and video. Excluded from this Scope of Work - transmission, service and maintenance of background music. All of the above shall include the installation and transmission over fiber optics.

ELEC0569-005 06/01/2020

	Rates	Fringes
Sound & Communications Sound Technician.....	\$ 33.95	13.55

SCOPE OF WORK Assembly, installation, operation, service and maintenance of components or systems as used in closed circuit television, amplified master television distribution, CATV on private property, intercommunication, burglar alarm, fire alarm, life support and all security alarms, private and public telephone and related telephone interconnect, public address, paging, audio, language, electronic, background music system less than line voltage or any system acceptable for class two wiring for private, commercial, or industrial use furnished by leased wire, frequency modulation or other recording devices, electrical apparatus by means of which electricity is applied to the amplification, transmission, transference, recording or reproduction of voice, music, sound, impulses and video. Excluded from this Scope of Work - transmission, service and maintenance of background music. All of the above shall include the installation and transmission over fiber optics.
SOUND TECHNICIAN: Terminating, operating and performing final check-out

ELEC0569-006 10/01/2018

Work on street lighting; traffic signals; and underground systems and/or established easements outside of buildings

	Rates	Fringes
Traffic signal, street light and underground work Utility Technician #1.....	\$ 32.44	8.67
Utility Technician #2.....	\$ 27.05	8.51

STREET LIGHT & TRAFFIC SIGNAL WORK:

UTILITY TECHNICIAN #1: Installation of street lights and traffic signals, including electrical circuitry, programmable controller, pedestal-mounted electrical meter enclosures and laying of pre-assembled cable in ducts. The layout of electrical systems and communication installation including proper position of trench depths, and radius at duct banks, location for manholes, street lights and traffic signals.

UTILITY TECHNICIAN #2: Distribution of material at jobsite, installation of underground ducts for electrical, telephone, cable TV and communication systems. The setting, leveling, grounding and racking of precast manholes, handholes and transformer pads.

ELEC0569-008 06/03/2019		
	Rates	Fringes
ELECTRICIAN (Residential, 1-3 Stories).....	\$ 34.69	7.65

ELEC1245-001 06/01/2020		
	Rates	Fringes
LINE CONSTRUCTION		
(1) Lineman; Cable splicer..	\$ 59.14	20.78
(2) Equipment specialist (operates crawler tractors, commercial motor vehicles, backhoes, trenchers, cranes (50 tons and below), overhead & underground distribution line equipment).....	\$ 47.24	19.59
(3) Groundman.....	\$ 36.12	19.19
(4) Powderman.....	\$ 51.87	18.79

HOLIDAYS: New Year's Day, M.L. King Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and day after Thanksgiving, Christmas Day

ELEV0018-001 01/01/2020		
	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 57.40	34.765+a+b

FOOTNOTE:

- a. PAID VACATION: Employer contributes 8% of regular hourly rate as vacation pay credit for employees with more than 5 years of service, and 6% for 6 months to 5 years of service.
- b. PAID HOLIDAYS: New Years Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Friday after Thanksgiving, and Christmas Day.

ENGI0012-003 07/01/2020

	Rates	Fringes
OPERATOR: Power Equipment (All Other Work)		
GROUP 1.....	\$ 48.25	27.20
GROUP 2.....	\$ 49.03	27.20
GROUP 3.....	\$ 49.32	27.20
GROUP 4.....	\$ 50.81	27.20
GROUP 5.....	\$ 48.96	25.25
GROUP 6.....	\$ 51.03	27.20
GROUP 8.....	\$ 51.14	27.20
GROUP 9.....	\$ 49.29	25.25
GROUP 10.....	\$ 51.26	27.20
GROUP 11.....	\$ 49.41	25.25
GROUP 12.....	\$ 51.43	27.20
GROUP 13.....	\$ 51.53	27.20
GROUP 14.....	\$ 51.56	27.20
GROUP 15.....	\$ 51.64	27.20
GROUP 16.....	\$ 51.76	27.20
GROUP 17.....	\$ 51.93	27.20
GROUP 18.....	\$ 52.03	27.20
GROUP 19.....	\$ 52.14	27.20
GROUP 20.....	\$ 52.26	27.20
GROUP 21.....	\$ 52.43	27.20
GROUP 22.....	\$ 52.53	27.20
GROUP 23.....	\$ 52.64	27.20
GROUP 24.....	\$ 52.76	27.20
GROUP 25.....	\$ 52.93	27.20
OPERATOR: Power Equipment (Cranes, Piledriving & Hoisting)		
GROUP 1.....	\$ 49.60	27.20
GROUP 2.....	\$ 50.38	27.20
GROUP 3.....	\$ 50.67	27.20
GROUP 4.....	\$ 50.81	27.20
GROUP 5.....	\$ 51.03	27.20
GROUP 6.....	\$ 51.14	27.20
GROUP 7.....	\$ 51.26	27.20
GROUP 8.....	\$ 51.43	27.20
GROUP 9.....	\$ 51.60	27.20
GROUP 10.....	\$ 52.60	27.20
GROUP 11.....	\$ 53.60	27.20
GROUP 12.....	\$ 54.60	27.20
GROUP 13.....	\$ 55.60	27.20
OPERATOR: Power Equipment (Tunnel Work)		
GROUP 1.....	\$ 50.10	27.20
GROUP 2.....	\$ 50.88	27.20
GROUP 3.....	\$ 51.17	27.20
GROUP 4.....	\$ 51.31	27.20
GROUP 5.....	\$ 51.53	27.20
GROUP 6.....	\$ 51.64	27.20
GROUP 7.....	\$ 51.76	27.20

PREMIUM PAY:

\$3.75 per hour shall be paid on all Power Equipment Operator work on the following Military Bases: China Lake Naval Reserve, Vandenberg AFB, Point Arguello, Seely Naval Base, Fort Irwin, Nebo Annex Marine Base, Marine Corp Logistics Base Yermo, Edwards AFB, 29 Palms Marine Base and Camp Pendleton

Workers required to suit up and work in a hazardous material environment: \$2.00 per hour additional. Combination mixer and compressor operator on gunite work shall be classified as a concrete mobile mixer operator.

SEE ZONE DEFINITIONS AFTER CLASSIFICATIONS
POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Bargeman; Brakeman; Compressor operator; Ditch Witch, with seat or similar type equipment; Elevator operator-inside; Engineer Oiler; Forklift operator (includes loed, lull or similar types under 5 tons; Generator operator; Generator, pump or compressor plant operator; Pump operator; Signalman; Switchman
GROUP 2: Asphalt-rubber plant operator (nurse tank operator); Concrete mixer operator-skip type; Conveyor operator; Fireman; Forklift operator (includes loed, lull or similar types over 5 tons; Hydrostatic pump operator; oiler crusher (asphalt or concrete plant); Petromat laydown machine; PJU side dum jack; Screening and conveyor machine operator (or similar types); Skiploader (wheel type up to 3/4 yd. without attachment); Tar pot fireman; Temporary heating plant operator; Trenching machine oiler

GROUP 3: Asphalt-rubber blend operator; Bobcat or similar type (Skid steer); Equipment greaser (rack); Ford Ferguson (with dragtype attachments); Helicopter radioman (ground); Stationary pipe wrapping and cleaning machine operator

GROUP 4: Asphalt plant fireman; Backhoe operator (mini-max or similar type); Boring machine operator; Boxman or mixerman (asphalt or concrete); Chip spreading machine operator; Concrete cleaning decontamination machine operator; Concrete Pump Operator (small portable); Drilling machine operator, small auger types (Texoma super economatic or similar types - Hughes 100 or 200 or similar types - drilling depth of 30' maximum); Equipment greaser (grease truck); Guard rail post driver operator; Highline cableway signalman; Hydra-hammer-aero stomper; Micro Tunneling (above ground tunnel); Power concrete curing machine operator; Power concrete saw operator; Power-driven jumbo form setter operator; Power sweeper operator; Rock Wheel Saw/Trencher; Roller operator (compacting); Screed operator (asphalt or concrete); Trenching machine operator (up to 6 ft.); Vacuum or much truck

GROUP 5: Equipment Greaser (Grease Truck/Multi Shift).

GROUP 6: Articulating material hauler; Asphalt plant engineer; Batch plant operator; Bit sharpener; Concrete joint machine operator (canal and similar type); Concrete planer operator; Dandy digger; Deck engine operator; Derrickman (oilfield type); Drilling machine operator, bucket or auger types (Calweld 100 bucket or similar types - Watson 1000 auger or similar types - Texoma 330, 500 or 600 auger or similar types - drilling depth of 45' maximum); Drilling machine operator; Hydrographic seeder machine operator (straw, pulp or seed), Jackson track maintainer, or similar type; Kalamazoo Switch tamper, or similar type; Machine tool operator; Maginnis internal full slab vibrator, Mechanical berm, curb or gutter (concrete or asphalt); Mechanical finisher operator (concrete, Clary-Johnson-Bidwell or similar); Micro tunnel system (below ground); Pavement breaker operator (truck mounted); Road oil mixing machine operator; Roller operator (asphalt or finish), rubber-tired earth moving equipment (single engine, up to and including 25 yds. struck); Self-propelled tar pipelining machine operator; Skiploader operator (crawler and wheel type, over 3/4 yd. and up to and including 1-1/2 yds.); Slip form pump operator (power driven hydraulic lifting device for concrete forms); Tractor operator-bulldozer, tamper-scraper (single engine, up to 100 h.p. flywheel and similar types, up to and including D-5 and similar types); Tugger hoist operator (1 drum); Ultra high pressure waterjet cutting tool system operator; Vacuum blasting machine operator

GROUP 8: Asphalt or concrete spreading operator (tamping or finishing); Asphalt paving machine operator (Barber Greene or similar type); Asphalt-rubber distribution operator; Backhoe operator (up to and including 3/4 yd.), small ford, Case or similar; Cast-in-place pipe laying machine operator; Combination mixer and compressor operator (guniting work); Compactor operator (self-propelled); Concrete mixer operator (paving); Crushing plant operator; Drill Doctor; Drilling machine operator, Bucket or auger types (Calweld 150 bucket or similar types - Watson 1500, 2000 2500 auger or similar types - Texoma 700, 800 auger or similar types - drilling depth of 60' maximum); Elevating grader operator; Grade checker; Gradall operator; Grouting machine operator; Heavy-duty repairman; Heavy equipment robotics operator; Kalamazoo balliste regulator or similar type; Kolman belt loader and similar type; Le Tourneau blob compactor or similar type; Loader operator (Athey, Euclid, Sierra and similar types); Mobark Chipper or similar; Ozzie padder or similar types; P.C. slot saw; Pneumatic concrete placing machine operator (Hackley-Presswell or similar type); Pumpcrete gun operator; Rock Drill or similar types; Rotary drill operator (excluding caisson type); Rubber-tired earth-moving equipment operator (single engine, caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. up to and including 50 cu. yds. struck); Rubber-tired earth-moving equipment operator

(multiple engine up to and including 25 yds. struck); Rubber-tired scraper operator (self-loading paddle wheel type-John Deere, 1040 and similar single unit); Self-propelled curb and gutter machine operator; Shuttle buggy; Skiploader operator (crawler and wheel type over 1-1/2 yds. up to and including 6-1/2 yds.); Soil remediation plant operator; Surface heaters and planer operator; Tractor compressor drill combination operator; Tractor operator (any type larger than D-5 - 100 flywheel h.p. and over, or similar-bulldozer, tamper, scraper and push tractor single engine); Tractor operator (boom attachments), Traveling pipe wrapping, cleaning and bending machine operator; Trenching machine operator (over 6 ft. depth capacity, manufacturer's rating); trenching Machine with Road Miner attachment (over 6 ft depth capacity): Ultra high pressure waterjet cutting tool system mechanic; Water pull (compaction) operator

GROUP 9: Heavy Duty Repairman

GROUP 10: Drilling machine operator, Bucket or auger types (Calweld 200 B bucket or similar types-Watson 3000 or 5000 auger or similar types-Textoma 900 auger or similar types-drilling depth of 105' maximum); Dual drum mixer, dynamic compactor LDC350 (or similar types); Monorail locomotive operator (diesel, gas or electric); Motor patrol-blade operator (single engine); Multiple engine tractor operator (Euclid and similar type-except Quad 9 cat.); Rubber-tired earth-moving equipment operator (single engine, over 50 yds. struck); Pneumatic pipe ramming tool and similar types; Prestressed wrapping machine operator; Rubber-tired earth-moving equipment operator (single engine, over 50 yds. struck); Rubber tired earth moving equipment operator (multiple engine, Euclid, caterpillar and similar over 25 yds. and up to 50 yds. struck), Tower crane repairman; Tractor loader operator (crawler and wheel type over 6-1/2 yds.); Woods mixer operator (and similar Pugmill equipment)

GROUP 11: Heavy Duty Repairman - Welder Combination, Welder - Certified.

GROUP 12: Auto grader operator; Automatic slip form operator; Drilling machine operator, bucket or auger types (Calweld, auger 200 CA or similar types - Watson, auger 6000 or similar types - Hughes Super Duty, auger 200 or similar types - drilling depth of 175' maximum); Hoe ram or similar with compressor; Mass excavator operator less than 750 cu. yards; Mechanical finishing machine operator; Mobile form traveler operator; Motor patrol operator (multi-engine); Pipe mobile machine operator; Rubber-tired earth-moving equipment operator (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck); Rubber-tired self-loading scraper operator (paddle-wheel-auger type self-loading - two (2) or more units)

GROUP 13: Rubber-tired earth-moving equipment operator operating equipment with push-pull system (single engine, up to and including 25 yds. struck)

GROUP 14: Canal liner operator; Canal trimmer operator; Remote-control earth-moving equipment operator (operating a second piece of equipment: \$1.00 per hour additional); Wheel excavator operator (over 750 cu. yds.)

GROUP 15: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine-up to and including 25 yds. struck)

GROUP 16: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 17: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 50 cu. yds. struck); Tandem tractor operator (operating crawler type tractors in tandem - Quad 9 and similar type)

GROUP 18: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, up to and including 25 yds. struck)

GROUP 19: Rotex concrete belt operator (or similar types); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 cu. yds. struck); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, up to and including 25 yds. struck)

GROUP 20: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps, and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 21: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck)

GROUP 22: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, up to and including 25 yds. struck)

GROUP 23: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 yds. struck); Rubber-tired earth-moving equipment operator, operating with the tandem push-pull system (multiple engine, up to and including 25 yds. struck)

GROUP 24: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 25: Concrete pump operator-truck mounted; Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck)

CRANES, PILEDIVING AND HOISTING EQUIPMENT CLASSIFICATIONS

GROUP 1: Engineer oiler; Fork lift operator (includes loed, lull or similar types)

GROUP 2: Truck crane oiler

GROUP 3: A-frame or winch truck operator; Ross carrier operator (jobsite)

GROUP 4: Bridge-type unloader and turntable operator; Helicopter hoist operator

GROUP 5: Hydraulic boom truck; Stinger crane (Austin-Western or similar type); Tugger hoist operator (1 drum)

GROUP 6: Bridge crane operator; Cretor crane operator; Hoist operator (Chicago boom and similar type); Lift mobile operator; Lift slab machine operator (Vagtborg and similar types); Material hoist and/or manlift operator; Polar gantry crane operator; Self Climbing scaffold (or similar type); Shovel, backhoe, dragline, clamshell operator (over 3/4 yd. and up to 5 cu. yds. mrc); Tugger hoist operator

GROUP 7: Pedestal crane operator; Shovel, backhoe, dragline, clamshell operator (over 5 cu. yds. mrc); Tower crane repair; Tugger hoist operator (3 drum)

GROUP 8: Crane operator (up to and including 25 ton capacity); Crawler transporter operator; Derrick barge operator (up to and including 25 ton capacity); Hoist operator, stiff legs, Guy derrick or similar type (up to and including 25 ton capacity); Shovel, backhoe, dragline, clamshell operator (over 7 cu. yds., M.R.C.)

GROUP 9: Crane operator (over 25 tons and up to and including 50 tons mrc); Derrick barge operator (over 25 tons up to and including 50 tons mrc); Highline cableway operator; Hoist operator, stiff legs, Guy derrick or similar type (over 25 tons up to and including 50 tons mrc); K-crane operator; Polar crane operator; Self erecting tower crane operator maximum lifting capacity ten tons

GROUP 10: Crane operator (over 50 tons and up to and including 100 tons mrc); Derrick barge operator (over 50 tons up to and including 100 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 50 tons up to and including 100 tons mrc), Mobile tower crane operator (over 50 tons, up to and including 100 tons M.R.C.); Tower crane operator and tower gantry

GROUP 11: Crane operator (over 100 tons and up to and including 200 tons mrc); Derrick barge operator (over 100 tons up to and including 200 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 100 tons up to and including 200 tons mrc); Mobile tower crane operator (over 100 tons up to and including 200 tons mrc)

GROUP 12: Crane operator (over 200 tons up to and including 300 tons mrc); Derrick barge operator (over 200 tons up to and including 300 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 200 tons, up to and including 300 tons mrc); Mobile tower crane operator (over 200 tons, up to and including 300 tons mrc)

GROUP 13: Crane operator (over 300 tons); Derrick barge operator (over 300 tons); Helicopter pilot; Hoist operator, stiff legs, Guy derrick or similar type (over 300 tons); Mobile tower crane operator (over 300 tons)

TUNNEL CLASSIFICATIONS

GROUP 1: Skiploader (wheel type up to 3/4 yd. without attachment)

GROUP 2: Power-driven jumbo form setter operator

GROUP 3: Dinkey locomotive or motorperson (up to and including 10 tons)

GROUP 4: Bit sharpener; Equipment greaser (grease truck); Slip form pump operator (power-driven hydraulic lifting device for concrete forms); Tugger hoist operator (1 drum); Tunnel locomotive operator (over 10 and up to and including 30 tons)

GROUP 5: Backhoe operator (up to and including 3/4 yd.); Small Ford, Case or similar; Drill doctor; Grouting machine operator; Heading shield operator; Heavy-duty repairperson; Loader operator (Athey, Euclid, Sierra and similar types); Mucking machine operator (1/4 yd., rubber-tired, rail or track type); Pneumatic concrete placing machine operator (Hackley-Presswell or similar type); Pneumatic heading shield (tunnel); Pumpcrete gun operator; Tractor compressor drill combination operator; Tugger hoist operator (2 drum); Tunnel locomotive operator (over 30 tons)

GROUP 6: Heavy Duty Repairman

GROUP 7: Tunnel mole boring machine operator

ENGINEERS ZONES

\$1.00 additional per hour for all of IMPERIAL County and the portions of KERN, RIVERSIDE & SAN BERNARDINO Counties as defined below:

That area within the following Boundary: Begin in San Bernardino County, approximately 3 miles NE of the intersection of I-15 and the California State line at that point which is the NW corner of Section 1, T17N,m R14E, San Bernardino Meridian. Continue W in a straight line to that point which is the SW corner of the northwest quarter of Section 6, T27S, R42E, Mt. Diablo Meridian. Continue North to the intersection with the Inyo County Boundary at that point which is the NE corner of the western half of the northern quarter of Section 6, T25S, R42E, MDM. Continue W along the Inyo and San Bernardino County boundary until the intersection with Kern County, as that point which is the SE corner of Section 34, T24S, R40E, MDM. Continue W along the Inyo and Kern County boundary until the intersection with Tulare County, at that point which is the SW corner of the SE quarter of Section 32, T24S, R37E, MDM. Continue W along the Kern and Tulare County boundary, until that point which is the NW corner of T25S, R32E, MDM. Continue S following R32E lines to the NW corner of T31S, R32E, MDM. Continue W to the NW corner of T31S, R31E, MDM. Continue S to the SW corner of T32S, R31E, MDM. Continue W to SW corner of SE quarter of Section 34, T32S, R30E, MDM. Continue S to SW corner of T11N, R17W, SBM. Continue E along south boundary of T11N, SBM to SW corner of T11N, R7W, SBM. Continue S to SW corner of T9N, R7W, SBM. Continue E along south boundary of T9N, SBM to SW corner of T9N, R1E, SBM. Continue S along west boundary of R1E, SMB to Riverside County line at the SW corner of T1S, R1E, SBM. Continue E along south boundary of T1s, SBM (Riverside County Line) to SW corner of T1S, R10E, SBM. Continue S along west boundary of R10E, SBM to Imperial County line at the SW corner of T8S, R10E, SBM.

Continue W along Imperial and Riverside county line to NW corner of T9S, R9E, SBM. Continue S along the boundary between Imperial and San Diego Counties, along the west edge of R9E, SBM to the south boundary of Imperial County/California state line. Follow the California state line west to Arizona state line, then north to Nevada state line, then continuing NW back to start at the point which is the NW corner of Section 1, T17N, R14E, SBM

\$1.00 additional per hour for portions of SAN LUIS OBISPO, KERN, SANTA BARBARA & VENTURA as defined below:

That area within the following Boundary: Begin approximately 5 miles north of the community of Cholame, on the Monterey County and San Luis Obispo County boundary at the NW corner of T25S, R16E, Mt. Diablo Meridian. Continue south along the west side of R16E to the SW corner of T30S, R16E, MDM. Continue E to SW corner of T30S, R17E, MDM. Continue S to SW corner of T31S, R17E, MDM. Continue E to SW corner of T31S, R18E, MDM. Continue S along West side of R18E, MDM as it crosses into San Bernardino Meridian numbering area and becomes R30W. Follow the west side of R30W, SBM to the SW corner of T9N, R30W, SBM. Continue E along the south edge of T9N, SBM to the Santa Barbara County and Ventura County boundary at that point which is the SW corner of Section 34. T9N, R24W, SBM, continue S along the Ventura County line to that point which is the SW corner of the SE quarter of Section 32, T7N, R24W, SBM. Continue E along the south edge of T7N, SBM to the SE corner to T7N, R21W, SBM. Continue N along East side of R21W, SBM to Ventura County and Kern County boundary at the NE corner of T8N, R21W. Continue W along the Ventura County and Kern County boundary to the SE corner of T9N, R21W. Continue North along the East edge of R21W, SBM to the NE corner of T12N, R21W, SBM. Continue West along the north edge of T12N, SBM to the SE corner of T32S, R21E, MDM. [T12N SBM is a thin strip between T11N SBM and T32S MDM]. Continue North along the East side of R21E, MDM to the Kings County and Kern County border at the NE corner of T25S, R21E, MDM, continue West along the Kings County and Kern County Boundary until the intersection of San Luis Obispo County. Continue west along the Kings County and San Luis Obispo County boundary until the intersection with Monterey County. Continue West along the Monterey County and San Luis Obispo County boundary to the beginning point at the NW corner of T25S, R16E, MDM.

\$2.00 additional per hour for INYO and MONO Counties and the Northern portion of SAN BERNARDINO County as defined below:

That area within the following Boundary: Begin at the intersection of the northern boundary of Mono County and the California state line at the point which is the center of Section 17, T10N, R22E, Mt. Diablo Meridian. Continue S then SE along the entire western boundary of Mono County, until it reaches Inyo County at the point which is the NE corner of the Western half of the NW quarter of Section 2, T8S, R29E, MDM. Continue SSE along the entire western boundary of Inyo County, until the intersection with Kern County at the point which is

the SW corner of the SE 1/4 of Section 32, T24S, R37E, MDM. Continue E along the Inyo and Kern County boundary until the intersection with San Bernardino County at that point which is the SE corner of section 34, T24S, R40E, MDM. Continue E along the Inyo and San Bernardino County boundary until the point which is the NE corner of the Western half of the NW quarter of Section 6, T25S, R42E, MDM. Continue S to that point which is the SW corner of the NW quarter of Section 6, T27S, R42E, MDM. Continue E in a straight line to the California and Nevada state border at the point which is the NW corner of Section 1, T17N, R14E, San Bernardino Meridian. Then continue NW along the state line to the starting point, which is the center of Section 18, T10N, R22E, MDM.

REMAINING AREA NOT DEFINED ABOVE RECIEVES BASE RATE

ENGI0012-004 08/01/2020

	Rates	Fringes
OPERATOR: Power Equipment		
(DREDGING)		
(1) Leverman.....	\$ 56.40	30.00
(2) Dredge dozer.....	\$ 50.43	30.00
(3) Deckmate.....	\$ 50.32	30.00
(4) Winch operator (stern winch on dredge).....	\$ 49.77	30.00
(5) Fireman-Oiler, Deckhand, Bargeman, Leveehand.....	\$ 49.23	30.00
(6) Barge Mate.....	\$ 49.84	30.00

IRON0433-006 07/01/2020

	Rates	Fringes
IRONWORKER		
Fence Erector.....	\$ 34.58	24.81
Ornamental, Reinforcing and Structural.....	\$ 41.00	33.45

PREMIUM PAY:
 \$6.00 additional per hour at the following locations:
 China Lake Naval Test Station, Chocolate Mountains Naval Reserve-Niland, Edwards AFB, Fort Irwin Military Station, Fort Irwin Training Center-Goldstone, San Clemente Island, San Nicholas Island, Susanville Federal Prison, 29 Palms - Marine Corps, U.S. Marine Base - Barstow, U.S. Naval Air Facility - Sealey, Vandenberg AFB

\$4.00 additional per hour at the following locations:
 Army Defense Language Institute - Monterey, Fallon Air Base, Naval Post Graduate School - Monterey, Yermo Marine Corps Logistics Center

\$2.00 additional per hour at the following locations:
 Port Hueneme, Port Mugu, U.S. Coast Guard Station - Two Rock

LABO0089-001 07/01/2020

LABORER (BUILDING and all other Residential Construction)

	Rates	Fringes
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	Rates	Fringes
Group 1.....	\$ 34.18	20.48
Group 2.....	\$ 34.86	20.48
Group 3.....	\$ 35.57	20.48
Group 4.....	\$ 36.37	20.48
Group 5.....	\$ 38.30	20.48

LABORER (RESIDENTIAL CONSTRUCTION - See definition below)

(1) Laborer.....	\$ 30.82	18.80
(2) Cleanup, Landscape, Fencing (Chain Link & Wood).....	\$ 29.53	18.80

RESIDENTIAL DEFINITION: Wood or metal frame construction of single family residences, apartments and condominiums - excluding (a) projects that exceed three stories over a garage level, (b) any utility work such as telephone, gas, water, sewer and other utilities and (c) any fine grading work, utility work or paving work in the future street and public right-of-way; but including all rough grading work at the job site behind the existing right of way

LABORER CLASSIFICATIONS

GROUP 1: Cleaning and handling of panel forms; Concrete Screeding for Rought Strike-off; Concrete, water curing; Demolition laborer; Flagman; Gas, oil and/or water pipeline laborer; General Laborer; General clean-up laborer; Landscape laborer; Jetting laborer; Temporary water and air lines laborer; Material hoseman (walls, slabs, floors and decks); Plugging, filling of Shee-bolt holes; Dry packing of concrete; Railroad maintenance, Repair Trackman and road beds, Streetcar and railroad construction trac laborers; Slip form raisers; Slurry seal crews (mixer operator, applicator operator, squeegee man, Shuttle man, top man), filling of cracks by any method on any surface; Tarman and mortar man; Tool crib or tool house laborer; Window cleaner; Wire Mesh puling-all concrete pouring operations

GROUP 2: Asphalt Shoveler; Cement Dumper (on 1 yard or larger mixer and handling bulk cement); Cesspool digger and installer; Chucktender; Chute man, pouring concrete, the handling of the cute from ready mix trucks, such as walls, slabs, decks, floors, foundations, footings, curbs, gutters and sidewalks; Concrete curer-impervious membrane and form oiler; Cutting torch operator (demoliton); Guinea chaser; Headboard man-asphlt; Laborer, packing rod steel and pans; membrane vapor barrier installer; Power broom sweepers (small); Riiprap, stonepaver, placing stone or wet sacked concrete; Roto scraper and tiller; Tank sealer and cleaner; Tree climber, faller, chain saw

operator, Pittsburgh Chipper and similar type brush shredders; Underground laborers, including caisson bellower

GROUP 3: Buggymobile; Concrete cutting torch; Concrete cutting torch; Concrete pile cutter; Driller, jackhammer, 2 1/2 feet drill steel or longer; Dri Pak-it machine; High sealer (including drilling of same); Hydro seeder and similar type; Impact wrench, mult-plate; Kettlemen, potmen and mean applying asphalt, lay-kold, creosote, line caustic and similar type materials (applying means applying, dipping, brushing or handling of such materials for pipe wrapping and waterproofing); Operators of pneumatic, gas, electric tools, vibratring machines, pavement breakers, air blasting, come-along, and similar mechanical tools not separately classified herein; Pipelayers back up man coating, grouting, making of joints, sealing, caulking, diapering and including rubber gasket joints, pointing and any and all other services; Rotary Scarifier or multiple head concrete chipping scaarifier; Steel header board man and guideline setter; Tampers, Barko, Wacker and similar type; Trenching machine, handpropelled

GROUP 4: Asphalt raker, luterman, ironer, apshalt dumpman and asphalt spreader boxes (all types); Concrete core cutter (walls, floors or ceilings), Grinder or sander; Concrete saw man; cutting walls or flat work, scoring old or new concrete; Cribber, shorer, lagging, sheeting and trench bracing, hand-guided lagging hammer; Laser beam in connection with laborer's work; Oversize concrete vibrator operator 70 pounds and over; Pipelayer performing all services in the laying, installation and all forms of connection of pipe from the point of receiving pipe in the ditch until completion of oepration, including any and all forms of tubular material, whether pipe, metallic or non-metallic, conduit, and any other stationary type of tubular device used for the conveying of any substance or element, whether water, sewage, solid, gas, air or other product whatsoever and without regard to the nature of material from which the tubular material is fabricated; No joint pipe and stripping of same; Prefabricated manhole installer; Sandblaster (nozzleman), Porta shot-blast, water blasting

GROUP 5: Blasters Powderman-All work of loading holes, placing and blasting of all pwder and explosives of whatever type, regardless of method used for such loading and placing; Driller-all power drills, excluding jackhammer, whether core, diamond, wagon, track, multiple unit, and any and all other types of mechanical drills without regard to the form of motive power.

LABO0089-002 11/01/2019

	Rates	Fringes
LABORER (MASON TENDER).....	\$ 32.00	18.28

LABO0089-004 07/01/2020
HEAVY AND HIGHWAY CONSTRUCTION

	Rates	Fringes
Laborers:		
Group 1.....	\$ 35.30	20.48
Group 2.....	\$ 35.76	20.48
Group 3.....	\$ 36.17	20.48
Group 4.....	\$ 37.01	20.48
Group 5.....	\$ 40.28	20.48

LABORER CLASSIFICATIONS

GROUP 1: Laborer: General or Construction Laborer, Landscape Laborer. Asphalt Rubber Material Loader. Boring Machine Tender (outside), Carpenter Laborer (cleaning, handling, oiling & blowing of panel forms and lumber), Concrete Laborer, Concrete Screeding for rough strike-off, Concrete water curing. Concrete Curb & Gutter laborer, Certified Confined Space Laborer, Demolition laborer & Cleaning of Brick and lumber, Expansion Joint Caulking; Environmental Remediation, Monitoring Well, Toxic waste and Geotechnical Drill tender, Fine Grader, Fire Watcher, Limbers, Brush Loader, Pilers and Debris Handlers. flagman. Gas Oil and Water Pipeline Laborer. Material Hoseman (slabs, walls, floors, decks); Plugging, filling of shee bolt holes; Dry packing of concrete and patching; Post Holer Digger (manual); Railroad maintenance, repair trackman, road beds; Rigging & signaling; Scaler, Slip-Form Raisers, Filling cracks on any surface, tool Crib or Tool House Laborer, Traffic control (signs, barriers, barricades, delineator, cones etc.), Window Cleaner

GROUP 2: Asphalt abatement; Buggymobile; Cement dumper (on 1 yd. or larger mixers and handling bulk cement); Concrete curer, impervious membrane and form oiler; Chute man, pouring concrete; Concrete cutting torch; Concrete pile cutter; driller/Jackhammer, with drill steel 2 1/2 feet or longer; Dry pak-it machine; Fence erector; Pipeline wrapper, gas, oil, water, pot tender & form man; Grout man; Installation of all asphalt overlay fabric and materials used for reinforcing asphalt; Irrigation laborer; Kettleman-Potman hot mop, includes applying asphalt, lay-klold, creosote, lime caustic and similar tyhpes of materials (dipping, brushing, handling) and waterproofing; Membrane vapor barrier installer; Pipelayer backup man (coating, grouting, making of joints, sealing caulkiing, diapering including rubber basket joints, pointing); Rotary scarifier, multiple head concrete chipper; Rock slinger; Roto scraper & tiller; Sandblaster pot tender; Septic tank digger/installer; Tamper/wacker operator; Tank scaler & cleaner; Tar man & mortar man; Tree climber/faller, chainb saw operator, Pittsburgh chipper & similar type brush shredders.

GROUP 3: Asphalt, installation of all fabrics; Buggy Mobile Man, Bushing hammer; Compactor (all types), Concrete Curer - Impervious membrane, Form Oiler, Concrete Cutting Torch, Concrete Pile Cutter, Driller/Jackhammer with drill steel 2 1/2 ft or longer, Dry Pak-it machine, Fence erector including manual post hole digging, Gas oil or water Pipeline Wrapper - 6 ft pipe and over, Guradrail erector, Hydro seeder, Impact Wrench man (multi plate), kettleman-Potman Hot Mop includes applying Asphalt, Lay-Kold, Creosote, lime caustic and similar types of materials (dipping, brushing or handling) and waterproofing. Laser Beam in connection with Laborer work. High Scaler, Operators of Pneumatic Gas or Electric Tools, Vibrating Machines, Pavement Breakers, Air Blasting, Come-Alongs and similar mechanical tools, Remote-Controlled Robotic Tools in connection with Laborers work. Pipelayer Backup Man (Coating, grouting, making of joints, sealing, caulking, diapering including rubber gasket joints, pointing and other services). Power Post Hole Digger, Rotary Scarifier (multiple head concrete chipper scarifier), Rock Slinger, Shot Blast equipment (8 to 48 inches), Steel Headerboard Man and Guideline Setter, Tamper/Wacker operator and similar types, Trenching Machine hand propelled.

GROUP 4: Any worker exposed to raw sewage. Asphalt Raker, Luteman, Asphalt Dumpman, Asphalt Spreader Boxes, Concrete Core Cutter, Concrete Saw Man, Cribber, Shorer, Head Rock Slinger. Installation of subsurface instrumentation, monitoring wells or points, remediation system installer; Laborer, asphalt-rubber distributor bootman; Oversize concrete vibrator operators, 70 pounds or over. Pipelayer, Prefabricated Manhole Installer, Sandblast Nozzleman (Water Blasting-Porta Shot Blast), Traffic Lane Closure.

GROUP 5: Blasters Powderman-All work of loading holes, placing and blasting of all powder and explosives of whatever type, regardless of method used for such loading and placing; Horizontal directional driller, Boring system, Electronic tracking, Driller: all power drills excluding jackhammer, whether core, diamond, wagon, track, multiple unit, and all other types of mechanical drills without regard to form of motive power. Environmental remediation, Monitoring well, Toxic waste and Geotechnical driller, Toxic waste removal. Welding in connection with Laborer's work.

LABO0300-005 01/01/2018

	Rates	Fringes
Asbestos Removal Laborer.....	\$ 33.19	17.78

SCOPE OF WORK: Includes site mobilization, initial site cleanup, site preparation, removal of asbestos-containing material and toxic waste, encapsulation, enclosure and disposal of asbestos- containing materials and toxic waste by hand or with equipment or machinery; scaffolding, fabrication of temporary wooden barriers and assembly of decontamination stations.

LABO0345-001 07/01/2020

	Rates	Fringes
LABORER (GUNITE)		
GROUP 1.....	\$ 45.05	19.62
GROUP 2.....	\$ 44.10	19.62
GROUP 3.....	\$ 40.56	19.62

FOOTNOTE: GUNITE PREMIUM PAY: Workers working from a Bosn'n's Chair or suspended from a rope or cable shall receive 40 cents per hour above the foregoing applicable classification rates. Workers doing gunite and/or shotcrete work in a tunnel shall receive 35 cents per hour above the foregoing applicable classification rates, paid on a portal-to-portal basis. Any work performed on, in or above any smoke stack, silo, storage elevator or similar type of structure, when such structure is in excess of 75'-0"" above base level and which work must be performed in whole or in part more than 75'-0"" above base level, that work performed above the 75'-0"" level shall be compensated for at 35 cents per hour above the applicable classification wage rate.

GUNITE LABORER CLASSIFICATIONS

GROUP 1: Rodmen, Nozzlemen

GROUP 2: Gunmen

GROUP 3: Reboundmen

	Rates	Fringes
Laborers: (HORIZONTAL DIRECTIONAL DRILLING)		
(1) Drilling Crew Laborer...	\$ 37.85	15.99
(2) Vehicle Operator/Hauler.	\$ 38.02	15.99
(3) Horizontal Directional Drill Operator.....	\$ 39.87	15.99
(4) Electronic Tracking Locator.....	\$ 41.87	15.99
Laborers: (STRIPING/SLURRY SEAL)		
GROUP 1.....	\$ 39.06	19.01
GROUP 2.....	\$ 40.36	19.01
GROUP 3.....	\$ 42.37	19.01
GROUP 4.....	\$ 44.11	19.01

LABORERS - STRIPING CLASSIFICATIONS

GROUP 1: Protective coating, pavement sealing, including repair and filling of cracks by any method on any surface in parking lots, game courts and playgrounds; carstops; operation of all related machinery and equipment; equipment repair technician

GROUP 2: Traffic surface abrasive blaster; pot tender - removal of all traffic lines and markings by any method (sandblasting, waterblasting, grinding, etc.) and preparation of surface for coatings. Traffic control person: controlling and directing traffic through both conventional and moving lane closures; operation of all related machinery and equipment

GROUP 3: Traffic delineating device applicator: Layout and application of pavement markers, delineating signs, rumble and traffic bars, adhesives, guide markers, other traffic delineating devices including traffic control. This category includes all traffic related surface preparation (sandblasting, waterblasting, grinding) as part of the application process. Traffic protective delineating system installer: removes, relocates, installs, permanently affixed roadside and parking delineation barricades, fencing, cable anchor, guard rail, reference signs, monument markers; operation of all related machinery and equipment; power broom sweeper

GROUP 4: Striper: layout and application of traffic stripes and markings; hot thermo plastic; tape traffic stripes and markings, including traffic control; operation of all related machinery and equipment

LABO1414-003 08/05/2020

	Rates	Fringes
LABORER		
PLASTER CLEAN-UP LABORER.....	\$ 36.03	21.01
PLASTER TENDER.....	\$ 38.58	21.01

Work on a swing stage scaffold: \$1.00 per hour additional.

Work at Military Bases - \$3.00 additional per hour:

 Coronado Naval Amphibious Base, Fort Irwin, Marine Corps Air Station-29 Palms, Imperial Beach Naval Air Station, Marine Corps Logistics Supply Base, Marine Corps Pickle Meadows, Mountain Warfare Training Center, Naval Air Facility-Seeley, North Island Naval Air Station, Vandenberg AFB.

PAIN0036-001 07/01/2020

	Rates	Fringes
Painters: (Including Lead Abatement)		
(1) Repaint (excludes San Diego County).....	\$ 29.59	17.12
(2) All Other Work.....	\$ 33.12	17.24

REPAINT of any previously painted structure. Exceptions: work involving the aerospace industry, breweries, commercial recreational facilities, hotels which operate commercial establishments as part of hotel service, and sports facilities.

PAIN0036-010 10/01/2019

	Rates	Fringes
DRYWALL FINISHER/TAPER		
(1) Building & Heavy Construction.....	\$ 35.69	17.10
(2) Residential Construction (Wood frame apartments, single family homes and multi-duplexes		

	Rates	Fringes
up to and including four stories).....	\$ 25.11	17.06

PAIN0036-012 01/01/2020		
	Rates	Fringes
GLAZIER.....	\$ 44.55	17.06

PAIN0036-019 01/01/2020		
	Rates	Fringes
SOFT FLOOR LAYER.....	\$ 32.27	17.24

PLAS0200-005 08/07/2019		
	Rates	Fringes
PLASTERER.....	\$ 43.73	16.03
<p>NORTH ISLAND NAVAL AIR STATION, COLORADO NAVAL AMPHIBIOUS BASE, IMPERIAL BEACH NAVAL AIR STATION: \$3.00 additional per hour.</p>		

PLAS0500-001 07/01/2018		
	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER		
GROUP 1.....	\$ 26.34	21.12
GROUP 2.....	\$ 27.99	21.12
GROUP 3.....	\$ 30.07	21.12
<p>CEMENT MASONS - work inside the building line, meeting the following criteria: GROUP 1: Residential wood frame project of any size; work classified as Type III, IV or Type V construction; interior tenant improvement work regardless the size of the project; any wood frame project of four stories or less.</p> <p>GROUP 2: Work classified as type I and II construction</p> <p>GROUP 3: All other work</p>		

PLUM0016-006 09/01/2019		
	Rates	Fringes
PLUMBER, PIPEFITTER, STEAMFITTER		
Camp Pendleton; Vandenberg Air Force Base.....	\$ 55.88	23.66
Work ONLY on new additions		

	Rates	Fringes
and remodeling of commercial buildings, bars, restaurants, and stores not to exceed 5,000 sq. ft. of floor space.....	\$ 49.83	22.68
Work ONLY on strip malls, light commercial, tenant improvement and remodel work.....	\$ 38.05	21.01
All other work except work on new additions and remodeling of bars, restaurant, stores and commercial buildings not to exceed 5,000 sq. ft. of floor space and work on strip malls, light commercial, tenant improvement and remodel work.....	\$ 51.38	23.66

PLUM0016-011 09/01/2019		
	Rates	Fringes
PLUMBER/PIPEFITTER		
Residential.....	\$ 41.10	19.58

PLUM0345-001 09/01/2019		
	Rates	Fringes
PLUMBER		
Landscape/Irrigation Fitter..	\$ 34.40	23.05
Sewer & Storm Drain Work....	\$ 38.49	20.43

ROOF0045-001 07/01/2020		
	Rates	Fringes
ROOFER.....	\$ 36.25	9.24

SFCA0669-001 04/01/2020		
	Rates	Fringes
SPRINKLER FITTER.....	\$ 41.57	24.10

* SHEE0206-001 07/01/2020		
	Rates	Fringes
SHEET METAL WORKER		
Camp Pendleton.....	\$ 42.62	29.55

	Rates	Fringes
Except Camp Pendleton.....	\$ 40.62	29.55
Sheet Metal Technician.....	\$ 30.51	9.49

SHEET METAL TECHNICIAN - SCOPE:

a. Existing residential buildings, both single and multi-family, where each unit is heated and/or cooled by a separate system b. New single family residential buildings including tracts. c. New multi-family residential buildings, not exceeding five stories of living space in height, provided each unit is heated or cooled by a separate system. Hotels and motels are excluded. d. LIGHT COMMERCIAL WORK: Any sheet metal, heating and air conditioning work performed on a project where the total construction cost, excluding land, is under

\$1,000,000 e. TENANT IMPROVEMENT WORK: Any work necessary to finish interior spaces to conform to the occupants of commercial buildings, after completion of the building shel

TEAM0166-001 09/01/2019

	Rates	Fringes
Truck drivers:		
GROUP 1.....	\$ 18.90	34.69
GROUP 2.....	\$ 26.49	34.69
GROUP 3.....	\$ 26.69	34.69
GROUP 4.....	\$ 26.89	34.69
GROUP 5.....	\$ 27.09	34.69
GROUP 6.....	\$ 27.59	34.69
GROUP 7.....	\$ 29.09	34.69

FOOTNOTE: HAZMAT PAY: Work on a hazmat job, where hazmat certification is required, shall be paid, in addition to the classification working in, as follows: Levels A, B and C - +\$1.00 per hour. Workers shall be paid hazmat pay in increments of four (4) and eight (8) hours.

TRUCK DRIVER CLASSIFICATIONS

GROUP 1: Fuel Man, Swamper

GROUP 2: 2-axle Dump Truck, 2-axle Flat Bed, Concrete Pumping Truck, Industrial Lift Truck, Motorized Traffic Control, Pickup Truck on Jobsite

GROUP 3: 2-axle Water Truck, 3-axle Dump Truck, 3-axle Flat Bed, Erosion Control Nozzleman, Dump Crete Truck under 6.5 yd, Forklift 15,000 lbs and over, Prell Truck, Pipeline Work Truck Driver, Road Oil Spreader, Cement Distributor or Slurry Driver, Bootman, Ross Carrier

GROUP 4: Off-road Dump Truck under 35 tons 4-axles but less than 7-axles, Low-Bed Truck & Trailer, Transit Mix Trucks under 8 yd, 3-axle Water Truck, Erosion Control Driver, Grout Mixer Truck, Dump Crete 6.5yd and over, Dumpster Trucks, DW 10, DW 20 and over, Fuel Truck and Dynamite, Truck Greaser, Truck Mounted Mobile Sweeper 2-axle Winch Truck

GROUP 5: Off-road Dump Truck 35 tons and over, 7-axles or more, Transit Mix Trucks 8 yd and over, A-Frame Truck, Swedish Cranes

GROUP 6: Off-Road Special Equipment (including but not limited to Water Pull Tankers, Athey Wagons, DJB, B70 Wuclids or like Equipment)

GROUP 7: Repairman

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons

resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION"

Davis-Bacon Requirements for CWSRF Projects

For purposes of this Exhibit only, “subrecipient” or “sub recipient” means the Recipient as defined in this Agreement.

For purposes of this Exhibit only, “recipient” or “State recipient” means the State Water Board.

I. Requirements Under The Water Resources Reform and Development Act of 2014 (WRRDA) For Sub recipients That Are Governmental Entities:

If a sub recipient has questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State Water Board at DavisBacon@waterboards.ca.gov or phone (916) 327-7323. The recipient or sub recipient may also obtain additional guidance from DOL’s website at <http://www.dol.gov/whd/>.

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

Under the Water Resources Reform and Development Act of 2014 (WRRDA), DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund. If a sub recipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the sub recipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Sub recipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

- (i) While the solicitation remains open, the sub recipient shall monitor www.wdol.gov weekly to ensure that the wage determination contained in the solicitation remains current. The sub recipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the sub recipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the sub recipient.
- (ii) If the sub recipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the sub recipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The sub recipient shall monitor www.wdol.gov on a weekly

basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

- (b) If the sub recipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the sub recipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.
- (c) Sub recipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.
- (d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a sub recipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the sub recipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the sub recipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The sub recipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

- (a) The Recipient shall insure that the sub recipient(s) shall insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF - financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or FY 2014 Water Resource Reform and Development Act, the following clauses:

- (1) Minimum wages.

- (i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

Sub recipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

- (ii) (A) The sub recipient(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:
- 1 The work to be performed by the classification requested is not performed by a classification in the wage determination; and
 - 2 The classification is utilized in the area by the construction industry; and
 - 3 The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the sub recipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the sub recipient (s) to the State award official. The State award official will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards

Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the sub recipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

- (iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
 - (iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.
- (2) Withholding. The sub recipient(s), shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract,

the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

- (i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.
- (ii) (A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the sub recipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the sub recipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <https://www.dol.gov/whd/forms/index.htm> or its successor site.

The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the sub recipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sub recipient(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

- 1 That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;
- 2 That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;
- 3 That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

- (iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the

contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees

- (i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or sub contractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- (ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
 - (iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended and 29 CFR part 30.
- (5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.
- (6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.
- (7) Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

- (8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.
- (9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and sub recipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.
- (10) Certification of eligibility.
 - (i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
 - (ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
 - (iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of \$100,000.

- (a) Contract Work Hours and Safety Standards Act. The sub recipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.
 - (1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
 - (2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic,

including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of \$25 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section.

- (3) Withholding for unpaid wages and liquidated damages. The sub recipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.
 - (4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.
- (b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Sub recipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Sub recipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

- (a) The sub recipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(3), all interviews must be conducted in confidence. The sub recipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.
- (b) The sub recipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or

subcontractors and the duration of the contract or subcontract. Sub recipients must conduct more frequent interviews if the initial interviews or other information indicated that there is a risk that the contractor or subcontractor is not complying with DB.

Sub recipients shall immediately conduct interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

- (c) The sub recipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The sub recipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the sub recipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Sub recipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the sub recipient shall verify evidence of fringe benefit plans and payments there under by contractors and subcontractors who claim credit for fringe benefit contributions.
- (d) The sub recipient shall periodically review contractors and subcontractor's use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.
- (e) Sub recipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at <https://www.dol.gov/whd/local/>.

11. AGENCY SPECIFIC PROVISIONS:

Note: Failure to comply with these specifications e.g., taking the specified steps prior to Bid opening and submitting the forms with the Bid, will lead to the Bid being declared **non-responsive** and, therefore, shall be rejected.

11.1. EPA Requirements:

1. Federal Disadvantaged Business Enterprise (DBE) regulations apply to this project. (Reference 40 Code of Federal Regulations Part 33 - Participation by Disadvantaged Business Enterprises in U.S. Environmental Protection Agency Programs).
2. The responsive Bid shall conform to GFE to increase DBE awareness of procurement opportunities through race and gender neutral efforts. Race and gender neutral efforts are ones which increase awareness of contracting opportunities in general, including outreach, recruitment and technical assistance.
3. Bidder agrees that it will cooperate with and assist the City in fulfilling the DBE Good Faith Effort Requirement achieving "fair share objectives" and will exercise GFE to achieve such minimum participation of small, minority and women owned businesses. In particular, in submitting a bid, the Bidder shall, in the selection of Subcontractors, and Suppliers for the procurement of equipment, supplies, construction, and services related to the project, at a minimum, undertake the affirmative GFE steps.
4. In accordance with EPA's Program for Utilization of Small, Minority Disadvantaged and Women Business Enterprises in procurement under Federal assistance programs, the Contractor agrees to the applicable "fair share objectives" as specified in **Attachment D**.
5. The provisions in the Contract Documents have been incorporated to prevent unfair practices that adversely affect DBEs.
6. If a DBE Subcontractor fails to complete the Work under the subcontract for any reason, the Contractor shall employ the 6 GFE if soliciting a replacement Subcontractor. The Contractor shall employ the 6 GFE described below even if the Contractor has achieved its fair share objectives.
7. Good Faith Efforts:
 - a) The Contractor shall demonstrate that efforts were made to attract DBEs on this contract. The "Good Faith" effort requires the Contractor and any Subcontractors to take the steps listed in these specifications to assure that DBEs are used whenever possible as sources of supplies, construction, equipment, or services even if the Contractor has achieved its fair share objectives.
 - b) If the Contractor awards subcontracts, it shall require the Subcontractors to take the steps in these specifications.
 - c) For the EPA defined GFE, see the steps below:
 - i. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. For Indian Tribal, State and Local and Government recipients, this will

- include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
- ii. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes posting solicitations for bids or proposals for a minimum of 30 Calendar Days (refer to 33 CFR 33.301) before the bid or proposal closing date.
- iii. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For Indian Tribal, State and local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process. Include with the GFE documentation a completed copy of the form AA61, "List of Work Made Available".
- iv. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
- v. Use the services and assistance of the U.S. Small Business Administration (SBA) and the Minority Business Development Agency (MBDA) of the Department of Commerce (DOC). See "DBE Potential Resources Centers" Section in a later part these specifications.
- vi. If the Contractor awards Subcontracts, the Contractor shall take the steps in the paragraphs above.

11.2. California State Revolving Fund (CASRF) Requirements:

11.2.1. Refer to Subsection 11.1, "EPA Requirements" above and the following:

11.2.2. The Bidder shall take affirmative steps prior to Bid opening to assure that MBE's and WBE's are used whenever possible as sources of supplies, construction and services.

11.2.3. The affirmative steps are defined for contracts funded by the California State Water Resources Control Board as follows:

1. Utilization of US Small Business Administration and Minority Business Development Agency (MBDA) resources is required at no cost. These agencies offer several services, including Internet access to databases of DBEs.
2. For additional assistance, the Contractor can telephone the local offices of both agencies in their area (SBA Minority Enterprise Development Offices and DOC MBDA Regional Centers). The Internet web sites also include names, addresses, and phone or fax numbers of local SBA and MBDA centers. There are contact phone numbers listed in Step 3 that will assist you in reaching the 2 offices if the Internet is unavailable. Do not write to these sources.
3. The Contractor shall provide documentation that the local SBA/MBDA offices or web sites were notified of the contracting bid opportunity at

least 30 Calendar Days prior to Bid opening and solicitation to DBE Subcontractors at least 15 Calendar Days prior to Bid opening. Documentation shall not only include the efforts to contact the information sources and list the Contract opportunity, but also the solicitation and response to the bid request.

4. Include qualified DBEs on solicitation lists and record the information. Solicitation shall be as broad as possible.
5. If DBE sources are not located, explain why and describe the efforts made.
6. The Contractor shall send invitations to at least 10 (or all, if less than 10) DBE vendors for each item of the Work referred by sources contacted. The invitations shall adequately specify the items for which bids are requested. The record of GFE shall indicate a real desire for a positive response, such as a certified mail receipt or a documented telephone conversation.
7. A regular letter or an unanswered telephone call is not an adequate "good faith" effort. A list of all Subcontractors, including the bidders not selected and non DBE Subcontractors, and bid amount for each item of the Work shall be submitted on Form AA62. If a low bid was not accepted, an explanation shall be provided.

11.2.4. See "DBE Potential Resources Centers" Section in a later part these specifications.

11.2.5. Annual DBE Utilization Reporting:

The Contractor shall report to the City on an annual basis, their utilization of Minority Business Enterprise and Women's Business Enterprise Subcontractors and Suppliers using California State Revolving Funds (CASRF) Form UR-334.

12. DBE POTENTIAL RESOURCES CENTERS:

- 12.1.** Utilization of US Small Business Administration and Minority Business Development Agency (MBDA) resources is required at no cost. These agencies offer several services, including Internet access to databases of DBEs.
- 12.2.** For additional assistance, the recipient or contractor can telephone the local offices of both agencies in their area (SBA Minority Enterprise Development Offices and DOC MBDA Regional Centers). The Internet web sites also include names, addresses, and phone or fax numbers of local SBA and MBDA centers. Do not write to these sources
- 12.3.** The Contractor shall provide documentation that the local SBA/MBDA offices or web sites were notified of the contracting bid opportunity at least 30 Calendar Days prior to Bid opening and solicitation to DBE subcontractors at least 15 Calendar Days prior to Bid opening. Documentation shall not only include the efforts to contact the information sources and list the Contract opportunity, but also the solicitation and response to the bid request.
- 12.4.** Include qualified DBEs on solicitation lists and record the information on Form AA63. Solicitation shall be as broad as possible.
- 12.5.** If DBE sources are not located, explain why and describe the efforts made.
- 12.6.** The Contractor shall send invitations to at least 10 (or all, if less than 10) DBE vendors for each item of work referred by sources contacted. The invitations shall adequately specify

the items for which bids are requested. The record of "good faith" efforts shall indicate a real desire for a positive response, such as a certified mail receipt or a documented telephone conversation.

- 12.7.** A regular letter or an unanswered telephone call is not an adequate "good faith" effort. A list of all sub-bidders, including the bidders not selected and non DBE Subcontractors, and bid amount for each item of the Work shall be submitted on Form AA62. If a low bid was not accepted, an explanation shall be provided.
- 12.8.** Federal Agencies (must be contacted and solicitations posted on their websites):

Name and Address	Telephone and Web Site
U.S. Small Business Administration	(415) 744-6820 Extension 0
455 Market Street, Suite 600	Dynamic Small Business Search: https://catalog.data.gov/dataset/dynamic-small-business-search-dsbs-025a1
San Francisco, CA 94105	Bid Notification: https://catalog.data.gov/dataset/subcontracting-network-subnet-system
RE: Minority Enterprise Development Offices	
U.S. Department of Commerce	(415) 744-7415
Minority Business Development Agency	Website:
555 Montgomery Street	https://www.mbda.gov
San Francisco, CA 94111	RE: Business Development Centers

- 12.9.** State Agencies (must be contacted):

Name and Address	Telephone and Web Site
California Department of Transportation	Mailing Address: PO Box 942874
(CALTRANS) Business Enterprise Program ⁴	Sacramento, CA 94274-0015
1820 Alhambra Blvd.	(916) 227-9599
Sacramento, CA 95816	<u>DBE Database:</u> https://dot.ca.gov/programs/civil-rights/dbe
CA Public Utilities Commission (CPUC)⁵	
505 Van Ness Avenue	<u>Directory:</u> https://sch.supplierclearinghouse.com/FrontEnd/SearchCertifiedDirectory.asp
San Francisco, CA 94102-3298	

Notes:

- The Contractor shall use the SBA's Dynamic Business Search database to search for potential subcontractors, suppliers, and/or manufacturers. Bidder must provide a copy of all search records for items of work made available with GFE documentation.

2. Contractor shall use SUB-Net to post subcontracting opportunities. Contractor shall post Subcontractor opportunities at least 15 Working Days prior to bid opening. Small businesses can review this web site to identify opportunities in their areas of expertise. The web site is designed primarily as a place for large businesses to post solicitations and notices. Bidder **must** provide copy of the Display Solicitation Record identifying the date solicitation notice was posted with GFE documentation.
3. Contractor may use MBDA web portal to post subcontracting opportunities. If utilized, the Contractor shall post subcontractor opportunities at least 30 Calendar Days prior to Bid opening. Small businesses can review this web site to identify opportunities in their areas of expertise. The web site is designed primarily as a place for large businesses to post solicitations and notices. Provide copy of the Offer Overview with the GFE documentation.
4. Based on the federal DBE program, CALTRANS maintains a database and provides directories of minority and woman-owned firms. Bidder must provide a copy of all search records for items of work made available with GFE documentation.
5. CPUC maintains a database of DBE-owned business enterprises and serves to inform the public. Bidder **must** provide a copy of all search records for items of work made available with GFE documentation.

13. GOOD FAITH EFFORT DOCUMENTATION SUBMITTALS:

13.1. The affirmative GFE steps documentation shall be submitted **within 4 Working Days after the Bid Opening**. If this documentation is not submitted when due, the City will declare the Bid **non-responsive** and reject it.

13.2. The required documentation shall be submitted and logged in at the following address:

CITY OF SAN DIEGO
ENGINEERING AND CAPITAL PROJECTS - CONTRACTS
525 B STREET, SUITE 750, MS 908A
SAN DIEGO, CA 92101
SUBJECT: AFFIRMATIVE GOOD FAITH EFFORT DOCUMENTATION
BID NO. K-21-1848-DBB-3

13.3. The Contractor shall maintain the records documenting compliance with requirements including documentation of its GFE and data relied upon in formulating its fair share objectives.

14. FORMS:

14.1. The Contractor shall demonstrate that efforts were made to attract DBEs on this contract. The Contractor and Subcontractors shall take the steps listed in these specifications to assure that DBEs are used whenever possible as sources of supplies, construction, equipment, or services. In addition to the specified GFE documentation, the Bidder shall submit the following forms.

14.1.1. The Contractor shall demonstrate that efforts were made to attract DBEs on this contract. The Contractor and Subcontractors shall take the steps listed in these specifications to assure that DBEs are used whenever possible as sources of supplies, construction, equipment, or services. In addition to the specified GFE documentation, the Bidder shall submit the following forms.

14.1.1.1 The following form shall be submitted **with the Bid submittal**. Failure to include any of the forms shall cause the Bid to be deemed **non-responsive**.

1. Form 4500-3: DBE Subcontractor Performance Form
2. Form 4500-4: DBE Subcontractor Utilization Form

14.1.1.2 The following forms shall be completed and submitted within **4 Working Days after the Bid opening**. Failure to include any of the forms shall cause the Bid to be deemed **non-responsive**.

1. Form AA61: List of Work Made Available
2. Form AA62: Summary of Bids Received
3. Form AA63: Good Faith Effort List of Subcontractors Solicited

14.1.2. The following additional forms shall be submitted annually in accordance with Section 11, "AGENCY SPECIFIC PROVISIONS".

1. Form UR-334: California State Revolving Funds (CASRF)

14.1.3. Bidder is to provide the following form to all DBE subcontractors participating on this contract. Submittal of form is dependent on DBE subcontractor and is to be forwarded to the DBE coordinator at any time during the project period of performance.

1. Form 4500-2: DBE Subcontractor Participation Form.

FUNDING AGENCY PROVISIONS

FORMS



**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form**

This form is intended to capture the DBE¹ subcontractor's² description of work to be performed and the price of the work submitted to the prime contractor. A Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractor's bid or proposal package.

Subcontractor Name		Project Name	
Bid / Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact	
Address			
Telephone No.		Email Address	
Prime Contractor Name		Issuing/Funding Entity	

Contract Item Number	Description of Work Submitted from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor
DBE Certified By: <input type="checkbox"/> DOT <input type="checkbox"/> SBA <input type="checkbox"/> Other: _____		Meets/exceeds EPA certification standards? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unknown

¹ A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.
² Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

Subcontractor Signature	Print Name
Title	Date

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

FORM 4500-3 (DBE Subcontractor Performance Form)



Disadvantaged Business Enterprise (DBE) Program DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE¹ subcontractor's² and the estimated dollar amount of each subcontract. A Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name	
Bid / Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact	
Address			
Telephone No.		Email Address	
Issuing/Funding Entity			

I have identified potential DBE certified subcontractors. ___ YES ___ NO If yes, please complete the table below. If no, please explain:			
Subcontractor Name/ Company Name	Company Address / Phone / Email	Estimated Dollar Amount	Currently DBE Certified?

--Continue on back if needed--

¹ A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

² Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

FORM 4500-4 (DBE Subcontractor Utilization Form)

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

FORM 4500-4 (DBE Subcontractor Utilization Form)

LIST OF WORK MADE AVAILABLE

List items of the Work the Bidder made available to DBE firms. Identify those items of the Work the Bidder might otherwise perform with its own forces and those items that have been broken down into economically feasible units to facilitate DBE participation. For each item listed, show the dollar amount and percentage of the Base Bid. The Bidder must demonstrate that enough work to meet the goal was made available to DBE firms.

SCOPE OF WORK MADE AVAILABLE	NAICS CODE	BIDDER NORMALLY PERFORMS ITEM (Y/N)	ITEM BROKEN DOWN TO FACILITATE PARTICIPATION (Y/N)	AMOUNT	PERCENTAGE OF BASE BID

SUMMARY OF BIDS RECEIVED

Company Name	NAICS CODES	Scope of Work	Selected (Y/N)	Bid Amount	DBE	Non-DBE	Explanation for not Selecting

USE ADDITIONAL FORMS AS NECESSARY

DISADVANTAGE BUSINESS ENTERPRISE (DBE)

GOOD FAITH EFFORT LIST OF SUBCONTRACTORS SOLICITED

Contractor Name	Contractor Address	How Located	Date of Contact	Contact Method	Scope of Work	Bidding (Yes/No)

USE ADDITIONAL FORMS AS NECESSARY



**STATE WATER RESOURCES CONTROL BOARD – DIVISION OF FINANCIAL ASSISTANCE
DISADVANTAGED BUSINESS ENTERPRISE (DBE) UTILIZATION
CALIFORNIA STATE REVOLVING FUNDS (CASRF)
FORM UR-334**

1. Grant/Finance Agreement Number:		2. Annual Reporting Period 10/1/___ through 09/30/___		3. Purchase Period of Financing Agreement:	
4. Total Payments Paid to Prime Contractor or Sub-Contractors During Current Reporting Period: \$					
5. <u>Recipient's Name and Address:</u>			6. <u>Recipient's Contact Person and Phone Number:</u>		
7. List All DBE Payments Paid by Recipient or Prime Contractor During Current Reporting Period:					
Payment or Purchase Paid by Recipient or Prime Contractor	Amount Paid to Any DBE Contractor or Sub-Contractor For Service Provided to Recipient		Date of Payment (MM/DD/YY)	Procurement Type Code** (see below)	Name and Address of DBE Contractor of Sub-Contractor or Vendor
	MBE	WBE			
8. Initial here if no DBE contractors or sub-contractors paid during current reporting period:					
9. Initial here if all procurements for this contract are completed:					
10. Comments:					
11. Signature and Title of Recipient's Authorized Representative			12. Date		

Email Form UR-334 to:

DrinkingWaterSRF@waterboards.ca.gov OR CleanWaterSRF@waterboards.ca.gov

Questions may be directed to:

Barbara August, SWRCB
Barbara.August@waterboards.ca.gov
 Phone: (916) 341-6952
 Fax: (916) 327-7469

****Procurement Type:**

1. Construction
2. Supplies
3. Services (includes business services; professional services; repair services and personnel services)
4. Equipment

**STATE WATER RESOURCES CONTROL BOARD - DIVISION OF FINANCIAL ASSISTANCE
DISADVANTAGED BUSINESS ENTERPRISE (DBE) UTILIZATION
CALIFORNIA STATE REVOLVING FUNDS**

INSTRUCTIONS FOR COMPLETING FORM UR-334

- Box 1** Grant or Financing Agreement Number.
- Box 2** Annual reporting period.
- Box 3** Enter the dates between which you made procurements under this financing agreement or grant.
- Box 4** Enter the total amount of payments paid to the contractor or sub-contractors during this reporting period.
- Box 5** Enter Recipient's Name and Address.
- Box 6** Enter Recipient's Contact Name and Phone Number.
- Box 7** Enter details for the **DBE purchases only** and be sure to limit them to the current period.
1) Use either an "R" or a "C" to represent "Recipient" or "Contractor." 2) Enter a dollar total for DBE and total the two columns at the bottom of the section. 3) Provide the payment date. 4) Enter a product type choice from those at the bottom of the page. 5) List the vendor name and address in the right-hand column
- Box 8** Initial here if no DBE contractors or sub-contractors were paid during this reporting period.
- Box 9** Initial this box only if all purchases under this financing agreement or grant have been completed during this reporting period or a previous period. If you initial this box, we will no longer send you a survey.
- Box 10** This box is for explanatory information or questions.
- Box 11** Provide an authorized representative signature.
- Box 12** Enter the date form completed.



**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Participation Form**

A Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE¹ subcontractor² the opportunity to describe work received and/or report any concerns regarding the funded project (e.g., in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the DBE Coordinator at any time during the project period of performance.

Subcontractor Name		Project Name	
Bid / Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact	
Address			
Telephone No.		Email Address	
Prime Contractor Name		Issuing/Funding Entity	

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Amount Received by Prime Contractor

¹ A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

² Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

Please use the space below to report any concerns regarding the above funded project:

Subcontractor Signature	Print Name
Title	Date

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

Send completed Form 4500-2 to:
 Mr. Joe Ochab, DBE Coordinator
 US EPA, Region 9
 75 Hawthorne Street
 San Francisco, CA 94105

FORM 4500-2 (DBE Subcontractor Participation Form)

ATTACHMENT E
SUPPLEMENTARY SPECIAL PROVISIONS

SUPPLEMENTARY SPECIAL PROVISIONS

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

1. The **2015 Edition** of the Standard Specifications for Public Works Construction (The "GREENBOOK").
2. The **2015 Edition** of the City of San Diego Standard Specifications for Public Works Construction (The "WHITEBOOK"), including the following:
 - a) General Provisions (A) for all Contracts.

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

1-2 TERMS AND DEFINITIONS. To the "WHITEBOOK", items 42, 56, 69, and 102, DELETE in its entirety and SUBSTITUTE with the following:

42. **Field Order** - A Field Order is a written agreement by the Engineer to compensate you for Work items in accordance with 3-3, "EXTRA WORK" or 3-4, "CHANGED CONDITIONS". A Field Order does not change the Contract Price, Contract Time, or the scope intent of the Contract. The unused portion of the Field Order shall revert to the City upon Acceptance.
56. **Notice of Completion (NOC)** - A document recorded with the County of San Diego to signify that the Contract Work has been completed and accepted by the City.
69. **Punchlist** - A list of items of Work or corrections generated after a Walk-through that is conducted when you consider that the Work and Services are complete, and as verified by the Owner. The Punchlist may be completed in phases if defined in the Contract.
102. **Walk-through** - An inspection the City uses to verify the completion of the Project or phase of the Project and to generate a Punchlist prior to Acceptance

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

The **Normal Working Hours** are **9:00 PM to 5:00 AM** except for the locations specified below:

- Towne Centre Dr bound by Nobel Dr and La Jolla Village Drive
8:30 AM to 3:30 PM
- Nobel Dr bound by Genesee Ave and Towne Centre Dr
8:30 AM to 3:30 PM
- I-805 Tunneling Operation
24 hour work day available to contractor

Construction activities outside of the normal working hours may occur with prior approval by the Resident Engineer, at no additional cost to the City.

To the "WHITEBOOK", ADD the following:

Item 108. Final Completion

Once Substantial Completion is finished, the following items are planned to be completed by the Owner prior to the Final Completion by the Contractor:

- The Contractor shall complete punch list fix-up as approved by the City prior to being provided with Final Completion.
- All Work required under Specification Section 01 77 00 Closeout Procedures shall have been completed.

Following Final Completion, the Owner shall provide acceptance of the facilities and take over operation of the facilities.

Item 109. Intermediate Substantial Completion

The time at which the Project's operating facilities or systems are sufficiently complete to provide Owner with uninterrupted temporary operations and maintenance of the overall facility as required to perform an integrated startup with other facilities within the Program. These facilities include the North City Pure Water Facility (NCPWF), Morena Pump Station, Force Main and Brine Conveyance, North City Influent Pump Station and Conveyance, Metropolitan Biosolids Center, and the Pure Water Facility Pump Station. All facilities shall be fully operable to allow for a flow increase to the NCWRP plant from the Morena Pump Station of 10% increase in flow per every ten days without interruption. The Contractor shall support all activities within the Integration period as described in Section 01 91 14 Testing, Integration, and Startup.

Item 110. Substantial Completion

The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

SECTION 2 - SCOPE AND CONTROL OF WORK

2-1.1.3 Requests for Information (RFI). To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

- a) Should You discover a conflict, omission, errors in the Contract Documents, differences with existing field conditions, or have any questions concerning interpretation or clarification of Contract Documents, or when you propose

deviations to the standards or design, you shall submit a Request for Information (RFI) to the City regarding your question or clarification within **1 Working Day**.

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

2-3.2 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.

2-3.4

Subcontract Requirements. To the "WHITEBOOK", ADD the following:

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

2-4

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

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

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

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

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

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

satisfactory to the City, that materials and workmanship shall be free from original or developed defects.

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

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

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

2-5.3.1 General. To the "WHITEBOOK", ADD the following:

1. For Additional requirements related to submittals, refer to Technical Specifications, Section 01 33 00 "Submittal Procedures".

2-5.3.4 Supporting Information. To the "WHITEBOOK", ADD the following:

2. For landscaping and irrigation materials, submit samples and test results to the Engineer within 15 Days of the NTP.

ADD:

2-5.3.7 Contractor's Quality Control Plan (QCP).

1. You shall establish, implement, and maintain an effective Quality Control Plan (QCP) to perform quality control inspection and testing for all items of paving Work required by the Contract Documents, including those performed by subcontractors and material suppliers.
2. The QCP shall ensure conformance to applicable specification and plan requirements with respect to materials, workmanship, construction, finish, and functional performance.
3. The QCP shall detail the methods and procedures that will be taken to ensure that all materials and construction required for street pavement restoration will conform to the Contract Documents, and to ensure that information included will be recorded in Daily Quality Control (QC) Inspection Reports for the Engineer's verification and approval.
4. You shall establish a level of control that will:
 - a) Provide for the production and delivery of acceptable quality materials.
 - b) Provide documentation that construction meets Contract requirements.

5. During the pre-construction meeting, you shall be prepared to discuss and present details of your QCP. You shall not begin any production of materials or construction of surface preparation, pavement restoration, and other related work until your QCP has been reviewed and approved by the Engineer. No partial payment will be made for materials subject to specific quality control requirements until the QCP has been approved.
6. The quality control requirements contained in this section and elsewhere in the Contract Documents are in addition to and separate from the acceptance testing requirements discussed elsewhere in the contract specifications.

2-5.3.7.1 QCP Submittal.

1. Submit the QCP in a written document to the Engineer at the pre-construction meeting. The QCP shall be reviewed and approved by the Engineer prior to the start of any material delivery or paving work.
2. The QCP shall be organized to address, at a minimum, the following items:
 - a) Quality Control Administrator
 - b) Surface preparation and paving schedule.
 - c) Inspection and documentation requirements (Daily Quality Control Inspection Report).
 - d) Material quality control testing plan.
 - e) Documentation of quality control activities.
 - f) Procedures for corrective action when quality control and/or acceptance criteria are not met.
3. You are encouraged to add any additional elements to the QCP as deemed necessary to adequately control all production and construction processes required by Contract Documents.

2-5.3.7.2 QCP Administrator.

1. You shall designate a QCP Administrator to implement the QCP.
 - a) The QCP Administrator shall be your full-time employee or your consultant. The QCP Administrator shall have full authority to institute any and all actions necessary for the successful implementation of the QCP to ensure compliance with the Contract Documents.

- b) The QCP Administrator shall ensure that the following functions are performed and documented:
 - i. Inspection of all materials, construction, plant, and equipment for conformance to the specifications.
 - ii. Performance of all quality control tests as required by the Contract Documents.
 - iii. Performance of density tests for the Engineer when required.

2-5.3.7.3 Inspection Requirements.

- 1. Quality control inspection functions shall be organized to provide inspections for all definable features of Work. You shall document all inspections.
- 2. Inspections shall be performed daily to ensure continuing compliance with contract requirements until completion of the particular feature of Work. These shall include the following minimum requirement:
 - a) During field operations, quality control test results and periodic inspections shall be utilized to ensure the quality of all materials and workmanship meets the requirements of the contract. All equipment utilized in placing, finishing, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the specifications and are within the plan dimensions, lines, grades, and tolerances specified. The QCP shall document how these and other quality control functions will be accomplished and utilized.

2-5.3.7.4 Documentation.

- 1. You shall maintain current quality control records of all inspections performed. These records shall include factual evidence that the required inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.
- 2. These records shall cover both conforming and defective or deficient features, and shall include a statement that all supplies and materials incorporated in the Work are in full compliance with the terms of the Contract. Legible copies of these records for the entire week of paving work shall be furnished to the Engineer after 2 Working Days. The records shall cover all Work placed subsequent to the previously furnished records and shall be verified and signed by the QCP Administrator.
- 3. Specific QCP records required for the Contract shall include, but are not necessarily limited to, the following records:

- a) **Daily Quality Control (QC) Inspection Reports.** The QCP Administrator shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations. These daily QC inspection reports shall provide factual evidence that continuous quality control inspections have been performed and shall, as a minimum, include the following items:
- i. Date and location/s of paving work performed.
 - ii. Asphalt mix specifications and supplier.
 - iii. Dig out locations.
 - iv. Tack coat application rate for each location.
 - v. Asphalt temperature at placement for each location.
 - vi. Asphalt depth for each location.
 - vii. Compaction test results for each location.
 - viii. Documentation that the following have been verified to be in compliance:
 - Proper storage of materials and equipment.
 - Proper operation of all equipment.
 - Adherence to plans and technical specifications.
 - Review of quality control tests.
 - Safety inspection.
 - ix. Location and nature of defects with remedial and corrective actions.
 - x. Presence of City Laboratory representative.
 - xi. Deviations from QCP.
 - xii. Signature of QCP Administrator.

The daily QC inspection reports shall identify inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed.

- b) The daily QC inspection reports shall be signed by the QCP Administrator. The Engineer shall be provided at least 1 copy of each daily QC inspection report for the entire week 2 Working Days following the end of the week.
- c) See **Appendix G** for a sample of the daily QC inspection report. An updated version of this sample report will be provided at the pre-construction meeting.

2-5.3.7.5 Corrective Action Requirements.

- 1. The QCP shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control.
- 2. The requirements for corrective action shall include both general requirements for operation of the QCP as a whole and for individual items of Work contained in the specifications.
- 3. The QCP shall detail how the results of quality control inspections will be used for determining the need for corrective action and shall contain clear sets of rules to gauge when a process is out of control and the type of correction to be taken to regain process control.

2-5.3.7.6 Noncompliance.

- 1. The Engineer will notify you of any noncompliance with any of the foregoing requirements. You shall, after receipt of such notice, immediately take corrective action. Any notice, when delivered by the Engineer to you, shall be considered sufficient notice.
- 2. In cases where quality control activities do not comply with either the QCP or the contract provisions, or where you fail to properly operate and maintain an effective QCP, as determined by the Engineer, the Engineer may:
 - a) Require replacement of ineffective or unqualified QCP personnel or subcontractors.
 - b) Stop operations until appropriate corrective actions are taken.

2-5.3.7.7 Payment.

- 1. The payment for preparation, submittal, implementation and maintenance of the Quality Control Plan in accordance with the Contract Documents shall be included in the Contract Price.

2-5.4.1 General. To the "WHITEBOOK", ADD the following:

- 6. For additional requirements related to Red-lines and Record Documents, refer to Technical Specifications, Section 01 77 00 "Closeout Procedures", Part 3 "Execution", Subsection 3.01 "Maintenance of Record Documents".

2-5.4.2

Asset Specific Red-lines. To the "WHITEBOOK", ADD the following:

1. Fiber Optic and WIFI Device Red-lines. Fiber Optic and WIFI Device Red-lines shall clearly record by dimension from 2 known fixed points and by depth of underground facilities all deviations, modifications, and changes in the Work. Records, deviations, modifications, and changes on the day the Work is performed shall reflect the actual Work location and shall be marked in red at the scale of the Plan sheet on which they are recorded. Red-lines shall show the equipment locations and associated information for the following:
 - a) Locations and depths of underground utilities.
 - b) Revisions to the routing of piping and conduits.
 - c) Actual equipment locations.
 - d) Pull Boxes.
 - e) Electrical Meter, including meter address.
 - f) Items abandoned in place.

2-7

SUBSURFACE DATA. To the "WHITEBOOK", ADD the following:

4. In preparation of the Contract Documents, the designer has relied upon the following reports of explorations and tests of subsurface conditions at the Work Site:
 - a) Geotechnical Report, Cut and Cover Pipeline Portion Dated January 5, 2018
 - b) Canyon Tunnels Geotechnical Baseline Report Dated June 22, 2018
 - c) Canyon Tunnels Geotechnical Desktop Report Dated June 22, 2018
 - d) Final Pothole Report X170266 (13) Dated Dec 15, 2017
 - e) Final Pothole Report X170266 (23) Dated Feb 24, 2018
5. The reports listed above are available for review by contacting the Contract Specialist or visiting:

<https://filecloud.sandiego.gov/url/4bud29hu2h9inxfb>

2-9.1

Permanent Survey Markers. To the "WHITEBOOK", item 3, DELETE in its entirety and SUBSTITUTE with the following:

3. You shall submit to the Engineer a minimum of 7 Days prior to the start of the Work a list of controlling survey monuments which may be disturbed. CMFS (or the private owner for Permit Work) shall perform the following:
 - a) Set survey points outside the affected Work area that reference and locate each controlling survey monument that may be disturbed.

- b) File a Corner Record or Record of Survey with the County Surveyor after setting the survey points to be used for re-establishment of the disturbed controlling survey monuments.
- c) File a Corner Record or Record of Survey with the County Surveyor after re-establishment of the disturbed controlling survey monuments.

ADD:

2-10 **AUTHORITY OF THE BOARD AND THE ENGINEER.** To the "GREENBOOK", Paragraph (2), DELETE in its entirety and SUBSTITUTE with the following:

The decision of the Engineer is final and binding on all questions relating to: quantities; acceptability of material, equipment, or work; execution, progress or sequence of work; requests for information (RFI), and interpretation of the Plans, Specifications, or other Contract Documents. This shall be precedent to any payment under the Contract. The Engineer shall be the single point of contact and shall be included in all communications.

2-13 **FORMAL PARTNERING.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

Refer to Technical Specifications, Section 01 12 01 "Partnering" for requirements.

2-14.2 **Integration of the Work with Separate Contractors.** To the "WHITEBOOK", ADD the following:

- 2. The list of Separate Contractors includes:
 - a) Morena Pump Station Project, Octavio Chiquete, phone no. 858-573-5069, Email: ochiquete@san Diego.gov
 - b) Morena Conveyance South Project, Robert Hanna, phone no. 858-627-3265, Email: rhanna@san Diego.gov
 - c) Morena Conveyance Middle Project, Robert Hanna, phone no. 858-627-3265, Email: rhanna@san Diego.gov
 - d) North City Pure Water Facility Project, Brian Bartow, phone no. 858-495-4719, Email: bbartow@san Diego.gov
 - e) North City Pure Water Facility and Pump Station Project, Brian Bartow, phone no. 858-495-4719, Email: bbartow@san Diego.gov
 - f) North City Water Reclamation Plant Expansion Project, Daniel Lottermoser phone no. 858-573-5011, Email: dlottermoser@san Diego.gov
 - g) Metro Bio Solids Center Improvements Project, John Udan, phone no. 858-654-4430, Email: judan@san Diego.gov

- h) North City Pure Water Pipeline Project, Clemens Wassenberg, phone no. 858-495-7872, Email: cwassenberg@sandiego.gov

2-14.3 Coordination. To the "WHITEBOOK", ADD the following:

- 2. Other adjacent City projects are scheduled for construction for the same time period in the vicinity of the Morena Conveyance North project. See **Appendix F, Adjacent Projects Map** for the approximate location. Coordinate the Work with the adjacent projects as listed below:
 - a) Midcoast Corridor Transit Project, Brett Stephens 619-504-3016

2-16 CONTRACTOR REGISTRATION AND ELECTRONIC REPORTING SYSTEM. To the "WHITEBOOK", item 1, DELETE in its entirety.

SECTION 3 – CHANGES IN WORK

3-2.2.1 General. To the "WHITEBOOK", ADD the following:

- 2. Upon discovery and prior to the Work, you shall notify the Resident Engineer if there is a change in Bid item quantity that increases the total Contract Price by 5% or \$100,000 or more, whichever is less.

3-3.2.3 Markup. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

- 1. Work paid under Allowance Bid items for permits, governmental fees, or direct payments specified in the Contract Documents shall not be subject to any markups.
- 2. The allowance for overhead and profit shall not exceed the values listed in the table below:

Component	Overhead	Profit
Labor	10%	10%
Material	10%	5%
Equipment	10%	5%

- 3. Markups for materials shall be applied to the actual cost of the material before applying the sales tax.
- 4. When a Subcontractor is performing Extra Work, the allowance for overhead and profit shall be applied to the labor, materials, and equipment costs of the Subcontractor as follows:

- a) Regardless of the number of Subcontractor tasks for Extra Work, you may only apply 10% for the first \$50,000 of the Subcontractor's portion of accumulated total cost.
- b) If the accumulated costs of single or subsequent tasks exceed the \$50,000 threshold, you shall instead only apply 5% to any amounts in excess of the \$50,000.
- c) You shall not apply 10% to any costs after the first \$50,000 of accumulated total costs from performing Extra Work.
- d) Regardless of the number of hierarchical tiers of Subcontractors, you may only markup a Subcontractor's Work once.

3-5 **DISPUTED WORK.** To the "GREENBOOK" and "WHITEBOOK", DELETE all sections in their entirety and SUBSTITUTE with the following:

3-5 **DISPUTED WORK.**

- 1. If you and the City are unable to reach agreement, the Resident Engineer may direct you to proceed with the Disputed Work. Payment shall be as later determined by 3-2, 3-3, mediation or arbitration, as agreed by you and the City, or as fixed in a court of law.
- 2. Although not to be construed as proceeding under 3-3, you shall keep and furnish records of Disputed Work to the Resident Engineer in accordance with 3-3.

3-5.1 **Claims.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

ADD:

3-5.1 **Claims.**

- 1. A Claim is a written demand by you that seeks an adjustment in the Contract Price, Contract Time, or other relief associated with a dispute arising under or relating to the Contract, including a breach of any provision thereof. A voucher, invoice, or other routine request for payment is not a Claim.
- 2. A Claim shall conform to these specifications and may be considered after the City has previously denied a request by you for a Change Order seeking the demanded relief.
- 3. You shall submit a Claim to the Engineer if a dispute occurs that arises from or relates to the Contract. The Claim shall seek all relief to which you assert you are entitled as a result of the event(s) giving rise to the dispute. Your failure to process a Claim in accordance with these specifications shall constitute a waiver of all relief associated with the dispute. Claims are subject to 6-11, "Right to Audit".

4. You shall continue to perform the Services and Work and shall maintain the Schedule during any dispute proceedings. The Engineer will continue to make payments for undisputed Services and Work.
5. The City's Claims process specified herein shall not relieve you of your statutory obligations to present claims prior to any action under the California Government Code.

3-5.1.1 Initiation of Claim.

1. You shall promptly, but no later than 30 Days after the event(s) giving rise to the Claim, deliver the Claim to the Engineer.
2. You shall not process a Claim unless the Engineer has previously denied a request by you for a Change Order that sought the relief to be pursued in the claim.

3-5.1.1.1 Claim Certification Submittal.

1. If your Claim seeks an increase in the Contract Price, the Contract Time, or both, submit with the Claim an affidavit certifying the following:
 - a) The Claim is made in good faith and covers all costs and delays to which you are entitled as a result of the event(s) giving rise to the Claim.
 - b) The amount claimed accurately reflects the adjustments in the Contract Price, the Contract Time, or both to which you believe you are entitled.
 - c) All supporting costs and pricing data are current, accurate, and complete to the best of your knowledge. The cost breakdown per item of Work shall be supplied.
 - d) You shall ensure that the affidavit is executed by an official who has the authority to legally bind you.

3-5.1.2 Initial Determination.

1. The Engineer will respond in writing to your Claim within 30 Days of receipt of the Claim.

3-5.1.3 Settlement Meeting.

1. If you disagree with the Initial Determination, you shall request a Settlement Meeting within 30 Days. Upon receipt of this request, the Engineer will schedule the Settlement Meeting within 15 Working Days.

3-5.1.4 City's Final Determination.

1. If a settle agreement is not reached, the City shall make a written Final Determination within 10 Working Days after the Settlement Meeting.
2. If you disagree with the City's Final Determination, notify the Engineer in writing of your objection within 15 Working Days after receipt of the written determination and file a "Request for Mediation" in accordance with 3-5.2, "Dispute Resolution Process".
3. Failure to give notice of objection within the 15 Working Days period shall waive your right to pursue the Claim.

3-5.1.5 Mandatory Assistance.

1. If a third party dispute, litigation, or both arises out of or relates in any way to the Services provided under the Contract, upon the City's request, you shall agree to assist in resolving the dispute or litigation. Your assistance includes, but is not limited to the following:
 - a) Providing professional consultations.
 - b) Attending mediations, arbitrations, depositions, trials, or any event related to the dispute resolution and litigation.

3-5.1.5.1 Compensation for Mandatory Assistance.

1. The City will reimburse you for reasonable fees and expenses incurred by you for any required assistance rendered in accordance with 3-5.1.5, "Mandatory Assistance" as Extra Work.
2. The Engineer will determine whether these fees and expenses were necessary due to your conduct or failure to act.
3. If the Engineer determines that the basis of the dispute or litigation in which these fees and expenses were incurred were the result of your conduct or your failure to act in part or in whole, you shall reimburse the City for any payments made for these fees and expenses.
4. Reimbursement may be through any legal means necessary, including the City's withholding of your payment.

3-5.2 Dispute Resolution Process. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. A mandatory Dispute Resolution Board process shall be established in accordance with 3-5.2.1, "Dispute Resolution Board (DRB)" prior to the mandatory mediation as described in 3-5.2.2, "Mandatory Non-binding Mediation".

3-5.2.1 Dispute Resolution Board (DRB).

1. The DRB is a 3-member board that you and the City establish prior to beginning work.

3-5.2.1.1 DRB Member Selection. Within 45 Working Days of Contract approval, you and the City shall select DRB members and establish the DRB using the following procedure:

1. You and the City each nominates a DRB member candidate who is on the City's approved list. For the list of approved member candidates, go to the City's Division of Construction website.
2. If you or the City nominates someone who is not on that list, the candidate shall:
 - a. Be knowledgeable in the type of construction and contract documents anticipated by the Contract.
 - b. Have completed training by the Dispute Resolution Board Foundation.
 - c. Have no prior direct involvement on this Contract.
 - d. Have no financial interest in the Contract or with the parties, subcontractors, suppliers, consultants, or associated legal or business services within 6 months before and during the Contract, except for payments for City DRA or DRB services, or payments for retirement or pensions from either party not tied to, dependent on, or affected by the net worth of the party.
3. You and the City shall request a disclosure statement from each nominated DRB member candidate and must each furnish it to the other party. The statement shall include:
 - a. Resume of the candidate's experience.
 - b. Declaration statement that describes past, present, anticipated, and planned professional or personal relationships with each of the following:
 - i. Parties involved in the Contract
 - ii. Parties' principals
 - iii. Parties' counsel
 - iv. Associated subcontractors and suppliers
4. You and the City are allowed:
 - a. One-time objection to the other's candidate without stating a reason.

- b. Objection to any of the other's subsequent candidates based on a specific breach of the candidate's responsibilities or qualifications under items 1 and 3 of this section.
5. If you or the City objects to the other's candidate, the party whose candidate was objected to must nominate another DRB candidate within 15 Working Days.
6. The 1st candidate from a party that receives no objection becomes that party's DRB member.
7. You and the City each provide written notification to your selected DRB member.
8. Within 15 Working Days of their notifications, the selected DRB members recommend to you and the City the 3rd DRB member candidate and provide that candidate's disclosure statement.
9. Within 15 Working Days of the recommendation, you and the City must each notify the first 2 DRB members whether you approve or disapprove of the recommended 3rd DRB member candidate.
10. If the 2 DRB members cannot agree on the 3rd DRB candidate, they will submit a list of candidates to you and the City for final selection and approval.
11. If the 2 DRB members do not recommend a 3rd DRB candidate within 15 Working Days of notification of their selections, or if you and the City do not agree on the 3rd DRB member candidate within 15 Working Days of the recommendation, or if you and the City do not agree on any of the candidates on the list provided by the first 2 selected DRB members, you and the City each must select 3 candidates from the current list of arbitrators certified by the Public Works Contract Arbitration Committee established by Pub Cont. Code § 10245 et seq. who will be willing to serve as a DRB member. The first 2 selected
12. DRB members must select the 3rd member in a blind draw of these 6 candidates.
13. The 3 DRB members then decide which of the three will act as the DRB chairman. If you and the City do not agree with the selected chairman, the 3rd member will act as the DRB chairman.

3-5.2.1.2 DRB Member Replacement.

1. The service of a DRB member may end at any time with a notice of at least 15 Working Days if any of the following occurs:
 - a. A member resigns
 - b. The City replaces its selected member

- c. You replace your selected member
 - d. The City's and your selected members replace the 3rd member
2. Either you or the City replace any member for failing to comply with the required employment or financial disclosure conditions of DRB membership as described in the Contract and in the Dispute Resolution Board Agreement form.
 3. Replacing any DRB member shall be accomplished by written notification to the DRB and the other party with substantiation for replacing the member.
 4. A replacement DRB member is selected the same way as the original DRB member. Selecting a replacement must start upon determination of the need for a replacement and must be completed within 15 Working Days. The Dispute Resolution Board Agreement form shall be amended to reflect the change to the DRB.

3-5.2.1.3 DRB Progress Meetings.

1. You and the City shall periodically meet with the DRB and visit the job site so the DRB members can keep abreast of construction activities and develop familiarity with the work in progress.
2. The progress meetings shall occur at the start of the project and at least once every 4 months after that.
3. Both parties shall attend each progress meeting.
4. You and the City may agree to waive scheduled progress meetings when the only work remaining is plant establishment.

3-5.2.1.4 DRB Traditional Dispute Meeting.

1. If you disagree with the City's Final Determination, notify the Engineer and DRB in writing of your objection within 15 Working Days after receipt of the determination.
2. A DRB dispute meeting shall be held no sooner than 30 Calendar Days and no later than 60 Calendar Days after the DRB receives your written notice unless you and the City otherwise agree.
3. At least 15 Calendar Days before the scheduled dispute meeting, each party shall furnish the DRB documentation that supports its position and any additional information requested by the DRB.
4. If the DRB requests additional information within 10 Calendar Days after the dispute meeting, the party receiving the request shall furnish this information within 10 Calendar Days of receiving the request.
5. The DRB shall provide a written recommendation report within 30 Calendar Days of the dispute meeting unless you and the City agree to allow more time.

6. Within 10 Calendar Days of receiving the DRB's recommendation report, either you or the City may request clarification of any part of the report. Only one request for clarification from each party is allowed per dispute.
7. Within 30 Calendar Days after receiving the DRB's recommendation, each party shall furnish a written response to the DRB indicating acceptance or rejection of the recommendation. If a party rejects the recommendation and has new information that supports its position, the party may request reconsideration. The reconsideration request shall be made within 30 Calendar Days after receiving the DRB's recommendation. Only one request for reconsideration from each party is allowed per dispute.
8. If both you and the City accept the DRB's recommendation but cannot agree on the time or payment adjustment within 60 Calendar Days of accepting the recommendation, either party may request that the DRB recommend an adjustment.
9. If you reject the DRB's recommendation, notify the Resident Engineer and DRB in writing of your objection within 15 Working Days after receipt of the DRB's recommendation and file a "Request for Mediation" in accordance with 3-5.2.2, "Mandatory Non-binding Mediation".

3-5.2.2 Mandatory Non-binding Mediation.

1. If a dispute arises out of or relates to the Contract, or the breach thereof, and if said dispute cannot be settled through contract provisions provided for the Dispute Resolution Board process, claim settlement, or negotiations, the parties agree to first endeavor to settle the dispute in an amicable manner, using mandatory mediation under the Construction Industry Mediation Rules of the American Arbitration Association or any other neutral organization agreed upon before having recourse in a court of law.

3-5.2.2.1 Mandatory Mediation Costs.

1. The expenses of witnesses for either side shall be paid by the party producing such witnesses. All other expenses of the mediation, including required traveling and other expenses of the mediator and the cost of any proofs or expert advice produced at the direct request of the mediator, shall be borne equally by the parties, unless they agree otherwise.

3-5.2.2.2 Selection of Mediator. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. A single mediator, knowledgeable in construction aspects and acceptable to both parties, shall be used to mediate the dispute.

2. To initiate mediation, the initiating party shall serve a Request for Mediation at the American Arbitration Association (AAA) on the opposing party.
3. If AAA is used, the initiating party shall concurrently file with AAA a "Request for Mediation" along with the appropriate fees, a copy of requested mediators marked in preference order, and a preference for available dates.
4. If AAA is selected to coordinate the mediation (Administrator), within 10 Working Days from the receipt of the initiating party's Request for Mediation, the opposing party shall file the following:
 - a. A copy of the list of the preferred mediators listed in preference order after striking any mediators to which they have any objection.
 - b. A preference for available dates.
 - c. Appropriate fees.
5. If the parties cannot agree on a mediator, then each party shall select a mediator and those mediators shall select the neutral third party to mediate the matter.

3-5.2.2.3 Conduct of Mediation Sessions.

1. Mediation hearings shall be conducted in an informal manner and discovery shall not be allowed.
2. Discussions, statements, and/or admissions shall be confidential to the proceedings and shall not be used for any other purpose as it relates to the party's legal position. The parties may agree to exchange any information they deem necessary.
3. Both parties shall have an authorized representative attend the mediation. Each representative shall have the authority to recommend entering into a settlement. Either party may have attorney(s), witnesses, or expert(s) present. Either party may request a list of witnesses and notifications of whether attorney(s) shall be present.
4. Any resulting agreements from mediation shall be documented in writing. Mediation results and documentation, by themselves, shall be "nonbinding" and inadmissible for any purpose in any legal proceeding, unless such admission is otherwise agreed upon in writing by both parties. Mediators shall not be subject to any subpoena or liability and their actions shall not be subject to discovery.

3-5.2.3 Payment.

1. Pay each DRB member \$1,500 per day for DRB's participation at each onsite meeting
 - a. If a DRB member serves on more than one DRB, the \$1,500 shall be divided evenly among the contracts.

2. On-site meetings include:
 - a. Initial project meeting
 - b. Scheduled progress meetings for a project with a DRB
 - c. Dispute meetings
3. This payment includes full compensation for on-site time, travel expenses, transportation, lodging, travel time, and incidentals for each day or portion thereof that the DRB member is at a DRB meeting.
4. Before a DRB member spends any time reviewing plans and specifications, evaluating positions, preparing recommendations, or performs any other off-site DRB-related tasks, you and the City shall agree to pay for the tasks. Pay the DRB member \$150 per hour for these tasks. This payment includes full compensation for incidentals such as expenses for telephone, fax, and computer services.
5. The City shall reimburse you for 1/2 of the invoiced costs to the DRB and 1/2 of the costs of any technical services agreed to. Submit a change order bill and associated invoices with the original supporting documents in the form of a canceled check or bank statement to receive reimbursement. Do not add mark-ups to the change order bill.
6. The City will not pay for any DRB-related work performed after Contract acceptance.
7. The City will not pay your cost of preparing for and attending a dispute resolution meeting.
8. The CONTRACTOR shall make direct payments to each DRB member for their participation in authorized meetings and approved hourly rate charges, from invoices submitted by each DRB member, and technical services. DRB members may submit invoices to the CONTRACTOR for partial payment for work performed and services rendered for their preapproved participation in authorized meetings. The invoices shall be in a format approved by the parties and accompanied by a general description of activities performed during that billing period. Payment for hourly fees, at the agreed rate, shall not be paid to a DRB member until the amount and extent of those fees are approved by the CITY and the CONTRACTOR.

3-5.3 Forum of Litigation. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. It is the express intention that all legal actions and proceedings related to the Contract or Agreement with the City or to any rights or any relationship between the parties arising therefrom shall be solely and exclusively initiated and maintained in courts of the State of California for the County of San Diego.

ADD:

3-5.4 Pre-judgment Interest.

1. The parties stipulate that if a judgment is entered against a party for breaching this Contract, the pre-judgment interest shall be two percent (2%) per annum.

SECTION 4 - CONTROL OF MATERIALS

ADD:

4-1.1.1 American Iron and Steel (AIS).

1. The Consolidated Appropriations Act, 2014, includes an "American Iron and Steel (AIS)" requirement in section 436 that requires this project, funded via the Clean Water State Revolving Loan Fund (CWSRF) and/or the Drinking Water State Revolving Loan Fund (DWSRF) to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system.
2. You acknowledge to and for the benefit of the City of San Diego and the State Water Resource Control Board that you understand the Work under this Contract is being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel" that requires all of the iron and steel products used for construction to be produced in the United States including iron and steel products to be provided by you. You hereby warrant to and for the benefit of the City and the State that:
 - a) You have reviewed and understand the American Iron and Steel Requirement,
 - b) All of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement with required certification (for sample certification letters, refer to **Appendix I, Sample Certification Letter for American Iron and steel (AIS) 120 Compliance**, unless a waiver of the requirement is approved, and;
 - c) You will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the City or the State.
3. The additional information below is being provided for reference and guidance to ensure that you comply with all requirements set forth by the CWSRF and/or DWSRF Loans:
 - a) Refer to the following EPA website:

<http://www.epa.gov/cwsrf/state-revolving-fund-american-iron-and-steel-ais-requirement>

- b) The United States Environmental Protection Agency’s Memorandum dated March 20, 2014 entitled, “Implementation of American Iron and Steel Provisions of P.L. 113-76, Consolidated Appropriations Act, 2014”:

<https://www.epa.gov/sites/production/files/2015-09/documents/ais-final-guidance-3-20-14.pdf>

4. Your failure to comply with this provision shall permit the City or State to recover damages against you for any loss, expense, or cost (including without limitation attorney’s fees) incurred by the City or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the City). Although you have no direct contractual privity with the State, as a lender to the City for the funding of this project, you and the City agree that the State is a third-party beneficiary and neither this provision (nor any other provision of this Contract necessary to give this provision force or effect) shall be amended or waived without the prior written consent of the State.

4-1.3.1 General. To the “WHITEBOOK”, ADD the following:

4. Steel pipe in sizes larger than 18 inches shall require inspection at the source of production.
5. City lab staff or a qualified inspection agency provided by the City’s Construction Management firm shall witness all welding, lining, coating, and testing.
6. All parts of production (including but not limited to product fabrication, welding, testing, lining, and coating of straight pieces and specials) shall be performed or produced in the United States.
7. Welding and all testing shall be performed by certified welders and testing staff with credentials traceable in the United States.

4-1.3.2 Inspection by the Agency. To the “GREENBOOK”, DELETE in its entirety and SUBSTITUTE with the following:

The City will provide inspection and testing laboratory services within the continental United States within a 200-mile radius of the geographical limits of the City.

4-1.3.3 Inspection of Items Not Locally Produced. To the “WHITEBOOK”, DELETE in its entirety.

ADD:

4-1.3.3 Inspection of Items Not Locally Produced. To the “GREENBOOK”, DELETE in its entirety and SUBSTITUTE with the following:

1. When you intend to purchase materials, fabricated products, or equipment from sources located more than 200 miles (321.9 km) outside the geographical limits of the City, City Lab staff or a qualified inspection agency approved by the Engineer, shall be engaged at your expense to inspect the materials, equipment, or process.

2. This approval shall be obtained before producing any material or equipment. City Lab staff or inspector shall evaluate the materials for conformance with the requirements of the Plans and Specifications. You shall forward reports required by the Engineer. No materials or equipment shall be shipped nor shall any processing, fabrication or treatment of such materials be done without proper inspection by City Lab staff or the approved agent. Approval by said agent shall not relieve you of responsibility for complying with the requirements of the Contract Documents.
3. The Engineer may elect City Lab staff to perform inspection of an out-of-town manufacturer. You shall incur additional inspection costs of the Engineer including lodging, meals, and incidental expenses based on Federal Per Diem Rates, along with travel and car rental expenses. If the manufacturing plant operates a double shift, a double shift shall be figured in the inspection costs.
 - a) At the option of the Engineer, full time inspection shall continue for the length of the manufacturing period. If the manufacturing period will exceed 3 consecutive weeks, you shall incur additional inspection expenses of the Engineer's supervisor for a trip of 2 Days to the site per month.
 - b) When the Engineer elects City Lab staff to perform out-of-town inspections, the wages of staff employed by the City shall not be part of the additional inspection expenses paid by you.
 - c) Federal Per Diem Rates can be determined at the location below:

<https://www.gsa.gov/portal/content/104877>

4-1.3.5 Special Inspection. To the "WHITEBOOK", ADD the following:

5. No special inspection shall be paid for or performed by the Contractor. The City shall employ and pay for the services of qualified inspection entities to perform specialty inspection services.

4-1.3.6 Preapproved Materials. To the "WHITEBOOK", ADD the following:

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

4-1.6 Trade Names or Equals. To the "WHITEBOOK", ADD the following:

11. You shall submit your list of proposed substitutions for an "equal" item **no later than 15 Working Days after the determination of the Apparent Low Bidder** and on the City's Product Submittal Form available at:

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

SECTION 5 – UTILITIES

5-1.1 General. To the "WHITEBOOK", ADD the following:

9. **90 Calendar Days** prior to any paving work, you shall notify the utility owner to provide them adequate time to adjust their utility box frame and cover to finish grade.

5-2 PROTECTION. To the "WHITEBOOK", item 2, ADD the following:

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

5-6 COOPERATION. To the "GREENBOOK", ADD the following:

2. Notify SDG&E at least 30 Working Days prior to excavating within 10 feet of SDG&E Underground High Voltage Transmission Power Lines (69 KV and higher).

5-7.1 Payment. To the "WHITEBOOK" Item 1, Subitem "c" DELETE and SUBSTITUTE with the following:

c. The Contractor shall be compensated for each existing utility pothole, with prior Engineer approval, that is not shown on the Plans but marked out by USA via the bid items, "Potholing Existing Utilities Not Shown on Plans (Depth < 5-ft)" and "Potholing Existing Utilities Not Shown on Plans (Depth > 5- ft)". Potholing for existing utilities that are shown on the Plans and marked out by USA shall be included in the Contract Price.

SECTION 6 - PROSECUTION, PROGRESS AND ACCEPTANCE OF WORK

6-1.1 Construction Schedule. To the "WHITEBOOK", items 5, 9, 20, and 22, DELETE in their entirety and SUBSTITUTE with the following:

5. Monthly progress payments are contingent upon the submittal of an updated Schedule and cash flow forecast as discussed in item 22 of 6-1.1, "Construction Schedule" to the Engineer. The Engineer may refuse to recommend the whole or part of any monthly payment if, in the Engineer's opinion, your failure or refusal to provide the required Schedule and cash flow forecast information precludes a proper evaluation of your ability to complete the Project within the Contract Time and amount.
9. Inclusive to the Contract Time, include 15 Working Days to the Schedule for the generation of the Punchlist. You shall Work diligently to complete all Punchlist items within 30 Working Days after the Engineer provides the Punchlist.
20. The **120 Calendar Days** for the Plant Establishment Period is included in the stipulated Contract Time. Time shall begin with the acceptance of installation of the vegetation plan in accordance with Section 801-6, "MAINTENANCE AND PLANT ESTABLISHMENT".
22. With every pay request, submit the following:

Submit an updated cash flow forecast with every pay request (for each Project ID or WBS number provided in the Contract) showing periodic and cumulative construction billing amounts for the duration of the Contract Time. If there has been any Extra Work since the last update, include only the approved amounts.

- i. Refer to the Sample City Invoice materials in **Appendix D – Sample City Invoice with Cash Flow Forecast** and use the format shown.

- ii. See also the "Cash Flow Forecast Example" at the location below:

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

- 23. Contractor shall also comply with requirements set forth in Section 01 32 00 Construction progress Documentation.

6-1.2 Commencement of the Work. To the "WHITEBOOK" DELETE in its entirety and SUBSTITUTE with the following:

- 1. Unless specified otherwise, you shall start construction within 5 Working Days after NTP and shall diligently prosecute the Work to completion within the Contract Time. Do not start any construction activities at the Site until the Pre-construction meeting is held and until the NTP has been issued by the Engineer.
- 2. Upon your written request, the Engineer may delay the issuance of the NTP as described in the following:
 - a) Up to 5 Working Days from the Pre-construction meeting.
- 3. For areas that do not require engineered TCP on D-sheets, you may at any time after the Pre-construction meeting obtain a TCP Permit via Working Drawings or the City's over the counter process and start the Work. If you decide to commence the construction Work before the completion of the D-sheet TCPs, you shall forfeit the 60 Working Days specified here. The D-sheet TCP shall be done concurrently and no additional time shall be granted.
- 4. For paving Work, coordinate the Work to facilitate the installation and protection of the new curb ramps and associated concrete Work prior to commencing the asphalt overlay operations. Do not start the Work at a specific location until all layouts and measurements are agreed upon by you and the Engineer.

6-1.2.1 Construction Phasing. To the "WHITEBOOK", ADD the following:

- 2. Contractor shall phase trench resurfacing operations to be completed after each phase of sewer main completion. Construction phases for trench resurfacing shall include, but is not limited to the following work activities:

Mainline phase completion and acceptance by the City, including trench base paving weekly and street patching operations, 30 Working days after mainline phase acceptance for "T-cap" paving required per SDG-107 (*modified) with a 1 1/2" deep trench grind - including a minimum of 6" additional width each side of the existing trench, temporary striping work, cross gutters, curb ramps, sidewalk panels, and fire hydrant pads.

*SDG-107 (modified). DELETE Notes 1 and 2 and SUBSTITUTE with the following:

- 1. SDG-107 Type 1 and/or Type 2 shall be applied for all trenches.

2. All streets shall be milled as shown and resurfaced with ½" Type III Class C2 asphalt no less than 30 calendar days after initial asphalt placement.

For additional requirements related to Construction Phasing, refer to Technical Specifications, Section 01 32 00 "Construction Progress Documentation".

6-1.6 Excusable Delays. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. If a delay in the Work occurs and affects Work activities, delays may either be Excusable Compensable Delays or Excusable Non-Compensable Delays.

ADD:

6-1.6.1 Excusable Compensable Delays.

1. If an Excusable Delay meets the requirements of 6-6.2, "Extensions of Time", then the City shall compensate for the following circumstances:
 - a) The City's failure or inability to make available any portion of the entire Site in accordance with the requirements of the Schedule.
 - b) The City's failure or inability to obtain necessary zoning changes, variances, code changes, permits or approvals from any governmental authority, or failure to obtain any street or alley vacations required for the performance of the Work, except to the extent due to your fault or neglect as determined by the Engineer.
 - c) Delays resulting from the acts or omissions of Separate Contractors, except to the extent Separate Contractors perform their work properly and in accordance with the Schedule.
 - d) Differing or concealed site conditions that could not reasonably have been anticipated at the time of Bid.
 - e) Delays resulting from the existence or discovery of hazardous materials or waste on the Site not brought in by you and not included in the Contract.
 - f) Delays resulting from any changes made to any City of San Diego Municipal Code after the date of execution of the Contract.
 - g) Delays due to the City's acts or omissions and those within the City's control.
 - h) Delays requested by the City.

ADD:

6-1.6.2 Excusable Non-Compensable Delays.

1. The City shall only issue an extension of time for Excusable Delays that meet the requirements of 6-6.2, "Extensions of Time" for the following circumstances:
 - a) Delays resulting from Force Majeure. Force Majeure are such acts that includes but shall not be limited to acts of God, fire, flood, earthquake, other natural disaster, nuclear accident, strike, lockout, riot, freight

embargo, public regulated utility, or governmental statutes or regulations superimposed after the fact.

- b) Delays caused by weather.
- c) Delays caused by changes to County, State, or Federal law.

6-2.1 Moratoriums. To the "WHITEBOOK", ADD the following:

- 3. Do not Work in the areas where there is currently a moratorium issued by the City. The areas subject to moratorium are listed here:
 - a) Shopping Moratorium from Thanksgiving to New Years Day. Specific locations are listed below:
 - 1. Nobel Drive bound by Genesee Ave and Towne Centre Drive
 - 2. Towne Centre Drive bound by Nobel Drive and La Jolla Village Drive

ADD:

6-2.2.1.1 Work Restrictions.

- 1. Contractor shall remain available through commissioning of the entire conveyance system to assist as required in the start-up and integration activities
- 2. Contractor shall coordinate with University City High School to avoid working hours during any special events that are planned to occur at the high school.
- 3. Contractor shall maintain left turn access from Centurion Way to Genesee Avenue and from Genesee Avenue to Centurion Way during non- work hours unless University City High School is on a summer, winter or spring recess. Contractor shall request approval from the Resident Engineer 30-days prior to anticipated closure.
- 4. Work within the North City Water Reclamation Plant (NCWRP) shall be closely coordinated with the Resident Engineer and the NCWRP Contractor. Work shall be limited from 229 working days after NTP to 380 working days after NTP. The Contractor shall be limited to staging area identified as 20-feet offset of the Temporary Concrete Pad identified on 40067-166-D not including the roadway surface. The Contractor shall access the NCWRP off of Eastgate Mall and coordinate usage of NCWRP access roads.
- 5. Contractor shall ensure access to all properties along the alignment during their hours of operations.
- 6. Contractor, Sub-consultant and associated individuals shall be prohibited from parking on Excalibur Way, Montrose Way, January Place and Sherlock Court.
- 7. When the contractor temporarily closes a bike lane, in addition to MUTCD requirements and the traffic control plans the Contractor shall implement the following additional measures:
 - a. "No parking" signs shall not be placed within vehicular or bicycle lanes.

- b. An additional "bike lane closed ahead" and "share the road" notification signs shall be placed ahead of the identified signs within the traffic control plans.
8. Work along Genesee Avenue between Decoro Street and Nobel Drive (Night Work) shall not coincide with the work along Nobel Drive between Genesee Avenue and Towne Centre Drive (Day Work). A minimum stagger of 7-calendar days is required for a transition of work from Night to Day work or Day to Night work in this area in order to provide a temporary reprieve from construction noise for the adjacent residents.
9. Contractor shall construct sound walls or other acoustic barriers adjacent to the center shaft of the Rose Canyon Tunnels in conformance with Environmental Mitigation Note 3.B.3 on Drawing 40067-08-D.
10. Contractor shall provide protection in place methods for all SDG&E crossings identified as Protect in Place for review and approval by SDG&E.

ADD:

6-2.2.1

Payment.

1. The payment for complying with the work restrictions shall be included in the Contract Price. Contractor shall not be entitled to any additional costs for repeated mobilization to continue the Work during the work restriction periods.

ADD:

6-2.3

Work Plan for MTS/NCTD.

1. The Contractor shall provide a detailed Work Plan and Construction Phasing Plan submittal for review and approval from MTS/NCTD to ensure the Contractor's proposed construction operations do not impede MTS/NCTD operational requirements, provide protection of MTS/NCTD right of way space, and provide protection of the railroad tracks during construction. The Work Plan and Construction Phasing Plan submittal shall be provided prior to beginning any work within the MTS/NCTD right of way and shall include the following elements at a minimum:
 - a. Project purpose for work where pipeline crosses the railway
 - b. Project scope for work pertaining to the installation of the Pure Water pipeline and support structure crossing the MTS/NCTD railway right of way.
 - c. Construction phasing plan and schedule including description of the required phasing for all work to allow for coordination of railroad track operations.
 - d. Description of Contractor's means and methods for pipeline and support structure installation.

- e. Description of Contractor's equipment proposed for pipeline and support structure installation.
- f. Description of any excavation (boring, potholing, digging, etc.) with locations and depths identified.
- g. Description of any excavation backfill.
- h. Description of any potential noise, dust or other impacts from work/equipment.
- i. Traffic control plan, if applicable.
- j. Community outreach plan, if applicable.
- k. Description of how Contractor will access the MTS/NCTD Right-of-Way.
- l. Description of any environmental issues and permits obtained.
- m. Activity hazard analysis and Safety Plan. Safety Plan must include NCTD 24/7 Operations Control Center contact number (760-967-2821) and have emergency contact information for the Contractor. Safety plan shall state "In the event of an emergency, call 911 and then immediately contact the Operations Control Center". Safety plan shall also require that Roadway Worker Protection (RWP) Training shall be taken by anyone who will be on NCTD Right of Way. Contractor shall use a flagger when working within 25 feet of the nearest rail and will meet with the Employee in Charge (EIC) for a safety briefing prior to entering.
- n. Any on-track/railroad movement must include a specific work plan that details the equipment that will be used by the Contractor on the railroad track, the on-track movement that will take place, and the qualifications of all personnel that will work on, in-between or near the equipment. The personnel qualifications must include the last twelve (12) months of all applicable training records and certifications.
- o. Contractor shall also prepare and submit an Erosion and Sediment Control Plan (ESCP) for the work within the MTS/NCTD right of way. Approval and issuance of permit by NCTD/MTS is contingent upon submittal and approval of ESCP.
- p. The payment for complying with the Work Plan, compensation to MTS/NCTD for providing flagmen, and all permit requirements shall be included in the "Tunneling - Rose Canyon (Dual Launch)" bid item. You shall not be entitled to any additional costs for the Work.

ADD:

6-2.4 Schedule Milestones.

- 1. Milestone 1 – Completion of I-805 Tunnel – Completion of all work on the east side (NCWRP) of the I-805 tunnel.
- 2. Milestone 2 - Intermediate Substantial Completion – Completion of all requirements defined herein for Intermediate Substantial Completion.

3. Milestone 3 - Substantial Completion – Occurs after the completion of the Integration Period and upon completing the prerequisites for substantial completion.
4. Milestone 4 - Final Completion – After successful completion of substantial completion requirements, and all aspects of the Contract Closeout have been satisfactorily completed.

ADD:

6-3.2.1.1 Environmental Document.

1. The City of San Diego has prepared an Environmental Impact Report/Environmental Impact Statement (EIR/EIS), Proj. No. SCH#2106081016/PS #499621 for Pure Water Phase 1, which includes the Morena Conveyance North. This document may be obtained at the following web link:

<https://www.sandiego.gov/public-utilities/sustainability/pure-water-sd/reports>.

In addition, Pure Water Phase 1 has obtained the Environmental Documents listed below and located at Filecloud at:

<https://filecloud.sandiego.gov/url/pwfenvironmentaldocuments>

ENVIRONMENTAL DOCUMENT
Site Development Permit
Record of Decision
Clean Water Act Section 401 Water Quality Certification
Army Corp of Engineers 404

Compliance with the City’s environmental document shall be included in the Contract Price.

6-3.2.2 Archaeological and Native American Monitoring Program. To the “WHITEBOOK”, ADD the following:

4. The City will retain a qualified archaeologist for this Contract. You shall coordinate your activities and Schedule with the activities and schedules of the archaeologist monitor. Notify the Engineer before noon of the Working Day before monitoring is required. See 2-11, “INSPECTION” for details.

6-3.2.3 Paleontological Monitoring Program. To the "WHITEBOOK", ADD the following:

3. The City will retain a qualified paleontologist for this Contract. You shall coordinate your activities and Schedule with the activities and schedules of the paleontologist monitor. Notify the Engineer before noon of the Working Day before monitoring is required. See 2-11, "INSPECTION" for details.

6-3.2.4 Payment. To the "WHITEBOOK", ADD the following:

All costs required for meeting the requirements in the aforementioned Environmental Documents above shall be included in the contract cost.

6-6.2 Extensions of Time. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. The Contract Time shall not be modified except by Change Order.
2. You shall immediately submit to the City a written request for a Change Order to modify the Contract Time, but in no event later than 1 Working Day after the occurrence and discovery of the events giving rise to the request. You shall include in your request a general description of the basis for and the estimated length of any extension and submit supporting data.
3. The Engineer shall not grant an extension of Contract Time unless you demonstrate, through an analysis of the critical path, the following:
 - a) The event causing the delay impacted the activities along the Project's critical path.
 - b) The increases in the time to perform all or part of the Project beyond the Contract Time arose from unforeseeable causes beyond your control and without your fault or negligence.
4. The Engineer shall issue a weekly document that shall stipulate the Contract Time. If you do not agree with this document, submit to the Engineer for review a written protest supporting your objections to the document within 15 Days after receipt of the statement. Your failure to file a timely protest shall constitute your acceptance of the Engineer's weekly document.
 - a) Your protest will be considered a claim for time extension and shall be subject to 3-5.1, "Claims".

6-6.4 Written Notice and Report. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

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

consider such request if your failure to notify prejudices the City in responding to the event.

6-7.1 General. To the "WHITEBOOK", item 3, ADD the following:

- d) 30 Days for full depth asphalt final mill and resurfacing work required per SDG-107.
- e) Where shutdowns of 16 inch and larger pipes are required, there is a shutdown moratorium from May until October. Plan and schedule Work accordingly. No additional payment or Working Days will be granted for delays due to the moratorium.

6-8.1 Completion. To the "GREENBOOK", ADD the following:

For additional requirements related to Closeout items, refer to Technical Specifications, Section 01 77 00 "Closeout Procedures".

6-8.1.1 Requirements Preparatory to Requesting a Walk-through. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

6-8.1.1 Requirements Before Requesting Substantial Completion.

1. The following items are required prior to requesting a Substantial Completion:
 - a) Remove temporary facilities from the Site.
 - b) Thoroughly cleaning the Site and removing all mark outs and construction staking.
 - c) Provide completed and signed Red-lines in accordance with 2-5.4 "Red-lines and Record Documents".
 - d) Provide all material and equipment maintenance and operation instructions and/or manuals.
 - e) Provide all tools which are permanent parts of the equipment installed in the Project.
 - f) Provide and properly identify all keys for construction and all keys for permanent Work.
 - g) Provide all final Special Inspection reports required by the applicable building Code.
 - h) Provide all items specified to be supplied as extra stock. Wrap, seal, or place in a container all items as necessary to allow for storage by the City for future use. Verify the specified quantities.
 - i) Ensure that all specified EOCP and certified wage rate documentations covering the Contract Time have been submitted.
 - j) Provide the spare parts for the proposed irrigation system as specified in the Special Provisions.

- k) If the Work includes sewer and storm drain installations, the inspection shall include televising in accordance with 306-18, "VIDEO INSPECTION".
- l) If the Work includes a Plant Establishment Period, Work in accordance with 801-6, "MAINTENANCE AND PLANT ESTABLISHMENT" shall be completed prior to requesting Substantial Completion, unless approved otherwise by the Owner.
- m) Notify the Engineer to arrange a final inspection of permanent BMPs installed.

6-8.1.2 Walk-through and Punchlist Procedure. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. You shall notify the Engineer 15 Working Days in advance of date of anticipated Substantial Completion to allow time for Engineer to schedule a Walk-through. After you complete the requirements in 6-8.1.1, "Requirements Before Requesting Substantial Completion" and when you consider that the Work is Substantially Complete, you will notify the Engineer in writing that the Project is Substantially Complete. The Engineer will review your request and determine if the Project is ready for a Walk-through, by verifying whether you have completed all items as required by 6-8.1.1, "Requirements Before Requesting Substantial Completion". Within 7 Working Days, the City will either reject your request of a Walk-through in writing or schedule a Walk-through inspection. The Engineer shall facilitate the Walk-through.
2. The following documents shall be provided at the time of your Walk-through request: As-Built markup, Plans, specifications, technical data such as submittals and equipment manuals, draft final payment, warranties, material certifications, bonds, guarantees, maintenance service agreements, and maintenance and operating manuals.
3. Written warranties, except manufacturer's standard printed warranties, shall be on a letterhead addressed to you. Warranties shall be submitted in the format described in this section, modified as approved by the City, to suit the conditions pertaining to the warranty. Lack of submitting these items will delay start of Walk-through.
4. The Engineer will provide you with the Punchlist within 15 Working Days after the date of the Walk-through. The City shall not provide a preliminary Punchlist.
5. If the Engineer finds that the Project is not Substantially Complete as defined herein, the Engineer will terminate the Walk-through and notify you in writing.
6. If, at any time during the Engineer's evaluation of the corrective Work required by the Punchlist, the Engineer discovers that additional corrective Work is required, the Engineer may include that corrective Work in the Punchlist.

7. You shall remain solely responsible for the Project Site until the Project is completely operational, all Punchlist items have been corrected, and all operation and maintenance manuals have been accepted by the City.
8. The Engineer shall meet with you within 5 Working Days of notification that all Punchlist items are corrected. You shall complete the Punchlist within 30 Working Days, and Working Days will continue to be counted until Acceptance of the Project.

6-8.2 Acceptance. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. You shall provide the completed, signed, and stamped DS-563 to the Engineer prior to Acceptance.
2. You shall deliver the final As-builts and final billing prior to Acceptance.
3. You shall assemble and deliver to the Engineer a Final Summary Report and Affidavit of Disposal prior to Acceptance.
4. Acceptance shall occur after all of the requirements contained in the Contract Documents have been fulfilled. If, in the Engineer's judgment, you have fully performed the Contract, the Engineer will recommend to the City Engineer that your performance of the Contract be accepted. You shall receive notification of Acceptance in writing from the Owner and counting of working days shall cease and Warranty begins.
5. Retention can be released 35 Calendar Days after NOC. Submit your request for retention to the Resident Engineer and they will mail to you a "Release of Claims" form which shall be completed and returned before the retention will be released.

6-8.3 Warranty. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. You shall warranty and repair all defective materials and workmanship for a period of 1 year. This call back warranty period shall start on the date the Work was accepted by the City unless the City has Beneficial Use or takes Occupancy of the project earlier (excluding water, sewer, and storm drain projects).
2. You shall warranty the Work free from all latent defects for 10 years and patent defects for a period of 4 years.
3. The warranty period for specific items covered under manufacturers' or suppliers' warranties shall commence on the date they are placed into service at the direction of the Engineer in writing.
4. All express warranties from Subcontractors, manufacturers', or Suppliers', of any tier, for the materials furnished and Work performed shall be assigned, in writing, to the City, and shall be delivered to the Engineer prior to the Acceptance of your performance of the Contract.

5. Replace or repair defective materials and workmanship in a manner satisfactory to the Engineer after notice to do so from the Engineer and within the time specified in the notice. If you fail to make such replacements or repairs within the time specified in the notice, the City may perform the replacement or repairs at your expense. If you fail to reimburse the City for the actual costs, your Surety shall be liable for the cost
6. Items that shall be warrantied free from defective workmanship and materials for a period longer than 1 year are as follows:

Specified Item	Minimum Warranty Period
Detectable Warning Tile Construction	3 Years of Manufacturer's Warranty
All Work Under SECTION 500 – PIPELINE REHABILITATION	3 Years
Fiber Optic Interconnect Cables	2 Years
Luminaires*	10 Years of Manufacturer's Warranty
LED Signal Modules	3 Years of Manufacturer's Warranty
Field Devices Associated with 700-6.3, "Adaptive Control Note"	See 700-6.3.9, "Warranty"

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

7. You shall provide the City and property owner a copy of the manufacturer's warranty for private sewer pumps, including the alarm panel and all other accessories.
 - a) You shall involve the manufacturer in the installation and startup as needed to secure any extended warranty required.
 - b) Nothing in here is intended to limit any manufacturer's warranty which provides the City with greater warranty rights than set forth in this section or the Contract Documents.
 - c) The warranty shall include all components. The form of the warranty shall be approved by the Engineer in accordance with 6-8.3.2, "Warranty Format Requirements".
8. If, during the warranty period, any item of the Work is found to be Defective Work, you shall correct it promptly after receipt of written notice from the City to do so. The warranty period shall be extended with respect to portions of the Work corrected as part of the warranty requirements.

6-9

Liquidated Damages. To the "WHITEBOOK", ADD the following:

3. Contractor and Owner recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in Contract Times in the Scope of Work. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), the Contractor shall pay the following amounts for each Milestone for each day that expires after the time specified herein until the Work is substantially complete.

Milestone No.	Milestone Description	Required Completion Date or Working Days	Amount of Liquidated Damages
Milestone 1	I-805 Tunnel	380 working days after Notice to Proceed	\$8,116/day
Milestone 2	Intermediate Substantial Completion	744 working days after Notice to Proceed	\$8,116/day
Milestone 3	Substantial Completion	760 working days after Notice to Proceed	\$1,000/day
Milestone 4	Final Completion	800 working days after Notice to Proceed	\$1,000/day

SECTION 7 - RESPONSIBILITIES OF THE CONTRACTOR

7-3

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

7-3

INSURANCE.

1. The insurance provisions herein shall not be construed to limit your indemnity obligations contained in the Contract.
2. The types of insurance identified in Section 7-3, **except** Subsection 7-3.10 Architects and Engineers Professional Insurance (Errors and Omissions Insurance), shall apply to the work described in Appendix K, "Long Term Maintenance and Monitoring Agreement".
3. The insurance identified in Subsection 7-3.10 Architects and Engineers Professional Insurance (Errors and Omissions Insurance) shall apply only to the preparation and

development of Storm Water Pollution Prevention Plan (SWPPP), engineered traffic control plans and other architectural, structural and engineering work.

4. All other work will fall under the Owners Controlled Insurance Program (OCIP) as described in Section 7-4.

7-3.1 Policies and Procedures.

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

7-3.2 Types of Insurance.

7-3.2.1 Commercial General Liability Insurance.

1. Commercial General Liability Insurance shall be written on the current version of the ISO Occurrence form CG 00 01 07 98 or an equivalent form providing coverage at least as broad.
2. The policy shall cover liability arising from premises and operations, XCU (explosions, underground, and collapse), independent contractors, products/completed operations, personal injury and advertising injury, bodily injury, property damage, and liability assumed under an insured's contract (including the tort liability of another assumed in a business contract).

3. There shall be no endorsement or modification limiting the scope of coverage for either "insured vs. insured" claims or contractual liability. You shall maintain the same or equivalent insurance for at least 10 years following completion of the Work.
4. All costs of defense shall be outside the policy limits. Policy coverage shall be in liability limits of not less than the following:

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

7-3.2.2 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.

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

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

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

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

7-3.5 Policy Endorsements.

7-3.5.1 Commercial General Liability Insurance.

7-3.5.1.1 Additional Insured.

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

7-3.5.1.2 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.

7-3.5.1.3 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.

7-3.5.2 Commercial Automobile Liability Insurance.

7-3.5.2.1 Additional Insured. Unless the policy or policies of Commercial Auto Liability Insurance are written on an ISO form CA 00 01 12 90 or a later version of this form or equivalent form providing coverage at least as broad, the policy shall be endorsed to include the City and its respective elected officials, officers, employees, agents, and representatives as additional insured, with respect to liability arising out of automobiles owned, leased, hired or borrowed by you or on your behalf. This endorsement is limited to the obligations permitted by California Insurance Code §11580.04.

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

7-3.7 Reservation of Rights. The City reserves the right, from time to time, to review your insurance coverage, limits, deductibles and self-insured retentions to determine if they are acceptable to the City. The City will reimburse you, without overhead, profit, or any other markup, for the cost of additional premium for any coverage requested by the Engineer but not required by this Contract.

7-3.8 Notice of Changes to Insurance. You shall notify the City 30 Days prior to any material change to the policies of insurance provided under this Contract.

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

7-3.10 Architects and Engineers Professional Insurance (Errors and Omissions Insurance).

1. For Contracts with required engineering services (e.g., Design-Build, preparation of engineered Traffic Control Plans (TCP), and etc.) by you, you shall keep or require all of your employees or Subcontractors, who provide professional engineering services under this contract, Professional Liability coverage with a limit of **\$1,000,000** per claim and **\$2,000,000** annual aggregate in full force and effect.
2. You shall ensure the following:
 - a) The policy retroactive date is on or before the date of commencement of the Project.
 - b) The policy will be maintained in force for a period of 3 years after completion of the Project or termination of this Contract, whichever occurs last. You agree that for the time period specified above, there will be no changes or endorsements to the policy that affect the specified coverage.
3. If professional engineering services are to be provided solely by the Subcontractor, you shall:
 - a) Certify this to the City in writing and
 - b) Agree in writing to require the Subcontractor to procure Professional Liability coverage in accordance with the requirements set forth above.

7-3.11

WORKERS' COMPENSATION INSURANCE AND EMPLOYERS LIABILITY INSURANCE.

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

2. Limits for this insurance shall be not less than the following:

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

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

7-3.11.1

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

ADD:

7-4

OWNER-CONTROLLED INSURANCE PROGRAM.

7-4.1

GENERAL REQUIREMENTS.

1. The City has implemented an Owner-Controlled Insurance Program (OCIP) for its Pure Water Projects. In this OCIP, the City furnishes Workers' Compensation, General, Excess, Pollution Liability and Builder's Risk insurance associated with construction of the Work. Insurance furnished under the OCIP covers the City, the Contractor, and the Contractor's subcontractors of all tiers with exceptions stated below. As detailed in Section 7-4.17 and 7-4.18, Contractor and subcontractors still provide some insurance coverage under the OCIP.

2. Bidders, as well as their subcontractors with a subcontract amount of greater than one half of one percent of the Contractors bid amount, shall exclude from bids the costs of insurance for risks covered under the OCIP.

3. Bidders, as well as their subcontractors with a subcontract amount of greater than one half of one percent, shall determine the OCIP coverage credit by utilizing the OCIP Credit Worksheets attached herein under **Section 6. Certifications and Forms.**

4. OCIP enrollment is mandatory for contractors/subcontractors with contracts valued at \$10,000 or greater or providing onsite labor of three days or more. For contracts under \$10,000 in value, should there be any potential for additive change orders thereby increasing the contract value to \$10,000 or greater, the contractor/subcontractor must enroll in the OCIP.
5. Bidders, as well as all of their subcontractors, with a subcontract amount of greater than one half of one percent of the Contractors bid amount, shall complete OCIP credit worksheets provided as part of the bid documents attached herein. Bidders shall submit, as well as OCIP credit worksheets obtained from all their subcontractors, the OCIP credit worksheets two business days after bid opening. **Failure to comply with OCIP worksheet requirements shall render the bid non-responsive and ineligible for award.**
6. Contractor shall still maintain minimum insurance outside of OCIP as defined in Section 7-4.17
7. OCIP related manuals mentioned in Section 7-4 and 7-10 can be downloaded from the following link:

<https://filecloud.sandiego.gov/url/ocipreference>

7-4.2

OCIP DEFINITIONS.

1. The following definitions apply to the OCIP program:
 - a) Claim – A covered loss asserted under the OCIP insuring policy(s).
 - b) OCIP Deductible Assessment – The amount the Enrolled Contractor is responsible for paying as its contribution for settlement of any loss that is chargeable to the Contractor, or its subcontractors. The deductible shall be paid in a proportional amount between the Contractor and subcontractor, as determined by responsibility of the party causing the loss, by the OCIP insurance carrier.
 - c) Enrolled Contractors – The Contractor and any Subcontractor who have submitted all necessary enrollment information and have received a confirmation letter, as well as certificates of insurance evidencing OCIP coverage as issued from the OCIP administrator. Enrollment date shall be established by the date on the certificate of insurance.
 - d) Excluded Parties: - The following parties shall not be enrolled in the OCIP:
 - Heavy or structural demolition utilizing wrecking balls or explosives.
 - i) Hazardous materials remediation, removal or transport companies and their consultants.
 - ii) Architects, surveyors, engineers, soil testing engineers and their respective consultants.

- iii) Vendors, suppliers, fabricators, materials dealers, truckers, haulers, drivers and others who merely transport, pickup, deliver, or carry materials, personnel, parts or other equipment to and from the Job Site.
- iv) Any parties or entities not specifically designated by the City at its sole discretion, even if otherwise eligible.
- v) Subcontractors work with a value of less than \$10,000, unless their work extends to greater than three days of onsite work
- e) Insured Party - Contractor, the Contractor's subcontractors, officers, employees and agents, the City and the City's officers, employees, contractors and agents as enrolled in the OCIP, except any Uninsured Party.
- f) OCIP Administrator - The person or insurance broker firm designated by the City with responsibility for administration of the OCIP, including claims.
- g) OCIP Coverage – the insurance coverages generally described in Sections 7-4.3, through 7-4.10 of this Section and set forth more fully in the policies of insurance or forms of policies of insurance on file with the City's Public Utilities Department.
- h) Uninsured Party - Any person, partnership, corporation, or other business entity performing work under the Contract that is not an Insured Party under the OCIP.

7-4.3 OCIP INSURANCE PROVIDED BY THE CITY.

1. Before commencement of the work, the City will obtain OCIP insurance coverage. Insured Parties will be enrolled in the OCIP according to the policies of OCIP insurance coverage.
2. The Contractor and the Contractor's subcontractors, officers, employees and agents, except for Excluded Parties as defined in Section 7-4.2 (d), will be Insured Parties with OCIP Coverage solely as to risks at the job site.
3. The City assumes no obligations to provide insurance other than OCIP Coverage.
4. The City does not warrant or represent that the OCIP Coverages constitute an insurance portfolio that adequately addresses all of the Contractor's risks under the contract documents. Nothing in this Section shall be construed to relieve the Contractor of any risk or obligation under the contract documents.
5. The OCIP Coverages are set forth in full in the respective policy forms and are on file with the City's Public Utilities Department. Nothing in this section is intended to alter or amend any provision of the OCIP Coverage policies. In the event of an actual conflict between the descriptions of coverage contained in this Section and the coverage provided under the policies, the provisions of the policies shall govern.

7-4.4

INFORMATION TO BE PROVIDED BY SUCCESSFUL BIDDER AFTER CONTRACT AWARD.

1. Within 15 working days from the mailing date of the Notice of Intent to Award of Contract, the successful bidder shall complete and return to the OCIP Administrator the "OCIP Insurance Enrollment Form," and provide such other information as the Project Manager or OCIP insurance carriers deem necessary. Each subcontractor shall complete the OCIP Insurance Enrollment Form and return such forms to the successful bidder for submission with, and attachment to, its form.
2. Each subcontractor shall complete the OCIP Insurance Enrollment Forms and submit to the successful bidder for submission to the OCIP Administrator not less than two weeks before the date they are scheduled to begin work. Failure to submit the information within the time required may delay the subcontractor's ability to commence work.
3. Contractor shall ensure that each subcontractor on the Work site for whom OCIP coverage is provided has received confirmation of such coverage from the OCIP Administrator before commencement of the subcontractor's work.
4. The City will review the OCIP documents submitted by the Contractor within 15 days of their submittal. Any deficiencies noted shall be corrected by the Contractor within five days of its receipt of the returned documents. The City will endeavor to issue a Limited Notice to Proceed within 60 working days of the mailing date of the Notice of Award however, failure to complete and return the documents identified in this paragraph within the time provided may delay the City's issuance of the Limited Notice to Proceed, or result in forfeiture of the successful bidder's bid bond and award of contract to the next lowest bidder.

7-4.5

OCIP WORKERS' COMPENSATION INSURANCE AND EMPLOYERS LIABILITY.

1. Coverage for workers' compensation insurance will comply with statutory limits of the workers' compensation laws of the State of California, with Coverage B - Employer's Liability, to limits of not less than one million dollars (\$1,000,000) each accident, one million dollars (\$1,000,000) each employee for bodily injury by disease, and one million dollars (\$1,000,000) policy limit for bodily injury by disease covering operations of the insured parties at the Work site. Coverage under the Broad Form All States extension is also included. This insurance is primary for all occurrences at the jobsite only.
 - a) Named Insured: Contractor and subcontractors of all tiers Enrolled in OCIP
 - b) Insurer: Zurich
 - c) A.M. Best Rating: AXV
 - d) Policy Term: Per Effective Date of each Enrolled Contractor, as defined above, to the earliest of each Enrolled Contractor Work completion, or at 12:01 AM, 7/21/25
 - e) Policy Form: Per CA statutory requirements

7-4.6

OCIP GENERAL AND EXCESS LIABILITY INSURANCE.

1. General and Excess liability will be provided under Commercial General Liability insurance policy(s) and covering the insured parties in connection with the performance of the work at the jobsite, that includes hazards of operations (including explosion, collapse, and underground coverage), elevators, independent contractors, employees as additional insureds, completed operations with a ten (10) year extended discovery period after substantial completion of the work, contractual liability coverage (for contracts related to the work), personal injury liability coverage, and excess Employer's Liability coverage for claims arising out of the work hereunder, for personal injury, bodily injury, and property damage, in policies of insurance such that the total available limits to all insureds combined will not be less than one hundred fifty million dollars (\$150,000,000) combined single limits for each occurrence and aggregates, as applicable.

- a) Named Insured: City, Contractor and subcontractors of tiers Enrolled in OCIP.
- b) Insurer: HDI
- c) A.M. Best Rating: AXV
- d) Policy Term: July 21, 2019 to July 21, 2025, Plus 10 years Completed Operation Coverage
- e) Policy Form: Occurrence
- f) Limits: General Liability

Coverage	Limit
Per Occurrence	\$2,000,000
Personal & Advertising Injury Limit	\$2,000,000
General Annual Aggregate*	\$4,000,000
Completed Operations Term Aggregate**	\$4,000,000

NOTE: * All aggregate limits reinstate annually.
 ** 10 year Completed Operations has single aggregate

EXCESS LIABILITY

- g) Coverage: Follow form excess liability (terms and conditions, exclusions, etc.) of the underlying Commercial General Liability and Employers Liability policy wording.

- h) Named Insured: City, Contractor and subcontractors of tiers Enrolled in OCIP.
- i) Insurer(s): See Below
- j) A.M. Best Rating: AXV
- k) Policy Term: 7/21/19 to 7/21/25
- l) Policy Form: Follow - Form
- m) Limits: Layered to \$154M.

Layer No.	Insurer	Policy Number	Shared Limit by all Enrolled Contractors	Cumulative Limits
1	AWAC		\$10M excess \$2M/\$4M	\$12M Each Occurrence \$14M Aggregate
2	CHUBB		\$15M excess \$27M/\$29M	\$27M Each Occurrence \$29M Aggregate
3	Liberty		\$25M excess \$27M/\$29M	\$52M Each Occurrence \$54M Aggregate
4	Great American		\$50M excess \$52M/\$54M	\$102M Each Occurrence \$104M Aggregate
5	Zurich		\$50M excess \$102M/\$104M	\$152M Each Occurrence \$154M Aggregate

7-4.7 CONTRACTORS POLLUTION LIABILITY.

Contractor's pollution liability shall include contractual liability coverage for liability arising out of cleanup, removal, storage, or handling of hazardous or toxic chemicals, materials, substances or any other pollutants resultant from the worksite.

- 1. Named Insured: City, Contractor and subcontractors of tiers Enrolled in OCIP.
- 2. Insurer: Ironshore
- 3. A.M. Best Rating: AXV

4. Policy Term: July 21, 2019 to July 21, 2025
5. Policy Form: Occurrence
6. Limits: \$50,000,000 per occurrence and Aggregate

7-4.8 OCIP DEDUCTIBLES – GENERAL/ EXCESS AND POLLUTION LIABILITY.

1. Notwithstanding the actual policy deductibles per occurrence, the Contractor shall be liable for a \$15,000 (fifteen thousand) dollar deductible for each occurrence, to the extent losses payable are attributable to the Contractor's acts or omissions or the acts or omissions of Contractor's officers, employees, subcontractors or agents, or Uninsured Parties providing equipment, materials, supplies or services for the Work. The Contractor's deductible shall encompass the costs of investigation and defense, including court costs and attorneys' fees.
2. Any deductible amount will be invoiced to the Contractor by separate billing. If not paid within 30 calendar days of notice, the amount will be withheld from the next progress payment. Any payment of a deductible amount per occurrence by the Contractor shall not be compensable to Contractor by the City.
3. Each claim, without regard to the amount claimed, shall be reported by the Contractor to the Project Manager, OCIP administrator and the insurance company. The insurance company will adjust the claim on behalf of the Insured Parties. Insurance company will determine if there is proportional responsibility for the loss between the contractor and subcontractor, and such determination will provide the basis for payment of the deductible between the contractor and subcontractor.

7-4.9 OCIP BUILDER'S RISK INSURANCE.

1. OCIP Coverage for builder's risk will provide coverage on an all-risk basis, including coverage against fire, flood, lightning, wind damage, hail, explosion, collapse, offsite storage and in-transit, and installation risks of equipment to be installed as part of the work. Earthquake coverage is not included. The policies for such insurance will be secured and maintained by the City in a form and amount consistent with such coverage commonly purchased for large construction projects. The Contractor's coverage for Builder's Risk shall be \$87 million per occurrence with no aggregate.
2. Coverage shall include materials, supplies, and equipment that are intended for specific installation in the work while such materials, supplies, and equipment are located at the jobsite, in transit, or while temporarily located away from the Work site for the purpose of repair, adjustment, or storage at the risk of one of the insured parties.
3. Except as otherwise provided in Subsection 7-4.9 (2), this insurance will not include coverage for tools or clothing of workers, or Contractor's equipment.

4. The Builder's Risk policy will be endorsed waiving the carrier's rights of recovery under subrogation against the other Insured Parties.

7-4.10 OCIP BUILDERS RISK DEDUCTIBLES.

1. Notwithstanding the actual policy deductible, the Contractor shall be liable for the first \$25,000 (twenty five thousand) of loss for each occurrence; \$50,000 (fifty thousand) for contracts over \$100M (one hundred million). Flood/Water and LEG3 deductible is \$50,000 (fifty thousand) The Contractor may insure the deductible risk at the Contractor's discretion and cost.
2. Each claim without regard to the amount claimed shall be reported by the Contractor to the OCIP Administrator and the insurance company. The insurance company will adjust the claim on behalf of the Insured Parties. Insurance company will determine if there is proportional responsibility for the loss between the contractor and subcontractor, and such determination will provide the basis for payment of the deductible between the contractor and subcontractor.
3. Payments by the insurer for all losses covered under the All Risk Builder's Risk policy will be made to the City. The City will make the proceeds from the Builder's Risk policy covered losses available to the Contractor for rebuilding work damaged by covered perils.

7-4.11 NO WAIVER OF CONTRACT OBLIGATIONS.

1. Nothing contained herein or in any document referenced herein shall relieve, limit, or be construed to relieve or limit the Contractor from any liability or obligations otherwise imposed by the contract documents.

7-4.12 CHANGE ORDERS.

1. Change orders shall include the removal of OCIP provided insurance costs from the Contractors costs associated with the change order. Contractor shall specifically identify the OCIP insurance costs associated with the change order.
2. Contractor is solely responsible for ensuring that its subcontractors remove the cost of OCIP insurance coverage associated with the change order.

7-4.13 THE CITY'S RIGHT TO AUDIT OCIP.

The Contractor hereby warrants to the City the accuracy of the information provided on the OCIP Insurance Enrollment Form and OCIP Credit Worksheets, and agrees that the City, its officers, agents, insurance carriers, and the OCIP Administrator may audit the records of the Contractor and its subcontractors to confirm the accuracy of information provided, including the accuracy of all estimated payrolls, and to ascertain any effect on insurance resulting from changes in the work. The audit will be held during the Contractor's normal business hours at the office of the Contractor or at another mutually agreeable location. This provision is supplemental to 2015 Whitebook Section 6-11, "Right to Audit".

1. The City shall be entitled to credits in OCIP insurance premiums that may accrue as a result of the audit. The Contractor shall also be entitled to any credits as a result of the audit for any OCIP premiums paid in excess of their OCIP Credit Worksheets.
2. The Contractor shall maintain or cause to be maintained sufficient records as may be necessary to audit its compliance and its subcontractors' compliance with the requirements of the OCIP.

7-4.14.1 ASSIGNMENT.

1. The Contractor and each of its subcontractors shall assign to the City all return premiums, premium refunds, dividends, and other monies due in connection with the insurance provided by the City. The Contractor and its subcontractors shall execute such other further documentation as may be required by the City to effect this assignment.

7-4.15 OCIP CLAIMS.

1. The Contractor, its subcontractors, and uninsured parties shall assist the City, its agents, and the OCIP Administrator and shall provide the utmost cooperation in the adjustment of claims arising out of the operations conducted under, or in connection with, the work and shall cooperate with the City's insurance carriers in claims and demands that arise out of the work and that the insurance carriers are called upon to adjust or resist.
2. The Contractor and its subcontractors shall make every effort to provide modified work for injured workers who have been placed on modified duty status as a result of a Workers' Compensation injury or illness covered under this OCIP.

7-4.16 LIMIT OF OCIP COVERAGES.

1. The City does not warrant or represent that the OCIP coverages constitute an insurance portfolio that adequately addresses the risk faced by the Contractor or its subcontractors. The Contractors and its subcontractors shall satisfy themselves as to the existence, extent, and adequacy of the OCIP coverages before the commencement of work under the Contract.
2. The OCIP coverages referred to above are set forth in full in the respective policy forms, and the foregoing descriptions of such policies are not intended to be complete, or to alter or amend any provision of the actual policies. In the event of an actual conflict between the foregoing descriptions of policies with such instruments, the provisions of the insurance policies shall govern.

7-4.17.1 CONTRACTOR PROVIDED INSURANCE THAT IS NOT COVERED BY THE OCIP INSURANCE.

1. The OCIP does not provide the insurance policies for auto liability coverage and aircraft liability coverage. In addition, the City requires that any excluded party under

OCIP who is performing work to have the required insurance listed in this section. The Contractor shall procure and maintain during the period of performance of this Contract and for 12 months following completion, insurance from insurance companies authorized to do business in the State of California, as set forth in this Section. These policies shall be primary insurance as to the City so that any other coverage held by the City shall not contribute to any loss under the Contractor's insurance. Coverage may be provided by a combination of primary and excess insurance policies, provided all insurers meet the requirements of this Section.

2. The Contractor shall obtain and maintain insurance following insurance coverages in the amounts as follows:
3. General Commercial Liability -- \$5,000,000 for any excluded party, any subcontractor who fails or loses enrollment in the OCIP. Coverage at least as broad as ISO form CG 00 01 10 01 or its equivalent, with no exclusion endorsements.
4. Automobile Liability -- \$5,000,000 Coverage at least as broad as ISO form CA 00 01 10 01, for "any auto," including owned, non-owned and hired vehicles
5. Aircraft Liability: If aircraft is used by the Contractor, its subcontractors, or anyone else on their behalf, the Contractor or its subcontractor shall maintain or cause the operator of the aircraft to maintain aircraft public liability insurance insuring passengers and the general public against personal injury, bodily injury, or property damage arising from aircraft owned, used, operated or hired in connection with the work by the Contractor, subcontractor, or anyone else in limits of not less than ten million dollars (\$10,000,000) combined single limit for each occurrence, for each aircraft.
6. Workers' compensation and employer's liability: Coverage shall comply with the laws of the State of California, but an employer's liability limit of less than \$1,000,000 is not permitted. The Contractor may satisfy this requirement by proof of an approved self-insurance program under California law.
7. Any insurance policy utilizing a self-insured retention is subject to approval by the City. Contractor shall be solely responsible for the payment of any self-insured retention, however, any self-insured retention policy obtained by either the contractor, or any tier of sub-contractor, shall be endorsed to provide that the self-insured retention may be satisfied by either the named, additional insured, or City covered under the policy.
8. The insurance policies shall be endorsed as follows:
 - a) For general commercial liability and automobile insurance, as well as excess or umbrella insurance covering risks within the scope of that type insurance, the City, its Council Members, officers, employees and agents are included as additional insureds with regard to liability and defense of suits or claims arising from the operations, products and activities performed by or on behalf of the Named Insured. The Contractor's insurance applies separately to each insured, including insureds added pursuant to this paragraph,

against whom claim is made or suit is brought except with respect to the policy limits of liability. The inclusion of any person or entity as an insured shall not affect any right which the person or entity would have as a claimant if not so included. Any failure of the named insured to comply with reporting provisions of the policy or breaches or violations of warranties shall not affect coverage provided to the insureds added pursuant to this paragraph. The additional insured endorsement shall provide coverage at least as broad as ISO form CG 20 10 11 01 and CG 20 37 10 01

- b) The Contractor's insurance shall be primary. Any other insurance or self-insurance available to the City or persons stated in paragraph (1) shall be in excess of and shall not contribute to the Contractor's insurance.
 - c) The Contractor's insurance shall not be canceled or materially reduced in coverage except after 30 days prior written notice has been given to the City, except 10 days' notice shall be allowed for non-payment of premium.
 - d) The workers' compensation and employer's liability insurance, and any property insurance shall be endorsed to include a waiver by the insurer all rights of subrogation against the City and other persons specified in paragraph (1) for losses paid under the terms of the insurance policy. Any of the Contractor's off-site insurance requirements shall not have the provision of naming the City as loss payee.
9. Unless otherwise specified by supplemental condition, the insurance shall be provided by an acceptable insurance provider, as determined by the City, which satisfies the following minimum requirements: An insurance carrier authorized to do business in California and maintaining an agent for process within the state. Such insurance carrier shall maintain a current A.M. Best rating classification of "A- (A minus)" or better and a financial size of \$50 million to \$100 million (Class VII) or better, or a Lloyds of London program provided by syndicates of Lloyds of London and other London insurance carriers, providing all participants are qualified to do business in California and the policy provides for an agent for process in the state and the program assures a financial capability at least equal to the required classification and size for authorized insurers. Workers' compensation and employer's liability insurance may be provided the California State Compensation Fund.

7-4.18 Certificates of insurance and endorsements shall be provided by the Contractor and approved by the City before execution of the Contract..

7-4.19 SUBCONTRACTORS PROOF OF INSURABILITY REQUIREMENT UNDER OCIP.

- 1. As a requirement of the OCIP Program, all subcontractors shall demonstrate insurability to the satisfaction of the OCIP Administrator as follows:
 - a) Commercial General Liability -- \$1,000,000
 - b) Automobile Liability - \$1,000,000
 - c) Workers' Compensation and employer's liability – as required by California law with employer's liability of not less than \$1,000,000

2. The Contractor shall be responsible for obtaining proof of insurability from its subcontractors and providing the information to the OCIP Administrator, as well as for assuring that all its subcontractors comply with the requirements of the OCIP Program.

7-4.20 NOTICES, COSTS, AND LOSSES – OCIP.

1. Before the date on which the Contractor or any subcontractor begins performance of its part of the work, the Contractor shall cause to be furnished to the OCIP Administrator certificates of insurance for insurance required to be maintained by the Contractor and its subcontractors as provided herein. The Contractor shall not be allowed, and shall not allow subcontractors on the jobsite for the performance of work until appropriate certificates of insurance are issued by the OCIP Administrator.
2. The City will pay the cost of the OCIP insurance premiums for the insurance described above as being provided by the City, and the City will receive or pay, as the case may be, all adjustments in such costs, whether by way of dividends or otherwise. All enrolled Contractors, and Subcontractors, shall assign to the City all adjustments, premium discounts, dividends, costs or other monies due for the OCIP insurer(s).
3. The cost of losses sustained because of clauses that specify the Contractor deductible amounts in any of the insurance policies furnished by the City shall be paid by the Contractor. If the City-provided OCIP policies described in Sections 7-4.6., 7-4.7 and 7-4.9 have deductible amounts greater than the Contractor-deductible amounts, such excess amounts will be paid by the City provided that the Contractor shall be responsible for losses greater than OCIP policy limits.
4. Require its subcontractors to waive the rights of recovery in the same manner as waived in the employees, and Contractors rendering services at the Work site, the Contractor, other Project contractors, and their subcontractors regardless of tier.

7-4.20 CONTRACTOR OBLIGATIONS UNDER OCIP.

1. The Contractor shall:
 - a) Provide OCIP Coverage enrollment information as required by the City. Furnish to the OCIP Administrator and the insurance carriers all information and documentation that the OCIP Administrator may require from time to time in connection with the issuance of policies under this Contract, in such form and substance as the OCIP Administrator may prescribe.
 - b) Furnish to the OCIP Administrator monthly payroll reports on the form provided by OCIP Administrator, and payroll records as required.
 - c) Segregate their respective reports relating to the work for which OCIP coverage is herein provided from their records relating to other work for which such coverage is not provided.

- d) Promptly comply with the policy requirements of the OCIP insurance carriers as submitted through the Project Manager.
2. The Contractor shall not violate or knowingly permit any subcontractor to violate any conditions of the policies of insurance provided by the City under the terms of the Contract and shall at all times satisfy the requirements of the insurance companies issuing them.
3. The Contractor shall assure that all OCIP requirements imposed upon and to be performed by the Contractor shall likewise be imposed upon, assumed, and performed by each of its subcontractors and uninsured parties with whom it or its subcontractors have a contractual relationship.
4. The Contractor shall furnish each bidding and negotiating subcontractor, vendor, supplier, material dealer, or other person or business entity that may provide goods or services in connection with the work a copy of this Section describing the insurance requirements for the Contractor and its subcontractors shall require each to impose the same requirement in their subcontracting and procurement procedures.
5. If the Contractor or any of its subcontractors should fail to comply with the requirements of this Section, the City may withhold payments due to the Contractor or suspend the work until such time as the Contractor and its subcontractors have performed such obligations to the reasonable satisfaction of the Project Manager.
6. The Contractor shall include in the bid price the cost of complying with the OCIP as herein described.
7. Failure of the Contractor to enroll any sub-contractor of any tier in the OCIP, or to allow any sub-contractor to begin work on-site without proof of enrollment, shall constitute a breach of the OCIP insurance requirements. As such, all work performed by the sub-contractor, or any accident or injury as a result of the sub-contractor's activity, shall be considered an uninsured risk under the OCIP coverage. No OCIP insurance coverage of any line of insurance described in this document, shall extend coverage to the conditions described above.

7-4.21 OCIP INSURANCE MANUAL.

The OCIP Administrator will provide an OCIP Insurance Manual that will describe procedures relevant to the OCIP to the Contractor. The Contractor and its subcontractors are required to comply with the procedures therein described.

7-4.22 ALTERNATIVE INSURANCE.

1. In the event the City is unable to furnish, or after commencement of work elects not to furnish or to continue to furnish the OCIP coverage herein described, and upon 30 days written notice from the City, the Contractor shall secure insurance as required

under the Section 7-4.17 with limits as specified below (2). The Contractor shall be allowed a change order for additional costs of insurance that were excluded from the bid as required by this Supplemental Condition.

2. The coverage limits for insurance required pursuant to paragraph (a), and also for coverage not provided by OCIP Coverage such as automobile liability, shall be as follows:
 - a) Commercial General Liability -- \$25,000,000 annual aggregate renewal
 - b) Contractors Pollution Liability - \$5,000,000 annual aggregate
 - c) Automobile Liability -- \$5,000,000
 - d) Workers' Compensation and employer's liability - as required by California law with employer's liability of not less than \$1,000,000
 - e) Builder's Risk – Contract Value
 - f) Aircraft Liability: If aircraft is used by the Contractor, its subcontractors, or anyone else on their behalf, the Contractor or its subcontractor shall maintain or cause the operator of the aircraft to maintain aircraft public liability insurance insuring passengers and the general public against personal injury, bodily injury, or property damage arising from aircraft owned, used, operated or hired in connection with the work by the Contractor, subcontractor, or anyone else in limits of not less than \$10,000,000 combined single limit for each occurrence, for each aircraft.

7-4.23 ACCIDENT REPORTS AND CLAIMS.

1. Contractor shall immediately report (as soon as feasible, but not more than 24 hours after occurrence) to the City any accident or other occurrence causing injury to persons or property during the performance of this Contract. If required by the City's Risk Management Department, or its designated representative, a report shall be made in writing and shall include, at a minimum:
 - a) the names, addresses, and telephone numbers of the persons involved,
 - b) the names, addresses and telephone numbers of any known witnesses,
 - c) the date, time and description of the accident or other occurrence.
2. All claims for damages, losses, expenses and other costs, received by the Contractor or the City, arising out of or resulting from or in connection with the performance of the Work shall be acknowledged by the Contractor by sending written notice to the claimant within 10 days of the Contractor's receipt of the claim. The written notice shall either:

- a) confirm the Contractor's responsibility for damages and losses, and intent to pay or settle claim directly with the claimant; or
 - b) confirm the Contractor's responsibility for prompt investigation and processing of the claim, including identifying the Contractor's insurance carrier and claims adjuster, describing the Contractor's or insurance carrier's procedure for investigating and processing of the claim, and providing a name and telephone number for contacting the representative of the Contractor. A copy of the written notice of claim shall be delivered to the Project Manager. Should the Contractor state his intent to pay or settle the claim directly with the claimant, payment or settlement shall be made within 45 working days of receipt of the claim. Claims to be submitted to the Contractor's insurance carrier shall be forwarded to the insurance carrier within 5 calendar days of receipt of the claim. Failure by the Contractor to send the written notice of claim, or to notify the Project Manager of any claim, shall be cause for the City to withhold payments to the Contractor.
3. The City shall have full authority to compromise or otherwise settle any claim related to the Contract at any time. The City will notify the Contractor of the receipt of any third party claim arising from or relating to the Work within 14 working days of the receipt of the claim by the City. The City shall be entitled to recover its reasonable costs incurred in providing the Contractor timely notification of third-party claims. Neither this Section nor the City's failure to give notice shall limit the City's ability to compromise or settle any claim.

7-4.24 ADDITIONAL INSURANCE PROVISIONS

1. Nothing in Section 7-4 shall be construed to limit or qualify the liabilities and obligations otherwise assumed by the Contractor pursuant to this Contract, including but not limited to the provisions relating to indemnity and warranty.
2. The City may require the Contractor to provide complete copies of all insurance policies required by Section 7-4.
3. If at any time, the Contractor fails to maintain in full force any insurance required by the Contract, the City may acquire the necessary insurance for the Contractor and deduct the cost thereof from any payment due the Contractor.

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PURE Program OCIP – Insurance Coverage by Project Segment Summary

Project Name: Morena Pipe Line – Northern Segment

Owner Controlled Insurance Program Insurance coverage provided for Contractor			Contractor/Sub-Contractor Insurance Requirements by type of insurance and limits still required under OCIP		
Type	Limit	Deductible	Contractor	Limit	Self-Insured Retention
General Liability	\$150M	\$15K	General Liability	\$5M	Needs Approval
Automobile Liability**	N/A	N/A	Automobile Liability	\$5M	Needs Approval
Workers Compensation	CA Statutory - \$1M employers Liability	N/A	Workers Compensation	CA Statutory - \$1M employers Liability	
Pollution Liability*	\$50M		Pollution Liability*	N/A	N/A
Builders Risk***	\$87M	\$25K	Builders Risk*	N/A	N/A
*Indicates shared limit among all Pure projects, per project limit applies **N/A indicates not provided by OCIP coverage *** AOP deductible per occurrence with no aggregate – deductible limit for Flood and LEG3 is \$50K			Sub-Contractor	Limit	Self-Insured Retention
			General Liability	\$1M	Needs Approval
			Automobile Liability	\$1M	Needs Approval
			Workers Compensation	CA Statutory - \$1M employers Liability	
			Pollution Liability*	N/A	N/A
			Builders Risk*	N/A	N/A
			* Coverage provided by OCIP		

Contractor Insurance Required if OCIP is unavailable at commencement of work or cancelled after construction has begun			General Notes – Pure Water OCIP Coverage Morena Pipe line – Northern Segment
Type	Limit	Self-Insured Retention	1) Contractor obligation for payment of the deductible under the OCIP coverage is triggered by insurance carrier acceptance of claim. 2) At issuance of the Notice to Proceed, the shared OCIP coverage limits remain at 100% of the values stated above.
General Liability	\$25M	Needs Approval	
Automobile Liability	\$5M		
Workers Compensation	CA Statutory - \$1M employers Liability		
Pollution Liability	\$5M		
Builders Risk	Contract Value	Needs Approval	

Notes: OCIP will utilize a per-occurrence deductible program. If Contractor utilizes Self-Insured retention insurance, it will require approval of the self-insurance retention amount the contractor declares.

END OF SECTION

7-5.3 Payment. To the "WHITEBOOK", item 2, DELETE and SUBSTITUTE with the following:

2. An Allowance Bid item "Permits" has been provided to cover the following permits:
 - a) Caltrans Encroachment Permit SR52
 - b) Caltrans Permit Extension SR-52
 - c) Caltrans Encroachment Permit I-805
 - d) Caltrans Permit Extension I-805
 - e) MTS NCTD Right of Entry Permit
 - f) UG Classifications – NC Morena Pump Station and Pipelines

All aforementioned permits can be downloaded from the filecloud link below:

<https://filecloud.sandiego.gov/url/uvb5d2bjxcm94ywf>

ADD:

7-6 The Contractors Representative. To the "GREENBOOK", ADD the following:

1. Both the representative and alternative representative shall be employees of the Contractor and shall not be assigned to a Subcontractor unless otherwise approved by the City in writing.

7-8.6.1.8 Permit Registration Documents (PRDs). To the "WHITEBOOK", ADD the following:

10. A Preamble and exhibit will be provided to the CONTRACTOR by the LRP providing context of the Project within the larger Pure Water Program. CONTRACTOR to request preamble and exhibit prior to Pre-con Meeting.

7-8.6.1.13 Annual Reports and Annual Fee. To the "WHITEBOOK", item 2, DELETE in its entirety and SUBSTITUTE with the following:

3. You shall pay the Annual Fee to the State Water Board within 30 Calendar Days of the Invoice Date. Your failure to pay within this timeframe shall result in a Notice of Violation (NOV) and the forwarding of the invoice to a Collections agency by the State.

7-8.6.2.10 BMP Inspection, Maintenance, and Repair. To the "WHITEBOOK", ADD the following:

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

7-8.6.3.7 Payment. To the "WHITEBOOK", item 3, subsection "g", DELETE in its entirety and SUBSTITUTE with the following:

- g) BMP Inspection, Maintenance, Repair, and Construction BMP Maintenance Log.

7-8.6.5 Payment. DELETE in its entirety and SUBSTITUTE with the following:

7-8.6.5 Drinking Water Discharges Requirements.

1. All discharge related to the project of water used for testing an acceptance of new water mains to the storm drain shall comply with the State Water Resources Control Board, ORDER WQ 2014-0194-DWQ, STATEWIDE GENERAL NPDES PERMIT FOR DRINKING WATER SYSTEMS DISCHARGES found at the State Boards website at the following location:

https://www.waterboards.ca.gov/water_issues/programs/npdes/docs/drinkingwater/final_statewide_wqo2014_0194_dwq.pdf

All monitoring, sampling and reporting for compliance with the Order must be completed by a QSP.

- a) BMPs shall be in place prior to the start of discharge. At a minimum, you shall:
 - i. Sweep the gutter and street in the flow path
 - ii. Provide inlet protection at all inlets receiving discharge
 - iii. Provide dechlorination
 - iv. Implement sediment and erosion control measures such as diffusers, check dams, flow controls, etc.
- b) Monitoring and Samples.
 - i. As required by the Order, you shall monitor, sample and report all discharges to the storm drain. You shall record the results for each discharge event on the City's Drinking Water discharge Monitoring form included **as Appendix H, Monthly Drinking Water Discharge Monitoring Form**. Submit completed forms to the Engineer at the end of every month.
 - ii. Notifications: You shall notify the RWQCB at and Transportation and Storm Water Department prior to the start of any large volume discharge (greater than 1 acre-foot volume). You shall notify The County of San Diego, Department of Environmental Health (DEH) at (858) 495-5579 prior to the start of discharges 100,000 gallons or more within ¼ mile of the ocean or bay coastline.
 - iii. Sampling and reporting requirements are outlined in the Order.
 - For Superchlorinated discharges, at a minimum, you shall sample chlorine, turbidity and pH the first 10 minute of discharge, the first 60 minutes of discharge and last 10 minutes of discharge and provide an estimate of the total volume of water discharged.
 - For Large Volume discharges (or discharges greater than 1 acre-foot in total volume), at a minimum, you shall sample

chlorine and turbidity pH the first 10 minute of discharge, the first 60 minutes of discharge and last 10 minutes of discharge and provide an estimate of the total volume of water discharged.

- For discharges that are not superchlorinated and are under 1 acre-foot in total volume, at a minimum, you shall provide an estimate of the total volume of water discharged.

iv. Effluent limits:

- Field measurement of 0.1 mg/L chlorine or more is an exceedance of the Order.
- Visual estimates of 20 NTU or more for surface water and 225 NTU or more for ocean is an exceedance the City's Basin Plan.
- Field measurements for pH outside the range of 6.5 to 8.5 is an exceedance of the City's Basin Plan.

v. Receiving water monitoring: if an exceedance is observed, the discharge shall be stopped immediately, BMPs must be adjusted until discharge is no longer exceeding limits. The QSP shall monitor receiving waters for adverse effects to water quality. If any adverse effect to water quality is observed, the RE and RWQCB shall be notified immediately. The QSP shall document the point of confluence between the discharge and receiving water with photographs.

c) Areas of Special Biological Significance (ASBS).

i. Non-storm water discharges including drinking water discharges to Areas of Special Biological Significance (ASBS) are prohibited. These are ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable and are classified as a subset of State Water Quality Protection Areas. Non-storm water discharges shall be located outside of the designated areas to ensure maintenance of natural water quality conditions in these areas.

ii. A map showing ASBS locations can be found in the Storm Water Standards Manual Part 2 Appendix A. The areas in the San Diego Region include: La Jolla (ASBS #29), Scripps (ASBS #31), and La Jolla Shores watershed boundaries.

2. If prior approval is obtained to discharge to the sewer system, you shall discharge the water used for testing and acceptance of new water mains to the sewer system in accordance with the Contract Documents as shown on the batch discharge Plans. You shall submit to the Engineer a "Request for Batch Discharge Authorization to Discharge Potable Pipe Flushing Water to Sewer" form. The request form is found on the City website at the following location:

https://www.sandiego.gov/sites/default/files/pipe_flush_batch_disch_0.pdf

- a) When discharging to the sewer system has been approved, you shall use a totalizer flow meter to record the total volume discharged to sewer and shall submit to the Engineer a log of actual discharged water quantities, dates, and locations. Failure to report this information to the Engineer is a violation of the authorization for discharge to the sanitary sewer. Within five (5) Working Days of the discharge, the Engineer shall receive and report actual total flows to the sanitary sewer to the Public Utilities Department (PUD), Industrial Wastewater Control Program (IWCP).
- b) If the discharge to the sewer system is not approved, you shall discharge the water used for the testing of new mains to surface waters, storm drain inlets, or to other approved sources and you shall comply with 7-8.6.5, "Drinking Water Discharges Requirements". All discharge activities related to the project shall comply with the State Water Resources Control Board, ORDER WQ 2014-0194-DWQ, STATEWIDE GENERAL NPDES PERMIT FOR DRINKING WATER SYSTEMS DISCHARGES as referenced by:

http://www.waterboards.ca.gov/water_issues/programs/npdes/docs/drinkwater/final_statewide_wqo2014_0194_dwq.pdf

ADD:

7-8.6.5.1 Payment.

- 1. The payment for complying with the requirements of drinking water systems discharge to the storm drain shall be included in the contract price.
- 2. The payment for complying with the discharge requirements for discharges to sewer system shall be included in the contract price.

7-8.6.6.9 Payment. To the "WHITEBOOK", DELETE in its entirety and REPLACE with:

- 2. The Allowance Bid item for "Dewatering Permit and Discharge Fees" shall cover actual costs of permit fees. Discharge fees to sanitary sewer shall be paid under the lump sum bid item "Dewatering Non-Hazardous Contaminated Water".

ADD:

7-10.4.1 General. To the "WHITEBOOK" and "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

ADD:

7-10.4.1 General.

7-10.4.1.1 Safety, Sanitation, Medical, And Drug And Alcohol Requirements.

- 1. The Contractor shall have ultimate responsibility for the health and safety of its employees. These specifications shall not be construed to limit the Contractors

liability nor to assume that the City, its employees, agents, or designates shall assume any of the Contractors liability associated with its safety performance.

2. The Contractor shall promptly and fully carry out the safety, sanitary, and medical requirements as stated in the contract documents and as may from time to time be prescribed by the Engineer, to the end that proper work shall be done, and the safety and health of the employees and of the public are preserved and safeguarded. In case such regulations and orders are not observed by the Contractor, they may be enforced by the Engineer at the Contractor's expense. The Contractor shall summarily dismiss and shall not again engage, except with the written consent of the Engineer, any employee or subcontractor who knowingly and willingly violates the safety, sanitary, or medical requirements. Such discharge shall not be the basis of any claim for compensation or damages from the Contractor against the City, its OCIP Insurance, or any of its officers, employees, consultants or agents.
3. Appropriate first aid facilities and supplies shall be kept at the site of the Work, and the Contractor shall provide and maintain all measures required by the Construction Safety Orders issued by the Division of Industrial Safety of the State of California.
4. The Contractor shall prohibit the use or possession of intoxicating liquors or controlled substance at the jobsite or in any vehicle or equipment used in performance of the Work. This prohibition shall not apply to use or possession of prescription or non-prescription medication in accordance with prescribed directions.
5. Employ a "competent person" as defined by Cal OSHA. The "competent person" shall monitor, educate, and facilitate safety related jobsite activities. This individual shall be on the jobsite during all work hours identified in Section 6.7, Paragraph (b), or as authorized in writing by the Engineer.
6. When trenching, place your name and emergency telephone number adjacent to the Work at intervals and locations approved by the Engineer. The method of marking shall be approved by the Engineer.
7. The City shall not assume any role in determining the adequacy of the Contractors Safety and HealthPlan.

7-10.4.1.2 Contractor's Safety And Health Representatives,

1. The Contractor shall provide a qualified and experienced full-time, on-site Safety Professional to serve as their Safety and Health Representative. Qualifications shall include at least 10 years of construction related safety experience as the lead site safety representative (only duty) and experience in developing and implementing accident prevention programs for construction projects. If the Contractors Safety and Health Representative has less than 10 years construction related safety experience, or equivalent level of education and experience, the Contractors Safety and Health Representative must be approved by The City of San Diego. This individual shall be assigned only to this project and whose sole duty is monitoring and supervising the Contractor's and Subcontractors' Safety, Health, and Environmental Program, and who shall be on-site when any work is in progress. In

the event the Contractor's Safety Representative gives notice of separation of employment or is transferred from the Contractor's work site, the Contractor shall ensure that the incumbent Safety Representative remains on site for a minimum of two weeks after giving notice, and that the Contractor's replacement Safety Representative receives a minimum of two weeks safety orientation on the construction site before being allowed to assume the full duties as the Contractor's Safety Representative. This requirement may be waived upon written approval by the City. The Contractor's Safety and Health Representative shall support and Implement the OCIP Safety Program, or its equivalent and shall coordinate and require the Contractor's and Subcontractor's foremen to participate in the OCIP Program and conduct and submit the required audits as described in the Safety Programs section of the OCIP Construction Safety Procedures Manual. In the event the Contractor fails to comply with the above safety professional requirements, the Engineer shall obtain the services of a Safety Professional, and charge all costs associated with the services to the Contractor.

2. The Contractor's safety and health representatives shall be responsible for, and have the authority to, direct the required safety and health programs, correct unsafe conditions and unsafe practices, and stop work in areas containing unsafe conditions or practices until such unsafe conditions or practices are correct.
3. The Contractor's safety and health representatives shall be charged with the responsibility of daily on-site safety and health coordination and inspections and shall record the results of the inspections and corrective actions, if any, on a report form provided by the City.
4. The weekly report shall be submitted to the Engineer not later than the first working day following the workweek covered by the report.
5. Contractor's Safety and Health representatives shall participate in weekly progress meetings and report out on safety conditions at the worksite.

7-10.4.1.3 Submittals.

1. Submit, within 30 days of the Notice of Award and before execution of the Contract or at a later time as directed by the Engineer a Project-specific safety and health program conforming to applicable laws and regulations that includes the following:
2. A Project-specific Injury and Illness Prevention Program covering work performed by or for the Contractor at the site.
3. The resume of qualification and experience for the Contractor's on-site safety representative responsible for safety and health.
4. A written Hazard Communication Program covering work performed by or for the Contractor at the site.
5. [Optional – Dependent upon Worksite Assessment] A written Emergency Action and Fire Protection Plan and a written Fire Prevention Plan covering work performed by or for the Contractor at the site. The Contractor shall have the Fire Protection Plan reviewed and approved by the jurisdictional fire protection agency. The Contractor's Fire Protection Plan shall include:

- a) Dedication of an on-site 2,000 gallon or greater water truck fitted with a one and one half inch fire hose that shall have the ability to access all on-site construction operations.
 - b) Fire watch on-site during construction operations. This role may be filled by the Contractor's safety representative.
 - c) Contractor shall check in daily with CAL FIRE for an update on fire conditions and to determine if any fire restrictions have been ordered. This information shall be included on the Contractor's Daily Report to the Engineer.
 - d) Contractor shall cease brush clearing, cutting, or chipping operations when a red flag fire day is declared by the jurisdictional fire agency.
 - e) Contractor shall have tailgate meetings daily to communicate fire conditions and fire prevention measures necessary for the daily work.
6. A written hazard safety analysis of the project conditions. The Contractor shall perform a comprehensive site analysis before commencement of work to determine any existing hazards and shall abate these hazards or inform the Engineer and all affected employees of these hazards and how to protect themselves from them.
7. In addition to the reports that the Contractor is required to file under the provisions of California Workers' Compensation law and other applicable laws, submit a report to the Engineer on or before the 10th day of each month giving:
- a) The total force employed on the contract in workdays during the previous calendar month.
 - b) The number and character of all accidents resulting in loss of time, medical treatment and first aid treatment.
 - c) Any other information or classification of employee injuries incurred on the Project and disabilities resulting there from that may be required by the Engineer.
8. Obtain and keep copies of the Material Safety Data Sheets of all hazardous materials brought to and stored at the site.

7-10.4.1.5 Emergency Procedures.

1. Designate responsible personnel to make emergency calls. Should an emergency occur, the Contractor shall:
- a) Immediately secure the area and implement the Emergency Action Plan. Preserve the site for investigation until released by OSHA, the Engineer or OCIP Insurance Provider.
 - b) Notify the Construction Management Team or another representative previously designated by the Engineer in writing.

2. Provide information regarding the emergency to the appropriate authorities and authorized City representatives only. Questions from others including the press and media shall be referred to the Engineer.
3. Emergency procedures shall ensure that the Contractor's Safety Representative or the most qualified senior supervisor present takes charge and directs the handling of the emergency. The Contractor shall ensure proper handling of all Subcontractor related emergencies per the Contractor's and OCIP Emergency Procedures.
4. All Incidents, whether causing injury, environmental impacts or unauthorized property damage or not, shall be investigated by the Contractor and documented on forms provided by the OCIP and as required by the OCIP Construction Procedures Safety Manual. Instruct and require supervisors that, except for rescue or other emergency measures, the Incident site shall be secured until investigation has been completed and the scene has been released by both the Contractor and the Engineer, and as appropriate, the insurance company/OSHA.
5. Injuries which require medical attention shall be reported to the Engineer or Construction Management Team immediately after summoning medical help and securing the scene to prevent further injury. Injuries which meet the Cal/OSHA, Title 8 requirement as reportable shall also be reported to Cal/OSHA immediately. The Contractor shall investigate and generate a report which identifies the root causes and corrective actions for all accidents and incidents. This report shall be on the OCIP Incident form or an equivalent form approved by the Engineer. The Construction Management Team will also investigate all accidents and incidents to identify means to prevent further occurrences
6. For incidents that caused or had the potential to cause injury or significant losses, the Engineer or Construction Management Team may request a post Incident review. In such cases, the Contractor, Subcontractor, or other entity shall send an appropriate Manager to present the facts of the incident and provide information how future similar incidents will be prevented.
7. Immediately notify the Engineer or OCIP Safety Manager of any unabated hazardous conditions and take action to guard or control access to these conditions until correction has been accomplished. Notify the Engineer of any property or equipment found at the work site that is not under the Contractor's control. However, it shall be the Contractor's responsibility to take necessary precautions to prevent injury to persons or damage to property from such hazardous conditions until corrected by the responsible party

7-10.4.1.9 Safety And Health. Have and implement a written site-specific IIPP and Code of Safe Work Practices covering site work to be performed under the contract.

1. If not a part of the IIPP, the following procedures shall also be implemented:
 - a) Stress the importance of, and conduct a thorough hazard safety analysis at the start of the project.
 - b) Participate to develop and ensure all key staff are aware of the project hazards and keep staff informed of existing and developing safety hazards.

- c) Encourage all suppliers to visit the project site to assess hazards before the delivery of materials.
2. Foremen and superintendents shall provide written Job Task Analysis for all tasks. The JTA shall include all hazards that might be encountered while performing the task and methods for assuring that each employee will be protected from the hazard.
3. Utilize supervisory and craft employees to conduct and document a jobsite Safety Survey each week. Each survey shall include subcontractor activities. Utilize the results of each survey to inform Contractor and Subcontractor employees and other affected jobsite individuals of hazards on the job and how to protect themselves from these identified hazards. Survey shall be submitted to the Engineer for review and comment. Identify upcoming jobs and associated hazards and notify affected employees and individuals.
4. Before authorization or start of construction, the Contractor shall prepare a Spill Prevention and Contingency Plan for review and approval of the appropriate jurisdictional agency and all construction crew members shall be trained in the requirements of the Spill Prevention and Contingency Plan. The Plan will include information on storage of hazardous materials, emergency response procedures, employee training requirements, fire safety, first-aid procedures, hazardous materials release containment/control procedures, and release reporting requirements. The Contractor shall integrate this SP&CP into the IIPP.
5. All persons shall be required to wear American National Standards Institute approved hard hats while at the Work site; no bump caps will be permitted. Each employee's hard hat shall identify the employee's name and employer. Steel toed shoes shall be worn when in active construction zone. Safety vest or equivalent shall be worn in addition to hard hat when in active construction zone.

When sufficient time is available, notify the City in advance of safety inspections by Cal/OSHA, the fire department, or other governmental agencies. When regulatory agencies arrive on-site for unannounced inspections, the Contractor shall immediately inform the Engineer and the Construction Management Team and shall escort the inspector(s) for the entire duration of their time on-site. When the Engineer is not present during a safety inspection, immediately report to the Engineer that an inspection has taken place, and describe any violations, or citations, and the Contractor's abatement actions or salient events arising from the inspection.
6. The Contractor shall be responsible to ensure compliance with the specific policies and procedures established in the OCIP Construction Safety Procedures Manual. To ensure Contractor and Subcontractor compliance with the IIPP's and applicable laws, contractor specifications, and the Owner Controlled Insurance Program, the Engineer or Construction Management Team Representative will use the [TBD Schedule Driven Safety Program] and the [TBD Managing Safety Performance] or equivalent program as approved by the Engineer to gauge the Contractor's compliance and adherence to its site-specific IIPP and applicable laws and regulations. Such monitoring and audits by the Construction Management Team or the Engineer will not relieve the Contractor of any safety and health obligations.

7. Eating and drinking shall not be permitted in areas containing hazardous materials.
8. Equipment shall be maintained in a proper state of operation as per the manufacturer's specifications. Equipment service records will be maintained and be available for inspection to ensure compliance.
9. Reduce harmful combustion engine emissions to the greatest extent feasible by conducting preventive maintenance on construction equipment and, whenever possible, limit equipment idling time by such means as turning engines off while vehicles are in loading and unloading queues; use clean and low sulfur fuels and use electric motors to drive conveyor belts, pumps, compressors, and other equipment.
10. All personnel shall wear appropriate Personal Protective Equipment in accordance with the Contractor's IIPP, regulatory requirements, and the OCIP Construction Safety Procedures Manual. All personnel in active construction areas shall be required to wear approved hard hats, eye protection, safety vests with reflective stripes, steel toed work shoes, long pants, and shirts with sleeves. Gloves, hearing protection, and additional eye protection may be required as appropriate.
11. No asbestos- or PCB-containing materials shall be used.
12. At the beginning of the Project, the Contractor shall post at the entrance to the construction site a sign of size and wording approved by the Engineer listing the general rules, regulations, attire, and PPE requirements.

7-10.4.1.10 Safety And Health Training.

1. The Contractor's safety and health representatives shall conduct training classes before commencement of the Work and on a monthly basis, or more often if needed, on safety and health, emergency procedures, first aid, fire prevention, and other areas applicable to the Work. The Contractor may seek input from the Engineer.

7-10.4.1.11 First Aid.

1. The Contractor is responsible to provide initial emergency care and to notify Emergency Responders by calling 911 when required. The contractor is also responsible to arrange for transportation of sick or injured persons off the job site when other than emergency transport is appropriate.

7-10.4.2.1 To the "GREENBOOK" DELETE in its entirety and SUBSTITUTE with the following:

ADD:

7-10.4.2.1 Regulatory Requirements

1. Have copies of the following at the Work site. The required information shall be made available to the Construction Management Team and the Engineer for review upon request:
 - a) A complete copy of the California Code of Regulations, Title 8.
 - b) Material Safety Data Sheets for all hazardous materials being used or stored at the site.
 - c) Permits required for the Work

- d) All records and information required by the Construction Safety Procedures Manual

ADD:

7-10.6.2.1 Project Identification Sign, ADD the following:

1. The State Revolving Fund requires that the Contractor place (2) temporary signs at least four (4) feet tall by eight (8) feet wide made of three-fourths (3/4) inch thick exterior grade plywood or other approved material in a prominent locations approved by the Engineer. The Contractor shall fabricate, properly mount and maintain both signs. The image cast on the sign should be resistant and protected from weathering. The signs should be mounted firmly and securely at the two sites with proper footing and post, as approved by the Resident Engineer. The Contractor is responsible for maintaining the signs in a manner approved by the Resident Engineer and will remove and dispose of upon completion. The sign shall include the full colored image that will be provided on a CD, at the pre-construction meeting.

7-13.4 Contractor Standards and Pledge of Compliance. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. The Contract is subject to City's Municipal Code §22.3004 as amended 10/29/13 by ordinance O-20316.
2. You shall complete a Pledge of Compliance attesting under penalty of perjury that you complied with the requirements of this section.
3. You shall ensure that all Subcontractors complete a Pledge of Compliance attesting under penalty of perjury that they complied with the requirements of this section.
4. You shall require in each subcontract that the Subcontractor shall abide by the provisions of the City's Municipal Code §22.3004. A sample provision is as follows:
"Compliance with San Diego Municipal Code §22.3004. The Subcontractor acknowledges that it is familiar with the requirements of San Diego Municipal Code §22.3004 ("Contractor Standards"), and agrees to comply with requirements of that section. The Subcontractor further agrees to complete the Pledge of Compliance, incorporated herein by reference."

ADD:

7-13.8 Equal Pay Ordinance.

1. You shall comply with the Equal Pay Ordinance (EPO) codified in the San Diego Municipal Code (SDMC) in section 22.4801 through 22.4809, unless compliance is not required based on an exception listed in SDMC Section 22.4804.
2. You shall require all of your Subcontractors to certify compliance with the EPO in their written subcontracts.
3. You shall post a notice informing your employees of their rights under the EPO in the workplace or job site.
4. By signing this Contract with the City of San Diego, you acknowledge the EPO requirements and pledge ongoing compliance with the requirements of

SDMC Division 48, section 22.4801 et seq., throughout the duration of this Contract.

7-16 **COMMUNITY OUTREACH.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTED with the following:

7-16.1 **General.**

1. To ensure consistency with the City's community outreach plan for the project, the City shall work with you to inform the public (which includes, but shall not be limited to, property owners, renters, homeowners, business owners, business patrons, recreational users, and other community members and stakeholders) of construction impacts, including when, where, and how long the impacts will last. Your efforts to mitigate construction impacts by communicating with the public require close coordination and cooperation with the City. Community outreach will be led by the Owner's Outreach team and supported by the Contractor.
2. You shall perform the community outreach activities required throughout the Contract Time. You shall assign a staff member from your construction team who shall perform the required community outreach services as a point of contact for the Owner's Outreach team and Construction Manager/Resident Engineer.
3. You shall closely coordinate with the Owner's Outreach team the Work with the businesses, institutions, residents, and property owners impacted by the Project.
4. Your example duties include working with the Owner's Outreach team to notify businesses, institutions, and residents of the commencement of construction activities not less than five (5) days in advance, coordinating access for vehicular and pedestrian traffic to businesses, institutions, and residences impacted by the Project, reporting activities at all Project progress meetings scheduled by the Engineer, attending the Project Pre-construction meeting, attending up to eight (8) community meetings, attending one-on-one meetings with businesses and stakeholders as needed, and supporting responses to community questions and complaints related to your activities.
5. Members of your team shall participate in outreach meetings, including an initial orientation meeting (superintendent and foremen), led by the City and Owner's Outreach team to discuss expectations for and participation in outreach tasks throughout the Contract Time. The superintendent shall participate in the subsequent outreach meetings on a quarterly basis following the initial orientation.
6. The assigned staff member responsible for performing required community outreach services shall maintain an outreach materials kit provided and updated by the Owner's Outreach team.
7. You shall execute the Information Security Policy (ISP) Acknowledgement Form - For Non-City Employees within 15 Days of the award of the Contract if any of the following apply:
 - a) Your contact information is made available on any outreach materials.
 - b) You will be the primary point of contact to resolve project related inquiries and complaints.

8. Electronic Communication.
 - a) All inquiries and complaints shall be sent to the Owner's Outreach team to be logged in to the City's internal public contact tracking system within 24 hours of receipt of inquiries and complaints.
 - b) Any updates or a resolution of inquiries and complaints shall be sent to the Owner's Outreach team to be documented in the City's internal public contact tracking system within 24 hours.
 - c) Copies of email communications shall be saved individually on to the City's internal public contact tracking system in an Outlook Message Format (*.msg).
 - d) All graphics, photos, and other electronic files associated with inquiries and/or complaints shall be provided to the Owner's Outreach team to be saved into the individual records, located within the City's internal public contact tracking system.

7-16.1.1 Quality Assurance.

1. During the course of community outreach, you shall ensure that the character of all persons that conduct community outreach (distributing door hangers, attending community meetings, interacting with the public, etc.) on your behalf shall:
 - a) Have the ability to speak and comprehend English and/or English and Spanish, as appropriate for the community or public they are informing.
 - b) Possess and display easily verifiable and readable personal identification that identifies the person as your employee.
 - c) Have the interpersonal skills to effectively, professionally, and tactfully represent you, the project, and the City to the public.

7-16.1.2 Submittals.

1. All public notifications and outreach materials will be prepared by the Owner's Outreach team and shall be delivered/distributed by the Contractor. After distributing, you shall submit verification of delivery and any copies of returned notices to the Owner's Outreach team. Submit a PDF copy of the approved letters and notices to the Owner's Outreach team.
2. You shall provide the required information to the Owner's Outreach team for the creation and distribution of newsletters, e-newsletters, website updates, etc., for a project including: a written update on the progress of Work, 3 week look-ahead schedules, contact names and phone numbers, and any other information which may be of interest to the public for this purpose.
3. You shall identify and summarize communications (via phone, in person, and email) with the public within 24 hours of receipt, even if your response to the individual is still incomplete, to the Owner's Outreach team for inclusion in the City's internal public contact tracking system. You shall submit copies of all written, electronic, and verbal communications and conversations with the public to the Owner's Outreach team for reporting to the City's internal public contact tracking system.

ADD:

7-16.1.3 Weekly Updates Recipients.

1. Submit a weekly correspondence with updates, traffic control issues and locations, lane closures, and any other pertinent information (with additional contact names given during award process) to the following recipients:

Nabil Batta, Senior Engineer, NBatta@sanidiego.gov

Bermudo, Project Engineer, JBermudo@sanidiego.gov

Clemens Wassenberg, Resident Engineer, CWassenberg@sanidiego.gov

7-16.2 Community Outreach Services.

7-16.2.1 Public Notice by Contractor. To the "WHITEBOOK", items 2 and 3, DELETE in their entirety and SUBSTITUTE with the following:

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

7-16.2.2 Communications with the Public.

1. Coordinate access for vehicular and pedestrian traffic to businesses, institutions, and residences impacted by the Project.
2. You shall provide updates on construction impacts to the Resident Engineer and the Owner's Outreach team. You shall notify the Resident Engineer in advance about time-sensitive construction impacts and may be required to distribute construction impact notices to the public on short notice.

3. You shall incorporate community outreach activities related to construction impacts in the baseline schedule and update the Resident Engineer and the Owner's Outreach team with each week's submittal of the Three-Week Look Ahead Schedule.
4. At the request of the Resident Engineer or the Owner's outreach team, you shall attend and participate in project briefings at community meetings and one-on-one meetings with businesses and/or stakeholders.
5. You shall coordinate with the Resident Engineer and Owner's Outreach team on all responses and actions taken to address public inquiries and complaints within the 24 hours that they are received.

7-16.2.3 Communications with Media.

1. The City may allow members of the media access to its construction site(s) on a case-by-case basis only.
2. Occasionally, uninvited members of the media may show up at construction Sites. Members of the media (including, but not limited to newspapers, magazines, radio, television, bloggers, and videographers) do not have the legal right to be in the construction Site without the City's permission.
3. In the event that media representatives arrive near or on the construction Site(s), you shall keep the media representative off the Site(s) in a courteous and professional manner until a Public Information Officer is available to meet them at an approved location.
4. You shall report all visits from members of the media to the Resident Engineer and the Owner's Outreach team as quickly as possible so that the City's Public Information Officer can be contacted and can meet with the members of the media at the construction Site(s).
5. If the City allows members of the media to access a construction Site, you shall allow the City to escort the media representatives while they are on the construction Site and shall ensure their safety.
6. You shall require media representatives to sign in and out of the Site Visitor Log and to use personal protective equipment.
7. You have a right to speak to members of the media about your company and its role on the project. All other questions shall be referred to the City.

7-16.4 Payment.

1. The payment for these community outreach services shall be included in the Contract Price.

7-17 NEWSLETTER. To the "WHITEBOOK" DELETE in its entirety.

7-20 ELECTRONIC COMMUNICATION. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. PM Web shall be used on this Contract as described in Technical Specification Section 01 33 22.

2. You shall comply with Section 2-16 for items related to "Contractor Registration and Electronic Reporting System".

You shall comply with Section 7-2.3 for items related to "Payroll Records".

7-21.1 General. To the "WHITEBOOK", item 3, DELETE in its entirety and SUBSTITUTE with the following:

3. During the construction phase of projects, the minimum waste management reduction goal is 90% of the inert material (a material not subject to decomposition such as concrete, asphalt, brick, rock, block, dirt, metal, glass, and etc.) and 65% of the remaining project waste. You shall provide appropriate documentation, including a Waste Management Form attached as an appendix, and evidence of recycling and reuse of materials to meet the waste reduction goals specified.

7-22.1 General. To the "WHITEBOOK", item 10, DELETE in its entirety and SUBSTITUTE with the following:

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

You shall be responsible for implementing, training, and submitting verification to the Engineer that construction staff have the required HAZWOPER certification before the Notice to Proceed (NTP) has been issued

SECTION 8 - FACILITIES FOR AGENCY PERSONNEL

8-2 FIELD OFFICE FACILITIES. To the "WHITEBOOK", Delete Entirety and replace with the following:

Owner's Representative Field Office

A. General:

1. Separate from Contractor's field office, Contractor shall provide field offices, equipment, services and utilities specified herein for the Owner's Representative and the Engineer at the project site. Alternatives to the modular trailer configuration and criteria described herein may be

proposed by the Contractor, provided that the alternatives meet the requirements outlined below. Alternatives will need to be reviewed and approved by the Owner's Representative. Potential alternatives include commercial or industrial office space.

2. Unless released earlier by the Owner's Representative in writing, said field office(s) shall be maintained in full operation at the site with all utilities connected and operable until the Notice of Completion has been executed or recorded. Upon execution or recordation of the Notice of Completion, or upon early release of the field office(s) by the Owner's Representative, the Contractor shall remove the field office(s) within 14 days from said date, and shall restore the site occupied by said field office(s).

B. Office Facilities:

1. General: The Contractor shall provide all necessary electrical utility service connection and trailer wiring, plumbing with hot and cold water, toilet and lavatory fixtures, air conditioning and heating equipment, and shall furnish all necessary light, heat, water, and janitorial services in connection with all field offices specified herein, for the duration of the Work.
2. Field office: The Contractor shall provide and maintain for the exclusive use of the Owner's Representative and the Engineer one separate, well lighted, field office trailer with the following:
 - a. The area of said field office shall not be less than 2880 (48'x60') square feet, including toilet facilities. The Contractor shall provide all furnishings, services, and equipment specified herein.
 - b. The office shall have a minimum of four outside doors with security locks and 10 keys provided. Lockable exterior door bars shall be provided. Railed landings and railed stairs shall be provided at each door. An 8-foot full trailer width deck at the main entrance of the trailer shall be provided with rails and ADA compliant handicap access ramp.
 - c. Trailer shall have a minimum of fifteen exterior windows. Windows shall be equipped with security guard screens and interior blinds.
 - d. Contractor shall provide a sign on the main entrance door reading Construction Manager, letter height 4 inches minimum.
 - e. The field office trailer will have a minimum of 6 offices (to be confirmed via approved floor plan submittal), two toilet rooms, one 15' x 48' conference room and a common area with sink and counter space and electrical outlets.
 - f. A minimum of four (4) 110-v ac duplex electric convenience outlets shall be provided in each individual office and four (4) in the conference room. Additional duplex outlets shall be evenly distributed around the common area. Each desk location shall have at least one duplex outlet. The electric distribution panel(s) shall be of sufficient size to provide uninterrupted service. Should sizing of panels be found inadequate Contractor shall, at no additional cost,

increase the circuits and wiring to provide uninterrupted service. A dedicated 20-amp circuit shall be provided for the copy machine.

- g. Three Ethernet outlets shall be provided in each office and shall be spaced throughout the common area and the conference room. Contractor shall provide all Ethernet cabling.
- h. Contractor shall provide a preliminary layout of the field office trailer for approval by the Owner's Representative prior to fabrication of the trailer.

C. Field Office Furnishings:

- 1. The Contractor shall provide the following listed items in new condition or as approved by the Owner's Representative for the field office:
 - a. 15 each - Standard 30 x 60-inch desks
 - b. 1 each - Plan table 36 x 72-inch top; 36-inches high
 - c. 15 each - File cabinets, legal size, 4-5 drawer, with suspension racks
 - d. 30 each - Office chairs, standard arm rest type, adjustable, swivel, tilt-back with casters.
 - e. 15 each - Waste baskets.
 - f. Clothes Rack: Two
 - g. 1 each - Reverse osmosis/cartridge filter water dispenser unit (supplying both hot and cold water) with continuous supply of paper cups.
 - h. 12 each - Book case, 30 x 72 x 12 inches
 - i. 18 each - Stackable chairs, cushion type
 - j. 15 each - Conference tables, 30" x 60"
 - k. 1 each - First aid kit.
 - l. 4 each - Fire extinguishers,
 - m. 4 each - Marker board, 2' x 4'
 - n. 3 each - Marker board, 4' x 8'
 - o. Provide and install 55-inch Samsung Smart TV
 - p. 1 each - Refrigerator/freezer, 21.7 cu ft minimum capacity
 - q. 1 each - Microwave oven
 - r. 1 each - Office copy machine. The copy machine shall be a Xerox VersaLink Model C7120 with the two tray option and the Integrated Office Finisher or equal with full maintenance support. Toner shall also be provided with two spare toner cartridges with the copier at all times. The Contractor shall set up the copy machine so that it can perform its full range of features such as copy, print, scan, e-mail, and send/receive fax. The Contractor shall obtain and pay for a service

contract with a local representative of the dealer or manufacturer for on-site service and repair within 24 hours.

D. Field Office Services:

1. The field office shall be provided with sufficient lighting to provide not less than 60-foot-candles at desk top height. Lighting shall be provided over the entrance doors.
2. Plumbing shall be connected to the sanitary sewer. A continuous supply of toilet paper and paper towels shall be furnished.
3. Two (2) times a week (Tuesday and Thursday) janitorial services shall be performed after working hours each day. Offices shall be swept, dusted, waste receptacles emptied, and all debris properly disposed of. Toilet facilities shall be sanitized and cleaned. Supplies shall be replenished, as required, of paper towels, paper cups, hand soap, toilet paper, and first-aid kit.
4. Provide and Install Electrical power service. Monthly power bill shall be paid by the Contractor.

E. Contractor shall pay for all permits and connection fees associated with the trailer installation.

F. Execution:

1. Make available for Construction Manager's use prior to start of the Work at Site or within 30 Days of the Notice to Proceed, whichever comes first. Field Office shall remain on Site through Notice of Completion. Contractor shall also demobilize trailer facilities.
2. Provide minimum 100 square feet of gravel or crushed rock base, minimum depth of 4 inches, at each entrance. Provide gravel or crushed rock base, minimum depth of 4-inches, for parking area suitable for fifteen vehicles.
3. Locate where directed by Construction Manager; level, block, tie down (seismic restraint), skirt, provide stairways, ADA accessible ramp, 8-foot-wide decking at entrance for the entire width of the trailer and relocate when necessary and approved. Construct on proper foundations, and provide proper surface drainage and connections for utility services.
4. Raise grade under field office, as necessary, to elevation adequate to avoid flooding.
5. Provide sanitary facilities in compliance with state and local health authorities.
6. Exterior Door Keys: Furnish two sets of keys.
7. Telephone:
 - a. Provide and install Voice over Internet Protocol (VOIP) phones for the number of incoming lines equal to that specified.

- b. Provide and install appropriate jacks; locate as directed by Construction Manager.
8. Computer:
- a. Provide and install four HP Inspiron Desktop Model # I3470-3903BLK-PUS with 24- inch Dell Monitors Model # S2419NX) or approved equal, including required connecting cables and plugs.
9. Local Area Network (LAN):
- a. Provide Ethernet network prewired in compliance with EIA/TIA 568B.
 - b. LAN shall be designed and installed by personnel experienced in similar LAN systems.
10. Telecommunications:
- a. Site/Room Requirements:
 - 1) Provide and install a 4' x 4' x 3/4" fire-rated plywood backboard
 - 2) Provide and install a 120V AC dedicated outlet on a dedicated 15Amp circuit breaker. Single standard 3 prong 120V AC, 15Amp dedicated receptacle. Within 5' of equipment mount
 - 3) Provide and install new #6 ground wire bonded to an MGN (except in CA) or UFER Ground terminated to a grounding bus bar 2" Sleeve(s).
 - 4) Backboard shall be mounted to wall with proper drywall anchors and not just screws
 - 5) Active equipment shall not be installed within 3' of electrical panels
 - 6) Active equipment shall not be installed within 3' of water sources (sinks, wash basins)
 - 7) All equipment shall be installed in accordance with all ADA code (leaving 36" open fare way).
 - 8) Provide and install two (2), 5-15P outlets on 120 volt, 15 amp circuits. Within three feet of the network racks
 - 9) Provide and install all labor, materials and equipment to connect to the City's SANNET fiber network.
 - b. Network Cabling Requirements:
 - 1) Provide and install fourteen (14) network wall plates with two (2) data jacks per wall plate for a total twenty-eight (28) data jacks.
 - 2) All data jacks shall be clearly and professionally labeled with matching labels at the face-plate and at the patch panel. Naming convention shall be based upon the matrix attached. Handwritten labels are not acceptable.

- 3) All data jacks shall be home runs from the face-plate to a Category 6 patch panel to the nearest IDF.
 - 4) Cabling between the wall jack to the patch panel shall be plenum rated cable where required by code. The Category 6 cables shall be "Blue" in color. Use T568A wiring pattern terminating into Keystone Jack, Category 6, 110 type, 90 degree at the wall jack. The wall jack shall match the color of the face-plate.
 - 5) The cabling between the wall plate and the patch panel, the cabling will terminate into the patch panel using a T568A wiring pattern into a Keystone Jack, Category 6, 110 type, 90 degree at the patch panel. The keystone shall match the color of the patch panel.
 - 6) All data jacks shall be tested and certified. The vendor will provide a complete testing report for all data jacks.
 - 7) Install one (1), 48-port Category 6 Patch Panel. Each patch panel will be a 2U, 48-port Category 6 Patch Panel.
 - 8) Install a Wall mounted cabinet. Rack Size - 19". Height (Rack Units) - 12U. Dimensions (WxDxH) - 25.1 in x 23.6 in x 17.7 in.
- c. Network a printer of quality and capabilities equal, or similar, to the following with contracted for immediate site services:
- 1) Sharp MX 4070V B&W an Color Networked capable of 11X17 printing and network accessible, or
 - 2) Multi-Function Device (MFD): Provide a Konica Minolta BizHub C350 or C351 capable of color printing, 11X17 printing, scan to email and fax capabilities.
- d. The contractor shall provide an Internet, T1 line or greater. The internet circuit shall be provided for the duration of the project to the CM with an Ethernet handoff. Provide a public routable IP address scheme with a subnet mask of /29 for routable addresses. The Contractor shall provide LAN Line telephone service and voicemail and will perform maintenance including move, add, and changes for the duration of the project. Each network component and UPS device will carry the stated maintenance types until thirty (30) days after Final Acceptance. Contractor also shall provide wired/wireless router.
- e. Contractor shall provide all consumable supplies necessary for complete operation of the equipment specified under this section shall be furnished by Contractor until thirty (30) days after Final Acceptance. These supplies include, but are not limited to, ink and toner cartridges, plain paper, first-aid supplies, and fire extinguishers and certifications.

- f. Provide appropriate jacks, wiring, and equipment required for a complete telecommunications system.
 - g. Arrange and provide for telecommunication service for use during construction. Pay costs of installation, maintenance, and monthly service of internet connection.
11. Maintain in good repair and appearance, and provide weekly cleaning service and replenishment, as required, of paper towels, paper cups, hand soap, toilet paper, first-aid kit supplies, and bottled water.

8-2.1 Payment. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

The payment for Field Office Facilities shall be included in the Lump Sum bid item "Field Office (Owner's Rep)" and shall comply with all requirements discussed in supplementary provisions section 8-2.5.

SECTION 9 - MEASUREMENT AND PAYMENT

9-3.1 General. To the "GREENBOOK", paragraph (9), DELETE in its entirety and SUBSTITUTE with the following:

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

9-3.2 Partial and Final Payment. To the "GREENBOOK", paragraph (3), DELETE in its entirety and SUBSTITUTE with the following:

Upon commencement of the Work, an escrow account shall be established in a financial institution chosen by you and approved by the City. Documentation for an escrow payment shall have an escrow agreement signed by you, the City, and the escrow agent. From each progress payment, no less than 5% will be deducted and deposited by the City into the escrow account. Upon completion of the Contract, the City will notify the Escrow agent in writing to release the funds to you. Only the designated representative of the City shall sign the request for the release of Escrow funds.

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

1. The Final Payment, which is the release of Retention, shall be paid to you after you have successfully submitted the following required documents:
 - a) An affidavit that payrolls and bills for materials, equipment, and other indebtedness connected with the Work for which the City or the City's property might be responsible for or encumbered by.
 - b) A certificate evidencing that insurances required by the Contract Documents shall remain in force after Final Payment is currently in effect

and shall not be canceled or allowed to expire until at least a 30 Calendar Days prior written notice has been given to the Engineer.

- c) Consent of Surety to Final Payment.
- d) If required by the Engineer, other data establishing payment or satisfaction of obligations such as receipts, releases and waivers of liens, claims, and security interests or encumbrances arising out of the Contract Documents. If a Subcontractor refuses to furnish a release or waiver required by the City, you may furnish a bond satisfactory to the Engineer to indemnify the City against such lien.
- e) If required in the Contract Documents, the successful completion and submittal of the required reports such as construction demolition, waste recycling, and hydrostatic discharge reports.
- f) Required EOCP Final Summary Report in accordance with Section 12, "Contract Records and Reports", record drawings, operations manuals, test reports, warranty documentation, and UL labels shall be submitted before requesting the release of retention.
- g) Acceptance of the completed Project by the asset owning Department.

To the "WHITEBOOK", ADD the following:

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

9-3.2.2

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

- 1. The City will pay 6% annually for late progress payments.
- 2. Progress payments will be considered "late" if the following occur:
 - a) The City does not pay the contractor within 30 Calendar Days from receipt of an undisputed and properly submitted invoice. A properly submitted payment invoice means that the City has approved for payment the entire invoice amount or if the Resident Engineer has not disputed any portion of the application within 7 Calendar Days of the date of submission.
 - b) The application for payment does not require signing of a Contract Change Order.

The Engineer may withhold payment for any of the following reasons:

- a) Defective or incomplete Work.
- b) Not providing an updated and accurate Cost Loaded Construction Schedule in accordance with 6-1.1, "Construction Schedule".

- c) Stop notices, wage orders, or other withholdings required by Applicable Law. Your failure to comply with 7-2.3, "Payroll Records" and the Contractor Registration and Electronic Reporting System requirements of the Contract Documents.
3. The Engineer may back charge the contract for any of the following reasons:
- a) Defective or incorrect Work not remedied.
 - b) Damage to City property or a third party's property that was caused by you.
 - c) Liquidated Damages.

9-3.2.3 Waiver of Claims at Final Payment. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

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

9-3.2.4 Withholding of Payment and Back Charge. To the "WHITEBOOK", DELETE in its entirety.

9-3.5 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 9-3.5
FIELD ORDER LIMITS**

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

- 2. Field Order items of Work for contracts greater than \$15,000,000 will require additional approvals from the City prior to its approval by the Resident Engineer.
- 3. The City will issue a Field Order only after the City's acceptance of the cost of the field order amount.

4. Field Orders shall not be used to add scope or to include extensions of time related to changes in work.
5. If in the event there is a change related to the critical path on the project which necessitates an extension of time and the change amount is within the Field Order limits shown on Table 9-3.5, then a Field Order can be issued to compensate you for the approved costs. Any extensions of time associated with the change shall be included in a subsequent Change Order and no additional compensation shall be granted as part of the change order for the extension of time.
6. The unused portions of Field Orders Bid item shall revert to the City upon Acceptance.

ADD:

9-3.7 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 201 – CONCRETE, MORTAR, AND RELATED MATERIALS

To the "WHITEBOOK", ADD the following:

201-10.5 Crystalline Waterproofing for Concrete Surfaces.

201-10.5.1 General. This section includes materials and application of crystalline waterproofing for concrete surfaces.

201-10.5.1.1 Submittals.

1. Submit shop drawings in accordance with the General Provisions.
2. Submit manufacturer's specifications, installation instructions, and general recommendations for the use of the waterproofing materials.
3. Submit a copy of manufacturer's representative's report certifying that surfaces to which waterproofing is to be applied are in an acceptable condition to receive same, that materials to be installed comply with specified requirements, and that applicator has the experience to install the materials in accordance with manufacturer's product data.
4. Submit certified independent test data for each material showing compliance with the specified requirements.

201-10.5.1.2 Quality Control.

1. Performance Criteria: Install waterproofing materials so that the completed work provides an impermeable barrier to withstand prevailing water pressure.
2. Applicator: Waterproofing applicator shall be a firm experienced in the installation of cementitious crystalline waterproofing as demonstrated by previous successful

installations. Waterproofing applicator shall be acceptable to the manufacturer and such acceptance shall be submitted in writing.

3. Qualification of Manufacturers: Provide only products of manufacturers with experience in supplying the principal materials for the required work.
4. Pre-installation Conference: Before start of construction of surfaces to receive waterproofing, schedule a meeting with waterproofing applicator and Owner's Representative to review procedures for substrate preparation and waterproofing application.

201-10.5.1.3 Independent Testing And System Description.

1. Testing shall be performed by an independent laboratory meeting requirements of ASTM E329 and certified by the United States National Bureau of Standards. Testing laboratory shall obtain concrete samples and waterproofing product samples.
2. Perform independent testing according to CRD C48-73 under the following conditions:
 - a. Concrete samples shall be 6 inches in diameter and no thicker than 2 inches.
 - b. Coatings shall be a maximum thickness of 0.05 inch per coat with up to two coats permitted.
3. Concrete samples shall have a design strength of 2,000 psi or less. No admixtures are permitted.
4. Test a minimum of four samples: two treated and two untreated. Untreated samples shall exhibit leakage at 10 psi or less.
5. Test samples to a pressure of 175 psi. Treated samples, after crystalline growth has occurred, shall exhibit no measurable leakage.

201-10.5.2 Materials.

201-10.5.2.1 Products.

1. XYPEX
2. KOESTER
3. PENETRON
4. Or approved equal

201-10.5.2.2 Crystalline Waterproofing. Crystalline waterproofing shall be a cementitious coating containing components that will diffuse into the concrete by water, react with free lime, and create an impervious, waterproof, calcified barrier in the substrate. Technical requirements:

1. Permeability: 2.6×10^{-8} cm/second maximum (two coats) per U.S. Army Corps of Engineers Specification CRD-C48-92.
2. Compatibility: Produce no degradation of substrate.

201-10.5.3 Execution.

201-10.5.3.1 Delivery, Storage, And Handling. Deliver materials in their original sealed packages clearly marked with the brand and manufacturer's name and store under cover in a dry, protected place.

201-10.5.3.2 Examination.

1. Prior to start of waterproofing installation, arrange a visit to project site by waterproofing material manufacturer's representative. Representative shall inspect and certify that surfaces to which waterproofing is to be applied are in acceptable condition.
2. Verify that surfaces are sound and clean.
3. Verify that form release agents, methods, and materials used to cure concrete surfaces are compatible with waterproofing materials.

201-10.5.3.3 Preparation. Examine surfaces to be waterproofed for form tie holes and structural defects such as honeycombing, rock pockets, faulty construction joints, and cracks. Repair these defects prior to application.

201-10.5.3.4 Concrete Finish. Concrete surfaces shall have an open capillary system to provide tooth and suction and shall be clean and free from scale, excess form oil, laitance, curing compounds, and foreign matter. Surfaces shall be lightly sandblasted or water blasted as necessary to provide a clean absorbent surface.

201-10.5.3.5 Application.

1. After completing repairs, apply a two-coat system to the concrete surfaces to be treated. Apply after concrete curing and finishing is completed. Application of waterproofing and any paint topcoats shall conform to the manufacturer's recommended application procedures.
2. Apply with a stiff bristle brush or broom. Application rates shall be in accordance with the manufacturer's printed recommendations.
3. The Contractor shall have the manufacturer's representative advise and/or supervise the waterproofing application in person.
4. Apply crystalline waterproofing material to concrete that has been thoroughly saturated with clean water. Moisten surfaces to be treated prior to application. Remove free water prior to application of waterproofing material.
5. Apply crystalline waterproofing to:
 - a. Faces of walls that will be in contact with water. Coat from bottom of wall to top edge of wall.
 - b. Exposed face of slabs and footings on grade that will be exposed to water.
6. Apply second coat when the first coat has reached an initial set. Use light water spray on surfaces to be coated if rapid drying occurs.

201-10.5.3.6 Curing.

1. Begin curing as soon as waterproofing materials have set up sufficiently so as not to be damaged by a fine spray.

2. Fog-spray treated surfaces three times a day for a two-day period or cover treated surfaces with damp burlap for the prescribed period.
 - a. In warm climates, more than three sprayings per day may be necessary to prevent excessive drying of coating.
 - b. 2. Do not lay plastic sheeting directly on waterproofing coating as air contact is required for proper curing.
 - c. 3. Cure waterproofing materials for 3 days and then allow to set for 12 days minimum before filling structure with liquid.
 - d. 4. For structures that will contain corrosive liquids, cure waterproofing for 3 days and allow to set for 18 days minimum.
 - e. 5. If there is poor air circulation in treated areas, provide fans or blown air to aid in curing of waterproofing.
3. Horizontal Surfaces: Begin curing as soon as final set has occurred but before surface starts to dry. Conventional moist procedures such as water spray and wet burlap may be used. Cure for a minimum of 48 hours.
4. In hot dry sunny conditions, consult manufacturer's product data.
5. Protect cured surfaces from damage due to wind, sun, rain, and temperatures below 36°F for a period of not less than 48 hours after application. If plastic sheeting is used as protection, it shall be raised off waterproofing coating to allow air circulation.

201-10.5.3.7 Bond. Remove and apply fresh waterproofing in any area that has not developed full bond within 48 hours.

201-10.5.3.8 Backfilling.

1. Do not backfill against structures for at least seven days after application of waterproofing.
2. Prior to backfilling, check treated surfaces for newly developed cracks. Repair cracks, apply waterproofing, and cure surface for 48 hours before backfilling. Do not backfill with dry material until after complete cure of coating.

SECTION 203 – BITUMINOUS MATERIALS

203-3.4.4 Rubber Polymer Modified Slurry (RPMS). To the "WHITEBOOK", DELETE in its entirety.

203-3.4.4.1 General. To the "WHITEBOOK", DELETE in its entirety.

ADD:

203-3.4.4.1 General. To the "GREENBOOK", paragraph (2), ADD the following:

- e) Crumb rubber shall be a product of recycled material from the City if unavailable from the San Diego County region.

ADD:

203-5.6 Rubber Polymer Modified Slurry (RPMS).

203-5.6.1 General.

1. Rubber polymer modified slurry (RPMS) is a crumb rubber asphalt slurry-seal surface treatment. RPMS shall be a stable mixture of asphaltic emulsion, mineral aggregate, set-control additives, specially produced and graded crumb rubber, polymer, mineral fillers, carbon black, and water. The materials for RPMS shall conform to 203-5.4, "Emulsion-Aggregate Slurry (EAS)" and these specifications. Mixing and spreading of RPMS shall be as described in 302-4.12, "Rubber Polymer Modified Slurry (RPMS)".
2. RPMS shall be used for this Contract.

203-5.6.2 Materials.

1. The ingredients of RPMS immediately prior to the mixing shall conform to the following:
 - a) Asphaltic emulsion shall be a quick-set type and shall conform to the requirements of CQS-1h and to the following requirements in accordance with the specified test methods:

Quality Tests for Emulsion	Test	Requirements
AASHTO T59	Residue after Distillation	60% min.
ASTM D244		
AASHTO T49	Penetration at 77° F (25° C)	40% - 90%
ASTM D2397		

- b) Quick setting Type CQS-1h Asphaltic Emulsion shall test positive for Particle Charge when tested in accordance with the applicable ASTM test designation. If the Particle Charge Test result is inconclusive, the asphaltic emulsion shall meet a pH requirement of 6.7 maximum.
- c) Water shall be potable and of such quality that the asphalt will not separate from the emulsion before the application of slurry seal.
- d) If necessary for workability, a set-control agent that will not adversely affect the RPMS material may be added.
- e) Polymer additive shall be SBR Latex or approved equal, which is added at a minimum of 2% by weight of the asphaltic emulsion.
- f) Crumb Rubber.

- i. Crumb rubber shall be ambient granulated or ground from whole passenger tires, truck tires, or a combination only in conformance with the requirements indicated in Tables 203-5.6.2 (A), 203-5.6.2 (B), and 203-5.6.2 (C).
- ii. Un-curing or de-vulcanized rubber shall not be acceptable. Rubber tire buffing from either recapping or manufacturing processes may not be used as a supplement to the crumb rubber mixture.
- iii. In order to remove steel and fabric, an initial separation stage which subjects the rubber to freezing temperatures may be used.
- iv. The crumb rubber shall not be elongated or hair-like in shape and individual particles shall not be greater than 1/20 of an inch in length.
- v. The crumb rubber shall be free of contaminants including fiber, metal, and mineral matter within the following tolerances: the fiber content shall be less than 0.30% by weight and the crumb rubber shall be free of metal particles. Metal imbedded in rubber particles shall not be allowed. The amount of mineral contaminants allowed shall not exceed 0.10% by weight.
- vi. The crumb rubber shall be dry with a moisture content of less than 0.75%.

TABLE 203-5.6.2 (A)

CRUMB RUBBER CHEMICAL PROPERTIES SPECIFICATION

Property	Specification Limits
Specific Gravity	1.15 ± .05
Percent of Carbon Black	35.0 Maximum
Percent of Rubber Hydrocarbon	55.0 Maximum
Percent Ash	6.0 Maximum
Percent of Acetone Extract	10.0 Maximum
Percent of Chloroform Extract	3.0 Maximum
Percent Natural Rubber	40 Minimum

TABLE 203-5.6.2 (B)

CRUMB RUBBER GRADATION REQUIREMENTS

Sieve Size	Percent Passing
No. 30	100
No. 40	90 - 100

Sieve Size	Percent Passing
No. 50	75 - 85
No. 100	25 - 35
No. 200	0 - 10

TABLE 203-5.6.2 (C)

TESTING METHODS FOR CRUMB RUBBER ANALYSIS

Property	Test Method
Specific Gravity	ASTM D1817
Carbon Black	ASTM D297
Ash	ASTM D297
Chloroform Extract	ASTM D297
Natural/Synthetic Rubber	ASTM D297
Sieve Analysis	ASTM C136

- vii. Carbon black solution shall be non-ionic in charge and liquid in form. The carbon black shall be compatible with the emulsion system, polymers, and additives being used and shall conform to the requirements indicated in 203-5.6.2 (D) and ASTM D1511.

TABLE 203-5.6.2 (D)

Specification	Tolerances
Total Solids	40 - 44
% Black by Weight	35 - 37
Type Black	Medium Furnace Color
Type Dispersing	Non-ionic

- viii. Additives may be used to accelerate or retard the break-set of the RPMS. The use of additives shall be in quantities specified in the mix design.
- ix. Mineral filler such as Portland cement, hydrated lime, limestone dust, fly ash, or other approved filler meeting the requirements of ASTM D242 shall be used if required by the mix design and may be used to facilitate set times as needed. Any cement used shall be considered as part of the dry aggregate weight for mix design purposes.
- x. The mineral aggregate used shall be the type and grade specified for the particular Type of RPMS. The aggregate shall be manufactured crushed stone such as granite, slang, limestone, chat, other high quality aggregate, or a combination thereof.

Aggregate shall consist of rock dust except that 100% of any aggregate of combination of aggregates larger than the No. 50 sieve size used in the mix shall be obtained by crushing rock. The material shall be free from vegetable matter and other deleterious substances. The aggregate shall be free of caked lumps and oversized particles. The aggregate shall also conform to the following requirements in Table 203-5.6.2 (E).

TABLE 203-5.6.2 (E)

Test	California Test	Requirements
Sand Equivalent	217	45 min.
Durability Index	229	55 min.

- xi. Crumb rubber shall be a product of recycled material from the City if unavailable from the San Diego County region.

203-5.6.3 Composition and Grading.

1. The percentage composition by weight of the aggregate shall conform to the requirements indicated in the tables below when determined by California Test 202 and modified by California Test 105 when there is a difference in specific gravity of 0.20 or more between blends of different aggregates.

TABLE 203-5.6.3 (A)

TYPE I SLURRY SEAL GRADATION

Sieve Size	Percentage Passing	Stockpile Tolerance
No.4	100	± 5%
No.8	90 - 100	± 5%
No.16	65 - 90	± 5%
No.30	40 - 60	± 5%
No.50	25 - 42	± 4%
No.200	10 - 20	± 2%

TABLE 203-5.6.3 (B)

TYPE II SLURRY SEAL GRADATION

Sieve Size	Percentage Passing	Stockpile Tolerance
No.3/8	100	± 5%
No.4	90 - 100	± 5%
No.8	65 - 90	± 5%

Sieve Size	Percentage Passing	Stockpile Tolerance
No.16	45 - 70	± 5%
No.30	30 - 50	± 5%
No.50	18 - 36	± 4%
No.100	10 - 24	± 3%
No.200	5 - 15	± 2%

TABLE 203-5.6.3 (C)

TYPE III SLURRY SEAL GRADATION

Sieve Size	Percentage Passing	Stockpile Tolerance
No.3/8	100	± 5%
No.4	70 - 90	± 5%
No.8	45 - 70	± 5%
No.16	28 - 50	± 5%
No.30	19 - 34	± 5%
No.50	12 - 25	± 4%
No.100	7 - 18	± 3%
No.200	5 - 15	± 2%

2. The job mix (target) gradation shall be within the gradation band for the desired type. After the target gradation has been submitted, the percent passing each sieve shall not be more than the stockpile tolerance.

3. The aggregate shall be accepted at the Site or stockpile. The stockpile shall be accepted based on 5 gradation tests according to California Test 202, modified by California Test 105 when there is a difference in specific gravity of 0.2 or more between blends of different aggregates. If the average of the 5 tests is within the gradation tolerances, then the material will be accepted. If the test shows the material to be out, you may choose to remove the material or blend other aggregates with the stockpile material to bring it into compliance with these specifications. Materials used in blending shall meet the quality test before blending and shall be blended in a manner to produce a consistent gradation.

4. When the results of either the Aggregate Grading or the Sand Equivalent test do not conform to the requirements specified, the aggregate shall be removed. However, if requested in writing and approved by the Engineer, the aggregate may be used and you shall pay to the agency \$1.75 per ton for such aggregate left in place. No single aggregate grading or sand equivalent tests shall represent more than 300 tons or one day's production, whichever is smaller.

203-5.6.4 Mix Design.

1. Before Work begins, you shall submit laboratory reports of mix designs performed in accordance with the tests identified in Table 203-5.6.4 at your expense and shall utilize the specific materials to be used on the project. The design shall be prepared by a laboratory experienced in designing rubber asphalt slurry-seal surface treatments. After the mix design is approved, no substitution shall be made unless approved by the Engineer. The proposed rubber asphalt slurry-seal surface treatment mix design shall verify compatibility of the aggregate, emulsion, mineral filler, set-control additive, and rubber blend.

TABLE 203-5.6.4

Test	Description	Specification
ISSA T-106	Slurry Seal Consistency	Pass
ISSA TB-109	Excess Asphalt	50 grams/ft ² maximum
ISSA TB-100 (Type I)	The Wet Track Abrasion	50 grams/ ft ² maximum
ISSA TB-100 (Type II)	The Wet Track Abrasion	60 grams/ ft ² maximum
ISSA TB-100 (Type III)	The Wet Track Abrasion	60 grams/ ft ² maximum
ISSA TB-113	Mixing Time	Controllable to 150 seconds minimum
ISSA TB-114	The Wet Stripping	Pass

2. The Mixing Time test shall be done at the highest temperatures expected during construction. The original lab report shall be signed by the laboratory that performed the mix design and shall show the results of the tests on individual materials. The report shall clearly show the proportions of aggregate, mineral filler (minimum and maximum), water (minimum and maximum), additive (s) (usage), asphalt emulsion, and asphalt rubber blend based on the dry weight of the aggregate.
3. Component materials used in the mix design shall be representative of your proposed materials. The percentage of each individual material required shall be shown in the laboratory report. Adjustments may be required during the construction based on field conditions.
4. The component materials shall be within the following limits:
 - a) Residual Asphalt Type I, 10% - 16% based on dry weight of aggregate.
 - b) Residual Asphalt Type II, 7.5% - 13.5% based on dry weight of aggregate.
 - c) Residual Asphalt Type III, 6.5% - 12% based on dry weight of aggregate.

- d) The crumb rubber will be added to the rubberized slurry mix at a rate of 5% by volume to the asphalt cement.
- e) Polymer additive shall be added at 2% of finished emulsion.
- f) Carbon Black shall be added at 1.3% to 2% of the finished emulsion.
- g) Mineral filler shall be 0.5% - 2.0% (if required by mix design) based on dry weight of aggregate.
- h) Additives, as needed.
- i) Water, as needed to achieve proper mix consistency (total mix liquids shall not exceed the loose aggregate voids).

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

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

SECTION 209 – PRESSURE PIPE

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

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

209-2.2.1 Materials. To Table 209-2.2.1, "Pipe", "Material", DELETE in its entirety and SUBSTITUTE with the following:

Material	Fabrication of mill manufactured steel pipe shall conform to the requirements of AWWA C200 . Pipe shall be fabricated from steel sheet, plate, or coil that conforms to ASTM A36 Grade 36 modified to have minimum yield strength of 40,000 psi, or equivalent.
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To Table 209-2.2.1, "Lining and Exterior Coating (Required on exposed steel surfaces and ring joints)", "Cement-Mortar Interior Lining and Exterior Coating", DELETE in its entirety and SUBSTITUTE with the following:

	Pipe Size	Lining Thickness
	30 inch (900 mm) and Larger pipe	1 inch (25mm)

Cement-Mortar Interior Lining (AWWAC205)	Conform to AWWA C205 using Type II/V cement.	
	Trim lining as necessary to allow full operation of butterfly or check valves at connections to steel pipe.	
	Line exposed portions of pipe interior with hand applied epoxy-conforming to SECTION 212 - WATER AND SEWER SYSTEM VALVES AND APPURTENANCES.	
	1 inch (25 mm) minimum coating thickness unless otherwise specified or if soil is identified as corrosive.	
	Trim coating 6 inch to 12 inch (150mm to 300 mm) above grade on spools penetrating to daylight or vault interiors.	

To Table 209-2.2.1, "Lining and Exterior Coating (Required on exposed steel surfaces and ring joints)", "Cold Applied Tape Exterior Coatings", DELETE in its entirety and SUBSTITUTE with the following:

Cold Applied Tape Exterior Coatings	Conform to AWWA C217-16 Microcrystalline Wax and Petrolatum Tape Coating Systems for Steel Water Pipe and Fittings. Min thickness: 50 mils.
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Table 209-2.2.1, "Lining and Exterior Coating (Required on exposed steel surfaces and ring joints)", "Fusion-Bonded Epoxy Interior Lining and Exterior Coatings of Above-Ground Pipe", DELETE in its entirety and SUBSTITUTE with the following:

Fusion-Bonded Epoxy Interior Lining and Exterior Coatings of Above-Ground Pipe and Appurtenances	Conform to AWWA C213-15 Lining and coating shall be a 100% solids, thermosetting, fusion bonded, dry powder epoxy resin: Scotchkote 134 or 206N, Valspar "Pipeclad 2000" or approved qual. Min thickness: 16 mils.
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To Table 209-2.2.1, "Joints", "Flanged Joint", DELETE in its entirety and SUBSTITUTE with the following:

Flanged Joint	Conform to AWWA C207 . Flange joints identified on the plans to receive dielectric insulation kits shall have the flange bolt holes over-drilled per section 4.2.3 of AWWA C207 . Faced and dimensioned in accordance with ASME/ANSI B16.5 for the pressure class shown on the Plans or specified in the Special Provisions.
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209-2.2.2 Submittals. To the "GREENBOOK", Sentence (1), DELETE in its entirety and SUBSTITUTE with the following:

Prior to fabricating pipe, the Contractor shall submit, in accordance with 2-5.3, "Shop Drawings", and 209-2.2.2.1, "Shop Drawings" for the fabrication of pipe, pipe specials, and joint details.

ADD:

209-2.2.2.1 Shop Drawings.

Manufacturer shall submit copies to the Engineer of Work for approval prior to manufacture of any pipe and fittings for the following:

1. Detailed drawings.
2. Tabulated layout schedule.
3. Design calculations for pipe wall thickness. (Use E' value of 750 in accordance with City of San Diego, Standard Drawing SDS-100)
4. Field joint details.
5. Technical data and information on the tape coating to be used.
6. Required tests for tape coating to be used.

Shop drawings shall be in accordance with the requirements of AWWA C200, C205 and C214.

Data to be furnished by the Contractor shall be in accordance with all applicable provisions of Section 2-5.3, "Shop Drawings," of the standard specifications where not inconsistent with the plans and the express provisions of these specifications.

The drawings accompanying these specifications indicate only the general features of the work, and all proportioning and detailing for the pipeline, specials, and connections shall be done by the Contractor. The Contractor shall prepare, and submit for review and approval before starting fabrication, a tabulated layout schedule and detailed fabrication drawings.

The drawings shall include the configuration, essential dimensions, and materials to be used in fabricating the pipe, pipe specials, and fittings, and shall include details of standard pipe joints, and of typical field welded joints showing the lining and coating holdback. The minimum radius of any fabricated bend shall be at least 2.5 times the nominal pipe diameter.

The layout and marking schedule shall include the specific number of each pipe and fitting and the location of each pipe and the direction of each fitting in the completed line. In addition, the layout schedule shall include: the pipe station and top of pipe elevation at all

changes in grade or horizontal alignment; the station and top of pipe elevation to which the bell end of each pipe will be laid; and all elements of curves and bends, both in horizontal and vertical alignment. Dimensional drawings of all valves, fittings and appurtenances shall be provided with the layout schedule.

Joint and pipe/fitting wall construction details which indicate the type and thickness of cylinder; the position, type, size, and area of wire or reinforcement if required; manufacturing tolerances; and all other pertinent information required for the manufacture of the product.

Fittings and specials details such as elbows, wyes, tees, outlets, connections, test bulkheads, and nozzles or other specials where shown on the drawings which indicate amount and position of all reinforcement. All fittings and specials shall be properly reinforced to withstand the internal pressure, both circumferential and longitudinal, and the external loading conditions as indicated in the contract documents. Material lists and steel reinforcement schedules which include and describe all materials to be utilized.

Joints below existing utilities shall be avoided.

The Contractor shall determine where to use cut-to-fit pieces and/or field weld on flanges. These shall be shown on the pipe shop drawings.

The pipe alignment and grade, the location of valves, fittings and appurtenances, as shown on the Contractor's layout schedule shall conform essentially with the shown on the contract plans. The Engineer, at his discretion, may approve minor changes made for economy or convenience in manufacture or construction. Unless otherwise ordered or permitted by the Engineer, construction shall conform to the approved layout schedule and fabrication drawings.

When approved by the Engineer, changes in alignment or grade may be accomplished by deflections at the joints between lengths of standard pipe, or by use of beveled pipe, or by a combination of the two.

Before preparing the schedule and fabrication drawings, the Contractor shall expose the existing main at points of connection and determine their precise locations and alignment relative to the alignment of the new pipe as shown on the drawings. The Contractor shall furnish the Agency with tracings or transparencies of the approved schedule and drawings, from which the Agency can obtain the required prints.

SHOP DRAWING D-SHEETS

Once the pipe shop drawings are approved and released for production, the pipe fabricator shall assemble all the approved and corrected shop drawings onto City of San Diego D-sheets and shall have a State of California registered engineer, who was responsible to oversee the preparation of the shop drawings, stamp and sign each D-sheet. The final D-sheets to be stamped and signed by the pipe fabricator's Registered Engineer shall be photo mylars or mylar plots from digital files. The preparation of the shop drawing mylars shall be coordinated with the Engineer to assure proper sheet numbering and title block information. The Engineer shall be responsible for processing the shop drawing sheets

through the City of San Diego as a Construction Change. The pipe fabricator shall be responsible for preparing and modifying the sheets to conform to City of San Diego requirements.

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

All nonflanged pipe joints shall be field welded. All pipe shall have lap welded slip joints and shall be field welded on the inside and outside for pipe sizes greater than 24 inches diameter. For pipe size less than or equal to 24 inches diameters, welding shall be on the outside of the joint. Fillet welds shall be used and shall be of a size equal to the thickness of the bell or cylinder, whichever is greater, and shall be built up in passes of not more than one-eighth inch (1/8") per pass. Field welding shall conform to AWWA C206, "Standard for Field Welding of Steel Water Pipe."

For lap joint pipe prepared for field welding, the inside circumference of the bell end shall not exceed the outside circumference of the spigot end by more than 0.1563 inch (5/32 inch).

In order that the proper shop modifications may be made to the joints to be field welded, the shop fabrications shall indicate details of the typical field welded joint and the required coating and lining holdback.

Casing pipe sections shall be butt welded.

All closure and makeup joints shall be made with butt straps for field welding in accordance with the latest version of the applicable City of San Diego Standard Drawing. Butt straps shall be field welded on the outside of the pipe joint using a fillet weld. The fillet weld shall be of a size equal to the thickness of the cylinder or butt strap, whichever is greater, and shall be built up in passes of not more than one-eighth inch (1/8") per pass.

Handholes shall be provided in accordance with the plans and the latest version of the applicable City of San Diego Standard Drawing.

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

Reinforcement and/or crotch plate design for wyes, tees, outlets and nozzles shall be designed in accordance with AWWA Manual M-11, "Steel Water Pipe - a Guide for Design and Installation." The Dished Heads required for this project shall be in accordance with the detail on the plans and the approved shop drawings, the lining and coating holdbacks shall be shown on the pipe shop drawings and approved by the Engineer of Work. Reinforcement shall be designed for the working pressure. Pipe materials used in fittings shall be of the same material as the pipe with minimum steel plate thickness as indicated in Section 207-10.2.1 of these specifications.

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 11 1/4 degrees. Fittings shall be equal in pressure design strength and shall have the same lining and coating as the abutting pipe. Specials and fittings, unless otherwise shown on the plans, shall be made of segmentally

welded sections from hydrostatically tested pipe, with ends to mate with the type of joint or coupling specified for the pipe.

Specials and fittings that cannot be mechanically lined and coated shall be factory lined and coated by hand-application using the same materials as are used for the pipe and in accordance with the applicable AWWA standards. Coating and lining applied in this manner shall provide protection equal to that specified 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 in accordance with applicable AWWA standards.

209-2.2.6 Welding. To the "GREENBOOK", ADD the following:

All welding procedures used to fabricate pipe shall be prequalified under the provisions of ANSI/AWS D1.1 or ASME SEC. IX. Welding procedures shall be required for, but not necessarily limited to, 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.

All 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 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. The manufacturer shall furnish all material and bear the expense of qualifying welders. The Contractor shall furnish the Engineer with a certified laboratory report stating the results of required welding tests performed during pipe fabrication.

Field welding shall be performed by certified welders in accordance with AWWA C206.

ADD:

209-2.2.6.1 Special Inspection and Testing of Field Welds. All costs for special welding inspection and testing of field welds shall be the responsibility of the Contractor in accordance with Section 4-1.3.4 of the "WHITEBOOK".

A. Qualification of Welders, Equipment and Procedures:

Prior to the start of welding, the special inspector shall check welder qualifications and verify that procedure specifications to be used have been approved.

B. Inspection of Field Welds:

The special inspector shall visually examine 100% of all welds performed in the field.

Acceptance Standards for Visual Examination. The following indications are unacceptable:

1. Cracks - external surface;
2. Undercut on surface which is greater than 1/32-inch (1.0 mm) deep;
3. Lack of fusion on surface;

4. Incomplete penetration (applies only when opposite surface is readily accessible).

Any weld not conforming to the above acceptance standards shall be ground smooth and blended in to the satisfaction of the special inspector.

C. Nondestructive Testing of Field Welds:

Nondestructive testing of field welds shall be performed by the special inspector, as directed by the Resident Engineer, using testing and acceptance criteria as set forth in the ASME Boiler and Pressure Vessel Code, Section V, and as specified herein.

Nondestructive test methods and acceptance criteria shall be submitted to the Resident Engineer for review and approval thirty (30) working days prior to beginning any field welding operations and in accordance with Subsection 2-5.3 of Standard Specifications for Public Works Construction. Nondestructive testing shall be performed as follows:

WELDED SLIP JOINTS:

Nondestructive testing shall be performed on a random sampling of all slip joint field welds provided that not less than twenty percent (20%) of such field welds are tested. The special inspector shall ensure that the work of each welder is tested in accordance with this section.

BUTT STRAPS AND NON-SLIP JOINTS:

Nondestructive testing shall be performed on one-hundred percent (100%) of all butt strap welds and other non-slip joint welds performed in the field.

Portions of welds not conforming to the applicable acceptance standards shall be completely removed in a manner, which will permit proper and complete repair by welding. All repair welds shall be re-tested by the special inspector.

D. Air/Soap Testing of Field Welds:

One ¼-inch tapped hole per joint is required for welded steel pipe requiring double welding of joints. Test procedure shall be per AWWA C206, Section 5.2.2.2.

ADD:

209-2.2.7 Affidavit of Compliance. Affidavit of compliance is required from the manufacturer that the pipe, specials, and fittings furnished under this contract comply with these special provisions, applicable standards and as specified in AWWA C200, C205, C214 and C217 and the following supplemental requirements:

1. Physical and chemical properties of all steel
2. Hydrostatic test reports

3. Results of production weld tests
4. Coating and lining tests
5. Technical data and information on the tape coating to be used.

All expenses incurred in making samples for certification of tests shall be borne by the Contractor and/or manufacturer.

ADD:

209-2.2.8 Field Painting. Metal components which are furnished with shop-applied protective coating shall be carefully installed to avoid damage to the coatings. Any areas of such coatings which show damage after installation is complete shall be cleaned and recoated. The touch-up coating materials shall be identical to the shop-applied coating, or a suitable substitute therefore, recommended by the component manufacturer and approved by the Engineer.

Steel surfaces, other than stainless steel, which are not galvanized or shop-coated, shall be epoxy coated in accordance with AWWA C210. The minimum dry film thickness shall be 16 mils, and the epoxy shall meet NSF Standards for contact with potable water.

ADD:

209-2.2.9 Installation, Storage and Handling. Bracing shall consist of at least three (3) sets of stulls for each standard length pipe. Stull struts and stull blocks shall be of such size, shape and material that the pipe is held round and its interior surface protected from damage under all loads encountered in handling, installing and backfilling. Bracing shall remain in place until after the pipe is laid in the trench, bedding and backfill compacted and pipe is firmly held in place.

Pipe shall be stored on sand ribbons during both curing operations and during yard storage.

When storage of the pipe at the manufacturer's yard shall exceed two calendar weeks after the completion of the pipe manufacturing and standard curing process, the manufacturer shall periodically wet the interior and exterior of the pipe to maintain sufficient moisture content in the cement mortar to avoid the development of mortar cracks greater than one-sixteenth of one inch. The end caps on the pipe shall be replaced after each addition of water in order to maintain the required seal for the interior mortar.

Until the pipe installation and backfilling are completed, all concrete surfaces of the pipe shall be sprinkled periodically to prevent excessive drying and thermal stressing.

At all times after application of the mortar coating or removal of the exterior forms, standard pipe lengths shall be handled only with belt slings of sufficient width to avoid damage to the exterior surface. Specials and fittings shall be handled by approved means, which avoid inflicting any damage. Chain slings shall not be used, and wire rope slings may be used only if encased in heavy rubber hose.

During transportation, pipe shall be mounted on padded bolsters curved to fit the pipe. Heavy padding shall be used under the tie chains. The pipe ends shall be closed to prevent air circulation and drying of the pipe interior in transit and during storage until the pipe is laid.

The pipe shall be handled by use of 12" wide nylon slings, padded cradles, or other devices, acceptable to the Engineer, designed and constructed to prevent damage to the pipe coating/exterior. The use of chains, hooks, or other equipment which might injure the pipe coating/exterior will not be permitted. All other pipe handling equipment and methods shall be acceptable to the Engineer.

The Contractor shall be fully liable for the cost of replacement or repair of pipe, which is damaged.

Stockpiled pipe shall be supported on sand or earth berms. The pipe shall not be rolled and shall be secured to prevent accidental rolling.

The Contractor and/or manufacturer shall consult the Owner if any anticipated outdoor storage will be required prior to installation so that necessary precautions can be taken.

ADD:

209-2.2.10 Side Outlets. Outlets shall be installed as shown on the plans for connections to the new pipe. The outlets shall remain uncovered until all joint assembly, field welding, lining, and coating is accomplished and hydrostatic testing and inspection is completed. Outlets shall be backfilled with sand densified as provided in Subsection 306-1.3. The outlets shall then be covered and the finish pavement laid.

All pipe with side outlets shall be considered as a special section and requires the main steel pipeline to be a minimum wall thickness as defined in Section 207-10.2.1.

All side outlets for appurtenances shall be factory lined and coated as specified for the main steel pipeline. The minimum hold back from the flange shall be zero (0) inches for the tape and the mortar. The flange shall be factory primed and the tape wrapped in the field.

ADD:

209-4.8 Flexible Couplings. Flexible couplings shall be carbon steel and all parts shall be fusion epoxy coated with carbon steel hardware. The manufacturer of the flexible couplings shall be from the City of San Diego's approved materials list. All flexible couplings installed in buried applications shall be wax tape wrapped in accordance with AWWA C217.PTFE Bearing and assembly shall be paid for per each Bearing System per location.

ADD:

209-9 GALVANIC ANODE CATHODIC PROTECTION SYSTEM.

209-9.1 General.

209-9.1.1 Work. The Contractor shall provide all labor, materials, tools, and incidentals to install a cathodic protection system for the new 36-inch Water Pipeline, which is Cement Mortar Lined and Tape Coated/Mortar Coated (CML&TCMC) steel pipe. The cathodic protection system shall include all electrical connections, anodes, rectifiers, test stations, insulators, enclosures, and all accessories required for a complete and operable system.

The Contractor shall retain a qualified Corrosion Engineer to direct the construction of facilities specified herein. The Corrosion Engineer shall test and certify that the corrosion control facilities for this project are constructed properly and as specified, and are fully functional.

209-9.1.2 Definitions.

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

209-9.1.3 Contractor Qualifications. All work must be conducted by qualified, experienced personnel working under continuous, competent supervision. Qualified Contractors must demonstrate experience with cathodic protection installations. The drilling subcontractor and well drilling foreman must have experience with the installation of deep well anodes. Cathodic protection installation and testing shall be done under the direct supervision of a Corrosion Engineer. The Contractor doing the electrical installations and well drilling work shall have proper valid State of California licenses.

209-9.1.4 Reference Specifications, Codes And Standards.

1. A497 – Steel Welded Wire Reinforcement
2. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
3. AWWA C217 - Wax Coating Systems for Underground Piping Systems
4. Bulletin 74 - California Well Standards
5. Green Book - Standard Specifications for Public Works Construction, 2012 edition
6. Mil-C-18480-B - Coating Compound, Bituminous, Solvent, Coal Tar Base
7. NACE SP0169 - Standard Practice, Control of External Corrosion on Underground or Submerged Metallic Piping Systems
8. NACE SP0572 - Design, Installation, Operation, and Maintenance, of Impressed Current Deep Groundbeds
9. NACE SP0286 - Electrical Isolation of Cathodically Protected Pipelines
10. NEC 70 – National Electrical Code
11. NEMA LE - Cotton Phenolic Resin – Electrical Grade
12. NEMA CE - Canvas Phenolic Resin - General Purpose Grade

13. NEMA 3R - Enclosures for Outdoor Applications
14. NEMA MR-20 – Semiconductor Rectifiers Cathodic Protection Units
15. NEMA WC 70 – Power Cables Rated 2,000 Volts or Less
16. NEMA G10 – Glass Reinforced Epoxy
17. NFPA 70 - National Electrical Code (NEC)
18. UL 514 - Metallic Outlet Boxes
19. Standard Specifications of Public Works Construction City Supplement (White Book) latest edition
20. Standard Drawings for Public Works Construction latest edition.

209-9.1.5 Contractor Submittals. The Contractor shall furnish the following documents (Submittals) AS ONE SUBMITTAL PACKAGE:

1. Catalog cuts and other information for products to be used including:
 - a. Mixed Metal Oxide Anodes
 - b. Anode Centering Devices
 - c. Calcined Coke
 - d. Deep Anode Construction Materials
 - e. Anode Wellhead Vault
 - f. Ornamental Enclosure
 - g. AC Meter Pedestal
 - h. AC Disconnect Switch
 - i. Manual Controlled Rectifier
 - j. Anode Shunt Panel
 - k. Conduit and Fittings
 - l. Wire, Leads, and Cable
 - m. Anode Shunts
 - n. Ready Mix Concrete
 - o. Plastic Warning Tape
 - p. Exothermic Weld Kits
 - q. Elastomeric Weld Caps
 - r. Exothermic Weld Coating

- s. MicroMax GPS Interrupter, Relay and Heat sink
 - t. At-Grade Concrete Test Box
 - u. Micarta Test Board
 - v. Flange Isolation Kits
 - w. Wax Tape Coating System
 - x. Standard Potential Galvanic Anode
2. As-Built Drawings: The Contractor shall maintain as-built drawings showing the exact locations of the deepwell anode bed, rectifier, test stations, insulators, and wire trenching runs. Location changes shall be clearly indicated in red on a blue-line copy of the design drawings. These drawings shall be submitted to the Engineer before the work is considered complete. Provide subfoot GPS coordinates for all test stations and impressed current equipment.
 3. Rectifier Owner's Manual: The rectifier Owner's Manual shall be submitted to the Engineer:
 4. Rectifier Test Results: The following shall be submitted to the Engineer:
 - a. Rectifier test results.
 - b. Testing Laboratory safety approval. The rectifier shall have a UL Approval Label or ETL Approval Label.
 - c. Driller's logs for deep anode and grounding installations.

209-9.1.5.1 Certifications. The Contractor shall submit a notarized affidavit of compliance that all Work, materials and equipment required according to this Section were properly constructed and manufactured in full conformance with these Contract Documents. The Contractor shall submit the manufacturers' Certificates of Compliance.

209-9.1.5.2 Operations And Maintenance Information. The Contractor shall submit operation and maintenance related information, rectifier field test reports, parts list with part replacement numbers, and troubleshooting procedures.

209-9.1.5.3 Test And Inspection Reports. The Contractor shall submit field test and inspection reports, along with wiring diagrams of the installed system. Testing reports shall include at a minimum: native or baseline pipe-to-soil potentials; electrical isolation from casings, and insulating flange kits; electrical continuity for all metallic pipe sections containing non-welded joints or inline specials not intentionally electrically isolated; cathodic protection system activation; any deficiencies; and conclusions and recommendations. The final testing report issued for this project shall include all previous testing results, approved material submittals, and as-built drawings. The reports shall be submitted in an electronic PDF format. In addition all tabulated calculated data shall be submitted as a Microsoft Excel file format.

209-9.1.5.4 Impressed Current Anode Current Measurements. The Contractor shall tabulate and submit all anode current outputs before and after the addition of the calcined coke backfill. These data shall be part of the final testing report.

209-9.1.5.5 Qualifications. The Contractor shall submit documentation of the qualifications of the Corrosion Engineer.

209-9.1.5.6 Permits. The Contractor shall submit copies of all permits including state and local well drilling permits and traffic control permits for deepwell anode sites.

209-9.1.5.7 Drilling Log. Drilling records shall be submitted to the Engineer within ten days of the completion of the anode well. Records shall include:

1. Drillers Log.
2. Identification of water-bearing strata.
3. Resistance-to-well of all anodes before and after calcined coke is added to the well.
4. Anode Well Drilling Permit and Final Well Completion Permit.

209-9.1.5.8 Packaging And Shipping. The Contractor shall coil wires, secure and package anodes as required to prevent damage during shipment.

209-9.1.5.9 Notification For Testing And Inspection. The Contractor shall notify the Engineer at least seven days in advance of the deepwell drilling and the installation of rectifier, wiring, and test stations. Well loading and completion shall be done in the presence of the Engineer. The Engineer or the Owner's Representative shall witness all corrosion control installations at their discretion.

209-9.1.5.10 Notification For Testing And Inspection. The Contractor shall notify the Engineer at least seven days in advance of the deepwell drilling and the installation of rectifier, wiring, and test stations. Well loading and completion shall be done in the presence of the Engineer. The Engineer or the Owner's Representative shall witness all corrosion control installations at their discretion.

209-9.1.5.11 Corrosion Engineer Qualifications Submittal. Services of Corrosion Engineer: Obtain the services of a Corrosion Engineer to inspect, activate, adjust, and evaluate the effectiveness of the cathodic protection system. The Corrosion Engineer is herein defined as a registered Professional Engineer with certification or licensing that includes education and experience in cathodic protection of buried or submerged metal structures, or a person accredited or certified by NACE International at the level of Corrosion Specialist or Cathodic Protection Specialist (i.e. NACE International CP Level 4). Such a person shall have experience inspecting pipeline cathodic protection systems. The Corrosion Engineer shall directly oversee the Cathodic Protection Technician, review all specification section 13111 related inspections and field measurements, and certify the accuracy and completeness of all cathodic protection submittals and reports.

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

209-9.2 Products.

209-9.2.1 Impressed Current Anodes.

209-9.2.1.1 Mixed Metal Oxide – Tubular.

1. Description: Dimensionally stable, tubular titanium anodes with a mixed metal oxide coating and having the dimensions listed below:
 - a. Length: 60 inches, minimum.
 - b. Outside Diameter: 1 inch, minimum.
 - c. Weight: 1.6 pounds, minimum.
2. Manufacturer: De Nora Lida "One" Anodes, or approved equal

209-9.2.2 Anode Centralizers. Centering devices shall consist of three metal or plastic assemblies that can be securely attached to the anodes and vent pipe to center them in the drilled hole. Centralizers shall not block the hole or impair installation of the anode, anode wire, or calcined coke. Centralizers shall be LIDA Ventralizers or approved equal.

209-9.2.3 Calcined Coke.

1. Calcined Petroleum Coke: Lubricated, low resistance, calcined petroleum coke shall be provided, suitable for pumping and with the following composition:
 - a. Bulk Density: 64 to 74 pounds per cubic foot.
 - b. Fixed Carbon: 98% to 99.8%.
 - c. Maximum Particle Size: 2.5mm
2. Manufacturers, or approved equal:
 - a. Loresco RS-3, or approved equal.

209-9.2.4 Deep Anode Construction Materials.

1. Vent Pipe: 2-1/2 inch, Schedule 40 PVC pipe with screwed and glued joints, with 0.006-inch longitudinal slots, 1.5-inches long, cut completely through both sides of the pipe at 4-inch centers in the active anode column area. Use Loresco All-Vent, or approved equal.
2. Ground Bed Sealing Material: Cement grout, bentonite-gelatinous mud, puddled clay, or concrete, in accordance with the applicable state and local regulations.
3. Deep Anode Well Head Vault: The wellhead vault shall be H-20 traffic rated. Use South Bay Foundry SBF 1243 or approved equal. The well head vault will need to be poured in place to fit the well head frame. Mark wellhead vault as shown on the drawings.

4. Surface Vent Pipe: ASTM A 53 standard steel pipe, hot dipped galvanized after fabrication, 1-inch diameter with 180-degree fabricated gooseneck and SST bug screen at the top.

209-9.2.5 Ornamental Enclosure.

1. The enclosure for the rectifier, AC disconnect switch, shunt panel, and AC outlet shall be freestanding, pad-mounted, aluminum enclosure. The enclosure shall be aluminum and finish shall be powder coated White inside and out. The color shall be as approved by the Engineer. Use Myers MSX NEMA 3R or approved equal. The enclosure shall accommodate all components and have the following dimensions:
 - a. Height: 57.5 inches
 - b. Width: 30 inches
 - c. Depth: 17 inches
2. The enclosure shall have stainless steel door handles with provisions for padlocks, louvered vents with filters, and stainless steel hardware.
3. AC Outlet: Provide a conveniently located 120V/20A receptacle with its own 20 amp breaker and circuit coming from the meter pedestal.
4. Shunt Panel Board: Anode shunts and test/reference cell leads shall terminate on a panel board made of micarta, 1/4-inch thick. Double-nutted brass bolts, nuts, and lock washers shall be installed on the panel boards as indicated and per UL 486.
5. Shunts: Anode shunts shall be 0.01 ohm.
6. Mounting Pad: The ornamental enclosure shall be mounted on a 24-inch deep reinforced concrete pad. The concrete pad shall extend above grade by 3-inches. The total thickness of the concrete pad is 27-inches. The concrete pad dimensions shall be at least 4-inches larger on all sides of the ornamental enclosure.

209-9.2.6 AC Meter Pedestal.

1. The AC meter pedestal (per SDG&E Guidelines, latest edition) shall be located at the location shown on the drawings with approval from the Engineer. The meter pedestal shall have a 100A main breaker and a 20 amp, double pole breaker for the rectifier and a 20A, single pole breaker for the 120V/20A outlet within the enclosure. Meter pedestal shall be Myers MEUG16-M100-SD or approved equal.
2. Concrete mounting pad size for the meter pedestal shall be 24 X 24 X 6 Inches thick with reinforcing steel. The wire conduit shall penetrate the concrete mounting pad.

209-9.2.7 Rectifier Assembly.

1. Construction: The rectifier shall be mounted in a freestanding ornamental enclosure and installed on a metal frame which slides out for access and maintenance. The rectifier unit, anode shunt panel, and 120 VAC convenience outlet shall all be mounted inside the ornamental enclosure. The rectifier shall be Universal air-cooled standard line Model ASAI 25-15 or approved equal.

2. Electrical Characteristics:
 - a. Rectifier shall have a 120/240 Volt single phase AC input, with filter choke, and have a rated DC output of 25 Volt 15 Amp, satisfying the requirements of NEMA publication MR-20 and NFPA 70. Rectifiers shall be capable of operating continuously at the rated output current at any voltage from zero to 110% without damaging any rectifier components. Full rated DC output voltage shall be adjustable by not less than 30 equal steps from approximately 5% of rated voltage to full rated output. This adjustment may be accomplished with studs and link-bars or tap switches and shall 5 coarse and 6 fine adjustments, at minimum. If tap switches are used, they shall not carry over 50% of the nominal current rating assigned by the manufacturer. The rectifier shall have a faceplate mounted 120 V convenience outlet.
 - b. Rectifiers shall be designed to operate continuously at rated maximum voltage and current in ambient temperature of 122 degrees F without damage to the rectifier components. Cooling shall be accomplished by natural convection. Fan cooling is not acceptable for unattended equipment.
 - c. Silicon stacks shall be equipped with silicon diodes rated a minimum of 800 peak inverse volts. Heat sinks shall be sized to keep diode junction and case temperatures from exceeding 212 degrees F under 113 degrees F ambient temperature conditions.
3. Transformers: Transformers shall be isolation type with a grounded electrostatic shield between the primary and secondary windings. Dielectric strength of all insulating materials shall not be less than 2,000 V RMS as tested for one minute when applied between windings and the transformer core. Magnet wire insulation and layer insulation shall be rated no less than 311 degrees F. The transformer efficiency shall not be less than 85%. The transformer voltage regulation shall not exceed 3% from full rated load to 1/4 of rated load.
4. Output Monitoring: Separate voltmeter and ammeter shall be provided for monitoring rectifier output. Minimum meter width shall be 3.5 inches round or rectangular with minimum scale length of 2-7/8 inches. Meter movement shall be jewel and pivot D'Arsonval type. Meter accuracy shall be a minimum of plus or minus 2% of full scale at 80 degrees F and shall be temperature compensated to vary no more than 1% per 10 degrees F temperature variation. Scale faces shall be metal or plastic. Ammeter shunt shall be block type mounted on the front panel for easy access. Current and millivolt ratings shall be clearly stamped on the shunt. Shunt accuracy shall be at least plus or minus one percent. Output meters shall have on/off switches.
5. Overload Protection: All rectifiers shall have overload protection. Protection from overload on the input shall be accomplished by molded case fully magnetic circuit breakers on the incoming power lines. These circuit breakers shall hold at 100% of load and may trip between 101% and 124% of rated load. They shall trip at 125% of rated load. The trip point shall be unaffected by changes in ambient

temperature. Trip handles of individual pole breakers shall be mechanically linked to open all lines when an overload occurs. Units shall be equipped with silicon stacks, overload protection shall be provided by a quick opening fuse in the transformer secondary. The rectifier shall have secondary breakers for AC and DC outputs.

6. Surge Protection: Voltage surge protection for units equipped with silicon stacks shall be supplied by AC and DC lightning arresters.
7. Testing: Electrical tests shall be performed at the factory and recorded as listed below:
 - a. AC Volts Input
 - b. AC Amperes Input
 - c. Apparent Watts Input
 - d. True Watts Input
 - e. Power Factor
 - f. DC Volts Output
 - g. DC Amperes Output
 - h. DC Watts Output
 - i. Conversion Efficiency
 - j. Dielectric Strength
 - k. Transformer Primary to Ground
 - l. Transformer Secondary to Ground
 - m. Transformer Primary to Secondary
 - n. Stack AC to Ground
 - o. Stack DC to Ground
 - p. Ripple Voltage at Full Output
8. Results of the tests shall be furnished to the Engineer with the Owner's Manual.
9. Rectifier Warranty: The manufacturer shall warrant the rectifier for one year against failures due to defective parts and/or faulty workmanship.
10. Rectifier Spare Parts: The rectifier unit shall be equipped with three spare fuses for each of the fuses used in the unit. The spare fuses shall be secured inside the rectifier cabinet and shipped with the unit.

209-9.2.8 Conduit, Fittings, And Accessories.

1. All below-grade wire shall be run in schedule 40 PVC conduit. All above-grade conduit shall be rigid galvanized steel.
2. Fittings: Fittings for use with rigid steel conduit shall be galvanized cast ferrous metal, with gasket covers. Rigid metallic conduit fittings shall be galvanized

conforming to UL 514. Fittings for use with either rigid nonmetallic conduit shall be PVC and shall have solvent weld-type conduit connections.

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

209-9.2.9 Wires.

1. General: Conform to applicable requirements of NEMA WC 70. All wires shall be single conductor, unless otherwise specified. All wires shall be single conductor, stranded copper wire with 600-volt HMWPE insulation, unless otherwise specified.
2. Joint Bond: Two No. 2 AWG HMWPE.
3. Cathode (Pipe) Lead: Two No. 2 AWG HMWPE.
4. Positive Jumper Wire: No. 6 AWG THWN with red insulation.
5. Negative Jumper Wire: No. 6 THWN with blue insulation.
6. Test Station Pipeline Leads: No. 8 AWG HMWPE.
7. Galvanic Anode Leads: No. 12 AWG THWN (WHITE).
8. Casing Test Leads: No. 10 AWG HMWPE.
9. IR Drop Test Leads: No. 8 AWG HMWPE
10. Impressed Current Anode Wires:
 - a. Construction: The wire attached to the anodes shall be AWG stranded, single conductor, copper, insulated for 600 V. Wire size shall be No. 8 AWG Halar/HMWPE, Kynar/HMWPE, PVDF/HMWPE, or approved equal. The inner insulation shall be 0.020-inch minimum, radiation-cross linked polyvinylidene fluoride. The outer insulation shall be 0.065-inch minimum HMWPE per ASTM D1248. Connection of wire to the anode shall have a pulling strength, which shall exceed the tensile strength of the wire. Any damage to the wire insulation or anode shall require complete replacement of the wire and anode.

Anode wires shall be of one continuous length without splices from the anode connection to the Anode Shunt Panel. Anode wires with the attached anode shall be shipped to the job site with the wire wound on a reel. The minimum core diameter of the reel shall be 7½-inches. The anode wire insulation shall be free of nicks, abrasions and scratches throughout the entire length of the wire. Precaution shall be taken during fabrication, transportation and installation of the anodes to see that the wire is not kinked or sharply bent. Bends sharper than 2½-inches in radius are not permissible.
 - b. Resistance Testing: The anode manufacturer shall conduct and report resistance tests performed on each anode wire connection to assure the

finished connection does not exceed 0.004 ohms. These resistance tests shall be performed with a Kelvin bridge circuit or approved equal. Anode wire connections that have a resistance value of greater than 0.004 ohms shall not be acceptable. An accurate record of tests shall be submitted to the Engineer. The records shall include the following information, as a minimum:

- i. Anode numbering system to identify anode under test
 - ii. Anode wire length
 - iii. Resistance value as indicated by test
 - iv. Test equipment
 - v. Description of test method
- c. The anode manufacturer shall mark the reel holding the anode wire for shipment to the job site with the same anode numbering system used on the test records and the total length of attached anode wire.

209-9.2.10 Shunts.

1. Impressed Current Anodes: Holloway Type RS, 0.01 ohm, 6 ampere capacity.
2. Galvanic Anode Test Stations: The shunt resistance shall be such that a 2-Amp current causes a voltage drop of 20-millivolts (i.e. 0.010-ohms). Shunts shall be flat manganin ribbon style as manufactured by Cott or approved equal.

209-9.2.11 Concrete.

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

209-9.2.12 Ancillary Materials.

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

209-9.2.13 Marking Tape.

1. Inert polyethylene, impervious to known alkalis, acids, chemical reagents, and solvents likely to be encountered in soil.

2. Thickness: Minimum 4-mils.
3. Width: 6-inches.
4. Identifying Lettering: Minimum 1-inch high, permanent black lettering imprinted continuously over entire length.
5. Color: Red with black lettering as follows: "CAUTION CATHODIC PROTECTION CABLES BURIED BELOW."

209-9.2.14 Exothermic Welds.

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

209-9.2.15 GPS Interrupter, Relay, And Heat Sink.

1. A separate GPS Interrupter shall be supplied to be installed within the rectifier ornamental enclosure. The interrupter shall be an American Innovations MicroMax GPS 300.
2. Relay: The relay for use in the GPS Interruption circuit shall be a solid state, normally open, 40 Amp DC relay. The relay shall be an NTE Electronics, Inc. Model No. RS3-1D40-41M or approved equal.
3. Heat Sink: The relay shall be mounted on an aluminum heat sink. Heat sink shall be a Crydom Model HS202 or approved equal

209-9.2.16 At-Grade Test Stations .

1. At-Grade (Flush) Mounted:
2. Test Box: Concrete box of dimensions as shown on the Drawings. Use Brooks 3RT or Christy G5 with cast iron lid per South Bay Foundry Part Number B1160 or B6199 respectively. The cast iron lid shall be 11-1/16 inch diameter with the letters "City of San Diego Corrosion Test Station".
3. Each CP Test Box shall include a 5 inch x 5 inch cross-laminated phenolic terminal board with a minimum thickness of 1/4-inch. The phenolic material shall be NEMA

type CE or LE or phenolic grade XX. The terminal board shall contain individual electrical lugs for each wire entering the test station or junction box.

209-9.2.17 Pipe Flange Isolation Kit.

1. For purposes of this specification, the terms "Pipe Flange Isolation Kit", "Insulating Flange", "Insulating Joint", and "Dielectric Flange" are used synonymously.
2. The Contractor shall over drill flange holes where insulating kits are to be used per AWWA C207 to accommodate insulating sleeves.
3. The Pipe flange isolation kit materials shall be designated by the manufacturer as suitable for service at the operating temperatures and pressures specified on the Plans.
4. Flange isolation kits shall consist of a one piece, full-face, insulating gasket, an insulating sleeve for each bolt, insulating washers, and steel washers. For nominal pipe diameters up to and including 36-inches, provide one insulating washer and one steel washer on each side of the flange for each flange bolt. For nominal pipe diameters greater than 36-inches, the insulating washers shall be installed sandwiched between a pair of matching steel washers on each side of the flange for each flange bolt.
5. Insulating Gasket: Insulating gasket retainers shall be full face, Type E, NEMA G-10 glass reinforced epoxy retainers with an Ethylene Propylene Diene Monomer (EPDM) rubber rectangular cross section O-ring seal. Minimum total gasket thickness shall not be less than 1/8-inch. The gasket shall have the same outside diameter as the pipe flange. For steel pipe the gasket's inside diameter shall be equal to the inside diameter of the pipe's steel cylinder. At valve to pipe connections where the inside diameters are not equal, the gasket's inside diameter shall be equal to the smaller of the two inside diameters. Dielectric strength shall be not less than 550-volts per mil, and compressive strength shall be not less than 50,000-psi. The manufacturer's name and date of manufacture shall be marked on both sides of the gasket with minimum two-inch tall block letters using a durable marking ink or paint. The gasket shall be installed within 12 months of its date of manufacture. Do not store insulated flange gaskets at jobsites under direct sunlight or at temperatures exceeding 110 degrees Fahrenheit. Use PSI Linebacker insulating gasket, or approved equal.
6. Insulating Sleeves: Provide full length, one piece, NEMA G-10 glass reinforced epoxy insulating flange bolt sleeves. Dielectric strength shall be not less than 400-volts per mil. The length of the insulating sleeves shall provide an air gap between the end of the insulating sleeve and inside surface of the stud bolt nut with a tolerance of 1/32-inch minimum and 1/8-inch maximum. Insulating sleeve length must be adjusted for the actual thickness of the washers and insulating washer thickness.
7. Insulating Washers: Insulating washers shall be NEMA G-10 glass reinforced epoxy with a minimum thickness of 1/8-inch. Dielectric strength shall not be less than 550-volts per mil, and compressive strength shall not be less than 50,000-psi. The

insulating washer's inside diameter shall be sized to fit over the insulating sleeve's outside diameter.

8. Steel Washers: Provide hardened steel washers that conform to ASTM F436 for insulated flanges greater than 36 inches in nominal diameter. Double steel washers (4 steel washers per flange bolt) are required for insulated flanges greater than 36 inches in nominal diameter. The inside and outside diameter of the steel washers shall match those of the insulating washers. The steel washers must be able to freely rotate around the insulating sleeve. Attention must be paid to the fit between the steel washers and the insulating sleeve in order to avoid the washers twisting and cracking the sleeves when the flange bolts are torqued.
9. Provide four extra insulating sleeves and eight extra insulating washers for each insulating flange upon successful inspection of the insulating flange by the Engineer.
10. The Contractor shall caulk the inside of flange isolation kits with a non-sag, polyurethane elastomeric sealant. The sealant shall be flush with the inside of the pipe lining. Use Sika 2C-NS-EZ or approved equal.

209-9.2.18 Wax Tape Coating For Buried Surfaces And Buried Isolation Flanges.

1. All buried pipe sections of pipe, specials, and fitting surfaces that are not tape wrapped or epoxy coated shall be wrapped with a petrolatum wax tape coating per AWWA C217 with plastic outer wrap. No bare metallic surfaces shall be buried, backfilled, or in contact with the soil.
2. Apply a wax tape coating system which conforms to AWWA C217 and consists of three parts: surface primer, wax-tape, and outer covering.
3. The primer shall be a blend of petrolatum, plasticizer, and corrosion inhibitors having a paste like consistency. It shall have a pour point of 100-degrees F to 110-degrees F and a flash point of 350-degrees. Use Trenton Wax-Tape Primer, or approved equal.
4. The wax-tape shall consist of a synthetic-fiber felt, saturated with a blend of high melt microcrystalline wax, solvents, and corrosion inhibitors, forming a tape coating that is easily formable over irregular surfaces and which firms up after application. The tape shall have a saturant pour point between 125-degrees F and 130-degrees F and a dielectric strength equal to a minimum of 100-volts per mil. Tape thickness shall be 70-mils to 90-mils in 6-inch wide rolls. Use Trenton No. 1 wax-tape, or approved equal.
5. The outer covering shall consist of two layers of a plastic wrapper. The plastic wrapper material shall consist of three 10-mil thick clear polyvinylidene chloride, high cling membranes wound together as a single sheet. Use Trenton Poly-Ply, or approved equal.

209-9.2.19 Standard Potential Magnesium Anodes.

1. CAPACITY. Standard potential magnesium anodes shall have a theoretical energy content of 1000 ampere-hours per pound and have a minimum useful output of 500 ampere-hours per pound.
2. CHEMICAL COMPOSITION (STANDARD POTENTIAL MAGNESIUM) ASTM B843
 - a. aluminum 5.30 to 6.70 percent
 - b. manganese 0.15 to 0.70 percent
 - c. zinc 2.50 to 3.50 percent
 - d. copper 0.02 percent max
 - e. nickel 0.002 percent max
 - f. iron 0.003 percent max
 - g. silicon 0.10 percent max
 - h. others, total 0.30 percent max
 - i. magnesium remainder
3. OPEN CIRCUIT POTENTIAL. The open circuit potential of all anodes, buried in the soil, shall be between 1.45 and 1.55 volts dc versus a copper-copper sulfate reference electrode.
4. INGOT SIZE AND WEIGHT. Anodes shall be 17-pound pre-packaged, standard potential ingots with a trapezoidal cross section. Ingot length shall be 25.25 inches long. The total packaged weight shall be 45 lbs.
5. ANODE CONSTRUCTION. Anodes shall be cast magnesium with a galvanized steel core rod recessed on one end to provide access to the rod for connection of the lead wire. Silver braze the lead wire to the rod and make the connection mechanically secure. Insulate the connection to a 600 volt rating by filling the recess with epoxy and covering any exposed bare steel core or wire with heat shrinkable tubing. The insulating tubing shall extend over the lead wire insulation by not less than 1/2 inch. The anode lead wire shall be stranded copper and shall be connected directly to the anode steel core as described above. There shall be NO wire splices between the anode steel core and the tag end at the test station.
6. ANODE PRE-PACKAGED BACKFILL MATERIAL. The anodes shall be completely encased and centered within a permeable cloth bag in a special low resistivity backfill mix with the following composition:
 - a. Gypsum 75%
 - b. Powdered bentonite 20%
 - c. Anhydrous sodium sulfate 5%
7. Backfill grains shall be such that 100 percent is capable of passing through a screen of 100 mesh. Backfill shall be firmly packed around the anode such that the ingot is approximately in the center of the backfill. The resistivity of the backfill shall be no greater than 50 ohm-cm when tested wet in a soil box. Total prepackaged weight shall be approximately 45 pounds.

209-9.3 Execution.

209-9.3.1 General. Work not specifically described herein shall conform to NACE SP0169, NACE SP0572, NACE SP0286, the Standard Specifications for Public Works Construction 2015 "GREENBOOK" and City Supplement "WHITEBOOK", and Standard drawings.

2. No specific alternate deepwell anode sites are provided however, if bedrock is reached prior to the design depth then alternate well locations may be designated by the Engineer. The following anode bed design changes shall apply depending upon the actual well depth achieved:
 - a. Bedrock depth greater than 142-feet to full design depth of 300-feet: Install all 10 anodes with active anode column length as shown in the detail drawings.
 - b. Bedrock depth greater than 134-feet but less than 142-feet: Install as shown in drawings except with 9 anodes.
 - c. Bedrock depth greater than 126-feet but less than 134-feet: Install as shown in the drawings except with 8 anodes.
 - d. Bedrock depth greater than 118-feet but less than 126-feet: Install as shown in the drawings except with 7 anodes.
 - e. Bedrock depth greater than 110-feet but less than 118-feet: Install as shown in the drawings except with 7 anodes.
 - f. Bedrock depth greater than 102-feet but less than 110-feet: Install as shown in the drawings except with 6 anodes.
 - g. Bedrock depth greater than 96-feet but less than 102-feet: Install as shown in the drawings except with 5 anodes. Install a second anode bed within the City's Easement, but no closer than 25-feet of the first well location with direction from the Engineer. Install the five remaining anodes in the second well and at the same depths. The active anode column lengths must be the same for both anode wells.
 - h. If bedrock is encountered at a depth less than 96-feet than an alternate anode well site will be selected by the Engineer.
3. The Contractor shall notify the Engineer immediately if rock is encountered. Drilling shall continue to the design well depth until specifically instructed otherwise by the Engineer.
4. The Contractor's base price quotation shall be based upon the assumption that the deepwells will be drilled to their full design depth and shall include 2-hours of rock-drilling.

5. Inspection and Notification: The drilling, preparation, loading of anodes and calcined coke shall be done in the presence of the Engineer and the Corrosion Engineer. The Contractor shall give the Engineer a 7-day notice before drilling and installation.
6. Location and Responsibility: The final location of the anode well shall be determined in the field by the Contractor and shall be approved by the Engineer. The well location can be adjusted to accommodate positioning of the drill rig such that there will be minimum impact on traffic. The Contractor is responsible to locate and avoid all utilities prior to drilling. The Contractor shall retain his responsibility regardless of the approval of the drilling site by the Engineer.
7. Drilling: Anode well drilling shall be done in the presence of the Engineer and the Corrosion Engineer and shall be done by means of a rotary drill rig using circulating water base drill mud or by rotary air drilling. It is the Contractor's responsibility to provide the proper drilling method with the knowledge that rock or cobble may be encountered. Holes shall be nominal 10-inches in diameter and shall be drilled essentially straight and plum. Drilling mud shall be circulated from a portable sump or tank provided by the Contractor.
8. The Contractor shall dispose of drilling mud and cuttings at a suitable disposal site at no additional cost to the Owner. Drilling fluid may be considered hazardous and must be disposed of in accordance with Local, State, Federal, and US EPA approved methods.
9. When the hole has been drilled to specified depth, fresh water shall be circulated from the bottom of the hole to clear the hole of drilling mud and cuttings. The hole shall be flushed until fluid is thinned as much as possible without danger of cave-in. The degree to which the hole is flushed shall be determined by the Engineer. The hole shall be maintained full to the top with fresh water throughout the entire loading operations.
10. Rock Drilling:
 - a. The Contractor shall notify the Engineer immediately if a rock strata is encountered. Drilling shall be stopped until authorized by the Engineer to proceed.
 - b. Rock drilling shall be defined as a condition where the rate of drilling drops below 6-feet per hour (1-foot every 10-minutes). It is assumed that the drillers' equipment is suitable for the intended purpose and can achieve a 50 to 90-feet per hour rate in good drilling conditions.
 - c. Rock drilling shall commence only upon the approval and direction of the Engineer and shall cease upon direction of the Engineer.
11. Loading:
 - a. Preparation of the impressed current system anode hole and loading of anodes and other equipment in the hole shall be done in the presence of the Engineer. A minimum of 7-day notice before anode loading shall be given by the Contractor to the Engineer. Loading of the anode hole shall be begun early enough in the day to insure completion of all loading,

including backfilling, during regular working hours. Loading shall not be started later than 1:00 p.m. unless prior approval has been obtained by the Contractor from the Engineer.

- b. Anode assemblies, with centralizers attached, shall be lowered into the hole supported by the attached lead wires. Anode vent pipes shall be lowered to the depth indicated. The Engineer shall visually inspect the insulation on the anode lead wire for abrasion or other damage to the insulation and wire as the anode is lowered into place. The Engineer will reject all anodes with damaged insulation or wire, and they shall not be installed. Splices and/or any form of wire repair shall not be allowed on the anode lead wire from the point of connection at the anode to the top of the deep well anode bed hole. In the event that an anode must be retrieved after it has been lowered into the hole, the entire length of the anode lead wire shall be inspected by the Engineer for abrasion or other forms of damage to the insulation and wire. Anodes with damaged wires shall be rejected by the Engineer and shall not be reinstalled.
- c. When an anode has been placed at specified depth, it shall be securely fixed in that position by tying the anode lead wire to a rack, sawhorse, etc., placed over or adjacent to the anode hole. That portion of the device to which the anode wire is tied shall be smooth and round and shall have a diameter of not less than 3-inches so as to prevent kinking or sharply bending the wire.
- d. All anodes shall be loaded before calcined coke backfill is loaded. No anodes shall be covered until the Engineer has inspected the placement of the anodes and given permission to backfill.
- e. The vent pipe shall be installed along with the first anode placed in the hole by attaching it to one of the centralizer straps with a stainless steel clamp. The vent pipe shall not be attached to the anode proper. The Engineer will approve the attachment before the vent pipe is lowered into the hole. Joints shall be made up as the anode assembly, with the vent pipe attached, is lowered into the hole.

12. Calcined Coke:

- a. Calcined coke shall be placed in the hole by pumping. The pumping shall be at a steady rate and shall be slow enough to insure that the calcined coke does not bridge or block in the hole. The hole shall be kept completely full of water during placement of backfill. The top of the hole shall be kept free of floating coke breeze particles.
- b. Settling of the backfill and coverage of the anodes shall be determined by the Engineer by observing the Contractor's measurement of anode current output through a 12V DC power source circuit. During backfill placement, continuous monitoring of the current output of the lowermost uncovered anode shall be made. Coverage of the anode will be indicated by a rapid

increase in current output, normally by at least 50%. As soon as coverage of a lower anode is indicated, the circuit shall be attached to the next higher anode in the hole and so on until coverage of all anodes has been verified. The Contractor shall record the anode current output of each backfilled anode on the same form used for recording the initial current output of the anode. After coverage of the top anode has been verified, sufficient coke shall be placed in the hole to insure backfilling a minimum of 10-feet above the uppermost anode.

13. Well Sealing:

- a. The hole above the coke column shall be No. 4 river run pea gravel (no sharp edges) up to the bottom of the grout seal. At the Contractor's option, the pea gravel intermediate backfill may be substituted with grout from the top of the calcined coke column to the wellhead. Following placement of the pea gravel, the hole shall be sealed per California State Bulletin Number 74.
- b. Well sealing operations above the calcined coke column shall begin no sooner than 30 minutes, nor later than 24 hours, after the anode current measurements, indicating that the uppermost anode had been covered with calcined coke. Once backfilling has begun, it shall continue until the hole is filled with grout. The annular seal shall extend to vault.

14. Wellhead Box: Concrete box shall be set at the top of the anode hole as indicated. From the top of the anode hole, the anode leads shall be run to the rectifier enclosure. The anode vent pipe shall be terminated at the ornamental enclosure as indicated in the detail drawings. Individual anode leads shall terminate in the anode junction box and be permanently marked with cable identifiers to their respective position in the anode hole as indicated. The wellhead vault shall have an approved H-20 traffic rated box.

209-9.3.3 Rectifier Installation.

1. Installation: The rectifier, anode shunt panel, and 120-volt convenience outlet with GFCI shall be installed inside the ornamental enclosure and wired as shown in the drawings. The installation shall conform to NEC 70 and be in compliance with all applicable electrical codes and standards. Upon completion of the installation, the Contractor shall leave the rectifier in the off position until activated by the Corrosion Engineer.
2. Concrete Pad: The ornamental enclosure shall be mounted on a concrete pad as shown in the detail drawings. The hold-down bolt pattern and locations shall be obtained by the Contractor from the manufacturer. The top of the concrete pad shall be 3-inches minimum above the final grade.
3. Meter Pedestal: The meter pedestal shall be mounted adjacent to the transformer. AC wires shall be trenched between ornamental enclosure and the meter pedestal. The AC wiring shall be installed in a conduit. Additionally, AC wiring shall be

trenched from the meter pedestal to the SDG&E transformer or handhold. Connections to transformers or handholds shall be made by SDG&E crews. It is the Contractor's responsibility to contact SDG&E for AC wiring connections.

4. Ground Rod: Install a ground rod and ground wiring at the rectifier in accordance with NFPA NEC 70.
5. Notification: Provide the Engineer with 7 working days notice before the completion of the rectifier, ground bed, and AC power service installation to allow scheduling of the required energizing and testing.

209-9.3.4 Wire Cables And Conductors.

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

209-9.3.5 Conduits.

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

209-9.3.6 Wire-To-Pipe Connections.

1. Exothermic Weld:
 - a. Use exothermic weld method for electrical connection of copper wire to steel surfaces. Observe proper safety precautions, welding procedures, weld charge selection, and surface preparation recommended by the welder manufacturer. Assure that the pipe or fitting wall thickness is of sufficient thickness that the exothermic weld process will not damage the integrity of the pipe or fitting wall or protective lining. One exothermic weld shall be used for one wire only.
 - b. Preparation of Metal: Remove all coating, dirt, grime, and grease from the metal surface by wire brushing and/or use of suitable safe solvents. Clean the surface to a bright, shiny surface free of all pits and flaws. The surface must be completely dry.
 - c. Testing: After the weld connection has cooled, remove slag, visually inspect, and physically test wire connection by striking the weld with a 2-lb hammer while pulling firmly on the wire. All unsound welds shall be completely removed, the surface prepared again, and re-welded. All weld slag shall be removed from the weld before applying coating and weld cap.
2. Protective Coating: The Contractor shall furnish all materials, clean surfaces and repair any damage to protective coatings and linings damaged as a result of the welding. A coating shall be applied to all exothermic weld locations. The coating for dielectrically coated steel shall be as described in Section 2.14 above. All surfaces must be clean and dry and free of oil, dirt, loose particles and all other foreign materials before application of the coating. The coating must cure per the manufacturer's recommendations prior to backfill. The mortar rockshield shall be repaired per the manufacturer's recommendations.

209-9.3.7 Magnesium Anodes.

1. INSPECTION. All lead wires shall be inspected to ensure that the lead wire is securely connected to the anode core and that no damage has occurred to the lead wire. Lead wire failures shall require replacement of the complete anode and lead wire.
2. PRE-PACKAGED ANODE INSPECTION. Each anode shall be inspected to ensure that the backfill material completely surrounds the anode and that the cloth bag containing the anode and backfill material is intact. If the prepackaged anodes are supplied in a waterproof container or covering, that container or covering shall be removed before installation. The CONTRACTOR shall notify the ENGINEER at least seven (7) days in advance of installing the anodes.

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

209-9.3.8 At-Grade Test Stations.

1. LOCATION. At-grade corrosion monitoring test boxes shall be located behind the curb or sidewalk and NOT in traffic lanes or gutters. All test box locations shall be approved by the ENGINEER.
2. TEST BOX BOTTOM. Test boxes shall be set in native soil.
3. TEST LEAD ATTACHMENT. Test leads shall be attached to the pipe using the exothermic weld process. An 18-inch length of slack wire shall be coiled at each weld and inside each test box.
4. CONCRETE PAD. A 24-inch square by 4-inch thick reinforced concrete pad is required around each at-grade test station. Test boxes and concrete pad shall be flush with the top of the median curb.

209-9.3.9 External Coating.

1. All insulating couplings shall be covered with a 3-layer wax tape coating system per AWWA C217 with plastic outer wrap. Additionally, all in-line valves, flanges couplings, and adapters that are not coated with a bonded dielectric coating shall be wax tape coated per AWWA C217 with plastic outer wrap.
2. Primer: Surfaces must be cleaned of all dirt, grime, and dust by using a wire brush and clean cloth. The surface shall be dry. Apply the primer by hand or brush. A thin coating of primer shall be applied to all surfaces and worked into all crevices. The primer shall be applied generously around bolts, nuts, and threads, and shall

fully cover all exposed areas. The primer should overlap the pipe coating by a minimum of 3-inches.

3. **Petrolatum Saturated Tape:** The wax tape can be applied immediately after the primer. Short lengths of tape shall be cut and carefully molded around each individual bolt, nut, and stud end. For long bolts (such as in couplings), short lengths of tape shall be cut and circumferentially wrapped around each individual bolt. After the bolts are covered, the tape shall be circumferentially wrapped around the flange with sufficient tension to provide continuous adhesion without stretching the tape. The tape shall be formed, by hand, into all voids and spaces. There shall be no voids or gaps under the tape. The tape shall be applied with a 1-inch minimum overlap. Minimum thickness of 70 mils over flat surfaces. Minimum thickness of 140 mils over edges.
4. **Outer Covering:** A plastic outer cover shall be applied over the petrolatum-saturated tape. The plastic shall be a minimum of 50-guage (10-mils) and shall have two layers applied.

209-9.3.10 Rebar Ground Cable At Concrete Structures. Minimum size #2 AWG, bare copper stranded grounding cable. The quantity of cable required should be sufficient to run two ground cables from a flush-to-grade concrete ground box down to two separate exothermic connections made to rebar inside each concrete encasement or major reinforced concrete structure. Locate the rebar ground test boxes adjacent to cathodic protection test boxes.

209-9.3.11 Installation Of Flange Isolation Materials.

1. Provide a minimum of five days advance notice to the Engineer before assembling insulated pipe flanges to allow for coordination and observance of its installation. The Engineer shall inspect the condition of the gasket's O-ring immediately before the gasket is installed to ensure it is free of cracks, dry rot, cuts, or other defects.
2. Install pipe flange insulating materials at the locations shown on the Plans. Install pipe flange insulating materials in accordance with the manufacturer's recommendations and NACE recommended practice SP0286, "Electrical Isolation of Cathodically Protected Pipelines." Particular attention shall be paid to properly aligning the flanges prior to inserting the insulating sleeves around flange bolts.
3. Prevent moisture, soil, or other foreign matter from contacting any portion of the insulated flange prior to or during installation. If moisture, soil, or other foreign matter contacts any portion of the insulated flange, disassemble it, clean with a suitable solvent and dry prior to reassembling. Follow the manufacturer's recommendations regarding the torque pattern of the bolts and the amount of torque to be used when installing the flange insulating kit. Do not use conductive grease on the flange bolts or any other flange components. Note: the following products have been tested for electrical conductivity and approved for use: Huskey

2000 Lubricating Paste & Anti-Seize compound, Triflow aerosol lubricant with Teflon additive, or approved equal.

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

209-9.4 Testing And Inspection.

209-9.4.1 General. The CP system shall be activated and adjusted by the Contractor's Corrosion Engineer. The Contractor is required to contact the City's Corrosion Section (phone number 619-527-5439) at least 5 days in advance of all corrosion control/cathodic protection facility installations. The Engineer, City's Corrosion Engineer, or the Owner's Representative shall witness all testing and installations at their discretion. All test data shall be submitted to the City's Corrosion Engineer within seven (7) days of the completion of the testing. All testing shall be conducted under the supervision of a qualified Corrosion Engineer who is retained by the Contractor. All deficiencies found to be due to faulty materials or workmanship shall be repaired or replaced by the Contractor and at his/her expense.

209-9.4.2 Test Leads And Bond Wires.

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

209-9.4.3 Anode Lead Wire Inspection.

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

209-9.4.4 Test Lead Trenching And Backfill.

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

209-9.4.5 Rectifier Testing.

1. Responsibility: The rectifier shall be inspected and tested by the Corrosion Engineer and witnessed by the City's Corrosion Engineer. Testing shall be done in the presence of the Engineer.
2. Test Method: Rectifier tests shall verify that AC power is available at the rectifier, that all switches and circuit breakers work, and that DC voltage is applied to the anodes. The current output of all anodes shall be measured and recorded with the rectifier taps set at 25%, 50%, and 75% capacity.
3. Acceptance: Compliance with this specification and full operation of the rectifier in accordance with the owner's manual description and manufacturer's claims. Anode current outputs shall be in proportion to the anode bed resistance as determined by the anode well logs.

209-9.4.6 Flange Isolation Kit Testing.

1. Each buried insulating flange shall be tested for its electrical isolation effectiveness by and acceptable to the City's Corrosion Engineer prior to burial. The insulating flange shall be tested for electrical isolation before the wax tape coating is applied. Testing shall be performed and deemed as acceptable as described in the above grade testing procedure.
2. Each above grade or insulating flange within a vault shall be tested for its electrical isolation effectiveness. This testing shall be performed by the Contractor's Cathodic Protection Technician and witnessed by the City's Corrosion Engineer. The Contractor shall provide written notice of this testing to the Engineer a minimum of two days in advance. If the insulated pipe flange will be buried, at the Engineer's option, the City of San Diego may repeat this testing during or immediately after the installation of the insulating flange. Replace or repair any insulated pipe flange that is determined to not meet the minimum electrical isolation requirements in this specification. The effectiveness of insulating flanges shall be determined using the following test techniques in the order shown until one of the criteria is achieved or as otherwise directed by the Engineer.
3. Electrical Potential Difference Test: Electrically bond the pipe on the vault or unburied side of the insulating flange to an electrical ground with a maximum resistance to remote soil of 5-Ohms. If the pipe on both sides of the insulating

flange is mechanically connected to a minimum 50-feet of buried pipe, then the pipe does not need to be bonded to an electrical ground for this test. Measure the CP Potential of the pipe on both sides of the insulating flange using a copper/copper sulfate reference electrode. If the difference in CP Potentials is greater than or equal to 500-millivolts, the insulating flange is providing adequate electrical isolation. This test must be performed with all cathodic protection systems and anodes disconnected from the pipeline. If this criterion is not met, perform the Nilsson 400 Meter Direct Resistance Test to verify the effectiveness of the insulating flange.

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

7. Individual Flange Bolt Testing: For all insulated flanges to be buried and for all other insulating flanges that do not meet any of the other criteria, measure the electrical resistance of each flange bolt to both sides of the insulated flange using a Nilsson Model 400 Soil Resistance Meter and four-wire resistance technique. The measured resistance value for each flange through-bolt shall be a minimum of 1,000-Ohms, as measured from each bolt to both flanges. This criterion applies to the flange through-bolts and does not apply to valve cap bolts which are threaded on one side. Remove, inspect, and replace all dielectric flange bolt sleeves and washers that do not meet the minimum resistance criterion.
8. If an insulated flange with threaded cap bolts passes the resistance tests for all the "through-bolts" yet fails the other previous tests, remove all the threaded cap bolts, inspect and replace all imperfect dielectric flange bolt sleeve and washer materials and retest.
9. In order to make an accurate resistance measurement that passes any of these criteria it may be necessary to disable the pipe inside a vault, flow control facility, or pump station on one side of the insulated flange (or temporarily remove any electrically grounded appurtenances) so that the pipe is not grounded on one side of the insulated flange. This temporary change may eliminate an electrical path which interferes with making an accurate resistance measurement.

209-9.4.7 Electrical Continuity Testing Of Pipe With Bonded Joints.

1. Conduct electrical continuity testing to demonstrate that all buried pipe joints (except insulated flanges) are either welded joints or have been electrically bonded across with bond cables. This testing shall be performed by the Contractor's Cathodic Protection Technician and witnessed by the Engineer. The Contractor shall demonstrate to the Engineer's satisfaction that full electrical continuity has been achieved and shall make all required bond cable connections in the event that electrical continuity of the pipeline is not achieved.
2. Perform electrical continuity tests between test stations. Circulate a 12-volt electrical direct current (DC) through the pipeline. Use two pairs of test wires, one for current flow, one for voltage measurement. Measure the voltage difference developed by the DC current flow. Calculate the electrical resistance of the pipeline section in Ohms using Ohm's Law.
3. The resistance acceptance criterion for each pipeline section tested is less than 120 percent of the calculated resistance value. The resistance value shall be calculated using the steel cross section area of the pipe, its length, and consideration for the joint bond cables at each bonded joint.
4. If other electrical continuity test methods are proposed, the Contractor shall prepare a written test procedure specifying the alternate method and equipment that will be used. A standard handheld digital multi-test meter's ohmmeter circuit (e.g. Fluke 87) is not suitable for properly making these electrical resistance measurements. Submit in writing the alternate proposed test method to the City's Corrosion Engineer for approval a minimum of 30 days before the pipe laying begins.

209-9.4.8 CP Test Station Wire Integrity Testing.

1. Testing of Completed Welds: Exothermically welded wire-to-pipeline connections shall be inspected by the Engineer prior to backfilling the pipeline. At the Engineer's direction, tests to verify the soundness of the welds shall be conducted by the Contractor. Tests for this purpose shall consist of striking the weld nugget with a 2-pound hammer while steadily pulling on the wire. Note that the wire near the weld shall not be unnecessarily cold worked during installation or testing. Remove and re-weld any welds that break loose or show signs of separating, as determined by the Engineer.
2. Wire Identification: The Engineer shall be given two day's advance notice to verify that buried pipe lead wires and anode lead wires are properly identified prior to backfilling the wires.
3. CP Test Wire Resistance Tests: After the pipeline is backfilled and the CP test wires are trenched to the CP Test Box or CP Monitoring Station, each pair of CP test wires shall be tested for integrity. The CP Technician shall measure the electrical resistance of one CP test wire to the pipeline and back on the second CP test wire. If more than twice the theoretical resistance of the total wire length installed is measured, the Contractor shall re-excavate the pipeline and replace or re-weld the CP test wires to the pipeline. Use the following copper wire unit resistance values to calculate the theoretical resistance of each pair of CP test wires.
 - a. No. 2 AWG wire 0.162 Ohms / 1000 feet
 - b. No. 4 AWG wire 0.258 Ohms / 1000 feet
 - c. No. 6 AWG wire 0.411 Ohms / 1000 feet
 - d. No. 8 AWG wire 0.653 Ohms / 1000 feet
 - e. No. 10 AWG wire 1.038 Ohms / 1000 feet
 - f. No. 12 AWG wire 1.650 Ohms / 1000 feet
 - g. No. 14 AWG wire 2.624 Ohms / 1000 feet

209-9.4.9 Electrical Isolation Testing Between Pipe And Steel Reinforcement, Tunnels, And Casings.

1. Prior to placing concrete, all pipe/wall/slab penetrations must be inspected by the City's Corrosion Engineer. Prior to backfilling tunnels and casing installations, the City's Corrosion Engineer will witness the testing for electrical isolation. Testing shall be performed and deemed acceptable as described herein. A seven-day notice is required before placing concrete or backfilling.
2. Conduct visual and electrical testing at all steel pipe penetrations through reinforced concrete structures before and after the concrete is placed. Conduct visual and electrical testing at all steel pipe/casing installations before backfilling. This testing is required to demonstrate that all buried steel pipe is not in contact with any metallic objects embedded in the tunnel, casing, concrete wall, or concrete slab including all of the following:
 - a. rebar
 - b. rebar tie wire

- c. snap ties
 - d. shebolts
 - e. tie rods
 - f. taper ties
 - g. dowels
3. Perform this testing no more than 1 day before each concrete placement and no more than 1 day after each concrete placement. Correct all direct contacts detected between sections of pipe to be buried and concrete reinforcing components by trimming or repositioning the reinforcement components. If pipe to reinforcement contacts are detected after concrete is in place, use chipping hammers and other concrete demolition tools to remove as much concrete as is necessary to eliminate all metallic points of contact with the steel pipe. A representative from the City of San Diego, Water System Operations, Corrosion Section shall be notified a minimum of 7 days before the first pipe-vault penetration concrete is placed in order to witness and ensure proper electrical isolation. The failure for a new buried steel pipeline to pass this electrical isolation test may require concrete and reinforcing steel to be incrementally demolished by the contractor at no cost to the City of San Diego until the new pipeline passes the electrical isolation test. For steel pipeline/casing installations, the Contractor shall correct all direct contacts (shorts) between the steel pipeline and the tunnel or casing at no cost to the City of San Diego.
 4. Perform all electrical resistance measurements for this test using a 97-Hertz square wave null balancing ohmmeter such as the Nilsson Model 400 Soil Resistance Meter or the MC Miller Model 400A and the four-wire resistance technique to compensate for the test wire and connection resistances. A standard handheld digital multi-test meter's ohmmeter circuit (e.g. Fluke 87) is not suitable for properly making these resistance measurements. Perform this test by connecting the meter's P1 and C1 terminals to the pipe, using two different wires and two different connections, and then connecting the meter's P2 and C2 terminals to the rebar, using two additional wires and connections. Use vise grips or temporary exothermic welds to make the wire connections to the pipe and rebar, tunnel, or casing.
 5. Rebar Ground Cable Connections at Pipe Encasements and Vault Penetrations: Select two exposed pieces of rebar separated by at least 2 feet that are wire tied to a minimum of 6 other perpendicular pieces of rebar for use as electrical ground reference test points. Using temporary connections such as vice grips or other compression clamps measure the electrical resistance between the two different pieces of rebar to ensure that the rebar test points are electrically continuous with the bulk of the rebar in the concrete structure. If either piece of rebar is not securely wire tied to all the other rebar in the encasement or vault, then the electrical resistance measurement will yield erroneous or misleading data. A maximum resistance of 0.10 Ohm between the two rebar test points is required before continuing with the electrical isolation test. Connect two unspliced lengths of minimum size #6 AWG bare copper stranded grounding cable to two different

pieces of rebar. Each ground cable connection to the rebar shall be made with a separate exothermic weld or a separate mechanical compression ground clamp.

6. Direct Resistance Isolation Test: Testing shall first be performed using the Direct Resistance Test. Attach one pair of the resistance test leads to the pipe and one pair of resistance test leads to the rebar, tunnel, or casing then measure the pipe to rebar, tunnel, or casing resistance. If the resistance is 10 Ohms or more, the pipe is sufficiently electrically isolated from the rebar, tunnel, or casing. If the test reading is less than 10 Ohms, proceed with the Steel Polarization Isolation Test described below.
7. Steel Polarization Isolation Test:
 - a. Step 1: Measure the baseline CP potentials of the buried pipeline and of the rebar, tunnel, or casing using a stationary location for a copper sulfate reference electrode. Place the reference electrode in soil at an offset distance from the pipeline equal to approximately the length or width (whichever is greater) of the concrete structure under construction. If the difference between the readings of the pipe and rebar, tunnel, or casing is 500 millivolts DC or more, that indicates sufficient electrical isolation. This test must be done with all nearby sources of cathodic protection electrical current turned off or disconnected, and with all welding equipment turned off. If the difference is less than 500 millivolts DC, record the baseline CP Potentials and proceed to the next step.
 - b. Step 2: Set up a temporary DC power source such as a truck battery, a minimum 300 Watt, 2 to 4 Ohm, power rheostat, a calibrated electrical shunt, and two minimum #6 AWG test cables. Set up the DC power source with the positive cable connected to the rebar, tunnel, or casing and the negative cable connected to the pipe. Initially adjust the rheostat for the largest resistance/smallest current and measure the current flow. Adjust the electrical power to a minimum current of 1 DC Amp, maximum of 10 DC Amps. Allow the DC current to flow for a minimum of 5 minutes then shut off the test current.
 - c. Step 3: Re-measure CP Potentials of the pipe and rebar, tunnel, or casing using the same reference electrode in the same location with the test current off. These are called polarized CP potentials.
 - d. Step 4: Compare the polarized CP Potentials with the previously measured baseline CP Potentials. If the pipe is electrically isolated from the rebar, tunnel, or casing, the test current will polarize the buried pipeline's steel cathodically (i.e. a more negative CP Potential) and shift the rebar, tunnel, or casing anodically (i.e. a more positive CP Potential). If the difference between the polarized potentials of the pipeline and rebar, tunnel, or casing is less than 300 millivolts DC there are one or more metallic contacts between the buried pipeline and the rebar, tunnel, or casing. If the difference is 300 millivolts DC or greater the steel pipeline is sufficiently electrically isolated from the rebar, tunnel, or casing.
8. In no case shall an electrical resistance measurement made with a hand held volt-ohm multimeter be accepted as an accurate isolation test procedure. In the event

of a question regarding the electrical isolation of the pipeline, the Engineer shall make the final determination.

9. Electrical isolation tests shall be conducted for each pipeline encasement, each pipe to vault penetration, each tunnel installation, and each casing installation, and any other reinforced concrete or steel structure that a pipeline passes through. The electrical isolation tests must be performed by the City's Corrosion Engineer one day before concrete is placed or before backfill (in the case of tunnel and casing installations), and the day after concrete is placed or before backfill. The Engineer will witness the electrical isolation test conducted before the concrete is placed.
10. After the pipeline passes the rebar isolation test, direct bury the two bare copper ground cables connected to the rebar to a flush-to-grade concrete ground box near the pipe-vault penetration. Provide a cover for the test box marked "GROUND". Provide a minimum of two (2) feet of extra ground cable inside the rebar ground test box. If there is a nearby cathodic protection test box, the rebar ground wires can be run into that box. If the rebar test wires are not long enough to reach the permanent test box, splice additional wire to them using two brass split bolts for each splice. No coating is required for the connections.

209-9.4.10 Pipeline Continuity Through In-Line Appurtenances And Pipe Joints.

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

209-9.4.11 Cathodic Protection Performance.

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

209-9.4.12 Compliance With Specifications.

1. Deficiencies: Any deficiencies or omission in materials or workmanship shall be rectified by the Contractor and at his expense. Deficiencies shall include, but not limited to: anode failures, rectifier malfunctions, electrical discontinuities, lack of electrical isolation, broken or missing test leads or test boxes, improper or unclean trench backfill, and other deficiencies associated with the workmanship, installation, and non-functioning equipment.

SECTION 210 - PAINTING AND COATING

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

210-1 GENERAL.

210-1.1 References.

The following is a list of standards that shall be complied with;

1. American Water Works Association (AWWA):
 - a. C203, Coal-Tar Protective Coatings and Linings for Steel Water Pipelines—Enamel and Tape—Hot-Applied.

- b. C209, Cold-Applied Tape Coatings for the Exterior of Special Sections, Connections, and Fittings for Steel Water Pipelines.
 - c. C213, Fusion-Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines.
 - d. C214, Tape Coating Systems for the Exterior of Steel Water Pipelines.
2. NACE International (NACE): SP0188, Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates.
 3. NSF International (NSF): 61, Drinking Water System Components – Health Effects.
 4. The Society for Protective Coatings (SSPC):
 - a. PA 2, Procedure for Determining Conformance to Dry Coating Thickness Requirements.
 - b. PA 10, Guide to Safety and Health Requirements for Industrial Painting Projects.
 - c. SP 1, Solvent Cleaning.
 - d. SP 2, Hand Tool Cleaning.
 - e. SP 3, Power Tool Cleaning.
 - f. SP 5, White Metal Blast Cleaning.
 - g. SP 6, Commercial Blast Cleaning.
 - h. SP 7, Joint Surface Preparation Standard Brush-Off Blast Cleaning.
 - i. SP 10, Near-White Blast Cleaning.
 - j. SP 11, Power Tool Cleaning to Bare Metal.
 - k. SP 16, Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals.
 - i. SP 13, Surface Preparation of Concrete.

210-1.2 Definitions.

Terms used in this section:

1. Coverage: Total minimum dry film thickness in mils or square feet per gallon.
2. FRP: Fiberglass Reinforced Plastic.
3. HCl: Hydrochloric Acid.
4. MDFT: Minimum Dry Film Thickness, mils.
5. MDFTPC: Minimum Dry Film Thickness per Coat, mils.
6. Mil: Thousandth of an inch.
7. PDS: Product Data Sheet.

8. PSDS: Paint System Data Sheet.
9. PVC: Polyvinyl Chloride.
10. SFPG: Square Feet per Gallon.
11. SFPGPC: Square Feet per Gallon per Coat.
12. SP: Surface Preparation.

210-1.3 Submittals.

210-1.3.1 Action Submittals.

1. Shop Drawings:
 - a. Data Sheets:
 - i. For each paint and coating product, furnish a Safety Data Sheet (SDS) and a Product Data Sheet (PDS), the manufacturer's technical data sheets, and paint colors available (where applicable). The PDS form is appended to the end of this section.
 - ii. For each paint system, furnish a Paint System Data Sheet (PSDS). The PSDS form is appended to the end of this section.
 - iii. Technical and performance information that demonstrates compliance with specification.
 - iv. Furnish copies of paint system submittals to the coating applicator.
 - v. Indiscriminate submittal of only manufacturer's literature is not acceptable.
 - b. Detailed chemical and gradation analysis for each proposed abrasive material.
 - c. Samples:
 - d. Proposed Abrasive Materials: Minimum 5-pound sample for each type.
 - e. Reference Panel:
 - i. Surface Preparation:
 1. Prior to start of surface preparation, furnish a 4-inch by 4-inch steel panel for each grade of sandblast specified herein, prepared to specified requirements.
 2. Provide panel representative of the steel used; prevent deterioration of surface quality.
 3. Panel to be reference source for inspection upon approval by Engineer.

ii. Paint:

1. Unless otherwise specified, before painting work is started, prepare minimum 8-inch by 10-inch sample with type of paint and application specified on similar substrate to which paint is to be applied.
2. Furnish additional samples as required until colors, finishes, and textures are approved.
3. Approved samples to be the quality standard for final finishes.

210-1.3.2 Informational Submittals.

1. Applicator's Qualification: List of references substantiating experience.
2. Coating manufacturer's Certificate of Compliance.
3. Factory Applied Coatings: Manufacturer's certification stating factory applied coating system meets or exceeds requirements specified.
4. Manufacturer's written verification that submitted material is suitable for the intended use.
5. Coating for Faying Surfaces: Manufacturer's test results that show the proposed coating meets the slip resistance requirements of the AISC Specification for Structural Joints using ASTM A325 or ASTM A490 bolts.
6. If the manufacturer of finish coating differs from that of shop primer, provide finish coating manufacturer's written confirmation that materials are compatible.
7. Manufacturer's written instructions and special details for applying each type of paint.

210-1.4 Quality Assurance.

1. Applicator Qualifications: Experience in application of specified products.
2. Regulatory Requirements:
 - a. Meet federal, state, and local requirements limiting the emission of volatile organic compounds.
 - b. Perform surface preparation and painting in accordance with recommendations of the following:
 - i. Paint manufacturer's instructions.
 - ii. SSPC PA 10.

- iii. Federal, state, and local agencies having jurisdiction.
3. Mockup:
- a. Before proceeding with Work under this section, finish one complete space or item of each color scheme required showing selected colors, finish texture, materials, quality of work, and special details.
 - b. After Engineer approval, sample spaces or items shall serve as a standard for similar work throughout the Project.

210-1.5 Delivery, Storage, And Handling.

1. Shipping:
- a. Where precoated items are to be shipped to the Site, protect coating from damage. Batten coated items to prevent abrasion.
 - b. Protect shop painted surfaces during shipment and handling by suitable provisions including padding, blocking, and use of canvas or nylon slings.
2. Storage:
- a. Store products in a protected area that is heated or cooled to maintain temperatures within the range recommended by paint manufacturer.
 - b. Primed surfaces shall not be exposed to weather for more than 2 months before being topcoated, or less time if recommended by coating manufacturer.

210-1.6 Environmental Requirements. Do not apply paint in temperatures or moisture conditions outside of manufacturer's recommended maximum or minimum allowable.

Do not perform final abrasive blast cleaning whenever relative humidity exceeds 85 percent, or whenever surface temperature is less than 5 degrees F above dew point of ambient air.

210-2 PRODUCTS.

210-2.1 Manufacturers. Nationally recognized manufacturers of paints and protective coatings who are regularly engaged in the production of such materials for essentially identical service conditions.

210-2.2 Abrasive Materials. Select abrasive type and size to produce surface profile that meets coating manufacturer's recommendations for specific primer and coating system to be applied.

210-2.3 Paint Materials.

1. General:
- a. Manufacturer's highest quality products suitable for intended service.

- b. Compatibility: 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.
- c. Thinners, Cleaners, Driers, and Other Additives: As recommended by coating manufacturer.

2. Products:

- a. Block Filler: Primer-sealer designed for rough masonry surfaces, 100% acrylic emulsion
- b. Coal-Tar Epoxy: Amine, polyamide, or phenolic epoxy type 70% volume solids minimum, suitable for immersion service
- c. DTM Acrylic Primer: Surface tolerant, direct-to-metal water borne acrylic primer
- d. DTM Acrylic Finish: Surface tolerant, direct-to-metal water borne acrylic finish coat
- e. Elastomeric Polyurethane: 100% solids, plural component, spray applied, high build, elastomeric polyurethane coating, suitable for the intended service
- f. Epoxy Filler/Surfacer: 100% solids epoxy trowel grade filler and surfacer, nonshrinking, suitable for application to concrete and masonry. Approved for potable water contact and conforming to NSF 61, where required
- g. Epoxy Nonskid (Aggregated): Polyamidoamine or amine converted epoxies aggregated; aggregate may be packaged separately
- h. Epoxy Primer—Ferrous Metal: Anticorrosive, converted epoxy primer containing rust-inhibitive pigments
- i. Epoxy Primer—Other: Epoxy primer, high-build, as recommended by coating manufacturer for specific galvanized metal, copper, or nonferrous metal alloy to be coated
- j. Fusion Bonded Coating: 100% solids, thermosetting, fusion bonded, dry powder epoxy, suitable for the intended service
- k. TFE Lube or Grease Lube: Tetrafluoroethylene, liquid coating, or open gear grease as supplied by McMaster-Carr Supply Corporation, Elmhurst, IL
- l. High Build Epoxy: Polyamidoamine epoxy, minimum 69% volume solids, capability of 4 to 8 MDFT per coat
- m. Inorganic Zinc Primer: Solvent or water based, having 85% metallic zinc content in the dry film; follow manufacturer's recommendation for topcoating
- n. NSF Epoxy: Polyamidoamine epoxy, approved for potable water contact and conforming to NSF 61
- o. Epoxy, High Solids: Polyamidoamine epoxy, 80% volume solids, minimum, suitable for immersion service

- p. Polyurethane Enamel: Two-component, aliphatic or acrylic based polyurethane; high gloss finish
- q. Organic Zinc Rich Primer: Epoxy or moisture cured urethane with 85-percent zinc content in the dry film, meeting the requirements of RCSC Specification for Structural Joints using High Strength Bolts, Class A or Class B, as required.
- r. Rust-Inhibitive Primer: Single-package steel primers with anticorrosive pigment loading
- s. Sanding Sealer: Co-polymer oil, clear, dull luster
- t. Silicone/Silicone Acrylic: Elevated temperature silicone or silicone/acrylic based
- u. Stain, Concrete: Acrylic, water repellent, penetrating stain
- v. Stain, Wood: Satin luster, linseed oil, solid or transparent as required
- w. Varnish: Nonpigmented vehicle based on a variety of resins (alkyd, phenolic, urethane) in gloss, semigloss, or flat finishes, as required
- x. Water Base Epoxy: Two-component, polyamide epoxy emulsion, finish as required

210-2.4 Mixing.

1. Multiple-Component Coatings:
 - a. Prepare using each component as packaged by paint manufacturer.
 - b. No partial batches will be permitted.
 - c. Do not use multiple-component coatings that have been mixed beyond their pot life.
 - d. Furnish small quantity kits for touchup painting and for painting other small areas.
 - e. Mix only components specified and furnished by paint manufacturer.
 - f. Do not intermix additional components for reasons of color or otherwise, even within the same generic type of coating.
2. Colors: Formulate paints with colorants free of lead, lead compounds, or other materials that might be affected by presence of hydrogen sulfide or other gas likely to be present at Site.

210-2.5 Shop Finishes.

1. Shop Blast Cleaning: Reference Paragraph, Shop Coating Requirements.

2. Surface Preparation: Provide Engineer minimum 7 days' advance notice to start of shop surface preparation work and coating application work.
3. Shop Coating Requirements:
 - a. When required by equipment specifications, such equipment shall be primed and finish coated in shop by manufacturer and touched up in field with identical material after installation.
 - b. Where manufacturer's standard coating is not suitable for intended service condition, Engineer may approve use of a tie-coat to be used between manufacturer's standard coating and specified field finish. In such cases, tiecoat shall be surface tolerant epoxy as recommended by manufacturer of specified field finish coat. Coordinate details of equipment manufacturer's standard coating with field coating manufacturer.
4. Steel Pipe:
 - a. Surface preparation and application of primer shall be performed by pipe manufacturer.
 - b. For pipe with epoxy lining, do not place end cap seals until pipe lining material has sufficiently dried.

210-3 EXECUTION.

210-3.1 General.

1. Provide Engineer minimum 7 days' advance notice to start of field surface preparation work and coating application work.
2. Perform the Work only in presence of Engineer, unless Engineer grants prior approval to perform the Work in Engineer's absence.
3. Schedule inspection of cleaned surfaces and all coats prior to succeeding coat in advance with Engineer.

210-3.2 Examination.

1. Factory Finished Items:
 - a. Schedule inspection with Engineer before repairing damaged factory-finished items delivered to Site.
 - b. Repair abraded or otherwise damaged areas on factory-finished items as recommended by coating manufacturer. Carefully blend repaired areas into original finish. If required to match colors, provide full finish coat in field.
2. Surface Preparation Verification: Inspect and provide substrate surfaces prepared in accordance with these Specifications and printed directions and recommendations of paint manufacturer whose product is to be applied. The more stringent requirements shall apply.

210-3.3 Protection Of Items Not To Be Painted.

1. Remove, mask, or otherwise protect hardware, lighting fixtures, switchplates, aluminum surfaces, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not specified elsewhere to be painted.
2. Provide drop cloths to prevent paint materials from falling on or marring adjacent surfaces.
3. Protect working parts of mechanical and electrical equipment from damage during surface preparation and painting process.
4. Mask openings in motors to prevent paint and other materials from entering.
5. Protect surfaces adjacent to or downwind of Work area from overspray.

210-3.4 Surface Preparation.

210-3.4.1 Field Abrasive Blasting.

1. Perform blasting for items and equipment where specified and as required to restore damaged surfaces previously shop or field blasted and primed or coated.
2. Refer to coating systems for degree of abrasive blasting required.
3. Where the specified degree of surface preparation differs from manufacturer's recommendations, the more stringent shall apply.

210-3.4.2 Surface Contamination Testing.

1. A surface contamination analysis test shall be performed every 500 square feet by means of a Chlor Test CSN Salts or approved equivalent.
2. Surface with chloride levels exceeding 3 µg/square centimeter for submerged surfaces and 5 µg/square centimeter for exposed surfaces shall be treated with a liquid soluble salt remover equivalent to CHLOR*RID (CHLOR*RID International, Chandler, AZ).
3. Follow manufacturer's recommendations and procedures for the use of this product to remove the surface contamination.

210-3.4.3 Metal Surface Preparation.

1. Where indicated, meet requirements of SSPC Specifications summarized below:
 - a. SP 1, Solvent Cleaning: Removal of visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants by cleaning with solvent.
 - b. SP 2, Hand Tool Cleaning: Removal of loose rust, loose mill scale, loose paint, and other loose detrimental foreign matter, using nonpower hand tools.

- c. SP 3, Power Tool Cleaning: Removal of loose rust, loose mill scale, loose paint, and other loose detrimental foreign matter, using power- assisted hand tools.
 - d. SP 5, White Metal Blast Cleaning: Removal of visible oil, grease, dust, dirt, mill scale, rust, coatings, oxides, corrosion products, and other foreign matter by blast cleaning.
 - e. SP 6, Commercial Blast Cleaning: Removal of visible oil, grease, dust, dirt, mill scale, rust, coatings, oxides, corrosion products, and other foreign matter, except for random staining limited to no more than
 - f. 33 percent of each unit area of surface which may consist of light shadows, slight streaks, or minor discolorations caused by stains of rust, stains of mill scale, or stains of previously applied coatings.
 - g. SP 7, Brush-Off Blast Cleaning: Removal of visible rust, oil, grease, soil, dust, loose mill scale, loose rust, and loose coatings. Tightly adherent mill scale, rust, and coating may remain on surface.
 - h. SP 10, Near-White Blast Cleaning: Removal of visible oil, grease, dust, dirt, mill scale, rust, coatings, oxides, corrosion products, and other foreign matter, except for random staining limited to no more than
 - i. 5 percent of each unit area of surface which may consist of light shadows, slight streaks, or minor discolorations caused by stains of rust, stains of mill scale, or stains of previously applied coatings.
 - j. SP 11, Power Tool Cleaning to Bare Metal: Removal of visible oil, grease, dirt, dust, mill scale, rust, paint, oxide, corrosion products, and other foreign matter using power-assisted hand tools capable of producing suitable surface profile. Slight residues of rust and paint may be left in lower portion of pits if original surface is pitted.
 - k. SP-16, Brush Blasting of Non-Ferrous Metals: A brush-off blast cleaned non-ferrous metal surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, metal oxides (corrosion products), and other foreign matter. Intact, tightly adherent coating is permitted to remain. A coating is considered tightly adherent if it cannot be removed by lifting with a dull putty knife. Bare metal substrates shall have a minimum profile of 19 micrometers (0.75 mil).
2. The words "solvent cleaning", "hand tool cleaning", "wire brushing", and "blast cleaning", or similar words of equal intent in these Specifications or in paint manufacturer's specification refer to the applicable SSPC Specification.
 3. Where OSHA or EPA regulations preclude standard abrasive blast cleaning, wet or vacu-blast methods may be required. Coating manufacturers' recommendations for wet blast additives and first coat application shall apply.

4. Hand tool clean areas that cannot be cleaned by power tool cleaning.
5. Round or chamfer sharp edges and grind smooth burrs, jagged edges, and surface defects.
6. Welds and Adjacent Areas:
 - a. Prepare such that there is:
 - i. No undercutting or reverse ridges on weld bead.
 - ii. No weld spatter on or adjacent to weld or any area to be painted.
 - iii. No sharp peaks or ridges along weld bead.
 - b. Grind embedded pieces of electrode or wire flush with adjacent surface of weld bead.
7. Preblast Cleaning Requirements:
 - a. Remove oil, grease, welding fluxes, and other surface contaminants prior to blast cleaning.
 - b. Cleaning Methods: Steam, open flame, hot water, or cold water with appropriate detergent additives followed with clean water rinsing.
 - c. Clean small isolated areas as above or solvent clean with suitable solvent and clean cloth.
8. Blast Cleaning Requirements:
 - a. Type of Equipment and Speed of Travel: Design to obtain specified degree of cleanliness. Minimum surface preparation is as specified herein and takes precedence over coating manufacturer's recommendations.
 - b. Select type and size of abrasive to produce surface profile that meets coating manufacturer's recommendations for particular primer to be used.
 - c. Use only dry blast cleaning methods.
 - d. Do not reuse abrasive, except for designed recyclable systems.
 - e. Meet applicable federal, state, and local air pollution and environmental control regulations for blast cleaning, confined space entry (if required), and disposition of spent aggregate and debris.
9. Post-Blast Cleaning and Other Cleaning Requirements:
 - a. Clean surfaces of dust and residual particles from cleaning operations by dry (no oil or water vapor) air blast cleaning or other

method prior to painting. Vacuum clean enclosed areas and other areas where dust settling is a problem and wipe with a tack cloth.

- b. Paint surfaces the same day they are blasted. Reblast surfaces that have started to rust before they are painted.

10. Galvanized Metal, Copper, and Nonferrous Metal Alloy Surface Preparation:

- a. Remove soil, cement spatter, and other surface dirt with appropriate hand or power tools.
- b. Brush blast in accordance with SSPC SP 16.
- c. Obtain and follow coating manufacturer's recommendations for additional preparation that may be required.

11. Concrete Surface Preparation:

- a. Do not begin until 30 days after concrete has been placed.
- b. Meet requirements of SSPC SP 13.
- c. Remove grease, oil, dirt, salts or other chemicals, loose materials, or other foreign matter by solvent, detergent, or other suitable cleaning methods.
- d. Brush-off blast clean to remove loose concrete and laitance, and provide a tooth for binding. Upon approval by Engineer, surface may be cleaned by acid etching method. Approval is subject to producing desired profile equivalent to No. 80 grit flint sandpaper. Acid etching of vertical or overhead surfaces shall not be allowed.
- e. Secure coating manufacturer's recommendations for additional preparation, if required, for excessive bug holes exposed after blasting.
- f. Unless otherwise required for proper adhesion, ensure surfaces are dry prior to painting.

12. Plastic and FRP Surface Preparation:

- a. Hand sand plastic surfaces to be coated with medium grit sandpaper to provide tooth for coating system.
- b. Large areas may be power sanded or brush-off blasted, provided sufficient controls are employed so surface is roughened without removing excess material.

13. Masonry Surface Preparation:

- a. Complete and cure masonry construction for 14 days or more before starting surface preparation work.

- b. Remove oil, grease, dirt, salts or other chemicals, loose materials, or other foreign matter by solvent, detergent washing, or other suitable cleaning methods.
- c. Clean masonry surfaces of mortar and grout spillage and other surface deposits using one of the following:
 - i. Nonmetallic fiber brushes and commercial muriatic acid followed by rinsing with clean water.
 - ii. Brush-off blasting.
 - iii. Water blasting.
 - iv. Do not damage masonry mortar joints or adjacent surfaces.
 - v. Leave surfaces clean and, unless otherwise required for proper adhesion, dry prior to painting.
 - vi. Masonry Surfaces to be Painted: Uniform texture and free of surface imperfections that would impair intended finished appearance.
 - vii. Masonry Surfaces to be Clear Coated: Free of discolorations and uniform in texture after cleaning.

14. Wood Surface Preparation:

- a. Replace damaged wood surfaces or repair in a manner acceptable to Engineer prior to start of surface preparation.
- b. Solvent clean (mineral spirits) knots and other resinous areas and coat with shellac or other knot sealer, prior to painting. Remove pitch by scraping and wipe clean with mineral spirits or turpentine prior to applying knotsealer.
- c. Round sharp edges by light sanding prior to priming.
- d. Filler:
 - i. Synthetic-based wood putty approved by paint manufacturer for paint system.
 - ii. For natural finishes, color of wood putty shall match color of finished wood.
 - iii. Fill holes, cracks, and other surface irregularities flush with surrounding surface and sand smooth.
 - iv. Apply putty before or after prime coat, depending on compatibility and putty manufacturer's recommendations.
 - v. Use cellulose type putty for stained wood surfaces.
- e. Ensure surfaces are clean and dry prior to painting.

15. Existing Painted Surfaces to be Repainted Surface Preparation:
 - a. Detergent wash and freshwater rinse.
 - b. Clean loose, abraded, or damaged coatings to substrate by hand or power tool, SP 2 or SP 3.
 - c. Feather surrounding intact coating.
 - d. Apply one spot coat of specified primer to bare areas, overlapping prepared existing coating.
 - e. Apply one full finish coat of specified primer to entire surface.
 - f. If an aged, plural-component material is to be topcoated, contact coating manufacturer for additional surface preparation requirements.
16. Application of Cosmetic Coat:
 - a. It is assumed that existing coatings have oxidized sufficiently to prevent lifting or peeling when overcoated with paints specified.
 - b. Check compatibility by application to a small area prior to starting painting.
 - c. If lifting or other problems occur, request disposition from Engineer.
17. Perform blasting as required to restore damaged surfaces. Materials, equipment, procedures shall meet requirements of SSPC.

210-3.5 Surface Cleaning.

210-3.5.1 Brush-Off Blast Cleaning.

1. Equipment, procedure, and degree of cleaning shall meet requirements of SSPC SP 7.
2. Abrasive: Either wet or dry blasting sand, grit, or nutshell.
3. Select various surface preparation parameters, such as size and hardness of abrasive, nozzle size, air pressure, and nozzle distance from surface such that surface is cleaned without pitting, chipping, or other damage.
4. Verify parameter selection by blast cleaning a trial area that will not be exposed to view.
5. Engineer will review acceptable trial blast cleaned area and use area as a representative sample of surface preparation.
6. Repair or replace surface damaged by blast cleaning.

210-3.5.2 Acid Etching.

1. After precleaning, spread the following solution by brush or plastic sprinkling can: One part commercial muriatic acid reduced by two parts water by volume. Adding acid to water in these proportions gives an approximate 10 percent solution of HCl.
2. Application:
 - a. Rate: Approximately 2 gallons per 100 square feet.
 - b. Work acid solution into surface by hard-bristled brushes or brooms until complete wetting and coverage is obtained.
 - c. Acid will react vigorously for a few minutes, during which time brushing shall be continued.
 - d. After bubbling subsides (10 minutes), hose down remaining slurry with high pressure clean water.
 - e. Rinse immediately to avoid formation on the surface of salts that are difficult to remove
 - f. Thoroughly rinse to remove any residual acid surface condition that may impair adhesion.
3. Ensure surface is completely dry before application of coating.
4. Apply acid etching to obtain a "grit sandpaper" surface profile. If not, repeat treatment.

210-3.5.3 Solvent Cleaning.

1. Consists of removal of foreign matter such as oil, grease, soil, drawing and cutting compounds, and any other surface contaminants by using solvents, emulsions, cleaning compounds, steam cleaning, or similar materials and methods that involve a solvent or cleaning action.
2. Meet requirements of SSPC SP 1.

210-3.6 Application.

210-3.6.1 General.

1. The intention of these Specifications is for new, interior and exterior masonry, concrete, and metal, and submerged metal surfaces to be painted, whether specifically mentioned or not, except as specified otherwise. Do not paint exterior concrete surfaces, unless specifically indicated.

2. Extent of Coating (Immersion): Coatings shall be applied to internal vessel and pipe surfaces, nozzle bores, flange gasket sealing surfaces, carbon steel internals, and stainless steel internals, unless otherwise specified.
3. For coatings subject to immersion, obtain full cure for completed system. Consult coatings manufacturer's written instructions for these requirements. Do not immerse coating until completion of curing cycle.
4. Apply coatings in accordance with these Specifications and paint manufacturers' printed recommendations and special details. The more stringent requirements shall apply. Allow sufficient time between coats to assure thorough drying of previously applied paint.
5. Sand wood lightly between coats to achieve required finish.
6. Vacuum clean surfaces free of loose particles. Use tack cloth just prior to applying next coat.
7. Fusion Bonded Coatings Method Application: Electrostatic, fluidized bed, or flocking.
8. Coat units or surfaces to be bolted together or joined closely to structures or to one another prior to assembly or installation.
9. On pipelines, terminate coatings along pipe runs to 1 inch inside pipe penetrations.
10. Keep paint materials sealed when not in use.
11. Where more than one coat is applied within a given system, alternate colors to provide a visual reference showing required number of coats have been applied.

210-3.6.2 Galvanized Metal, Copper, And Nonferrous Metal Alloys.

1. Concealed galvanized, copper, and nonferrous metal alloy surfaces (behind building panels or walls) do not require painting, unless specifically indicated herein.
2. Prepare surface and apply primer in accordance with System No. 10 specification.
3. Apply intermediate and finish coats of the coating system appropriate for the exposure.

210-3.6.3 Porous Surfaces Such As Concrete And Masonry.

1. Filler/Surfacer: Use coating manufacturer's recommended product to fill air holes, bug holes, and other surface voids or defects.
2. Prime Coat: May be thinned to provide maximum penetration and adhesion.
 - a) Type and Amount of Thinning: Determined by paint manufacturer and dependent on surface density and type of coating.

3. Surface Specified to Receive Water Base Coating: Damp, but free of running water, just prior to application of coating.

210-3.6.4 Film Thickness And Coverage.

1. Number of Coats:
 - a) Minimum required without regard to coating thickness.
 - b) Additional coats may be required to obtain minimum required paint thickness, depending on method of application, differences in manufacturers' products, and atmospheric conditions.
2. Application Thickness:
 - a) Do not exceed coating manufacturer's recommendations.
 - b) Measure using a wet film thickness gauge to ensure proper coating thickness during application.
3. Film Thickness Measurements and Electrical Inspection of Coated Surfaces:
 - a) Perform with properly calibrated instruments.
 - b) Recoat and repair as necessary for compliance with specification.
 - c) Coats are subject to inspection by Engineer and coating manufacturer's representative.
4. Visually inspect concrete, masonry, nonferrous metal, plastic, and wood surfaces to ensure proper and complete coverage has been attained.
 - a) Give particular attention to edges, angles, flanges, and other similar areas, where insufficient film thicknesses are likely to be present, and ensure proper millage in these areas.
 - b) Apply additional coats as required to achieve complete hiding of underlying coats. Hiding shall be so complete that additional coats would not increase the hiding.

210.3.7 Protective Coatings Systems And Application Schedule.

- A. Unless otherwise shown or specified, paint surfaces in accordance with the following application schedule. In the event of discrepancies or omissions in the following, request clarification from Engineer before starting work in question.
- B. System No. 1 Submerged Metal—Potable Water:

Surface Prep.	Paint Material	Min. Coats, Cover
SP 5, White Metal Blast Cleaning	NSF Epoxy	3 coats, 3 MDFTPC

1. Use on the following items or areas:
 - a. Metal surfaces new and existing below a plane 1 foot above the maximum liquid surface; metal surfaces above the maximum liquid surface that are a part of the immersed equipment; surfaces of

metallic items, such as wall pipes, pipes, pipe sleeves, access manholes, gate guides and thimbles, and structural steel that are embedded in concrete; and the following specific surfaces:

2. Interior surfaces of steel piping noted in the Piping Schedule.

C. System No. 2 Submerged Metal—Domestic Sewage:

Surface Prep.	Paint Material	Min. Coats, Cover
SP 5, White Metal Blast Cleaning	Prime in accordance with manufacturer's recommendations	
	Coal-Tar Epoxy -OR- High Build Epoxy	2 coats, 16 MDFT 2 coats, 16 MDFT

1. Use on the following items or areas:
 - a. Metal surfaces **new and existing** below a plane 1 foot above maximum liquid surface, metal surfaces above maximum liquid surface that are a part of immersed equipment, concrete embedded surfaces of metallic items, such as wall pipes, pipes, pipe sleeves, access manholes, gate guides and thimbles, and structural steel, and the following specific surfaces:

D. Interior surfaces of steel piping noted in the Piping Schedule. System No. 3 Submerged Metal—Other:

1. Use on the following items or areas:
 - a. Metal surfaces below a plane 1 foot above maximum liquid surface, metal surfaces above maximum liquid surface which are a part of immersed equipment, and the following specific surfaces:
2. Interior surfaces of steel piping noted in the Piping Schedule.

E. System No. 4 Exposed Metal—Highly Corrosive:

Surface Prep.	Paint Material	Min. Coats, Cover
SP 10, Near-White Blast Cleaning	Epoxy Primer— Ferrous Metal	1 coat, 2.5 MDFT
	High Build Epoxy	1 coat, 4 MDFT
	Polyurethane Enamel	1 coat, 3 MDFT

1. Use on the following items or areas:
 - a. Exposed metal surfaces, **new** located inside or outside of structures and exposed to weather.

F. System No. 5 Exposed Metal—Mildly Corrosive:

Surface Prep.	Paint Material	Min. Coats, Cover
SP 10, Near-White Blast Cleaning	Epoxy Primer— Ferrous Metal	1 coat, 2.5 MDFT
	Polyurethane Enamel	1 coat, 3 MDFT

1. Use on the following items or areas:
 - a. Exposed metal surfaces, **new** located inside or outside of structures and exposed to weather or in a highly humid atmosphere, such as pipe galleries and similar areas.

G. System No. 6 Exposed Metal—Atmospheric:

Surface Prep.	Paint Material	Min. Coats, Cover
SP 6, Commercial Blast Cleaning	Rust-Inhibitive Primer	1 coat, 2 MDFT
	Alkyd Enamel	2 coats, 4 MDFT

1. Use on the following items or areas:
 - a. Exposed metal surfaces, located inside or outside of structures or exposed to weather, including metal doors and frames, vents, louvers, exterior metal ductwork, flashing, sheet metalwork and miscellaneous architectural metal trim. Apply surface preparation and primer to surfaces prior to installation. Finish coats need only be applied to surfaces exposed after completion of construction.

H. System No. 7 Concrete Encased Metal:

Surface Prep.	Paint Material	Min. Coats, Cover
SP 6, Commercial Blast Cleaning	Coal-Tar Epoxy	2 coats, 16 MDFT

1. Use on the following items or areas:
 - a. Use on concrete encased ferrous metals including wall pipes, pipe sleeves, access manholes, gate guides, and thimbles; and the following specific surfaces:

I. System No. 8 Buried Metal—General:

Surface Prep.	Paint Material	Min. Coats, Cover
SP 10, Near-White Blast Cleaning	Standard Hot Coal-Tar Enamel -OR- Coal-Tar Epoxy	AWWA C203 2 coats, 16 MDFT
	For Highly Abrasive Soil, Brackish Water: Tape Coat System	AWWA C214 with Double Outer Wrap

1. For steel pipe and fittings, follow AWWA C209 and AWWA C214 with double outer wrap.
2. Use on the following items or areas:
 - a. Buried, below grade portions of steel items, except buried stainless steel or ductile iron.

J. System No. 10 Galvanized Metal, Copper, and Nonferrous Metal Alloy Conditioning:

Surface Prep.	Paint Material	Min. Coats, Cover
In accordance with Paragraph Galvanized Metal, Copper, and Nonferrous Metal Alloy Surface Preparation	Epoxy Primer—Other	As recommended by coating manufacturer Remaining coats as required for exposure

1. Use on the following items or areas:
 - a. Galvanized surfaces requiring painting.
 - b. After application of System No. 10, apply finish coats as required for exposure.

K. System No. 11 Faying Surfaces of Slip Critical Bolted Connections:

Surface Prep.	Paint Material	Min. Coats, Cover
SP 10, Near-White Blast Cleaning	Organic Zinc Rich Primer	1 coat, 3 MDFT

1. Use on faying surfaces of slip critical joints as specified and as shown on Drawings.

2. Provide primer in accordance with RCSC Specification for Structural Joints using High-Strength Bolts.

a. 6 surface

L. System No. 18a Concrete Exposed Metal Repair Coating—Potable Water and Non-Submerged:

Surface Prep.	Paint Material	Min. Coats, Cover
Brush blast concrete in accordance with Paragraph Concrete Surface Preparation; blast exposed reinforcing steel to Near White Metal, SSPC SP10. See Note 1	NSF Epoxy; finish color white	2 coats, 4 MDFTPC, see Note 2.
<p>Note 1. Surface Preparation Alternative: Mechanical abrade concrete surfaces to meet International Concrete Restoration Association standard 37/32, Concrete Surface Profile No. 3. Mechanically abrade exposed ends of reinforcing steel in accordance with SSPC SP-11.</p> <p>Note 2. Brush out surface voids and irregularities to provide a monolithic film.</p>		

1. Use this system:

a. On saw-cut concrete surfaces that will not receive new concrete to cover exposed ends of rebar and metal embeds. Or alternately, where approved, over ends of and minimum 2 inches around ends of exposed metal and rebar in lieu of entire surface.

M. System No. 19 Concrete Tank Lining—Domestic Sewage:

Surface Prep.	Paint Material	Min. Coats, Cover
In accordance with Paragraph Concrete Surface Preparation	Epoxy Filler/Surfacer	As required to fill voids and level surface
	Epoxy, High Solids	3 coats, 250 SFGPC

1. Use on the following items or areas:

a. Concrete surfaces below a plane 1 foot above maximum liquid surface

N. System No. 19a Concrete Exposed Metal Repair Coating—Wastewater:

Surface Prep.	Paint Material	Min. Coats, Cover
Brush blast concrete in accordance with Paragraph Concrete Surface Preparation; blast exposed reinforcing steel to Near White Metal, SSPC SP10. See Note 1.	Amine-cured epoxy, suitable for exposure to primary wastewater, finish color gray.	2 coats, 8 MDFTPC, see Note 2.
<p>Note 1. Surface Preparation Alternative: Mechanical abrade concrete surfaces to meet International Concrete Restoration Association standard 37/32, Concrete Surface Profile No. 3. Mechanically abrade exposed ends of reinforcing steel in accordance with SSPC SP-11.</p> <p>Note 2. Brush out surface voids and irregularities to provide a monolithic film.</p>		

1. On saw-cut concrete surfaces that will not receive new concrete to cover exposed ends of rebar and metal embeds. Or alternately, where approved, over ends of and minimum two inches around ends of exposed metal and rebar in lieu of entire surface.

O. System No. 20 Concrete Tank Lining—Other:

1. Use on the following items or areas:
 - a. Concrete surfaces below a plane 1 foot above maximum liquid surface

P. System No. 21 Skid-Resistant—Concrete:

Surface Prep.	Paint Material	Min. Coats, Cover
In accordance with Paragraph Concrete Surface Preparation	Epoxy Nonskid (Aggregated)	1 coat, 160 SFPG

1. Use on the following items or areas:
 - a. Concrete slab on grade / walking surfaces.

Q. System No. 22 Chemical-Resistant Wall, Heavy-Duty— Concrete, Masonry:

Surface Prep.	Paint Material	Min. Coats, Cover
In accordance with Paragraph for Concrete and Masonry Surface Preparation	Epoxy Filler/Surface	1 coat as required to fill voids and smooth surface; apply to 100 percent of surface.
	High Build Epoxy	1 coat, 160 SFPG
	High Build Epoxy, Gloss	1 coat, 160 SFPG

1. Use on the following items or areas:
 - a. All exposed interior CMU building wall surfaces.

R. System No. 25 Exposed FRP, PVC:

Surface Prep.	Paint Material	Min. Coats, Cover
In accordance with Paragraph Plastic and FRP Surface Preparation	Acrylic Latex Semigloss	2 coats, 320 SFPGPC

1. Use on the following items or areas:
 - a. All exposed-to-view PVC and CPVC surfaces, and FRP surfaces without integral UV-resistant gel coat.

S. System No. 27 Aluminum and Dissimilar Metal Insulation:

Surface Prep.	Paint Material	Min. Coats, Cover
Solvent Clean (SP 1)	Prime in accordance with manufacturer's recommendations	
	Bituminous Paint	1 coat, 10 MDFT

1. Use on aluminum surfaces embedded or in contact with concrete.

NC MORENA PUMP STATION & PIPELINES

T. System No. 29 Fusion Bonded Coating:

Surface Prep.	Paint Material	Min. Coats, Cover
SP 10, Near-White Blast Cleaning	Fusion Bonded Coating 100% Solids Epoxy	1 or 2 coats, 7 MDFT

1. For steel pipe and fittings, meet all requirements of AWWA C213.

U. System No. 29A Fusion Bonded, Steel Dowel Coating:

Surface Prep.	Paint Material	Min. Coats, Cover
SP 10, Near-White Blast Cleaning	Fusion Bonded Coating 100% Solids Epoxy	1 or 2 coats, 7 MDFT
TFE Lube, Shop Applied; Grease Lube Alternative, Field Applied Just Prior to Installation	TFE Lube or Grease Lube	1 coat, as required

1. Use on steel expansion joint dowels as specified in the standard specification.

210-3.8 Architectural Paint Systems And Application Schedule.

- A. Unless otherwise shown or specified, paint surfaces in accordance with the following application schedule. In the event of discrepancies or omissions in the following, request clarification from Engineer before starting work in question. Additional requirements may be included in the Piping Schedule.
- B. System No. 106 Galvanized Metal:

Surface Prep.	Paint Material	Min. Coats, Cover
In accordance with Paragraph Galvanized Metal, Copper, and Nonferrous Metal Alloy Surface Preparation	Manufacturer's Recommended Primer	1 coat, as recommended by manufacturer

Surface Prep.	Paint Material	Min. Coats, Cover
	Alkyd Enamel (Semigloss)	2 coats, 4 MDFT

1. Use on the following items or areas:
 - a. Hollow metal frames and doors.

C. System No. 107 Metal Trim and Structural Steel:

Surface Prep.	Paint Material	Min. Coats, Cover
SP 6, Commercial Blast Cleaning	Rust-Inhibitive Primer	1 coat, 2 MDFT
	Alkyd Enamel (Semigloss)	2 coats, 4 MDFT

1. Use on the following items or areas:
 - a. All exposed structural steel, flashing, sheet metal.

D. System No. 110 Masonry Sealer:

Surface Prep.	Paint Material	Min. Coats, Cover
In accordance with Paragraph Masonry Surface Preparation	Acrylic Sealer	2 coats, 100 SFPGPC

1. Use on the following items or areas:
 - a. Exterior side of masonry wall.

SECTION 212 – WATER AND SEWER SYSTEM VALVES AND APPURTENANCES

212-4.4 Gear Actuators. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

212-4.4.1 General.

212-4.4.1.1 Summary.

- A. This section includes materials, installation and testing of electric motor actuators for valves six inches and larger in accordance with AWWA C540, except as modified below. The electric motor actuator shall include any

necessary intermediate gearing between the electric actuator and the valve to which it is attached. Refer to Part 2.1 of this specification for minimum manufacturer requirements.

212-4.4.1.2 References.

All work covered in this section shall comply with the following standards;

- A. American Water Works Association: C540 Power Actuating Devices for Valves and Sluice Gates
- B. National Electrical Manufacturers Association
- C. National Fire Protection Agency: 70 National Electrical Code.

212-4.4.1.3 Submittals.

- A. Manufacturer's catalog data showing motor actuator parts and materials of construction referenced by NEMA specification and grade. Show motor actuator dimensions, weights and coatings.
- B. Motor data including nameplate data, insulation type, output torque, voltage, phases, frequency, current at running torque and locked rotor, duty rating, and open/close travel time.
- C. Open/close travel times meeting the valve travel times shall be 15 minutes. The open/close travel time is defined as the time required for the valve to travel, or stroke, from close-to-open or open-to-close. A cycle is defined as close to open and back to close, which is equal to two strokes of the valve. Valve positioning time shall be programmable at the project site at any time. If required, positioning time for different portions of the valve stroke shall be independently programmable.
- D. Electrical schematic drawings and physical wiring diagrams showing all components.
- E. Certified factory performance test records, including written cycle test results as specified herein.
- F. Documentation confirming actuator has a minimum maintenance history of 50 units of the same model and option package as the proposed actuator, with each unit functioning in a field installation for a period of one year without defect or malfunction in accordance with the requirements of Part 2.1, Paragraph C of this section.
- G. Drawings of the electrical components enclosure, showing physical layout in three dimensions or views.
- H. Electronic measurement of torque. No use of mechanical switches for torque measurement.
- I. Complete specifications and ordering information for replacement motors.

- J. Certified factory performance test report.
- K. Warranty certification from actuator manufacturer. Operation and maintenance manuals containing the following:
 1. Complete installation instructions;
 2. Operating and maintenance instructions;
 3. Complete parts list;
 4. Part change out instructions;
 5. Theory of operation of the actuator and intermediate gearing;
 6. Expanded parts drawings, showing all mechanical and electrical parts.
 7. Electrical schematic drawings and physical wiring diagrams showing all components.
 8. Drawings of the electrical components enclosure, showing physical layout in three dimensions or views;
 9. List of recommended spare parts.
 10. List of special tools for installation, maintenance, and adjustments;
 11. All software and interface cabling used for maintenance or programming.
 12. Lubrication guide with list of recommended lubricants.
- L. Copies of factory training certification, from the actuator manufacturer, for any maintenance or installation technicians. Provide training certifications specific to the model installed. Certificates shall be accepted by the Engineer before technicians are authorized to perform any work on the valve actuators.

212-4.4.2 Products.

212-4.4.2.1 Manufacturers.

- A. Actuators designated in the Contract Documents as "intelligent electric motor actuators" shall be AUMA - Group Non-Intrusive, or approved equal.
- B. Actuator manufacturers shall have experience manufacturing and installing valve actuators.
- C. Actuator shall have a minimum maintenance history of 50 units, of the same model and option package as the proposed actuator, which have each functioned in a field installation for a period of one year without defect or malfunction. Valve actuator manufacturer shall provide complete documentation to meet this requirement, including contact names, telephone numbers, and fax numbers, to verify the field installations. Acceptance of the validity of submitted maintenance history is solely at the discretion of the Engineer.

212-4.4.2.2 Actuator Identification.

- A. Identify electric motor actuators by model number and serial number shown cast or molded onto the actuator body or on a permanently attached plate in raised letters.

212-4.4.2.3 Geared Operators.

- A. Geared valve operators shall conform to AWWA C-504
- B. Intermediate Geared Operators.
 - 1. Provide intermediate operators of spur, helical, or bevel gears, between the new electric motor actuator and the new or existing geared valve operators, if needed to provide the specified open/close time, and to provide proper operation of the valve. Design the intermediate geared operators with bearings suitable for adapting to an electric actuator. Do not provide operators designed with bushings.
 - 2. Intermediate geared operators shall be enclosed, oil or grease lubricated, with seals provided on shafts to prevent entry of dirt and water into the operator. Intermediate geared operators do not need a dial indicating the position of the valve.
 - 3. Provide intermediate geared operators of the totally enclosed design, proportioned to permit operation of the valve under full differential pressure equal to the pressure rating of the valve, with a maximum input of 150 foot-pounds on the operating shaft. Orient intermediate geared operators to operate with valve stem and electric actuator as directed by the Engineer.
 - 4. Support gear shaft at each end by ball or tapered roller bearings. Provide reduction gearing to meet maximum torque and pull design requirement. The reduction gearing shall run in a proper lubricant.
 - 5. Intermediate geared operators shall open valves by turning counterclockwise.

212-4.4.2.4 Motors For Electric Actuators.

- A. Provide a 120 V single phase electrical connection to the power available at the Project site. The motor shall be operated by an integrated frequency converter and be three phase, non-ventilated, totally enclosed. The electric motors must be rated for continuous duty.
- B. Provide motors with Class F or H insulation, specifically designed for valve actuation service, and 100 start/stops per hour without overheating. Heat rise after 100 start/stops in an hour shall be less than 50 degrees C. Heat rise after three full consecutive valve cycles shall be less than 50 degrees C. If travel time

requirements would cause the three-cycle test to extend beyond 60 minutes, limit the test to 60 continuous minutes.

- C. Provide motor output capacity sufficient to open or close the valve against the maximum differential pressure when the voltage is 10 percent above or below normal at the specified service conditions.
- D. Motor bearings shall be of the anti-friction type, and permanently lubricated.
- E. Provide overload protection by integrated electronic surveillance of the motor with the use of a linear positive temperature coefficient, PTC, sensor with monitoring by the control unit.
- F. For ease of motor or gear replacement, the motor shall be an independent sub-assembly of the actuator power unit, so the power gearing shall not be an integral part of the motor assembly. The wiring shall be easily disconnected during replacement.
- G. If replacement motors or motor assemblies for use in the electric actuator are not available to the Water Authority directly from a motor manufacturer, supply spare electric motors or motor assemblies so the Water Authority has immediate access to spare motors. At the time electric actuators are delivered to the Project site, provide the Engineer with one spare motor or motor assembly for each size or style of motor supplied for this Project.

212-4.4.2.5 Actuator Torque Requirements.

- A. Provide actuator with rated output torque at least one and one half times the maximum torque required to operate the valve at any position, including seating and unseating conditions, and neglecting hammer- blow effect.
- B. Maximum torque requirement is defined as the torque required at the most severe operating conditions, including maximum differential pressure across the valve, and maximum mechanical friction or other restrictive conditions inherent in the valve assembly.
- C. The differential pressure across the valve is defined as the pressure rating of the valve, or as specified herein.
- D. Actuator maximum torque shall be calculated with the applied voltage 25 percent below the nominal motor voltage rating. The actuator shall produce no more than the nominal maximum torque in overvoltage conditions.
- E. Coordinate with the valve manufacturer to ensure that the motor actuator stall torque output does not exceed the torque limits of the valve operating stem or shaft.
- F. Except as specified otherwise, base the maximum line velocity for torque calculations on the maximum design flow rate as indicated on the Plans.
- G. The line fluid temperature range shall be 40 degrees F to 100 degrees F.

212-4.4.2.6 Electrical Characteristics

A. Operating Speed and Indication

1. Design the actuator to move a valve from fully closed to fully open, or one stroke, in a time of 15 minutes for each valve, with a tolerance of plus or minus two percent. Actuator shall maintain specified travel times during a plus or minus 25 percent fluctuation in voltage. Travel times shall be variable after commissioning without mechanical changes of the actuator.
2. Design valve actuators for modulating service of the plunger valve to regulate flows. Actuator control shall be performed by an outside control source, unless specifically stated to the contrary elsewhere in this section. Any movement, control, or functionality that is done by the actuator without an outside control source shall be disabled, allowing full and exclusive control from the outside control source.
3. The integrated electronics of the actuator shall provide a soft start and stop of the valve movement. Torque reserves shall be sufficient to move the valve out of the end positions.

B. Actuator Housing

1. The housing for the actuator motor and electrical components shall be NEMA 6.
2. The housing shall have double-sealed dust and water protection at electrical connection compartment.
3. Removal of fuses and switch adjustments shall be accomplished without necessitating removal of other components within the enclosure for ready access.
4. Enclosures shall have at least one 1-1/4 - inch minimum and one to 1 1/4 inch NPT threaded hubs for conduit entry.

C. Power Transmission

1. Provide the actuator with an internal, multiple reduction power gearing unit, consisting of spur or helical gears and worm gearing.
2. Provide a self-locking worm gear set in the drive train to maintain valve position.
3. Provide the spur or helical gearing and worm of hardened alloy steel, and the worm gear of alloy bronze. Manufacture all power gearing accurately.
4. Do not use non-metallic, aluminum, or cast gearing.
5. Use anti-friction bearings with caged balls or roller throughout.
6. All rotating power train components shall operate immersed in grease or oil with provisions for inspection and re-lubrication without disassembly.
7. Lubricants shall be suitable for ambient conditions of minus 20 degrees F to ISO degrees F. Provide adequate seals on all shafting.

8. Noise generated by the actuator shall not exceed 72 dBA at all times within a three-foot radius.
9. The design shall permit the gear case to be opened for inspection or disassembled without releasing the stem thrust or taking the valve out of service.

212-4.4.2.7 Intelligent (Non-Intrusive) Electric Motor Actuators.

A. General Design

1. The actuator shall be of a modular design, allowing rapid replacement of faulty modules or sub- sections. Include as one integral assembly the motor, internal reduction gearing, electronic position and torque detection and push button controls.
2. The actuator shall be an intelligent, microprocessor-based design, with Bluetooth wireless interface as an option. All wireless functionality shall be password protected and disabled when not in use.
3. All calibration and set-up features shall be available from a non-intrusive front panel, accessible without requiring the removal of any covers or the use of special tools. Include password protection preventing any changes to the setup as a feature.
4. Actuator shall be suitable for service within the temperature range from minus 20 degrees C to plus 60 degrees C.
5. The electric motor shall be electrically connected to the actuator through use of a plug-in electrical connector. The motor shall be removable without draining oil or grease from the gearbox.

B. Communication with Actuator

1. Actuator shall be configurable for remote step-mode control, using 120 VAC control power, as specified on the Plans.
2. Actuator shall supply 120 VAC control power for remote control, and shall accept external 120 VAC control power for remote control. Internal actuator power supplies shall be automatically protected against overcurrent or short circuit conditions.
3. Actuator shall allow manual programming of all programmable features via front-panel switches and local display and laptop programming as detailed in Part 2.07, Paragraph B, Item 5 of this section.
4. Actuator shall allow access to all programmable features via a laptop computer connected to the actuator. If software other than a terminal emulator is required for access, then the software, the interface, and a

cable shall be provided to the Engineer at the time of delivery of each actuator.

5. The programming port access shall be by Bluetooth, or other means that does not require the actuator to be opened in any way to connect a laptop to the actuator and gain access to the programming features.

C. Local/Remote Interface

1. Actuator shall have a local interface/display screen capable of displaying at least 32 alphanumeric characters and a 0 percent to 100 percent bar graph display for valve position readout. All text messages or displays shall be in English.
2. Actuator shall have local push buttons (open, close, stop/enter and remote/local). The remote/local (LOR) push button or selector switch shall be lockable in any position by using a standard padlock.
3. Local and remote programming interface shall be protected by user-selectable password protection for all programmable features.
4. The local control pushbuttons shall not penetrate the actuator enclosure, and shall electrically isolate the operator from any internal voltages.
5. The push buttons for open and close shall have jog switch functionality.
6. Four contacts shall be provided for remote indication of valve open/close limit indication. These contacts shall be I-NO and 1-NC for open or closed limit indication. These contacts shall be programmable for operation at any position between full open and full closed positions, or shall be programmable to indicate any of the following: mid-travel, local mode, over torque, motor over temperature, manual operation, remote mode, valve moving, close torque switch, open torque switch, hardware failure, or valve jammed. These contacts shall be rated 250 VAC/30 VDC, three A.

D. Position/Limit/Torque Sensors

1. Actuators shall use non-contact type absolute position encoders, capable of at least 32-bit resolution. Position encoders shall sense actual valve position at all times, during electrical or handwheel operation, with or without applied electrical power, and without the use of batteries. The encoder maximum error shall be less than one percent and shall provide the same repeatability, linearity, and positional accuracy throughout the entire range of motion. Actuators that rely on batteries to retain position, limit settings, or any other programmable feature during a power outage are not acceptable.
2. Open and close valve travel-limit positions shall be a function of an absolute position encoder, stored in permanent, non-volatile memory, and be easily adjustable from the local or remote interface.

3. Torque shall be measured with a non-mechanical, purely electronic sensor. The motor-torque limit shall be adjustable over 50 percent to 100 percent of design torque in 10 percent increments.
4. The motor shall automatically de-energize if an over-torque condition is sensed. Torque limit protection shall automatically adjust for initial valve un-seating, or for programmed torque seating of valves. The actuator shall provide a remove blocking functionality.

E. Intelligent Control Module

1. The actuator control module shall be of a modular design, with replaceable circuit boards for troubleshooting. The control module shall be entirely housed within the actuator, and easily accessible for maintenance.
2. The control circuit boards or modules shall be connected with plug-in card connectors or wiring plugs.
3. The control module shall include an integrated frequency converter for motor operation. The control module shall include any necessary internal protection fuses. No external or accessory fuses shall be required for full protection of the motor or control electronics package.
4. The control module shall include a feature to reduce speed as it nears open or close limits based on valve percentage. This feature shall be able to be turned off and adjusted as needed.
5. The control module shall incorporate an automatic phase-correction circuit to correct motor rotation errors due to incorrect Project site wiring.
6. The control module shall include an automatic phase-failure detection circuit that shall disable motor rotation if a phase-loss is detected.
7. The control module shall allow step-mode control of the actuator.
8. The control module shall offer two additional non-latching NO relay outputs, and one additional NC relay output. All relay outputs shall be rated at 120 VAC, three Amps. These relay outputs shall be user-configurable to offer indications of any of the following conditions: pre-programmed valve position, over-torque, HAND-OFF-AUTOMATIC in local mode, HAND-MODE-AUTOMATIC in off mode, hand wheel operation, motor over-temperature, open torque switches, closed torque switches, hardware failure and valve moving.
9. Terminals shall be included within the actuator control wiring compartment to power the control module from an external 24 VDC source.
10. Design the control module to prevent undesired valve operation in the event of an internal fault or erratic command signal. Fault detection by the control module, or failure of the control module. Shall not energize the motor.

11. Actuator calibration shall be possible without removing any covers, does not require any special tools, and be accomplished by answering simple questions displayed on the operator display.
12. The control module shall accumulate and store diagnostic information about the performance of the actuator. This information shall include motor, position encoder, and contractor performance, cycle time, hand wheel operations, actuator identification, output turns, and a torque profile of the valve baseline stroke and the last valve stroke for comparison. All diagnostic information shall be displayed on the local operator interface panel, and shall be available over the digital communication link.

F. Power/Control Wiring

1. Locate all connections in a compartment that is separate from the control circuits and other internal spaces. Accessing the wiring compartment shall not require opening any other actuator compartments.
2. The wiring connections compartment shall contain a suitable number of screw-type terminals to allow connection of step-mode controls or digital communication control wiring, and the control wiring shall be physically separated from the power wiring. The terminals shall be easily accessible without removing components or the use of special tools.

212-4.4.2.8 Drive Sleeve.

- A. Provide a drop-in stem nut held in place with a snap ring, torque bushing, or threaded locknut and keyway which couples the actuator to the intermediate geared operator or valve stem and provides a versatile means of disassembling the actuator from the operator or valve.

212-4.4.2.9 Factory Testing Of Motor Actuator.

- A. Test each actuator before shipment to the Project site. Submit certified test reports of performance. The application torque used during the testing shall be the maximum torque required to open or close the valve at any position including seating and unseating conditions.

212-4.4.2.10 Manual Actuators.

- A. Provide lever or wrench actuators for exposed valves three inches and smaller.
- B. Provide enclosed gear actuators on butterfly, ball, and plug valves four inches and larger. Gear actuators shall be worm and gear type.
- C. Design gear actuators assuming that the differential pressure across the plug or disc is equal to the pressure rating valve.
- D. Gear actuators shall be enclosed, lubricated with oil or grease, and provided with seals on shafts to prevent entry of dirt and water into the actuator. Gear actuators

for valves located in vaults and structures shall have as shown on the Plans, either hand wheels or operating nuts or extension stems to valve boxes at grade level. The actuators for valves exposed service shall contain a dial indicating the position of the valve disc or plug. Attach two-inch operating nut to the input shaft with a keyway and Allen screw.

- E. Worm and gear actuators shall be of the totally enclosed design so proportioned as to permit operation of the valve under full differential pressure rating of the valve with a maximum pull of 80 pounds on the hand wheel and a maximum input of 150 foot-pounds on the operating nut. Provide stop limiting devices in the actuators in the open and closed positions. Actuators shall be of the self-locking type to prevent the disc or plug from creeping. Design actuator components between the input and the stop-limiting devices to withstand without damage a pull of 200 pounds for hand wheel actuators, and an input torque of 300 foot-pounds for operating nuts when operating against stops. Actuators shall be oriented to operate with valve stem extensions as shown on the plans.
- F. Self- locking worm gear shall be a one-piece design of gear bronze material (ASTM B427), accurately machine cut. Actuators for lubricated plug valves may use high strength steel gearing. The worm shall be hardened alloy steel (ASTM A322, Grade G41500; or ASTM A 148, Grade 105-85), with thread ground and polished. Helix angle of worm and gear shall be designed and cut at 3.5 degrees or less to prevent creep, unless other means to prevent creep are employed and are approved by the engineer. The actuator shall prevent creeping of the valve under all flow conditions. Support worm gear shaft at each end by ball or tapered roller bearings. Provide reduction gearing to meet maximum torque and pull design requirement. The reduction gearing shall run in a proper lubricant. Worm gear actuators shall be Lumitorque Model HBC, EIM Type WO, or approved equal.
- G. Actuators or levers shall open valves by turning counterclockwise.
- H. Provide open and close limit switches with one normally open and normally closed contact for mainline isolation valves within the flow control facility. Mount switches on the valve such that the corresponding switch transfers when the valve is fully open and closed. Limit switches shall be Square D Class 9007, HA 1 arm, C54B2 switch.

212-4.4.3 Execution.

212-4.4.3.1 Attaching Electric Actuators.

- A. Actuators shall be maintained and protected from damage according to the manufacturer's recommendations at all times before commissioning. Electrical enclosures and electrical components found with condensation or condensation related damage shall be rejected and replaced at no cost to the Water Authority before acceptance of the Work. Any Project delays or additional costs caused by actuators being rejected are solely the responsibility of the Contractor. The Work shall not be accepted until all actuators are installed and in operational condition that fully meets the requirements of this section.

- B. For new installations, the valve manufacturer shall mount the electric motor actuator and accessories on each valve and stroke the valve before shipment to the Project site. Adjust limit switch positions, valve position transmitter and torque switches. Measure and record voltage, current, torque, timing, and other operational parameters and combine with factory test data for comparison during startup testing.
- C. For new valve and actuator installations, the valve manufacturer shall provide, install and calibrate each valve actuator on the specified valve(s). The valve manufacturer shall only employ skilled workers that are factory certified by the actuator manufacturer to install and calibrate each valve actuator. Actuator mounting arrangements shall facilitate operation and maintenance and shall be determined by the valve manufacturer, unless indicated otherwise on the Plans or directed by the Engineer. Provide certification that the valve actuators have been installed and adjusted by the valve manufacturer. The actuator access cover, if present, shall be orientated to prevent the cover from falling into the workspace, causing injury to personnel.
- D. For existing installations where a new actuator is replacing an existing actuator, the actuator manufacturer or supplier shall have the responsibilities set forth in Part 3.01, Paragraphs A, Band C of this section.

212-4.4.3.2 Painting And Coating.

- A. Coat exterior metal surfaces of electric motor actuators and intermediate geared operators. Provide rust inhibiting inorganic zinc-rich primer and intermediate and finish coats of high-build epoxy recommended by the manufacturer of the equipment.

212-4.4.3.3 Field Testing Of Electric Motor Actuators.

- A. Only maintenance technicians that are certified by the actuator manufacturer shall be employed to perform any field-testing, adjustment, or set-up of the valve actuator. The factory test reports and factory recorded data shall be at the Project site before the actuator is setup and tested.
- B. The motor temperature shall be recorded before the actuator is energized and after the actuator is setup and stroked three times or 60-minutes of continuous operation. After three strokes or 60 minutes of operation, if the temperature difference is greater than 50 degrees C the actuator shall be rejected and replaced with an actuator that meets the requirements of this section.
- C. Test motor actuators as installed by measuring the current drawn (in amperes) by each motor for unseating, seating, and running conditions. The measured current shall not exceed the current measurement recorded during the factory performance test by more than five percent.

- D. If the measured current drawn exceeds the value identified in Part 3.03, Paragraph C of this section, provide a larger motor of the same type or a gear drive or adjust the actuator so that the measured amperage does not exceed the value.
- E. Ensure that limit switches are placed at their correct settings. Open and close valves twice and ensure that limit switches function. Verify the position transmitters and any other information being developed in the actuator complies with requirements contained in the Contract Documents.
- F. The electric motor actuator manufacturer shall be available at the Project site to check the installation, supervise the startup, and conduct field-testing and adjustment of the equipment.

Provide factory-authorized formal training in the operation and maintenance of the equipment to Water Authority personnel, so the Water Authority personnel are qualified by the submitted equipment manufacturer to maintain the equipment. Identical training shall be provided on two separate days to allow for splitting of crews. Documentation of this qualification shall be provided as part of the training package.

- G. All electric actuator digital communication shall be verified to be correct and without errors before acceptance. Re-occurring error or warning messages shall not be allowed on the displays or in the communications.

212-4.4.3.4 Electric Motor Actuator Warranty.

- A. The electric motor actuator manufacturer shall warrant its product to be free from defects in materials, workmanship and performance for actuators incorporated in the Work for a period of five years from the date of recording of the Notice of Completion. Upon notice by the Water Authority, any damage or defect found during the warranty period shall be promptly repaired or replaced by the manufacturer at no additional cost to the Water Authority.
- B. In emergency situations, if warranty service is not immediately available from the vendor, supplier or the manufacturer, the Water Authority will perform repairs to re-establish proper operation of the actuator and valve. All defective parts returned by the Water Authority shall be replaced with new parts. If the Water Authority replaces the entire actuator for cause, the vendor, supplier or manufacturer shall repair or replace the entire actuator.
- C. Maintenance or repair work performed by the Water Authority during the warranty period shall not be cause for voiding the warranty.
- D. If any periodic maintenance is required during the term of the warranty, include that maintenance for the duration of the warranty.

212-5 VALVES. To the "WHITEBOOK", no. 5., DELETE in its entirety and SUBSTITUTE with the following:

5. External bolts and nuts for buried or submerged Class 150 or 250 flanges or valve fittings shall be hexagonal, Type 316 stainless steel conforming to ASTM A193, Grade B8M for bolts and ASTM A194, Grade 8M for nuts.

212-5.2 Butterfly Valves. To the "WHITEBOOK", no. 7., DELETE in its entirety and SUBSTITUTE with the following:

7. Bolts and nuts for butterfly valves end flanges shall be hexagonal, Type 316 stainless steel conforming to ASTM A193, Grade B8M for bolts and ASTM A194, Grade 8M for nuts.

212-5.3.2 Plug Valves. To the "GREENBOOK". ADD the following:

- a) Minimum valve pressure rating shall be 300 psi.
- b) Line and coat valves with fusion bonded epoxy per SSP.

212-5.6 Air Release, Air/Vacuum, and Combination Air Valves. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the Following:

212-5.6.1 General.

212-5.6.1.1 Description. This section includes materials and installation of slow-closing combination air-release and vacuum relief valves for sewage service.

212-5.6.1.2 Submittals.

- A. Submit shop drawings in accordance with the General Provisions.
- B. Submit manufacturer's catalog data and detail drawings showing all valve parts and described by material of construction, specification (such as AISI, ASTM, SAE, or CDA), and grade or type. Show linings and coatings.

212-5.6.1 Products.

212-5.6.2.1 Valve Design And Operation.

- A. Two chambers, where the primary screened chamber prevents any solids above 2mm from entering the float/seal chamber.
- B. This primary chamber to incorporate a vertical tubular screen to facilitate the ejection of trash back to the main.
- C. This primary chamber to automatically hold compressed air at the ambient pressure within the main to facilitate anti-hammer.

- D. This primary chamber to have a removable lid to allow quick interchange of the filter screen from above and without removal of the valve body from the valve vault.
- E. The flow of air and filtered water to the secondary float/seal chamber to be at a low cross-over point to guarantee anti-hammer air always in the primary chamber.
- F. The secondary chamber, holding air and filtered water, to have sufficient float buoyancy and seal integrity to seal at atmospheric pressure.
- G. This float/seal mechanism must include a combination of primary and secondary seals to allow vacuum break.
- H. Air/water flow between the primary and secondary chamber to be horizontal in direction to firstly prevent premature closing of the air valve and secondly to backflush the screen at times of negative pressure in the main.
- I. The air/vac should have an extended service interval and be easily serviced on-site, from above, with no heavy lifting in and out of pits.
- J. Provide a 1/4-inch NPT test/bleed cock.

212-5.6.2.2 Materials Of Construction.

- A. Materials of construction for air-release valves/air and vacuum-relief valves for sewage service shall be as follows:
 - 1. All metal components and including any attachments to be in ANSI 316 stainless steel
 - 2. All welds to be purge welded and fully passivated to maintain best practice durability
 - 3. Seals to be Buna-N (BNR).
 - 4. Slides and floats polycarbonate/acetal.
 - 5. ANSI 316 stainless steel 4" ANSI Flange.

212-5.6.2.3 Valve End Connections.

- A. Valves 3 inches and larger shall have flanged ends.
- B. Flanges for Class 300 valves shall comply with ASME B16.1, Class 250.

212-5.6.2.4 Valves. Custom combination sewage air valves, 2 through 8 inches, class 300: valve system shall allow unrestricted venting or reentry of air during filling or draining of pipelines and to vent small pockets of air which collect in the pipeline. Air/vacuum valve shall incorporate two floats or a float and plug connected by a common float guide to maintain an air gap between the two.

212-5.6.2 Execution.

212-5.6.3.1 Service Connections. Valves shall seat drip tight at the specified seating pressure.

212-5.6.3.2 Factory Testing.

- A. Test each valve per AWWA C512, Section 5 and the following.
- B. Hydrostatically test the pressure-containing parts at the factory with water for 30 minutes minimum at a pressure of 1.5 times the rated pressure but not less than 20 psig. Test shall show zero leakage. If leaks are observed, repair the valve and retest. If dismantling is necessary to correct valve deficiencies, provide an additional operational test per AWWA C512, Section 5 for each affected valve.
- C. The chloride content of liquids used to test austenitic stainless steel materials shall not exceed 50 ppm. To prevent deposition of chlorides as a result of evaporative drying, remove residual liquid from tested parts at the conclusion of the test.

212-5.6.3.3 Painting And Coating. Line and coat valves with fusion-bonded epoxy per the ssp. Do not coat seating areas and plastic, bronze, stainless steel, or other high alloy parts.

212-5.6.2.4 Shipment And Storage.

- A. Identify the equipment with item and serial numbers. Material shipped separately shall be identified with securely affixed, corrosion-resistant metal tags indicating the item and serial number of the equipment for which it is intended. In addition, ship crated equipment with duplicate packing lists, one inside and one on the outside of the shipping container.
- B. Pack and ship one copy of the manufacturer's standard installation instructions with the equipment. Provide the instructions necessary to preserve the integrity of the storage preparation after the equipment arrives at the jobsite and before start-up.
- C. Provide flanged openings with metal closures at least 3/16-inch thick, with elastomer gaskets and at least four full-diameter bolts. Provide closures at the place of pump manufacture prior to shipping. For studded openings, use all the nuts needed for the intended service to secure closures.
- D. Provide threaded openings with steel caps or solid-shank steel plugs. Do not use nonmetallic (such as plastic) plugs or caps. Provide caps or plugs at the place of pump manufacture prior to shipping.
- E. Clearly identify lifting points and lifting lugs on the valves. Identify the recommended lifting arrangement on boxed equipment.

212-5.6.3.5 Installation.

- A. Clean flanges by wire brushing before installing flanged valves. Clean flange bolts and nuts by wire brushing, lubricate threads with oil and graphite, and tighten nuts uniformly and progressively. If flanges leak under pressure testing, loosen or

remove the nuts and bolts, reseal or replace the gasket, reinstall or retighten the bolts and nuts, and retest the joints. Joints shall be watertight.

- B. Clean threaded joints by wire brushing or swabbing. Apply Teflon® joint compound or Teflon® tape to pipe threads before installing threaded valves. Joints shall be watertight.
- C. Do not use duct tape and plastic for covering the ends of pipe flanges. Use a solid metal cover with rubber gasket to cover flange openings during installation. These metal covers shall remain in place until the piping is connected to the valves.
- D. Do not spring flanges of connecting piping into position. Separately work connecting piping systems into position to bring the piping flanges into alignment with the matching valve flanges. Do not move valves to achieve piping alignment. Do not use electrical heating stress relieving to achieve piping alignment.
- E. Line up pipe flange bolt holes with valve nozzle bolt holes within 1/16 inch maximum offset from the center of the bolt hole to permit insertion of bolts without applying any external force to the piping.
- F. Flange face separation shall be within the gasket spacing $\pm 1/16$ inch. Use only one gasket per flanged connection.

212-5.6.3.6 Valve Field Pressure Testing. Test valves at the same time that the connecting pipelines are pressure tested. Protect or isolate any parts of valves, operators, or control and instrumentation systems whose pressure rating is less than the test pressure.

SECTION 217 – BEDDING AND BACKFILL MATERIALS

217-2.2 Stones, Boulders, and Broken Concrete. To the "GREENBOOK", Table 217-2.2, DELETE in its entirety and SUBSTITUTE with the following:

TABLE 217-2.2

Zone	Zone Limits	Maximum Size (greatest dimension)	Backfill Requirements in Addition to 217-2.1
Street or Surface Zone	From ground surface to 12" (300 mm) below pavement subgrade or ground surface	2.5" (63 mm)	As required by the Plans or Special Provisions.
Street or Surface Zone Backfill of Tunnels beneath Concrete Flatwork		Sand	Sand equivalent of not less than 30.
Trench Zone	From 12" (300 mm) below pavement subgrade or ground surface to 12" (300 mm) above top of pipe or box	6" (150 mm)	

Zone	Zone Limits	Maximum Size (greatest dimension)	Backfill Requirements in Addition to 217-2.1
Deep Trench Zone (Trenches 3' (0.9 m) wide or wider)	From 60" (1.5 m) below finished surface to 12" (300 mm) above top of pipe or box	Rocks up to 12" (300 mm) excavated from trench may be placed as backfill	
Pipe Zone	From 12" (300 mm) above top of pipe or box to 6" (150 mm) below bottom of pipe or box exterior	2.5" (63 mm)	Sand equivalent of not less than 30 or a coefficient of permeability greater than 1-½ inches/hour (35 mm per hour).
Overexcavation	Backfill more than 6" (150 mm) below bottom of pipe or box exterior	6" (150 mm)	Sand equivalent of not less than 30 or a coefficient of permeability greater than 1-½ inches/hour (35 mm per hour). Trench backfill slurry (100-E-100) per 201-1 may also be used.

SECTION 302 – ROADWAY SURFACING

302-3 PREPARATORY REPAIR WORK. To the "WHITEBOOK", ADD the following:

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

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

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

302-4.12.2.1 General. To the "WHITEBOOK", item 1, ADD the following:

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

ADD:

302-4.12.2.1.1 Slurry Treatment.

1. When slurry treatment is required by the Contract Documents, notify the Engineer at least 10 Working Days prior to the first application of slurry. The Engineer, upon assessment of street condition and classification, will verify the slurry type to be applied.
2. Application of sequential layers of slurry shall not commence until approved by the Engineer and until the following have been completed:
 - a) Mix design and wet track abrasion testing for the first-step slurry application has been approved by the Engineer. Unless otherwise directed by the Engineer, this testing may require 4 Working Days from field sampling to reporting of test results to the Engineer.
 - b) Corrective actions have been executed in accordance with 302-4.11.1.2, "Reduction in Payment Based on WTAT" such as reductions in payment, non-payment, or removal of material not meeting specifications, as directed by the Engineer.

302-4.12.4 Measurement and Payment. To the "WHITEBOOK", item 2, DELETE in its entirety and SUBSTITUTE with the following:

2. The payment for RPMS shall be the total square footage used on the project calculated using the method described and shall be paid under the following Bid items:

BID DESCRIPTION	UNIT
Rubber Polymer Modified Slurry (RPMS) Type I	SF
Rubber Polymer Modified Slurry (RPMS) Type II	SF
Rubber Polymer Modified Slurry (RPMS) Type III	SF
Rubber Polymer Modified Slurry (RPMS) Type I (Bike Lane)	SF

The Bid items for RPMS shall include full compensation for the specified surface preparation not included in other Bid items and shall include the Work necessary to construct the RPMS as specified on the Plans. Sweeping, removals, and furnishing the aggregate required for the mix design shall also be included in this Bid item.

302-5.2.1 Measurement and Payment. To the "WHITEBOOK", item 1, letter c), DELETE in its entirety and SUBSTITUTE with the following:

- c) Subgrade preparation including imported backfill material.

302-5.9 Measurement and Payment. To the "WHITEBOOK", item 2, DELETE in its entirety.

302-7.4 Payment. To the "WHITEBOOK", item 1, last sentence, DELETE in its entirety and SUBSTITUTE with the following:

Payment shall not be made for additional fabric for overlapped areas.

SECTION 303 – CONCRETE AND MASONRY CONSTRUCTION

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

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

303-5.9 Measurement and Payment. To the "WHITEBOOK", ADD the following:

7. Additional median curb and gutter removal, disposal and replacement adjacent to the Work, shall be required as directed by the Engineer. The payment for the additional removal, disposal and replace median curb and gutter shall be included in the Bid item "Additional Median Curb and Gutter Removal and Replacement".

303-5.10.2 Payment. To the "WHITEBOOK", item 3, ADD the following:

Curb ramps may require modifications from the design to account for and accommodate the latest regulations. As directed by the Engineer, Contractor shall construct the modified curb ramp as directed by the Engineer. Payment is made for this item from the allowance for "Modified Curb Ramps per New ADA Requirements" and shall be inclusive of all work to construct the new design for the curb ramp subtracted by the Bid Item for the designed curb ramp. Payment under this bid item shall be made from the allowance amount named in the Bid Schedule

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

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

SECTION 304 – METAL FABRICATION AND CONSTRUCTION

304-5 PAYMENT. To the "WHITEBOOK", REVISE section 304-5 to "304-6.

SECTION 306 – OPEN TRENCH CONDUIT CONSTRUCTION

ADD:

306-1.2 Phased Paving.

1. You shall implement phased paving, when directed and approved by the Engineer.
2. The Engineer will notify you when you can proceed with phased paving Work. Each phase shall be completed within **90 Calendar Days** after the Engineer's notification. Plan and schedule your Work accordingly to ensure each phase is complete.
3. When Phased Paving is initiated, the following Work shall be completed within the determined areas:
 - a) Installation of mains and appurtenances.
 - b) Operational checks and testing.
 - c) Mains are in service.
 - d) Trench restoration.
 - e) Road surface preparatory Work.
 - f) Installation of concrete sidewalks and curb ramps.
 - g) Adjustments of gate valves and manholes, survey monuments and utility boxes.
4. You may propose to change the limits of the determined phasing, in writing, for the Engineer's review and approval. If approved, there shall be no additional costs to the City. No additional Working Days will be granted for delays due to the City's review and approval of your proposed change and due to the implementation of that proposed change.
5. You may use multiple crews to complete each phase of paving.

ADD:

306-1.2.1 Payment.

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

306-2.8 **Advance Preparation before Connecting to Existing Pipelines.** To the "GREENBOOK", ADD the following:

Prior to making any connections to existing pipes for relocation of conflicting utilities, the Contractor shall coordinate with City staff to coordinate connection activities. Contractor to verify that the existing conditions are adequate for the proposed relocation drawings prior to ordering materials or laying any pipe or conduit.

306-3.3 Removal and Abandonment of Existing Conduits and Structures. To the "GREENBOOK", ADD the following:

1. For 16 inch (406.4 mm) and larger conduits, abandoned pipe shall be filled with sand or CLSM in accordance with 201-6, "Controlled Low Strength Material (CLSM)".

306-3.4 Minimum and Maximum Pipe Zone Trench Width. To the "GREENBOOK", ADD the following:

Where pipe trench width or depth shown on the drawing is not wide or deep enough to accommodate welding procedures, Contractor shall widen or deepen trench as needed at the joint to accomplish the work.

306-6.5.1 General. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. For PVC water pipes:
 - a) Bedding material shall:
 - i. Either be sand, crushed aggregate, or native free-draining granular material.
 - ii. 100% of the bedding material shall pass the no. 4 sieve and shall have an expansion when saturated with water of not more than 0.5%.
 - iii. Have a sand equivalent of SE 50. SE 30 or higher may be substituted for SE 50 as bedding material if all of the following requirements are met:
 - The top of the pipe and haunch areas are mechanically compacted by means of tamping, vibrating roller, or other mechanical tamper.
 - Equipment is of size and type approved by the Engineer.
 - 90% relative compaction or better is achieved.
 - b) When jetting, care shall be exercised to avoid floating of the pipe.
2. PVC sewer pipes shall be bedded in 3/8 inch (9.5 mm) or 1/2 inch (12.5 mm) crushed rock in accordance with 200-1.2, "Crushed Rock and Rock Dust". Crushed rock for PVC sewer pipes may contain recycled Portland Cement Concrete and shall conform to gradation requirements for 3/8 inch or 1/2 inch nominal size as shown in Table 200-1.2.1 (A).
3. Storm drains and all types of non-PVC sewer mains shall be bedded in 3/4 inch (19 mm) crushed rock in accordance with 200-1.2, "Crushed Rock and Rock Dust". Crushed rock for storm drains may contain recycled Portland Cement Concrete and shall conform to gradation requirements for 3/4 inch nominal size as shown in Table 200-1.2.1 (A). Bedding shall be placed to a depth of 4 inches (101.6 mm) below the

outside diameter of the pipe or 1 inch (25.4 mm) below the bell of the pipe, whichever is greater.

ADD:

306-6.6 General. CLSM shall be used for bedding and backfilling as directed by the Engineer. CLSM shall conform to 201-6, "Controlled Low Strength Material (CLSM)" and the following concrete classes or as designated in the Contract Bid Item or shown on the Plans:

- a. 190-E-400 in residential and local streets.
- b. 380-E-800 in major and arterial streets.

306-6.6.1 Payment.

1. The payment for Controlled Low Strength Material (CLSM) for bedding and backfill for pipe and fittings, as directed by the Engineer is included in the Bid item for "Controlled Low Strength Material (CLSM)."

306-7.8.2.1 General. To the "WHITEBOOK", item 2, ADD the following:

- a) Specified test pressure for Class 235 pipe shall be 150 psi and is tested at 225psi.
- b) Specified test pressure for Class 305 pipe shall be 200 psi and is tested at 300psi.

ADD:

306-8.5.4 High Deflection Coupling.

3. High deflection couplings shall be constructed in accordance with the Plans and Reference Specifications. Working Drawings prepared by a Civil or Structural Engineer registered in the State of California shall be submitted in accordance with 2-5.3.2, "Working Drawings" for any proposed additional high deflection couplings not indicated on the Plans and Reference Specifications.

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

1. Thrust blocks shall be installed at all bends, tees, dead-ends and reducers. The use of restrained joints requires approval from the Engineer. The thrust blocks shall be constructed as follows:
 - a) Thrust blocks shall be constructed of concrete conforming to 201-1, "PORTLAND CEMENT CONCRETE".
 - b) Unless otherwise shown on the Plans, concrete thrust blocks shall be constructed in accordance with SECTION 303 - CONCRETE AND MASONRY CONSTRUCTION and the Standard Drawings.
 - c) Concrete blocks shall be constructed between undisturbed ground and fittings to be anchored.
 - d) Unless otherwise shown on the Plans, the quantity of concrete and the bearing area of the pipe against undisturbed soil shall be as shown on the Standard Drawings.
 - e) Unless otherwise shown on the Plans, concrete shall be placed so pipe joints and fittings remain accessible to repairs.

306-13.2 Permanent Resurfacing. To the "WHITEBOOK", DELETE in its entirety and REPLACE with the following:

1. Contractor shall phase, permanent resurfacing operations to be completed after every one (1) mile of work is completed. Contractor shall include in their Schedule, construction phases for every one (1) mile and shall assume five (5) permanent resurfacing phases that shall include, but is not limited to the following work activities: Pipe installation, trench restoration, successful testing of pipe and appurtenances, highline removal, sidewalk, curb & gutter, median restoration, curb ramps, street patching operations and street resurfacing. Any alternate schedule that deviates from these resurfacing requirements and still demonstrates resurfacing the streets in a timely manner requires prior approval by the City.
2. You shall be responsible for removal and replacement of all permanent paving damaged due to exposition, repair, and replacement of the pipe which has failed testing at no cost to the City. You shall not be entitled to any additional Working Days or contract extension due to delays resulting from removal and replacement of permanent paving due to test failure.

306-13.2.1 Payment. ADD the following:

Mobilization and demobilization and other items associated with the phasing of resurfacing activities shall be included in the bid item for "Permanent Resurfacing Phasing".

306-15.1 General. To the "WHITEBOOK", DELETE in its entirety.

ADD:

306-15.1 General. To the "GREENBOOK", paragraph (1), sub-item "d", DELETE in its entirety and SUBSTITUTE with the following:

- d) the excavations of the trench and disposal of excess excavation;

To the "GREENBOOK", paragraph (1), sub-item "m", DELETE in its entirety and SUBSTITUTE with the following:

- m) all other work necessary to install the pipe or conduit, complete in-place.

To the "GREENBOOK", paragraph (1), ADD the following:

- n) trench shoring and plans, excluding engineered shoring and engineered shoring plans.
- o) temporary resurfacing and use of steel plates

To the "GREENBOOK", paragraph (2), DELETE in its entirety and SUBSTITUTE with the following:

No separate or additional payment shall be made for additional bedding or a higher strength of pipe necessitated by you exceeding the maximum trench width, unless a bid item has been provided.

306-15.2 Shoring and Bracing. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. The Bid item for "Trench Shoring" shall include full compensation for furnishing, installing, maintaining, and removing all sheeting, shoring, or bracing for any conditions encountered that require shoring including the preparation of engineered Shoring Plans in accordance with 7-10.4.2.2, "Shoring Plan". No additional payment shall be made.

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

2. The payment for sewer plug valve with bypass shall be included under the Bid items for the following:
 - a) "Sewer Plug Valve with Bypass (48 Inch, Class 250)" per Detail 5 on Sheet 40067-195-D
 - b) "Sewer Plug Valve with Bypass (42 Inch, Class 250)" per Detail 5 on Sheet 40067-195-D
 - c) "Sewer Plug Valve with Bypass (30 Inch, Class 250)" per Detail 5 on Sheet 40067-195-D

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

9. The Contractor shall have additional fittings readily available to mitigate unforeseen conflicts discovered while trenching. Upon discovering a conflict that can be mitigated with the use of additional fittings that are not originally identified in the Contractor's approved pipe lay sheets, or as shown on the plans, the Contractor shall immediately notify the Resident Engineer and obtain their approval for use. Upon completion of the contract, additional fittings that are not used, shall be delivered to a location as directed by the Owner.

FITTING	QTY.	UNIT
48" Steel Pipe (3/8" thick) – interior lined, without mortar coating	40	LF
48" Steel High Deflection Coupling – Female x Female	2	EA
48" Butt Straps	4	EA
48" 45 Degree Bend	2	EA
48" 22.5 Degree Bend	2	EA

FITTING	QTY.	UNIT
30" Steel Pipe (3/8" thick) – interior lined, without mortar coating	40	LF
30" Steel High Deflection Coupling – Female x Female	2	EA
30" Butt Straps	4	EA
30" 45 Degree Bend	2	EA
30" 22.5 Degree Bend	2	EA

The payment for these additional fittings shall be covered by the bid item, "Additional Pipeline Appurtenances". Payment shall include but is not limited to labor related to furnishing, delivery and storage of these materials. The labor cost involved with installation of each fitting that is approved for use, complete in place, shall be included in this bid item.

306-15.9 Temporary Resurfacing, To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

Payment for temporary resurfacing shall be included in the cost of pipe as per section 306-15.1.

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

6. The payment for Access Manways is included in the Bid item for "Access Manway (SDSD SDW-103 MOD)" and shall be constructed in accordance with the Plans, Reference Specifications and Standard Drawing SDW-103 "Access Manhole;" and shall include, but not be limited to, the structure, interior and exterior piping and appurtenances, liners, coatings, and surface improvements.
7. The payment for Blow Off Vault Combined FM/Vent Assembly is included in the Bid item for "Blow Off Vault Combined FM/Vent Assembly" and shall include the structure, interior and exterior piping and appurtenances, sewer laterals, cleanouts, connections to existing mains, construction of reconfiguration of sewer manholes, liners, coatings, and surface improvements.
8. The payment for Air/Vac Valve Vault/Vent Assembly is included in the Bid item for "Air/Vac Valve Vault/Vent Assembly" and shall include the structure, interior and exterior piping and appurtenances, sewer laterals, cleanouts, connections to existing mains, construction of reconfiguration of sewer manholes, liners, coatings, and surface improvements.

SECTION 307 – JACKING AND TUNNELING

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

307-1 GENERAL.

307-1.1 Description.

- A. This Section specifies construction by tunneling of three Canyon crossings located at I 805, Rose Canyon and San Clemente Creek to the lines, grades, and limits shown on the Contract Documents, or as approved by the OWNER. Work shall include but not be limited to monitoring for ground movements, dewatering if required and excavation of shafts and tunnels including installing initial ground supports and steel casing within the tunnel, ground improvement as necessary for shaft and tunnel stabilization; and installing carrier pipe within the limits of the tunnel including pipe, pipe supports, blocking, joint work, and grouting. Furnish materials and perform labor necessary to fulfill the requirements of these Specifications. Monitoring shall meet the requirements of permittee agencies. Including explicit requirements in the permit and non explicit requirements such as Caltrans requirements TR-0151.
- B. General: Supply materials and perform work in accordance with applicable American Society for Testing and Materials (ASTM), American Water Works Association (AWWA), and American National Standards Institute (ANSI). Latest revisions of standards are applicable. If requested by the OWNER, submit evidence that manufacturer has consistently produced products of satisfactory quality and performance.
- C. Acceptable methods of tunneling either circular or horseshoe shaped tunnel section include Microtunneling, Pipe Jacking, Shielded tunneling, Road header with rib and lag or bolts and shotcrete initial support suitable for the ground conditions indicated in the GDR and GBR. Install within the tunnel either a single minimum 8ft diameter steel casing or two steel casings of minimum 54 in and 42 in diameter across the Caltrans and railroad ROW. Microtunneling requirements if used are provided elsewhere in the Contract Documents.
- D. The CONTRACTOR shall provide complete ground supports and protection as immediately as excavation of tunnel progresses. Type and location of supports will be determined by CONTRACTOR and designed by an Engineer licensed in California and submitted to the OWNER for review. Actual locations for installation of various support types shall be determined, with the approval of the OWNER, as the excavation progresses.
- E. The Contractor shall provide and install the carrier pipes within the steel casings as indicated in the Contract Documents and will include all blocking and required grouting of voids and annular spaces.
- F. Modifications or alternatives of the work indicated on the Contract Documents, proposed by the CONTRACTOR, shall be submitted in writing to the OWNER for

review. Shop drawings that are submitted for review do not constitute "in-writing" unless it is clearly noted that specific changes are being suggested.

- G. The contractor shall provide ground measurement devices as indicated on the instrumentation plan shown on the contract drawings including the inclinometers and ground deformation points.
- H. Work specified in this section is considered to be necessary and essential to the performance of the work under this Contract, including submittals and other incidental requirements.
- I. Control of Alignment and Grade: The CONTRACTOR shall control the application of the jacking pressure and excavation of materials of the casing but within the jacking head as it advances to prevent the casing from becoming earthbound or deviating from the required line and grade. The CONTRACTOR shall restrict the excavation of the materials to the least clearances necessary to prevent binding in order to avoid loss of ground and consequent settlement or possible damage to overlying structures. Allowable grade deviations in horizontal and vertical alignments shall be no greater than 0.2 feet per 100 feet in any direction over the length of the jacking or boring to a maximum deviation of 0.5 feet. Final installation shall be without a sag in the pipe. A lubricant such as bentonite may be used to reduce the friction between the casing and the bore hole after first reviewing the procedure with the GSWC. Survey control shall be provided by a California licensed land surveyor who shall also monitor for any settlement over the casing. Survey control and settlement monitoring shall be conducted to meet Caltrans, MTS, NTCD and City requirements before, during and after the boring operations and the carrier pipe is fully grouted within the annular space of the casing. The CONTRACTOR shall submit survey control and settlement monitoring plan to City and Caltrans for approval prior to beginning any operations. The CONTRACTOR shall provide two copies of the controls and monitoring record to the City at completion. Once the guided auger boring and jacking operation has begun, the CONTRACTOR shall work continuously and diligently until the complete length of pipe has been installed. This requirement may be waived if the CONTRACTOR demonstrates the ability to bulkhead and stabilize the tunnel face at all times, maintain dewatering if necessary, lubricate the sleeve as needed to prevent "seizing" of the casing, and continue with jacking should it be stopped overnight or for any other reason.

307-1.2 References.

All tunneling work shall comply with the following standards;

- A. American Society for Testing Materials (ASTM):
 - 1. A123: Standard Specification for Carbon Steel Zinc (Hot Dip Galvanized) Coating on Iron and Steel Products
 - 2. A185: Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete

3. A307: Standard Specification for Carbon Steel Bolts and Studs
 4. A325: Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
 5. A569: Standard Specification for Carbon Steel
 6. A615: Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 7. A992: Standard Specification for Structural Steel Shapes
 8. C39: Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
 9. C150: Standard Specification for Portland Cement
- B. American Welding Society (AWS):
1. B2.1: Standard for Welding Procedure and Performance.
 2. D1.1: Structural Welding Code.
- C. OSHA – Occupational Safety and Health Administration. Regulations and Standards for Construction.
- D. National Electric Corporation
- E. U.S. Bureau of Mine Safety Laws and Regulations

307-1.3

Definitions.

- A. Trenchless Construction: A family of methods, materials, and equipment capable of being used for subsurface construction work that requires no continuous trenches with minimal disruption to the ground surface. It includes such construction methods as tunneling (i.e. bored tunnel and mined tunnel as defined herein) pipe jacking and microtunneling.
- B. Bored Tunnel: Tunnel excavated by Tunnel Boring Machine (TBM) and/or shield to protect the cutting equipment and operating personnel behind the tunnel heading. The resulted excavation opening is typically circular in shape. The TBM face can be fully pressurized to balance the earth and groundwater pressures (i.e. closed face TBM) or operate in an open mode without pressure balance (i.e. open face TBM). Initial ground support is installed as soon as possible behind the shield and based on ground conditions may typically be concrete or steel bolted segment, rib and lagging, bolts and shotcrete.

- C. Mined Tunnel: Tunnel excavated manually by some type of mechanical excavator with or without the use of a protecting shield at the tunnel heading, also referred to as hand-mining. The excavation shape can be circular or horseshoe with flat bottom to provide a working platform from which the excavation is performed.). Initial ground support is installed based on ground conditions but is typically rib and lagging , Steel bolted segments or bolts and shotcrete.
- D. Pipe Jacking: Tunnel excavated with a shield to protect the cutting equipment and operating personnel behind the tunnel heading. The resulting excavation opening is typically circular in shape. Excavation may be manually or with types of mechanical excavators. Ground support is provided by the pipes of various materials steel , concrete and glass fiber being the most common which are added from the excavation starting shaft and connected to the previous pipe and pushed by a hydraulic jacking unit into the ground simultaneously as excavation proceeds. In this way the ground is continuously supported behind the shield.
- E. Microtunneling: An unmanned entry method that uses a remotely operated micrtunneling boring machine (MTBM) to install pipes underground with minimal surface disruption. Microtunneling continuously installs pipe behind a remotely controlled, steerable, laser-guided, full face controlled, articulated MTBM. The pipe to be installed is connected to and follows the MTBM.

307-1.4

Submittals.

- A. Submit the following in accordance with the Contract Documents.
- B. Provide CONTRACTOR qualifications/experience in accordance with this Section.
- C. Prepare and submit detailed shop drawings, descriptions, data, specifications, schedules, calculations and other pertinent information for items to be incorporated into the finished work minimum of 60 days before tunneling is scheduled to begin. Do not proceed with the work prior to the ENGINEER's review of the required submissions.
- D. Submit shop drawings and calculations as follows:
 - 1. Shop drawings for tunnel to be constructed shall include but not be limited to: tunnel location, alignment and dimension; ground support types and locations; steel casing diameter; direct-jacked pipe; shaft tunnel entry and breakthrough; and final pipe-in-casing.
 - 2. Submit calculations for proposed steel casing, direct-jacked pipe, initial ground support, and modifications to ground supports and structural members used in tunnel excavations shown on the Contract Documents. Calculations shall be signed and sealed by a Professional Engineer retained by the CONTRACTOR who is qualified and experienced in tunneling and

registered in the State of California. Review by the OWNER will only be with respect to the basic principles and methods the CONTRACTOR intends to employ.

3. Submit methods of ground improvement if necessary to include but not limited to: lateral and vertical extents of ground improvements, types, materials and equipment, and performance specifications.
4. Steel Ribs with Steel Wire Mesh or Timber Lagging:
 - a) Sizes and shapes of steel ribs, butt and connection plates, rods, flat stocks, bolts, and steel wire mesh or timber lagging.
 - b) Details and arrangements of structural members, connections, methods of assembly and blocking as appropriate.
2. Rock Dowels and Resin Grout:
 - a) Manufacturer's literature for both the steel bar and resin including recommended installation procedure for rock dowels.
 - b) Manufacturer's certified test results of gel time and working strength for each type of resin grout to be used.
 - c) Proposed installation procedure.
3. Liner Plates, if used for tunnel initial support:
 - a) Sizes and shapes of liner plates and bolts.
 - b) Details and arrangements of structural members, connections, methods of assembly, blocking, backfilling, and grouting as appropriate.
4. Steel casing or direct-jacked pipe size, thickness, strength, joint method, jacking method and design of steel casing or pipe for anticipated jacking loads, ground loads, hydrostatic loads, surcharge loads, and any other temporary construction loads, and contact grouting procedure between casing or pipe and surrounding ground.
5. Product certifications that meet the design requirements set forth in the Contract Documents.
6. Design Calculations: For proposed stages of excavation, showing temporary requirements, loads and stress levels.

E. Submit procedures and working drawings as follows:

1. Submit a detailed work plan and schedule of activities required to perform shaft and tunneling operations, including jacking of steel casing or pipe, excavating, dewatering, muck removal and installing ground support systems and final lining, and proposed variation from the methods and techniques stipulated in this Specification or shown on the Contract Documents. Information in this work plan shall include, but not be limited to, the following:
 - a) Tunneling equipment; concreting and/or grouting equipment; hoisting plant; tunnel ventilation, air quality and hazardous gas monitoring equipment, noise control measures, communications, lighting, electrical systems, water supply and drainage; tunnel safety provisions and emergency evacuation procedures; groundwater control methods; tunnel walkways and step-up schemes; staging operations in tunnels; breakout methods of construction; survey methods and method of controlling line and grade of excavation and final lining; and methods and equipment for placement or installation of final pipe-in-tunnel liner.
 - b) Plan showing the work zone equipment configuration at the ends of the bore(s), staging areas, storage areas, location of muck handling areas.
 - c) Equipment list including make and model number and specifications (catalog cuts) of major equipment proposed for use on the project, including year of manufacture or rebuild of tunneling equipment and demonstrating suitability for the project conditions. The CONTRACTOR shall be responsible for the final determination of the required equipment size based on the length and depth of the actual tunnel runs, the subsurface conditions expected, etc.
 - d) Proposed procedures shall provide for immediate and adequate support of soil and rock, ground, adjacent structures and other facilities. Special consideration and details shall be submitted for TBM operation dealing with mixed face conditions during transition zone. Working methods or procedures which, in the opinion of the OWNER, might result in subsidence of the ground surface, or might interfere with or damage adjacent structure and/or utility, or might result in unduly large rock overbreak, will not be allowed.
 - e) Proposed ground improvements as necessary to control tunnel stability including face stability during open face tunneling or hand-mining.

- f) Proposed digger shield, if used with the jacked casing or pipe. Digger shield shall be equipped with shelves and breasting boards to maintain the tunnel face stability.
- g) Submit methods for controlling groundwater and removing and disposing of drainage. Conform to the Contract Documents.
- h) Steering and tracking equipment.
- i) Ground and existing structures monitoring instrumentation plan
- j) Contingency plan of action if obstructions are encountered during tunneling operation.
- k) Modification of the tunneling methods in the event that unsatisfactory results and/or damages occur from tunneling operations for review.
- l) Contingency plan in event ground movements exceed maximum settlement or damage to structures or utilities.
- m) Submit the details of tunnel lighting, ventilation plant and equipment including capacities and exchange rates, gas monitoring, communications, tunnel safety provisions, emergency evacuation procedures, and electrical systems. Provide details of noise control measures and details of air quality monitoring.
- n) Submit proposed disposal sites for approval prior to commencing construction. All disposal facilities shall be permitted for use as disposal sites. Comply with requirements in the Contract Documents.

F. Submit construction and installation reports and records as follows:

- 1. General Shift Report: Prepare a shift report of tunnel construction work for each shift worked, and provide the OWNER with one copy of the shift report on the following work day. The following information shall be included in these reports:
 - a) Time and location of tunnel face by station at start and end of each work shift.
 - b) Method(s) of tunnel excavation utilized, and where.
 - c) TBM performance data monitoring records including but not limited to time and location of every shove or stroke, advance rate, cutter head turning torque, total thrust force of propel jacks, rotation speed of the cutterhead, and volume of excavated material.

- d) Type, quantity, and location of initial support, casing or pipe installed.
- e) Initial support system measurements, including records of observed deformation.
- f) Survey records of tunnel excavations including the offset from design line-and-grade, including corrective measures for line and grade deviations.
- g) Description of the ground, its behavior, and notes regarding occurrences such as work stoppages, delays, obstructions, and equipment malfunction and replacement, including the station or location and time of each occurrence.
- h) Record location and submit the results of tests for combustible and toxic gases, if any, oxygen content, dust and other atmospheric impurities in the working area. Testing shall be performed according to OSHA Regulations, and record action undertaken, if any.
- i) Test (measure) and submit test results for air flow in the tunnel and work areas indicating that the anticipated ventilation levels are reached and maintained. Submit the ventilation measurement report on a daily basis indicating in detail how the testing was performed, type of equipment used and locations where the measurements were taken.
- j) Crew size and employee classification.
- k) Downtime and causes of downtime.
- l) Geotechnical monitoring results to show compliance with the maximum allowable settlement specified in this Section.

2. A sample shift report shall be submitted to the OWNER for review before tunneling is scheduled to begin.

307-1.5 Storage And Protection. Materials shall be stored and protected in accordance with the manufacturer's recommendations.

307-1.6 Quality Assurance,

- A. Comply with the requirements specified in the Contract Documents.
- B. Except as shown on the Contract Documents and specified herein, the CONTRACTOR shall design the ground supports, casing, and pipe to be used for

the tunnel. The supports shall be designed by a Professional Engineer registered in the State of California, with underground project design experience which include projects of similar nature, in similar subsurface condition, and using similar means and methods as proposed by the CONTRACTOR.

- C. The CONTRACTOR may modify the tunnel dimensions as shown on the Contract Documents to accommodate its equipment and methods, while maintaining sufficient clearance to existing utilities, as approved by and at no additional cost to the OWNER.
- D. The owner will engage the services of a qualified tunnel surveyor, experience in tunnel and underground construction surveys. The tunnel surveyor shall be registered in the State of California, or the work shall be supervised and certified by a surveyor registered in the State of California.
- E. CONTRACTOR Qualifications:
 - 1. Tunnel construction is deemed to be specialty contractor work. The specialty subcontractor or CONTRACTOR, if the CONTRACTOR elects to self perform this work, shall provide evidence demonstrating experience in tunnel construction, and successful completion of tunnel projects of similar size and length and in similar ground conditions using the proposed tunneling method.
 - 2. Ground improvement if required is deemed to be specialty contractor work. The CONTRACTOR or his ground improvement subcontractor shall have completed projects of a size and complexity comparable to the work required for this project. Comparable projects are defined as those performed in similar geological conditions to those described in the Geotechnical Baseline Report (GBR).
 - 3. The filling of annular void between the tunnel initial support or casing and final carrier pipe-in-tunnel is deemed to be specialty contractor work. The specialty subcontractor or CONTRACTOR, if the CONTRACTOR elects to perform this work, shall provide evidence demonstrating successful experience.
 - a. Grouting of at least three tunnels, minimum 60 inches in finish diameter and minimum 500 feet long each, which was performed and supervised by the specialty contractor or CONTRACTOR's own personnel.
 - b. Supervising personnel with similar experience shall be utilized to supervise this Projects grouting operation.

- c. Documentation of such evidence shall include tunnel diameter and length, pipe liner diameter and material of construction, project name, project owner, project engineer, project date and name of grouting supervisor.
- F. Employ certified welders. Welding in accordance with AWS Welding Code B2.1 and D1.1.
- G. Maximum Alert Level settlements arising from this work, as stipulated by the geotechnical instrumentation and monitoring requirements in the Contract Documents.
- H. The alignment of the tunnel shall conform to the following tolerances and requirements:
 - 1. The horizontal and vertical alignment of the tunnel excavation shall accommodate installation of the final casing and carrier pipe-in-tunnel at the specified horizontal and vertical alignment.
 - 2. The entry points and exit points shall be physically located in the field.
 - 3. Maximum variation from lines and grades shown on the Contract Documents for final carrier pipe-in-tunnel: +/- 6in in lateral or vertical alignment.

307-1.7 Site Conditions.

- A. For subsurface and site conditions refer to the Geotechnical Data and Baseline Reports.
- B. The entire length of tunnel is classified as "Potentially Gassy." Perform work as specified herein, in accordance with the Contract Documents, and with current applicable regulations and codes of Federal, State, and local agencies. Comply with applicable provisions of 29 CFR Part 1926, Subpart S, "Underground Construction" Standard Number 1926.800 by OSHA and Subpart P, "Excavations", latest revision. Should there be conflict between these specifications and OSHA requirements, the more restrictive will apply.
- C. If differing site conditions (DSC) are encountered during construction, immediately notify the Owner's Resident Engineer and indicate claim per the City of San Diego existing DSC claim requirements.
- D. Safety of workmen and providing adequate support for excavations shall be the sole responsibility of CONTRACTOR.

307-1.8**Tunnel Means And Methods Design By Contractor.**

- A. Tunneling method and associated ground support shown on the Contract Documents are based on the OWNER's expectation of CONTRACTOR preferences. CONTRACTOR may elect to use alternative means and methods including excavation dimensions, subject to the stipulations herein, which satisfy the intent of the Contract at no additional cost to the OWNER.
- B. Select methods of tunnel excavation, initial ground support, and necessary ground improvement that are compatible with conditions described in the GBR, and with the specified requirements for placement of permanent carrier pipe, control of groundwater, safety of personnel, and protection of adjacent property.
- C. CONTRACTOR shall be solely responsible for design of initial ground support systems, ground improvement requirements, and final pipe for the selected means and methods, and for ground behavior associated with the selected means and methods. The design shall be prepared and sealed by a registered Professional Engineer licensed in the State of California, having experience designing similar support systems and pipe in similar ground conditions using similar construction means and methods.
- D. The tunneling method and equipment, initial ground support systems, steel casing, and final pipe liner shall be designed to the ground conditions including groundwater described in the GBR. CONTRACTOR shall verify that ground and surcharge loads for design are adequate for the expected ground conditions, and are appropriate for the type of support system proposed. CONTRACTOR shall add construction loads appropriate to the means and methods of construction.
- E. The maximum unsupported length of tunnel excavation shall not exceed the minimum support distance, and no tunnel excavation shall be left unsupported for more than 2 hrs.. Methods and equipment shall control ground surface movement above and surrounding the tunnel to prevent damage to streets, existing utilities, facilities, and improvements. The CONTRACTOR shall be solely responsible for any damages resulting from the selected tunnel construction means and methods, and shall repair any damages at no additional cost to the OWNER and without schedule extension.
- F. Determination of an adequate tunnel size and section shall be the responsibility of the CONTRACTOR, to match the proposed construction methods. Tunnel shall be of sufficient size to permit efficient excavation operations, to provide sufficient working space for placing the initial support, and to allow for installation of the casing and carrier pipes as shown in the Contract Documents.

307-2 PRODUCTS.

307-2.1 Materials And Equipment.

A. General

1. Provide and maintain an adequate supply of ground support material at the site while tunnel excavations are in progress.
2. The amount of supply material on hand shall be at the discretion of the CONTRACTOR but not less than 5 percent of the quantity indicated by the Contract Documents. Work delay due to the insufficient supply of ground support material shall be the responsibility of the CONTRACTOR.

B. Rock Dowels if used: Shall be in accordance with the Contract Documents unless otherwise specified herein. For the purpose of tunneling works, the terms rock dowels and rock bolts are synonymous and used interchangeably.

C. Rock Dowel Resin Cartridges: Shall be in accordance with the Contract Documents. They shall be capable of developing the minimum yield strength of the rock dowels.

D. Structural Steel Supports: Ribs, posts, beams, plates, rods and stocks shall be structural steel conforming to ASTM A992 Grade 50 unless otherwise indicated on the Contract Documents.

E. Steel Welded Wire Fabric if used in conjunction with other support elements:

1. Ungalvanized, conform to ASTM A185.
2. Unless otherwise indicated on the Contract Documents, welded wire fabric shall be 4 x 4 W2.9 x W2.9.

F. Timber Blocking and Lagging: Sound hardwood, dressed or undressed of rectangular cross section, standard grade joists and planks as graded by the National Hardwood Lumber Association. The minimum allowable working stress shall be 1,100 psi.

G. Tunnel liner plates, if used:

1. Tunnel liner plates shall be manufactured from steel meeting the chemical requirements of ASTM A569 with the following mechanical properties before forming:
 - a. Minimum tensile strength: 42,000 psi
 - b. Minimum yield strength: 28,000 psi
 - c. Elongation, 2 inches: 30 percent

2. Liner plates shall be 2-flange with a minimum 7 gage (.1793-inch) thickness. The actual liner plate thickness shall be determined by the CONTRACTOR (2-flange 7-gage minimum). The CONTRACTOR's design of the tunnel shall take into consideration the combined effects of live and dead loads, hydrostatic loads, and both temporary and permanent loads caused by the CONTRACTOR's method of construction. The design shall bear the seal of a professional Engineer currently registered in the State of California.
 3. Design shall meet the following minimum criteria. Greater safety factors may be required.
 - a. Minimum stiffness: 3.5 safety factor
 - b. Critical buckling: 2.0 safety factor
 - c. Seam strength: 3.0 safety factor
 4. Plates shall be punched for bolting on both longitudinal and circumferential seams and shall be so fabricated so as to permit complete erection from the inside of the tunnel. The longitudinal seam shall be of the lap type, with an offset equal to gage of metal for the full width of plate to allow the cross section of the plate to be continuous through the seam. Circumferential hole spacing will be a multiple of plate length to allow staggering of the longitudinal seam.
 5. Liner plates in the tunnel shall be new and unused prior to installation, of the same type, and shall be interchangeable.
 6. Grouts shall conform with ASTM A307 Grade A.
 7. Grout holes shall be 2-inch minimum diameter tapped couplings welded into place over holes cut in the liner plate. Provide a minimum of three grout holes, one every ring alternating at 10, 12 and 2 o'clock positions. Grout holes shall be provided with steel or iron plugs. CONTRACTOR shall determine if more grout plugs may be required.
- H. Bolts, Nuts and Washers: Bolts and nuts conform to ASTM A307. Washers conform to ASTM A325. The diameter and length of bolts shall be as specified or recommended by the manufacturer and approved by the OWNER.
- I. Steel Casing: Casing pipe shall be bare wall steel pipe with minimum yield strength of 35,000 psi and sufficient wall thickness to handle jacking loads, ground and hydrostatic loads, surcharge, and any other construction loading. Steel casing sections shall be connected by welding or press-fit connections, or equivalent in accordance with ANSI requirements.

- J. Welding: For structural steel conform to AWS D1.1 and as indicated on the Contract Documents. Grade E70 electrode shall be used for welding.
- K. Direct-jacked Pipe: Conform to the Contract Documents.
- L. Tunnel Grouting: Conform to the Contract Documents.
- M. Grout: Grout shall be used for filling the void between the tunnel liner plates (if used), casing or pipe and the excavated ground. Cement shall conform to ASTM C150, Type II. Grout shall have a minimum compressive strength of 100 psi attained within 24 hours. The grout shall be fluid enough to inject through the lining and to fill voids, however, it shall set promptly enough to keep grout flow under control.

307-2.2 Tunneling Equipment.

- A. Tunneling equipment shall be of U.S. Bureau of Mines approved types. Power machinery and tools within the tunnel shall be operated by either by electricity, compressed air or diesel with approved scrubber or other approved power. Electrical tools and equipment shall be grounded in accordance with the latest requirements of the National Electrical Code.
- B. Provide temporary electric lights to properly and safely illuminate parts of the tunnel construction area including special illumination at the working face. Lighting circuits shall be thoroughly insulated and separated from power circuits, and lights shall be enclosed in wire cages. Secure electrical permits required for successful completion of this work.
- C. TBM, shield, and other tunneling equipment shall be fully capable of excavating the tunnel to the minimum dimensions shown on the Contract Documents in the ground conditions described in the GBR. The TBM and other tunneling equipment shall excavate the tunnel and allow installation of initial support system in accordance with the requirements of the Contract Documents. Larger size tunnel may be proposed for the CONTRACTOR's convenience at no additional cost to the OWNER and subject to the review and approval of the ENGINEER. The TBM and other tunneling equipment shall meet applicable standards for potentially gassy operations, including air monitoring.
- D. The complete TBM and other tunneling equipment shall be factory tested and calibrated such that its functions are within the manufacturers' recommendations prior to the TBM delivery, and again upon reassembly at construction staging area. The TBM may be new or rebuilt. If a rebuilt TBM is proposed, the TBM shall be inspected, upgraded, remanufactured, reassembled, tested and certified by the manufacturer that components are new or in like-new condition.

- E. The Contractor will provide a list of key parts of the tunneling system including bearings , motors, seals drive shafts and the manufacturer will provide availability of such parts.

307-3 EXECUTION.

307-3.1 General.

- A. Interpretation of geotechnical data, investigating the site and the determination of conditions including ground improvement requirements prior to bidding is the sole responsibility of the CONTRACTOR. Subsurface investigation by the Bidder or CONTRACTOR, if performed, shall be approved by the appropriate Authority having jurisdiction over the site.
- B. Tunnel construction shall be performed so as not to interfere with, interrupt or endanger roadway surface and activity thereon, and minimize subsidence of the surface, structures, and utilities above and in the vicinity of the tunnel. Support the ground continuously in a manner that will prevent loss of ground and keep the perimeters and face of the tunnel, passages and shafts stable. The CONTRACTOR shall be responsible for settlement resulting from tunnel operations and shall repair and restore damaged property to its original or better condition at no cost to the OWNER.
- C. Emergency Measures: Continuous 24 hour operations, seven days a week shall be performed when the stability of the excavation or adjacent structures is in danger. At any interruption of the tunneling operation, the heading shall be completely bulkheaded.
- D. Blasting shall not be permitted for the tunnel construction including starter or tail tunnel. Drill and blast operations shall be restricted to vertical shaft and bottom of shaft connection to the tunnel excavations, if needed and if approved by the Owner.
- E. The CONTRACTOR shall provide underground accommodations at the launch shaft to assemble the TBM and other tunneling equipment. They shall be of sufficient length and size to allow efficient TBM assembly, testing, and start-up. The length, shape and dimensions of the starter or tail tunnel, if used shall be selected by the CONTRACTOR to fit the CONTRACTOR's selected equipment.
- F. Face protection: In an open shield the face of the excavation shall be protected from collapse . This protection is to be provided by TBM cutterhead, bulkheads, shields or other means including ground improvement determined necessary by the CONTRACTOR.
- G. The overcut of the digger shield or leading edge of casing pipe during hand-mining shall not exceed the outside diameter of the casing pipe by more than one

inch. The digger shield or leading edge of casing pipe shall be arranged to provide a reasonable safety protection for tunnel worker and bulkhead against poor and unstable ground material.

- H. Tunnel Design: Each tunnel and support shall be designed to accommodate the combined effects of effective earth pressure, traffic loads, site surcharge loads, and hydrostatic loads. The excavation method selected shall be compatible with expected ground conditions and the support system. The lengths of the tunnel shown on the Contract Documents are the minimum lengths required
- I. Mining Environmental Conditions:
 - 1. TBM and tunnel excavation machine shall be fitted with a combustible gas analyzer (CGA) that continuously monitors methane and other flammable gas concentrations at the excavation face. The CGA will sound audible alarms and activate lights when methane or other flammable gases are detected in excess of 10% of the lower explosive limit (LEL).
 - 2. The CGA shall be set to have a second alarm point at 20% of the lower explosive limit. When Operations will be terminated and power to the tunnel apart from ventilation will be cut.
 - 3. The TBM and excavation machine shall be equipped with hydrogen sulfide monitoring device capable of continuous air sampling and providing visual and audible alarm when hydrogen sulfide concentration reaches 20 ppm.
 - 4. As a backup, a portable battery operated CGA and hydrogen sulfide monitoring device shall be provided in accordance with the Contract Documents. Portable battery operated CGA and hydrogen sulfide monitoring device shall be provided to continuously monitor methane and other flammable gas concentrations at the excavation face.
 - 5. No employee will be allowed to work in areas where concentrations of airborne contaminants exceed Federal threshold limits until necessary precautions and corrective measures to eliminate the hazard have been taken and the situation corrected or controlled. Respirators shall not be substituted for environmental control measures and shall be used only as prescribed by OSHA.
 - 6. Diesel equipment used in the tunnel shall be approved by MSHA as defined in OSHA.
- J. Tunnel walkways: Provide, securely install, and maintain a plank walkway along the tunnel invert or on top of the rail ties for muck cars, as applicable, to provide safe footing for persons walking in the tunnel. Keep walkway secure, visible and free of accumulated muck and standing water at all times.

- K. Conduct work without causing damage to existing structures and/or utilities from ground vibrations caused by construction operations.
- L. Monitoring Program
 - 1. Survey the existing ground surface and structures and utilities within 100ft of tunnel centerline at pre-determined locations along the proposed tunnel alignment prior to the start of work to set baseline data, and monitor the presence/extent of ground movements during tunneling in accordance with the Contract Documents. Comply with the maximum allowable settlement specified in the Contract Documents.
 - 2. The contractor shall provide weekly surveying/monitoring of the ground measurement devices and provide results to the project geotechnical engineer for review at the end of each week. The project geotechnical engineer shall be allotted reasonable time to review the monitoring data as determined by the OWNER. Instrumentation and monitoring should be in conformance with the monitoring plan prepared by the contractor and approved by the project geotechnical engineer.
- M. A forced ventilation system shall be provided for man entry excavations. The ventilation system shall conform to applicable codes.
- N. If the tunnel alignment exceeds the tolerances specified in this Section, stop work. The CONTRACTOR shall then modify the methods of survey and alignment control and submit them for review and acceptance as stated in this Specification at no additional cost to the OWNER.

307-3.2 Groundwater Control.

- A. The CONTRACTOR shall control the groundwater throughout the construction of the tunnel as specified in the Contract Documents. If required install and operate on 24-hour basis a groundwater control system to maintain shaft and tunnel from accumulating seepage or runoff.
- B. Methods of dewatering shall be at the option and responsibility of the CONTRACTOR. Maintain close observation to detect settlement or displacement of surface facilities at the site, take immediate action to restore surface elevations to that existing prior to start of tunnel operations.
- C. Construct pump sumps and cut ditches as necessary to carry water to sumps. Furnish and lay underdrains where necessary including trimming out of rock to construct ditches and permit placement of drains.
- D. Where necessary, build temporary dams and flumes and furnish, erect, move and operate pumps for maintaining length of tunnel invert dry during excavation,

preparation of the bottom, and placing of pipe-in-tunnel, and during placing and setting of backfill grout.

- E. Construct blind drains or furnish and lay small tile drains where necessary to keep the water from freshly placed backfill grout and to collect and deliver it into sumps. Furnish and place galvanized sheet steel pans or shields and connect them with drain and vent pipes where necessary to prevent water from mixing with backfill grout during placing and setting.
- F. Excavate, maintain and refill with concrete temporary sumps, chambers, or pumping stations which may be necessary for the installation and operation of pumps or other appurtenant parts of the drainage plant.
- G. The CONTRACTOR shall cooperate fully with jurisdictional personnel. Settlement shall be corrected by, and at the expense of, the CONTRACTOR.
- H. Promptly report settlement and horizontal movement immediately to the OWNER and take immediate remedial action.

307-3.3 Shaft Construction. Construction, maintenance and cut off, including damage attributed to the shaft construction, is the responsibility of the contractor. Tunnel shafts and the ingress and egress of the tunnel shall meet requirements of the contract documents and osha. Perform excavation, backfill and grading in accordance with the contract documents and to the requirements specified herein. Provide and record horizontal and vertical locations of excavation support elements left in place on the record drawings.

307-3.4 Ventilation And Air Quality. Provide, operate and maintain for duration of tunnel project ventilation and lighting systems to meet safety and osha requirements.

307-3.5.1 Tunnel Excavation.

- A. Excavate earth and rock to lines and grades indicated on the Contract Documents, and specified herein, in accordance with sound construction practices and required safety provisions. Utilize personnel experienced in the type of equipment used including TBM and other specialized equipment as necessary. The CONTRACTOR's machine shall be capable of excavating through the ground conditions expected to be encountered and as indicated in the GBR.
- B. Control the tunnel face against sloughing by using such support procedures as breasting boards, poling plates, face jacks, sliding tables, or other means including ground improvement as necessary either singly or in combination, spaced as required.
- C. Excavate in such a manner that voids or over excavations behind the steel ribs, liner plates, or casing pipe are held to a minimum. During the tunneling operation, care shall be exercised in trimming the surface of the excavated section in order that

the ribs, liner plates, or casing pipe fit snugly against undisturbed material. Remove, to the extent that will give satisfactory surfaces, material which is naturally loose, broken, unsound, or disintegrated. Excavation shall not be advanced ahead of the previously installed initial support more than is necessary for the installation of the succeeding initial support.

- D. Excavation ahead of the shield forward edge will be limited to 12-inches before advancing the shield.
- E. Whenever the tunnel operation is suspended, support the tunnel face by positive means and keep dewatering system operating. Have qualified personnel periodically check conditions that might threaten tunnel stability.
- F. Rock excavation in the tunnel face shall be removed by mechanical means such as air hammers or TBM cutters to fracture rock sufficiently for its removal by hand or mechanical means.
- G. Excavated soil and rock shall be removed from the site by the CONTRACTOR and disposed of properly at a location secured by the CONTRACTOR in accordance with the Contract Documents.

307-3.6 Installation Of Tunnel Initial Support.

- A. General: Construct ground support systems and install casing or pipe to proper line, grade and dimensions which will enable the casing and carrier pipes to be placed and the tunnel to be completed in accordance with tolerances specified herein.
- B. Inspection and Maintenance: Check and monitor supports in previously excavated sections for continuous structural integrity as directed by the OWNER, but not less frequently than every 48 hours. Retighten and block supports as necessary.
- C. Rock Dowels if used:
 - 1. In accordance with the recommendations of the resin manufacturer, subject to the review of the OWNER.
 - 2. Excavation shall not be advanced ahead of the previously installed rock dowels any more than is necessary for the installation of the succeeding set of rock dowels.
- D. Steel Ribs, if used:
 - 1. Install steel rib supports true to the required lines and grades. Steel ribs shall be erected to provide intimate contact with the excavated ground surface and shall be blocked in erected position by steel shims, dutchmen or spacers placed between rib butt plates, or by foot blocks. Repair damaged support at no additional cost to the OWNER.

2. Restrain horizontal and vertical deflections of steel rib sets by appropriate measures, including foot blocks, anchor bolts, invert struts, jump sets or increased section modulus at no additional cost to the OWNER. Secure steel ribs against longitudinal movement or distortion by steel tie rods, stocks or compression struts.
3. Bolted connections shall be capable of developing the full strength of the steel ribs unless indicated otherwise on the Contract Documents.
4. Excavation shall not be advanced ahead of the previously installed steel rib set any more than is necessary for the installation of the succeeding set of steel ribs.

E. Steel Liner Plates, if used:

1. Install liner plates in a manner that will not damage or overstress the liner plates or coating. If damaged, replace liner plates; repair coating damage to the satisfaction of the OWNER.
2. Clean foreign matter from the surfaces of flanges which will be in contact with each other, taking care not to damage the coating in the cleaning process. Such surfaces shall be free from material that could interfere with proper bearing and water tightness.
3. Bolt liner plates in accordance with liner plate manufacturer's recommendations. Assemble in a true circle or portion thereof as appropriate. Stagger longitudinal joints in adjacent rings by one-half segment but in no case less than two bolt spaces. Retighten or replace bolts.
4. Ensure contact between liner plate and excavated surface by filling voids between the ground and the tunnel liner with grout. Use tie rods or other spacing restraint as required to maintain liner plate in a true circle until grouting operations are completed. Provide stiffener angles welded to liner plate, if required to protect the liner from buckling or damage, at no additional cost to the OWNER.
5. Grouting between the liner plates and excavation shall follow as soon as practicable but at no time shall more than 10 feet of tunnel be left ungrouted. At the end of a work shift or when work is interrupted for any reason, no ring shall be left ungrouted. Grouting shall follow progressively with each adjacent set of holes.
6. The grout pump and injection system shall be of a type that will deliver the grout in a smooth, even flow without surge. The grouting equipment shall be capable of developing uniform pressure at the grout hole connection sufficient to fill voids without disturbing the liner plates, adjacent utilities, structures or roadways. The equipment shall be equipped with hoses having a minimum inside diameter of 1-1/2 inches and have a minimum capacity of 1/2 cubic yard.

7. In general, grouting shall proceed from the lowest grout hole of each ring and proceed progressively upward. When going from lower to higher grout holes, do not make connection to the higher holes until grout has completely filled the space below.

F. Jacked Steel Casing or Pipe if used:

1. The trenchless construction method may consist of jacking or pushing steel casing into the ground with a digger shield and hand-mining from inside the casing pipe to remove the soil and other obstructions within the tunnel face by mechanical means. Blasting is not permitted.

2. Microtunneling: See specification elsewhere in the contract documentation.

307-3.7 Casing In Tunnel.

A. Install as indicated in accordance with the Contract Documents.

B. Clean-up. Remove loose soil, rock and debris prior to installation of the casing, to provide clean backfill grout contact with the initial support and excavated surfaces.

307-4 TESTING AND INSPECTION. Testing of the carrier pipe shall comply with the standard specifications, Hydrostatic Pressure Test.

307-5 MEASUREMENT AND PAYMENT. For Payment see Technical Specification 01 29 00.

SECTION 308 – MICROTUNNELING

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

308-1 GENERAL.

308-1.1 Scope Of Work.

A. The Work specified in this Section consists of installing pipe as specified on the Contract Drawings along the alignment shown in the Contract Drawings and documents by Microtunneling. The soil material and hydrological conditions are described in the Geotechnical Data Report (GDR) and Geotechnical Baseline Report (GBR). Straight microtunneling is specified the CONTRACTOR may adjust the shown alignment within the project easement boundary subject to OWNER's approval. CONTRACTOR shall furnish all labor, tools, and equipment, and perform operations necessary or incidental for the excavation and support of microtunneling operations including construction of the launching and receiving shafts and supply of suitable jacking pipes.

B. The support of excavation for shafts shall be in accordance with the Contract Documents, except as modified herein for microtunneling operations. This specification describes the additional measures that shall be provided by

CONTRACTOR for each of the launching and receiving shafts used with the microtunneling method.

- C. The shafts used for launching and receiving shall be made fully adequate for the microtunneling work and for any permanent structures situated within the shafts. CONTRACTOR shall be responsible for providing each launching shaft and each receiving shaft with the provisions necessary to perform the microtunneling operations. Furnish labor, equipment, material, and additional design, as necessary, to meet the minimum requirements as contained herein.
- D. CONTRACTOR shall hire a California licensed Professional Engineer meeting the requirements as contained herein. CONTRACTOR is responsible for the work produced by this engineer. CONTRACTOR shall also hire a California licensed surveyor meeting the requirements as contained herein. CONTRACTOR is responsible for the work produced by this surveyor.
- E. CONTRACTOR shall provide each launch shaft with thrust blocks, entrance seals, base slabs, pumping and drainage systems, ventilation systems, electrical systems, and lighting systems. CONTRACTOR's licensed engineer shall design the shaft support (SOE), thrust blocks, entrance seals, and base slabs including necessary modifications to the shoring. CONTRACTOR shall also be responsible for developing a Fluid Control Plan to be implemented by CONTRACTOR at each of the shaft sites in accordance with the requirements as contained herein.
- F. CONTRACTOR shall provide each receiving shaft with exit seals, base slabs, and, as necessary, a pumping and drainage system to maintain dry working conditions. CONTRACTOR's licensed engineer shall design the exit seals including necessary modifications to the shoring.
- G. CONTRACTOR shall prevent the inflow of ground and/or groundwater into the shafts during the microtunneling operations including but not limited to exit and entry of the shaft during the launching and receiving processes of the MTBM. The ground shall be improved, as necessary, to prevent any inflow of ground and/or groundwater in excess of specified tolerances as contained herein.
- H. CONTRACTOR shall prevent the machine from veering off of the design alignment during the launching, jacking, and/or receiving process in excess of the specified tolerances as contained herein. CONTRACTOR shall redesign pipeline and associated structures at no additional cost to the OWNER, if and when necessary due to exceedance of the specified tolerances.
- I. CONTRACTOR shall be responsible for ensuring that each of the shafts, including modifications, used with the microtunneling is fully adequate for installation of the permanent structures as shown on the Contract Documents. CONTRACTOR shall modify these shafts as necessary to accommodate the construction of these

structures. Furthermore, CONTRACTOR's licensed engineer shall provide additional design necessary for completing this work.

- J. The CONTRACTOR shall provide a microtunnel boring machine (MTBM) capable of excavating through the ground and any material as described in the GBR, furnishing and installing jacking pipe complete and operational as specified in the documents to the specified line and grade. Furnish and attempt to replace lubricant with grout behind the jacking pipes to completely fill any annular void between the pipe extrados and the excavated surface through grout holes in the pipes.
- K. CONTRACTOR shall store, process, properly transport, and legally dispose of muck and/or excavated material in accordance with the Contract Documents.
- L. Microtunneling operations will be carried out to minimize settlements to within limits established in the Contract Documents. CONTRACTOR shall be responsible for damage caused by construction activities to include damage by subcontractors, and conducting restoration of existing facilities for damages due to shaft construction and microtunneling related ground movement.
- M. CONTRACTOR's engineer shall develop a Survey Plan in accordance with the requirements as contained herein. The Licensed surveyor shall perform survey readings associated with this plan.

308-1.2 References.

- A. American Association of State Highway and Transportation Officials (AASHTO).
- B. American Society of Civil Engineers (ASCE).
- C. California Occupational Safety and Health Administration (CAL-OSHA) – Particular attention is called to Sub-part S, Underground Construction, and Sub-part K, Electrical, of the Standards and Guidelines 29 CFR Part 1926,
- D. ASCE Microtunneling Guideline

308-1.3 Definitions.

- A. Microtunneling: A continuously supported trenchless installation of a pipe by jacking the pipe directly behind a closed face, remotely controlled, steerable, guided, microtunnel boring machine (MTBM) which provides a continuous pressure on the face of the excavation to balance groundwater and earth pressures.
- B. MTBM: The total system of the mechanized excavating equipment, consisting of a boring and articulated steering head, trailing shield segment(s), auxiliary and support equipment, and other items necessary for the sustained excavation operations of the microtunnel.

- C. Jacking Pipe: pipe specifically designed to withstand jacking loads as defined herein, that serves as initial construction lining and tunnel support, and as the final carrier or casing pipe.
- D. Hydraulic pipe joint: Specialty pipe joint system for jacking pipe through a drive to spread the jacking force or reduce force concentration over the pipe perimeter. It consists of a hose mounted in the pipe joint with controllable deformation and fluid pressure, which can be translated into forces acting on the pipe.
- E. Ground Conditioning Agents: Used during microtunneling operations to control settlement, reduce cutting head torque, and prevent excessive wear on cutting tools and other MTBM components. These may include 1) foam (both simple surfactant/air/ water foam and polymer/surfactant/air/water foam); 2) polymers; 3) bentonite slurry.
- F. Lubrication: Bentonite and/or polymer lubricant injected in the annular space between the pipe and surrounding ground during microtunneling to support the annular space and reduce friction between the pipe and soil.
- G. Muck: Material excavated from shafts or tunnel including any ground treatment, lubrication, or slurry. Also referred to as spoils.
- H. Spoil Transport System: A system of piping, pumps, valves, screw conveyors, or other equipment which transports the muck from the tunnel face to the surface. This includes the slurry treatment plant if a slurry based system is utilized.
- I. Jacking Shaft: Excavation from which the MTBM is launched, which incorporates a thrust block to spread reaction loads to the ground. Also referred to as launching shaft.
- J. Receiving Shaft: Excavation to which the MTBM is launched towards. A shaft can be used as both a jacking shaft and receiving shaft for adjacent microtunnel drives but is not required.
- K. Jacking System: A system of hydraulic jacks installed inside the jacking shaft that provides thrust for the string of pipe in the ground and the MTBM. Capacity of jacks and extension rate is synchronized with excavation rate of the MTBM.
- L. Intermediate Jacking Station (IJS): A fabricated steel cylinder fitted with hydraulic jacks installed at intermediate locations in the pipe string to allow selective shoving of discrete segments of the total pipe string and MTBM.
- M. Laser: An optical system projecting a beam to a target to provide guidance for and location of the MTBM.

- N. Guidance system : A system that may be based on a laser for straight drives or a Gyro or a automated or manual system based on surveyors total stations and prisms to provide position information for drives
- O. Controls: The system which provides operational control to the MTBM including steering and synchronizes excavation, removal of the excavated material, and jacking of pipe to maintain overall balance to provide complete and adequate ground support at all times. The controls are generally containerized and located on the surface adjacent to the Jacking shaft.
- P. Face Access: Provision of an opening in the MTBM pressure wall to give man access to the muck chamber behind the cutter wheel to allow cutter tool changes in stable ground
- Q. AirLock: A system that allows access to the muck chamber behind the cutter head under pressure to change cutter tools if required
- R. Contact Grouting: Grout used to fill the annular space between the pipe and the soil due to MTBM overcut upon completion of a microtunnel drive.
- S. Dewatering: System of wells or excavations and pumps used for lowering the groundwater and/or removing groundwater from the microtunnel shafts.
- T. Entrance Seal: A mechanism incorporated into the launching shaft, including any necessary ground improvement, to prevent the inflow of ground and/or groundwater into the shaft while launching the MTBM and jacking subsequent pipes.
- U. Exit Seal: A mechanism incorporated into the receiving shaft, including any necessary ground improvement, to prevent the inflow of ground and/or groundwater into the shaft while in the process of recovering the MTBM at the receiving shaft.
- V. Grade: Vertical alignment.
- W. Launching: The machine is in the process of being launched at the beginning of a drive when passing through the entrance seal along the alignment beyond the outside edge of the launching shaft
- X. Line: Horizontal alignment.
- Y. Receiving: The machine is in the process of being received at the end of a drive when passing through the exit seal along the alignment beyond the outside edge of the receiving shaft.
- Z. Shoring: Scheme of the shaft for supporting the excavation and controlling the groundwater.

- AA. Thrust Block: A thrust block, including necessary ground improvement, is used to evenly distribute the jacking loads to the ground as part of the pipe installation process without excess movement or misalignment of the equipment.
- BB. Pilot Bore: A small diameter test bore to be used to probe the ground on the tunnel alignment for obstructions.

308-1.4

Submittals.

- A. Submit the following in accordance with the Contract Documents.
 - 1. Coordination and Implementation Plans to demonstrate that applicable requirements from the Contract Documents as well as the requirements as contained herein, have been reviewed and coordinated by CONTRACTOR. Each of the subcontractors, if any, shall sign these plans.
 - 2. Fluid Control Plan to ensure that the equipment operator maintains full control over fluid volumes and fluid pressures during microtunneling operations including slurries and/or lubricants. CONTRACTOR shall determine the construction activities at each launch shaft site location and describe these in detail. CONTRACTOR's engineer shall evaluate these activities and develop a plan including recommendations to ensure that fluid control is not impeded to any degree by any construction activity occurring at the site including but not limited to backfilling operations, leakage in the shoring, dewatering activities, and induced flow of groundwater. Consideration shall be given to the ground and groundwater conditions as defined in the GBR. CONTRACTOR's engineer shall sign this plan.
 - 3. Shaft Layout and Details: For each microtunneling shaft and drive from it, provide complete details, drawings, and schematics, as applicable. Show layout of shaft, including equipment, drawn to scale. Demonstrate that proposed layout of shafts is adequate for sequence of construction, equipment operations, and means and methods of pipe installation including required acceptance testing. Describe in detail provisions for the working slab, invert treatment, and pump and drainage systems. Include details of lighting, ventilation, hydraulic, and electrical systems.
 - 4. Structures Shown on Contract Documents: Evaluate each microtunneling shaft and demonstrate that each shaft is adequate for installation of the permanent structures as shown on the Contract Documents including each stage of construction and backfilling. Provide detailed descriptions, procedures, shop drawings, schematics, and explanations. Furthermore for design modifications to accommodate these structures, provide fully developed design details, material requirements, standards, calculations, shop drawings, procedures, construction stages, and explanations signed

and sealed by CONTRACTOR's engineer. Evaluate ground improvement schemes and contingency measures to be implemented as part of the design.

5. Contractor will submit means and methods to carry out pilot tube probing under the levee on the drive between Junction structure 1 jacking shaft and the pump station, and if obstructions are found in the tunnel alignment a method for completing the drive as per the contract drawings.
 6. Survey Techniques: Provide complete details that fully describe the survey techniques to be used for transfer of line and grade.
 7. Provide details of site monitoring plan including provision of measuring ground movements at shafts and along the tunnel alignment and the monitoring of any existing structures within 100ft of the centerline of the excavation and tunnel alignment. Submit a plan for actions to be taken in the case of ground movements exceeding the allowable movement limits (Unless otherwise submitted 1/2in movement requires action to be taken as per the plan)
 8. Qualifications of key personnel to include CONTRACTOR's California licensed engineer, project superintendent, MTBM operators, and shift supervisors.
 9. Field Inspections, not less than once per week, in accordance with requirements as contained herein.
- B. Shop Drawings (Minimum of 60 days before microtunneling is scheduled to begin):
1. Calculations and working drawings signed and sealed by a Professional Engineer registered in the State of California, showing jacking and reception shafts support, including shaft exit cut outs and thrust blocks designed to resist maximum jacking loads.
 2. Working drawings indicating limits of jacking and reception shafts showing layout of tunneling and ancillary equipment.
 3. MTBM shop drawings including:
 - a. Configuration of cutterhead and over cut.
 - b. Ventilation system details for personnel entry to the MTBM.
 - c. Provision for cutter tool replacement during a drive
 - d. If an Airlock is supplied the Airlock operational manual

- e. Jacking pipe lubrication system details.
 - f. Grade and alignment control system details.
 - g. MTBM emergency groundwater control provisions.
 - h. Details of slurry pumping and separation control if applicable.
4. Jacking pipe calculations and details as required by the Contract Documents.
 5. Calculations and working drawings signed and sealed by a Professional Engineer registered in the State of California for methods of controlling groundwater, in accordance with the Contract Documents, during microtunneling.
 6. Show pertinent dimensions, spacing, and layout of Microtunneling components. Indicate sizes, shapes, material specifications, and elevations, as related to depth of excavation. Include plan, elevations, sections, and details showing the arrangement and method of installation during intermediate construction stages in addition to providing the final stages.
- C. Design calculations:
1. Include design assumptions, and for computer software, provide the program input.
 2. Demonstrate the integrity of the pipe design and conformance to applicable design standards. Account for loads, sequences, and conditions during the various construction stages.
 3. Provide analyses to determine impacts with existing site improvements including but not limited to structures and utilities.
 4. For backfilling of shafts after microtunneling operations, provide analyses for end bearing capacity, skin friction/down-drag, and settlement.
- D. Show existing structures, utilities, trees, and other site improvements located within each of these shaft areas.
1. Product Data (Minimum of 60 days before microtunneling is scheduled to begin):
- E. Submit details of muck or slurry conditioning additives used to reduce machine applied torque and maintain muck flow and pressure holding capability.

F. Examples of Shift reports & Data Recording printouts (Minimum of 60 days before microtunneling is scheduled to begin):

1. A sample of the Data log printout or manual log of the jacking operation to be used, which will include the following items and be provided every 24hrs:

- a. Position of the MTBM in relation to the design line and grade.
- b. Jacking forces exerted on the pipe and at each intermediate jacking station if applicable.
- c. Date, starting time, and finish time of each pipe joint.
- d. Instantaneous jacking rate and total distance jacked.
- e. Position of the steering jacks.
- f. Pitch and roll of the MTBM.
- g. Cutterhead RPM & torque.
- h. Details of problems, obstructions, or delays: including the conjectured cause.
- i. Rotational speed of screw conveyor if applicable.
- j. For slurry based system: The volume of slurry in both the supply and return side of the slurry loop, indication of slurry bypass valve position, and indication of pressure in face support chamber.
- k. Face water jet use.
- l. For slurry based system the viscosity and density of the slurry supply fluid to the MTBM

Shift report identifying the operating crew, weather , any downtime and reasons, description of the ground being excavated.

2. A sample of the visual inspection form to be used.

G. Special Equipment and Repair (Minimum of 60 days before microtunneling is scheduled to begin):

1. Certification by the original MTBM manufacturer of the thrust, torque, condition, and operational characteristics of equipment to be used for installing the specified pipe. The microtunneling equipment shall employ

a spoil removal system with a pressure balance system that is capable of equalizing pressures between the tunnel face and the microtunneling machine head to positively and continuously support the face of the excavation to balance groundwater and earth pressures.

2. Manufacturer's literature describing in detail the microtunneling system to be used. Provide the names, addresses and telephone numbers of owner's representatives for these projects as well as the length, diameter, and pipe material used. Indicate whether the machine proposed for this contract currently exists, or will be newly manufactured.
3. Details of special precautions required and the inspection procedures to be taken when stopping the machine for repair, weekends, holidays etc. to ensure that the pipe string does not become "locked" by soil pressure and face stability is not compromised during the shutdown including contingency measures to be implemented if problems arise or in groundwater control if power is lost.

H. Installation and inspection data (Minimum of 45 days before microtunneling is scheduled to begin.):

1. A detailed technical description of the microtunneling procedure, and construction techniques to provide the access required to install the specified pipe in conformance with the Contract Documents to include:
 - a. Intended machine parameters to achieve pressure balance at the tunnel face, including cutterhead rotation speed, torque, thrust, pump or screw conveyor speeds, and discharge rates, rate of advance, and volumetric control.
 - b. Details of muck handling system, rock crushing and spoil separation methods if required, including proposed additive formulations and calculations of the system capacity to handle flows at all distances and changes of elevation to and from the MTBM.
 - c. Details of conditioning agents to be used, including concentration, injection rate, injection point, and ratios of these conditioning agents.
 - d. Details of main jacking system, intermediate jacking stations, hydraulic joints (if proposed) and their proposed spacing, method of operation and thrust capacity. Include calculations of anticipated jacking forces required to advance the pipe and calculations of maximum jacking force permissible on straight sections for the selected jacking pipe material. Include details and

supporting compression calculations for joints used with intermediate jacking stations and hydraulic joints. Describe controls to prevent the maximum jacking force from being exceeded during the drive including use of hydraulic joints and/or other measures to prevent pipe overstress.

- e. Description of guidance system and procedures for maintaining line and grade.
- f. Method of spoil disposal conforming to the Contract Documents.
- g. A startup plan for the MTBM and the method of launching through the launching shaft wall into the ground, and the plan for exiting the drive at the reception shaft.
- h. A plan for contact grouting after the pipe has been installed. The details shall include injection pressure, method of controlling grout pressures, and method for verifying complete filling of the void space between the pipe and the surrounding ground.
- i. Complete information on CONTRACTOR's safety plan for personnel conducting the tunneling or jacking operations and appurtenance installation in accordance with OSHA and local regulations. The plan shall include provisions for lighting, ventilation, and electrical safety.
- j. Contingency Plan, detailing measures to be taken when surface settlement exceeds the maximum values as described herein and in the Contract Documents.
- k. A procedure (method statement) for remedial grouting to reduce infiltration rates to specified levels, if applicable.
- l. Performance reports and test data (daily when MTBM is operating):
 - 1. Jacking operation data log containing the data detailed in this Specification taken at intervals no more than 1 minute apart and a minimum of 10 times per pipe section. If the data is collected digitally it shall be submitted in both hard copy and digital format on an appropriate storage media.
 - 2. If the electronic data log is not submitted or available in a digital format then a CD video recording of the operator's console shall be required. Video shall show a real-time clock that matches the time scale used in the manual log, and information used by the operator in machine operation, guidance, and control. Indicators for the MTBM being viewed by the CD recorder shall indicate when the MTBM is excavating and the number of the pipe joint that is being pushed. (The video disk

shall be submitted to the OWNER each week and a complete video recording at the end of each drive)

3. Separate log tracking pipe lubricant used in gallons, its measured viscosity, and pumping pressure.
 4. Separate log tracking the volume removed from the tunnel excavation for each pipe section and from the site each day. Any anomaly should be reported immediately to the Engineer.
- J. Line and Grade Plan:
1. This plan shall be developed by CONTRACTOR's engineer to transfer line and grade from the surface to the working floor of the shaft and to complete the as-built survey of the pipe installed by microtunneling. Any anomaly should be reported immediately to the Engineer.
 2. In pipes over 48in inside diameter Include the techniques to be used for acquiring the as-built line and grade. The points along the installed pipe shall be spaced at a distance not to exceed 10 feet but not less than one survey reading shall be taken per pipe. Additionally, survey low or high points will be indicated.
 3. Provide interpretation of this data; compare with specified tolerances for line and grade as contained herein as well as in the Contract Documents. Whichever are more restrictive.
 4. Submit as-built data to OWNER at the end of each drive.

308-1.5 Quality Assurance.

- A. Experience Requirements:
1. CONTRACTOR's engineer shall be licensed by the State of California with experience designing microtunneling and shafts in similar ground conditions. This engineer shall meet applicable regulatory criteria for each system design. Experience and education shall be documented in a resume with a detailed description of the work actually performed on each of the reference projects. Include contact details for each of the reference projects to include the current phone number, e-mail address, and title of a senior project representative familiar with his/her work. Descriptions of reference project shall include the number of shafts designed, dimensions, shoring methods, modifications to shoring, base slab details, ground and groundwater conditions, and thrust block details. Also indicate method of analyses, standards, computer programs, and materials used for constructing the shafts to include the entrance and exit seal. Provide sample design documents.
 2. Provide a project superintendent.

3. Provide a MTBM operator and a shift supervisor for each shift.

B. CONTRACTOR Design Responsibilities:

1. Design and details of jacking unit thrust collar to be used for symmetric and uniform transfer of jacking forces to the pipe.

2. Design and arrangement of shafts, including dimensions, capacity and location of the jacking reaction thrust block, frame alignment and interface with the pipe, support system for shaft walls, and provisions for control of groundwater. The excavation and excavation support shall be coordinated with construction of the permanent structure, tunnel access and manhole facilities.

3. Design and arrangement of microtunneling system including:

a. An MTBM specifically designed for excavating and installing pipe from the jacking shaft through the geological materials as described in the GDR and GBR, for the soil and rock types, density, strength, abrasivity and maximum hydrostatic, and earth pressures. The MTBM shall also be designed to cut through boulders or obstructions as described in the GBR. The excavated diameters shall be suitable for the installed pipe diameters along the alignment specified in the Contract Documents.

b. A spoil transport system specifically designed for matching the excavation advance rate to the spoil removal rate while conveying the tunnel muck from the face for geologic materials as described herein and in the GBR. Including a surface separation plant if a recycled slurry based microtunneling system is selected, and additives, such as foams, or other muck conditioners.

c. A jacking system specifically designed for maintaining microtunnel advance as prescribed in the Contract Documents through the geologic materials as described in the GBR.

d. Design and arrangement of intermediate jacking stations, including jacking and reaction plates and their interface with the pipe, external shield, and jack capacity and location.

e. A laser, theodolite or gyro guidance control system specifically designed for maintaining tunnel tolerances as it is advanced along the required alignment as prescribed in the Contract Documents through the subsurface environment as described in the GDR and GBR.

4. Methods of excavation at the face, and details of cutting head tooling.
5. For MTBM over 60in outside diameter, provision of entry to the cutter / muck chamber for changes of cutter tools or removal of obstructions.
6. Locations where pipe lubricant is to be used and lubrication procedure.
7. Requirements for ports in pipe wall, for introduction of lubricant and contact grouting.
8. Procedure for operation of the MTBM to maintain tunnel face stability and minimize surface settlements at all times and under all conditions indicated during both excavation operations and periods of MTBM shutdown.
9. For personnel entry provide provisions for adequate ventilation in tunnels and shafts.
10. Provision for gas monitoring in the MTBM and shafts
11. Provisions for adequate lighting to facilitate as required the work in tunnels and shafts. Power and lighting circuits shall be separate as per regulations.

C. Design Criteria:

1. The geotechnical conditions including groundwater elevations to be encountered during microtunneling as detailed in the GBR.
2. Minimum shaft design loadings as provided in the GBR, plus additional construction loads such as erection, handling, storage and jacking forces necessary for installation of the pipe and other structures. Truck loading shall be minimum HS-20 vehicle loading distributions in accordance with AASHTO.
3. Internal pipe diameter, alignment, and invert location and elevations shall conform to those shown in the Contract Documents.
4. All electrical equipment should be suitable for Class 1 Zone 2 environment as per NFPA Pub70. If explosive gas encountered, install and operate required ventilation systems as required by CalOsha at no additional cost to the Owner.
5. The MTBM shall meet the following minimum requirements:
 - a. Providing continuous positive face support in excess of the in-situ pressure during all phases of tunnel excavation and shutdown.

- b. Articulated to enable controlled steering in both the vertical and horizontal directions to the tolerances indicated in the Contract Documents.
 - c. All functions shall be controlled remotely from the surface under normal operation.
 - d. Capable of controlling shield rotation of the MTBM in the ground.
 - e. Capable of injecting lubricant from the back of the MTBM and around the exterior of the pipes being jacked. Lubricant shall be refined, processed natural high swelling montmorillonite clay or other product as approved by the OWNER as necessary to produce satisfactory lubrication and earth support.
 - f. Capable of controlling heave and settlement to the acceptable tolerances as specified in the Contract Documents.
 - g. Provide access to the rear of the cutter wheel through the MTBM via an access door.
 - h. Capable of boring through the anticipated geotechnical conditions and any obstruction as described in the GBR.
6. The main and intermediate jacking system shall each consist of an even number of thrust cylinders arranged symmetrically. Each cylinder of the mainjacking system shall have individual activation, synchronized activation and individual thrust control. Cylinders shall not exert force when idle but shall resist displacement. The installed thrust capacity shall be at least 20 percent greater than the maximum theoretical combined reactions from the hydrostatic pressure, pipe friction, earth pressure, and cutter forces of the proposed drive.

308-1.6 Coordination documentation.

CONTRACTOR's engineer shall inspect, to the extent necessary, and certify that construction operations were performed in accordance with the approved design submittals. Deficiencies shall be immediately corrected by CONTRACTOR and reported to OWNER.

308-1.7 Conditions.

- A. The entire length of tunnel is classified as "Potentially Gassy." Perform work as specified herein, in accordance with the Contract Documents, and with current applicable regulations and codes of Federal, State, and local agencies. Comply with applicable provisions of 29 CFR Part 1926, Subpart S, "Underground Construction" Standard Number 1926.800 by OSHA and Subpart P, "Excavations",

latest revision. Should there be conflict between these specifications and OSHA requirements, the more restrictive will apply.

- B. CONTRACTOR shall comply with applicable codes, standards, and regulations.
- C. CONTRACTOR shall assess existing conditions, including property rights of adjacent properties whether private or public. Be responsible for the proposed temporary works and construction methods.
- D. CONTRACTOR shall provide access to OWNER at all times during construction operations to perform inspections.

308-1.8 Tolerances.

- A. Inflow of Ground and Groundwater: Not more than a total of one (1) cubic foot of ground shall enter into the shaft. Not more than one (1) gallon per minute of groundwater shall enter into the shaft during the course of the drive. If the groundwater is mixed with slurry and/or lubricant, it shall be prevented from entering the shaft in accordance with Fluid Control Plan.
- B. Line and Grade during the Launching and Receiving Operations: During launching and receiving operations, line shall be maintained within ± 3 inches and grade shall be maintained within ± 1.5 in
- C. Maximum variation from lines and grades shown on the Contract Documents: +/- 3inches in lateral alignment and +/-1.5infor vertical grade, providing that the final grade of flow line shall be in the direction shown. In the case of variation outside the required tolerance correction of the line and grade will not exceed 1inch in 25ft.
- D. Maximum ground settlements and/or differential settlements shall not exceed the limits provided in the ground movement monitoring plan.

308-2 PRODUCTS.

308-2.1 Materials.

- A. Sewer jacking pipe shall consist pipe as shown on the Contract Drawings as required to provide a safe, stable tunnel excavation and acceptable in-place pipe. Pipe materials shall be in accordance with the Contract Documents and specifications.
- B. CONTRACTOR shall be responsible for selecting and designing appropriate pipes and pipe joints to safely carry the loads imposed during construction, including jacking forces. Pipe joints shall be flush with the inside and outside of the pipe surface when pipes are assembled.

308-2.2**Equipment.****A. Microtunnel Boring Machine (MTBM)**

1. The Microtunneling Boring Machine (MTBM) shall have a closed face capable of providing positive supporting pressure to the full excavated area (face) at all times and must have the capability of controlling and measuring the pressure at the face. The balancing of earth and groundwater pressures shall be achieved by the use of slurry pressure, auger earth pressure balance system, or a combination of the two. The system shall be capable of any adjustment required to maintain face stability for anticipated ground conditions. For equipment that uses a slurry spoil transportation system the earth and groundwater pressure at the face shall be controlled by the use of a variable flow slurry pumping system, pressure control valves and a minimum of two flow meters, one on the supply side and one on the return side. For equipment that uses an auger spoil transportation system the earth and groundwater pressures at the face shall be managed by controlling the volume of spoil removal relative to the advance rate (Earth Pressure Balance) and shall be augmented by the application of compressed air or soil conditioning agents if conditions require.
2. The MTBM shall be capable of controlling rotation or roll by means of bi-directional drive on the cutter head and/or by use of fins or grippers.
3. The MTBM cutter head shall be electro or hydro mechanically powered and shall provide sufficient torque to cut the face, crush material as required and feed the excavated material to the spoil transportation system.
4. The MTBM shall be articulated and fully steerable, both vertically and horizontally.
5. Automated Spoil Transportation
 - a. The MTBM system shall include an automated spoil transportation system that has the capability of matching the excavation rate to the rate of spoil removal such that settlement tolerances can be maintained.
 - b. A separation process shall be provided when using a slurry spoil transportation system. The separation process shall be designed to provide adequate and efficient separation of solids from the slurry so that clean slurry can be returned to the cutting face for reuse and the solids can be disposed of in an efficient manner.

B. Control Systems

1. A remote control system shall be provided that allows for the operation of the system without the need for personnel to enter the tunnel for routine operation of the system. The control equipment shall integrate the system of excavation, removal of spoil and its simultaneous replacement by a pipe. As each pipe section is jacked forward, the control system shall synchronize all of the operational functions of the system. The system shall provide complete and adequate ground support at all times.
2. Line and grade shall be controlled by a guidance system that relates the actual position of the MTBM to a design reference established by a surveying system. Typically in straight drives by a laser beam transmitted from the jacking shaft to a target mounted in the MTBM. The laser shall be mounted in the jacking shaft independent of the jacking frame and thrust block. For long drives Laser guided tachimetry or theodolite or gyroscope is also acceptable. The guidance system shall be checked and calibrated at least every 50ft of pipe jacking or once every day whichever is the sooner. The active steering information shall be monitored and transmitted to the operation console. The minimum information available to the operator at the control console shall include the position of the MTBM relative to the reference, roll, inclination, attitude, rate of advance, installed length, thrust force, and cutter head torque.

C. Jacking Equipment

1. Each pipe section shall be jacked forward as the excavation progresses in such a way as to provide complete and adequate ground support at all times. A jacking frame shall be provided for developing a uniform distribution of jacking forces around the perimeter of the pipe.
2. The thrust reaction block shall be properly designed and constructed and shall be perpendicular to the jacked pipe alignment. The thrust reaction block shall be designed to support the maximum estimated jacking force with a factor of safety of at least two.
3. Intermediate jacking stations shall be provided to maintain total jacking forces within the capacity of the main jacking system and the thrust reaction block. Intermediate jacking stations shall be provided of sufficient numbers and spacing to ensure completion of the drive and be of individual capacity compatible with the maximum safe jacking capacity of the pipe.

308-3 EXECUTION.

308-3.1 Construction.

A. General Requirements:

1. Do not begin work on the microtunneling and shafts until required submittals have been approved.
2. Construction techniques required to provide access for microtunneling shall be such as to ensure the safety of the work, at all times and during all stages of the work.
3. Support excavations and control movement of the ground, pavement, utilities or structures outside of the excavation. Ensure support of excavation conforms to applicable Local Safety Standards, OSHA Standards, trenching, and shoring standards.
4. If, at any time, the method being used by the CONTRACTOR for supporting any material or structure adjacent to excavation is not safe in the opinion of the OWNER or applicable Federal, State, or local inspection authorities, provide additional bracing and support necessary to furnish the added degree of safety required by the OWNER. Provide such added bracing and support by such method approved by the OWNER as the CONTRACTOR may elect to use but the taking of such added precautions shall in no way relieve the CONTRACTOR of their sole final responsibility for the safety of lives, work, and structures. The use of such additional bracing and support shall be at no additional cost to the OWNER. The absence of an order for additional bracing shall in no way relieve the CONTRACTOR of the sole and final responsibility.
5. Ventilation and air quality monitoring shall conform to the requirements of OSHA 3115-06R 2003 Underground Construction regulations for Gassy or Potentially Gassy Operations. The ventilation design shall be determined by the CONTRACTOR.
6. Furnish necessary labor, material, equipment, power, water, and utilities to complete the work. Additionally:
 - a. Select the means and methods for performing the work.
 - b. Select, design, and install the thrust blocks. The thrust blocks shall be sufficiently reinforced, isolated, and otherwise anchored, to include necessary ground improvement measures, to prevent movement from occurring within the launching shaft and/or misalignment of the jacking frame.

- c. Select, design, and install the entrance seals, including necessary modifications to the shoring, for the launching shafts.
 - d. Select, design, and install the base slabs, including necessary modifications to the shoring, for the launching shafts.
 - e. Select, design, and install the exit / entry seals, including necessary modifications to the shoring, for the receiving shafts.
7. Construct the shafts to accommodate the installation of the pipe, MTBM, and jacking device. Execute microtunneling such that settlement is maintained below maximum levels detailed in this Section of the specification, such that the in-place pipe shall have full bearing against earth, and such that voids shall be fully filled with grout.
8. Damaged and/or deficient materials shall be repaired and/or replaced as directed by OWNER.
9. Provide surface drainage during the period of construction to protect the work.
10. Control of Line and Grade:
- a. The OWNER will establish the baselines and benchmarks indicated on the plans. The CONTRACTOR shall check these baselines and benchmarks at the beginning of the contract period and report errors or discrepancies to the OWNER. Use these baselines and benchmarks to furnish and maintain reference lines and grades for microtunnel construction. Use these lines and grades to establish the starting location of the microtunnel.
 - b. Mount guidance system in a manner than isolates it from effects of movement by the jacking forces.
 - c. When the excavation is off line or grade, return to the plan line and/or grade at a rate of no more than 1 inch per 25 feet.
11. Grouting:
- a. A uniform mixture of 1:6 maximum (cement:sand) cement grout shall be placed to fill voids, which exist between the pipe and the ground in accordance with the requirements of this Section and the Contract Documents. Grout shall have a minimum 28-day compressive strength of 500 psi.
12. Protect the existing improvements at the site from damage including but not limited to structures, utilities, and culverts.

308-3.2**Installation.**

- A. Perform work in accordance with the approved submittals.
- B. The owner's licensed surveyor shall be responsible for verifying control points identified in the Contract Documents. Surveyor shall check baseline and/or benchmarks shown prior to starting and report errors or discrepancies to OWNER. Contractor to provide request for Surveyor to perform verifications 30 days in advance.
- C. Notify OWNER immediately upon detecting larger than predicted deformation, distress, or damage to the excavation support system.
- D. Notify OWNER immediately of any structural element that is not in accordance with the approved design submittals.
- E. Do not resume construction activities until corrective measures have been fully implemented.
- F. Microtunnel each pipe section as the excavation progresses in such a way to provide complete and adequate ground support at all times. Utilize a jacking frame that develops a uniform distribution of jacking forces around the periphery of the pipe. Design and construct the thrust block to sustain jacking reactions and construction forces. The thrust block shall be normal (square) with the proposed pipe alignment and designed to support the maximum obtainable jacking pressure with a factor of safety of at least 2.0. The jacking system, including intermediate jacks used, shall be capable of continuously monitoring the jacking pressure and rate of advancement.
- G. On drives over 500ft utilize an automated (ABIS) lubrication system that injects a lubricant from the rear of the MTBM and at intervals along the pipeline to the external surface of the pipe, which lowers the friction developed on the outside of the pipe during jacking. Spacing of lubricant points along the pipe train shall be at the CONTRACTOR's option. Modify this system as required to prevent pipe binding or stoppage at no additional cost to the OWNER.
- H. Utilize a spoil transportation method capable of handling and removing the expected excavated materials as indicated herein and in the GBR.
- I. Limit the overcut on the tunnel shield to no more than ½ inch on radius unless approved by the OWNER. The annular space created by the overcut shall be filled with a lubricant that has been proven suitable for the particular ground conditions to be tunneled.

- J. After completion of microtunneling, replace lubricant between the pipe exterior and surrounding ground with a cement grout. Control the pressure and the amount of grout to prevent damage and displacement of the pipe.
- K. Use additive as required in muck conditioning system to reduce machine applied torque and maintain muck flow and pressure holding capability.
- L. If a slurry system is used then a slurry separation plant shall be used. The plant shall clean the excavated spoil from the slurry for disposal and return the slurry back to the MTBM face for reuse. The type of separation plant used shall be designed by the CONTRACTOR.
- M. Dispose of excavated material off-site in accordance with applicable permit and regulatory requirements and in accordance with the Contract Documents.

308-3.3 Field Inspection.

- A. CONTRACTOR's engineer shall conduct visual inspections to verify:
 - 1. Shafts and modifications to the shoring were constructed in accordance with the approved design submittals.
 - 2. Entrance/exit seals were constructed in accordance with the approved design submittals.
 - 3. Thrust Blocks were constructed in accordance with the approved design submittals.
 - 4. Base slabs were constructed in accordance with the approved design submittals.
 - 5. Layout of shaft is generally in accordance with approved submittals.
- B. Details of these visual inspections shall be written into a field inspection report and submitted to OWNER.
- C. Submit to the OWNER copies of field notes used to establish lines and grades; however, the CONTRACTOR remains fully responsible for the accuracy of the work and the correction of it, as required.
- D. Record locations where the jacking pipe has deflected more than 3in offline or 1in off grade.

308-4 TESTING AND INSPECTION. Testing of the carrier pipe shall comply with the standard specifications, Hydrostatic Pressure Test.

308-5 MEASUREMENT AND PAYMENT. For Payment see Technical Specification 01 29 00

SECTION 310 - PAINTING

310-6 TESTING.

310-6.1 Testing Equipment.

1. Provide calibrated electronic type dry film thickness gauge to test coating thickness specified in mils.
2. Provide low-voltage wet sponge electrical holiday detector to test completed coating systems, 20 mils dry film thickness or less, except zinc primer, high-build elastomeric coatings, and galvanizing, for pinholes, holidays, and discontinuities, as manufactured by Tinker and Rasor, San Gabriel, CA, Model M-1.
3. Provide high-voltage spark tester to test completed coating systems in excess of 20 mils dry film thickness. Unit as recommended by coating manufacturer.

310-6.2 Testing.

1. Thickness and Continuity Testing:
 - a. Measure coating thickness specified in mils with a magnetic type, dry film thickness gauge, in accordance with SSPC PA 2. Check each coat for correct millage. Do not make measurement before a minimum of 8 hours after application of coating. Holiday detect coatings 20 mils thick or less, except zinc primer and galvanizing, with low voltage wet sponge electrical holiday detector in accordance with NACE SP0188.
 - b. Holiday detect coatings in excess of 20 mils dry with high voltage spark tester as recommended by coating manufacturer and in accordance with NACE SP0188.
 - c. After repaired and recoated areas have dried sufficiently, retest each repaired area. Final tests may also be conducted by Engineer.

310-6.3 Inspection. Leave staging and lighting in place until Engineer has inspected surface or coating. Replace staging removed prior to approval by Engineer. Provide additional staging and lighting as requested by Engineer.

310-6.4 Unsatisfactory Application.

1. If item has an improper finish color or insufficient film thickness, clean surface and topcoat with specified paint material to obtain specified color and coverage. Obtain specific surface preparation information from coating manufacturer.
2. Evidence of runs, bridges, shiners, laps, or other imperfections is cause for rejection.

3. Repair defects in accordance with written recommendations of coating manufacturer.

310-6.5 Damaged Coatings, Pinholes, And Holidays.

1. Hand or power sand visible areas of chipped, peeled, or abraded paint, and feather edges. Follow with primer and finish coat. Depending on extent of repair and appearance, a finish sanding and topcoat may be required.
2. Remove rust and contaminants from metal surface. Provide surface cleanliness and profile in accordance with surface preparation requirements for specified paint system.
3. Feather edges and repair in accordance with recommendations of paint manufacturer.
4. Apply finish coats, including touchup and damage-repair coats in a manner that will present a uniform texture and color-matched appearance.

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

314-4.3.7 Payment. To the "GREENBOOK", ADD the following:

1. The payment for the replacement of existing traffic striping, pavement markings, and pavement markers shall be included in the Bid item for "Painted Traffic Striping and Markings and Curb Markings" and shall also include the payment for new installations of traffic striping, pavement markings, and pavement markers.

314-4.4.6 Payment. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. No separate payment shall be made for establishing alignment for stripes and layout Work.
2. The payment for the installation of proposed thermoplastic striping and thermoplastic pavement markings, in accordance to the Plans, shall be included in the Bid item for "Thermoplastic Traffic Striping".

SECTION 600 - ACCESS

ADD:

600-1 GENERAL. To the "WHITEBOOK", item 5, DELETE in its entirety and SUBSTITUTE with the following:

5. If the City's crews are unable to provide the citizens with the mandated services due to your failure to comply with these specifications, you shall collect trash, recyclables, and yard waste on the City's schedule and deliver to the City's

designated locations. If you fail to perform this Work, you shall incur additional costs for the City to reschedule pick up of an area.

600-5 PAYMENT. To the "WHITEBOOK", Delete in its entirety and SUBSTITUTE with the following:

1. The payment for access Work as specified in SECTION 600 – ACCESS shall be included in the Contract Price.
2. The payment for MTS Right of Entry Permit Procurement Work including railroad liability insurance, plan reviews, inspections, flagging, and fees shall be included in the lump sum Bid item for " Tunneling - Rose Canyon (Dual Launch)".

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

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

6. Engineered TCP (2 foot x 3 foot size) shall be required for the following areas:
 1. Executive Drive (Towne Center Drive to eastern end)
 2. Towne Center Drive (Executive Dr to Nobel Drive)
 3. Nobel Drive (Towne Center Drive to Genesee Ave)
 4. Genesee Ave (Nobel Drive to Clairemont Mesa Blvd)
 5. Clairemont Mesa Blvd (Genesee Ave to Dubois Ave)

TCP with red marks will be available as in "Appendix O" but for reference ONLY.

601-2.1.4 Traffic Control for Resurfacing and Slurry Sealing. To the "WHITEBOOK", item 6, DELETE in its entirety and SUBSTITUTE with the following:

6. Place "NO PARKING - TOW-AWAY ZONE" signs 72 hours in advance of the scheduled slurry sealing. Reschedule street block segments which are not completed by the last posted Working Day. If a Work delay of 48 hours or more occurs from the originally scheduled Work date, remove the "NO PARKING - TOW-AWAY ZONE" signs for a minimum of 24 hours, then reset and re-post for the appropriate Work date.
7. The Contractor shall design utilizing a Registered Civil Engineer or Registered Traffic Engineer stamp all Traffic Control Plans for the Project. Un-approved Traffic Control Plans and native files can be provided for the convenience of the CONTRACTOR.

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

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

601-3.6.4 Barricades. To the "WHITEBOOK", to item 4, ADD the following:

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

601-5.5 Temporary Traffic Detection Systems. To the "WHITEBOOK" ADD the following:

Prior to traffic loops being impacted from any trench work, the contractor shall plan ahead and have in-place the temporary traffic detection systems. The Contractor shall install temporary detection systems for affected approaches, to be video, compatible with the existing system. Systems must be able to interface to a Caltrans 332 cabinet and provide presence detection for a minimum of 12 discrete zones per approach. Temporary detection systems shall be approved by the City prior to installation. The Contractor shall install all necessary cables, mountings, etc. to ensure correct operation of the temporary system. The Contractor shall calibrate and clean equipment (including, but not limited to, lenses) monthly, or as needed, and adjust zones whenever lane shifting occurs. In the event that insufficient space is available with the signal system conduits for additional cables, cable may be routed overhead in which appropriate clearances to ground shall be maintained. Overhead cabling shall not be used if space exists in the conduit system. Temporary detection systems shall be removed at contractor's expense once permanent detection has been restored.

601-6 PAYMENT. To the "WHITEBOOK", item 5, ADD the following:

- d) The Contractor shall be required no more than twelve (12) PCMS on-site at one time, as directed by the City, and shall be paid via the Bid item for "Portable Changeable Message Signs," for signs in use. All other costs associated with placing, operating, programming, maintaining, repairing, replacing, transporting from location to location, and removing each PCMS shall be included in this bid item. The quantity, as provided in the bid list, accounts for twelve (12) PCMS multiplied by thirty-five (35) months for a total quantity of four hundred and twenty (420) months. The Contractor shall be compensated each month by applying the unit cost to each PCMS used in that month.
- e) The payment for furnishing, installing, programming, maintaining, and removing City approved temporary video or radar detection systems as specified in 601-1, "GENERAL" shall be included in the Bid item for each "Temporary Detection System" required at each intersection.

SECTION 700 – MATERIALS

- 700-5.1 (86-5.01) Vehicle Detectors.** To the "WHITEBOOK", item 1, DELETE in its entirety and SUBSTITUTE with the following:
1. Loop wire shall be Type 2. Loop detector lead-in cable shall be Type "B". Slots shall be filled with elastomeric sealant, epoxy sealant, or hot-melt rubberized asphalt sealant, except asphaltic emulsion loop sealant and cold tar loop sealant are acceptable if the pavement surface will receive an asphaltic concrete overlay.
- 700-5.9 (86-5.02) Pedestrian Push Button Assemblies.** To the "WHITEBOOK", correct section numbering from 700-5.3 to 700-5.9. In addition, ADD the following:
- The housing assembly for the pole-supported pedestrian signal push-button or pedestrian push button shall be made of die-cast aluminum or permanent mold-cast aluminum with a color throughout that matches color no. 33538 of Federal Standard 595.
- 700-9.1 Pedestrian Barricade.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:
1. Pedestrian barricades shall be constructed in accordance with the City of San Diego Standard Drawing SDE-103, "Pedestrian Barricade".
 2. Assembly shall be commercial quality galvanized material.

SECTION 701 – CONSTRUCTION

- 701-2 PAYMENT.** To the "WHITEBOOK", ADD the following:
19. The payment for Pedestrian Barricades shall be included in the Bid item for each "Pedestrian Barricade".
 20. The payment for relocating existing traffic signal pull boxes, as directed by the Engineer, is included in the Bid item for "Relocate Traffic Signal Pull Box".
 21. The payment for pedestrian push button installation is included in the bid item "Relocate, Upgrade and Install Pedestrian Push Buttons".

SECTION 800 - MATERIALS

- 800-1.1.2 Class "A" Topsoil.** To the "WHITEBOOK", item 4, subsection "e", DELETE in its entirety and SUBSTITUTE with the following:
- e) The test results shall provide the following information:
 - i. Date of Testing
 - ii. Project Name
 - iii. The Contractor's Name
 - iv. Source of Material and Supplier's Name

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

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

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

pH	6.0 – 7.5
ECe (electrical conductivity)	0.0 – 3.0
SAR (Sodium Absorption Ratio)	0.0 – 5.0
Chloride Content	Less than 150 ppm
Boron Content	Less than 1 ppm
Organic Content	3% to 6% by dry weight
Carbon : Nitrogen Ratio	20:1 maximum
Sandy Loam Gradation Limit*	Gravel over 2mm: Less than 10% by weight Sand: 75% to 85% Sand finer than 100 mesh (0.15 mm): Less than 15% Sand finer than 60 mesh (0.25 mm): Less than 40% Sand larger than 32 mesh (0.5 mm): Minimum 15% Silt: 20% maximum Clay: 15% maximum
Permeability Rate**	2 inches to 5 inches per hour at 80% compaction

* Per USDA Classification Scheme.

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

PART 10

EQUAL OPPORTUNITY CONTRACTING PROGRAM (EOCP)

SECTION A – GENERAL REQUIREMENTS

4.1 Nondiscrimination in Contracting Ordinance. To the "WHITEBOOK", subsection 4.1.1, paragraph (2), sentence (1), DELETE in its entirety and SUBSTITUTE with the following:

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.

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

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

TECHNICALS

MORENA CONVEYANCE NORTH (PACKAGE B3)

TECHNICAL SPECIFICATIONS

DIVISION 01 - GENERAL REQUIREMENTS

- 01 12 01 Partnering
- 01 29 00 Payment Procedures
- 01 32 00 Construction Progress Documentation
- 01 33 00 Submittal Procedures
- 01 33 22 Web Based Construction Document Management
- 01 77 00 Closeout Procedures
- 01 78 23 Operation and Maintenance Data
- 01 91 14 Testing, Integration and Startup

DIVISION 26 - ELECTRICAL

- 26 05 33 Raceway and Boxes

DIVISION 40 – PROCESS INTERCONNECTION

- 40 95 34 Fiber Optics and Installation

SECTION 01 12 01
PARTNERING

PART 1 GENERAL

1.01 PARTNERING

- A. The Owner intends to encourage the foundation of a cohesive partnership with the Contractor. This partnership will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. The general objectives are effective and efficient contract performance to achieve completion within budget, on schedule, and in accordance with the intent of the Contract Documents.

- B. Project partnering recognizes that the Owner, Contractor, Construction Manager and Engineer all hold in common the goal of successful completion of this Project, including the following specific goals:
 - 1. Construction of a facility that meets the project performance standards as defined in the Specifications.
 - 2. Completion of the project on schedule in order to correctly interface with other concurrent and related projects and provide operational success of the Morena Pump Station (MPS) and the other Pure Water Program Projects.
 - 3. Conformance to budgetary requirements and limitations.
 - 4. Promote organizational efficiency for all parties.

- C. In addition, it is recognized that safety, liability limitation, avoidance of litigation, reputation, good will, and other factors are of significant importance to all parties involved in the Project.

- D. Through partnering, the four parties will agree among themselves regarding the primary goals for the Project and the methods that will be used to accomplish them. This will require development of a cooperative open relationship among the Contractor, Owner, Construction Manager, and Engineer. The parties will mutually develop a communication framework and a conflict resolution system to be used throughout the Project.

- E. Partnering will include an initial 8-hour workshop in which the basic requirements for the partnering relationship will be established. The following persons will be expected to attend the workshop, at a minimum.
 - 1. Contractor:
 - a. Project Sponsor (Principal-in-Charge).
 - b. Project Manager.
 - c. Safety Representative.
 - d. Startup Manager.

- e. Superintendents.
- f. Subcontractors.
- g. Key Manufacturers.
- 2. Owner:
 - a. Director of Utility Services (Principal).
 - b. Manager of Technical Services.
 - c. Project Manager.
 - d. Construction Manager.
- 3. Construction Manager:
 - a. Principals.
 - b. Construction Manager.
 - c. Project Coordinator.
 - d. Startup Manager.
 - e. Resident Engineers.
 - f. Inspectors.
- 4. Engineer:
 - a. Principals.
 - b. Project Manager.
 - c. Resident Engineer.

F. The partnering workshop will be conducted by an independent partnering facilitator within 30 days of the limited Notice to Proceed at a time and date agreed upon by all parties and at a neutral location away from each entity's home office and/or field facilities. The facilitator will prepare the workshop agenda after conducting telephone interviews with key individuals from each party to assess their needs and concerns.

G. Additional partnering sessions will be held quarterly on an as needed basis, and will include an 8-hour workshop, with the same attendees as the initial partnering workshop. The purpose of these follow-up sessions will be to confirm the relationship and assure the partnering effort continues to be successful throughout the Project.

H. A partnering facilitator will be employed by the Owner who will help establish and monitor the partnering relationship. Payment and Partnering shall be per Section 2-13.1 of the 2015 WHITEBOOK.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 GENERAL

1.1 WORK REQUIRED OF THIS SECTION

- A. Payment for the various items of the Bid Schedule, as further specified herein, shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor and services, operations, and incidentals appurtenant to the items of Work being described here and within the plans, specifications, and Contract Documents, as necessary to complete the various items of the Work all in accordance with the requirements of the Contract Documents, including all appurtenances thereto, and including all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the California Division of Industrial Safety and the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA). No separate payment will be made for any item that is not specifically set forth in the Bid Schedule, and all costs therefore shall be included in the Contract Price.

- B. Work shall include all electrical, mechanical, HVAC, plumbing, instrumentation and control, structural, coatings, and architectural work required to support each Bid Item.

1.2 SUBMITTALS

- A. Informational Submittals:
 - 1. Schedule of Values: Submit on Schedule of Estimated Progress Payments:
 - a. Submit with initially acceptable Schedule of Values.
 - b. Submit adjustments thereto with Application for Payment.
 - 2. Application for Payment: Submit on Owner's form.
 - 3. Final Application for Payment.

1.3 SCHEDULE OF VALUES

- A. Prepare a separate Schedule of Values for each schedule of the Work under the Agreement.

- B. Upon request of Engineer, provide documentation to support the accuracy of the Schedule of Values.

- C. Unit Price Work: Reflect unit price quantity and price breakdown from conformed Bid Form.
- D. Lump Sum Work:
 - 1. List bonds and insurance premiums, mobilization, demobilization, preliminary and detailed progress schedule preparation, equipment testing, facility startup, and contract closeout separately.
 - a. Include item(s) for monthly progress schedule update.
- E. An unbalanced or front-end loaded schedule will not be acceptable.
- F. Summation of the complete Schedule of Values representing all the Work shall equal the Contract Price.
- G. Submit Schedule of Values on a USB Flash Drive in a spreadsheet format compatible with latest version of MS Excel.

1.4 SCHEDULE OF ESTIMATED PROGRESS PAYMENTS

- A. Show estimated payment requests throughout Contract Times aggregating initial Contract Price.
- B. Base estimated progress payments on initially acceptable progress schedule. Adjust to reflect subsequent adjustments in progress schedule and Contract Price as reflected by modifications to the Contract Documents.

1.5 ALLOWANCES

- A. Allowances will be administered in accordance with the Contract requirements and as described below under 1.14 Bid Items.
- B. Submit, with application for payment, invoice showing the date of purchase, labor costs, expenses, and the total price for all allowance items.
- C. Allowances shall be paid based on actual work performed up to the amount listed in the Bid Schedule. The Owner shall authorize the use of the cash allowances on an as needed basis.
- D. Allowances are further described as:
 - 1. Permits & fees
 - 2. Dewatering Hazardous Contaminated Water
 - 3. Equipment Setup for Hazardous Dewatering
 - 4. Dewatering Permit for Discharge Fees
 - 5. SWPPP Permit Fee
 - 6. Dispute Resolution Board

7. Field Orders
8. Security Systems.

1.6 APPLICATION FOR PAYMENT

- A. Transmittal Summary Form: Attach one Summary Form with each detailed Application for Payment for each schedule and include Request for Payment of Materials and Equipment on Hand as applicable. Execute certification by authorized officer of Contractor.
- B.** Use detailed Application for Payment Form provided by Owner.
- C. Provide separate form for each schedule as applicable.
- D. Include accepted Schedule of Values for each schedule or portion of lump sum Work and the unit price breakdown for the Work to be paid on a unit priced basis.
- E. Include separate line item for each Change Order and Work Change Directive executed prior to date of submission. Provide further breakdown of such as requested by Engineer.
- F. Preparation:
 1. Round values to nearest dollar.
 2. Submit Application for Payment, including a Transmittal Summary Form and detailed Application for Payment Form(s) for each schedule as applicable, a listing of materials on hand for each schedule as applicable, and such supporting data as may be requested by Engineer.

1.7 MEASUREMENT—GENERAL

- A. Weighing, measuring, and metering devices used to measure quantity of materials for Work shall be suitable for purpose intended and conform to tolerances and specifications as specified in National Institute of Standards and Technology, Handbook 44.
- B. Whenever pay quantities of material are determined by weight, weigh material on scales furnished by Contractor and certified accurate by state agency responsible. Obtain weight or load slip from weigher and deliver to Owner's representative at point of delivery of material.
- C. If material is shipped by rail, car weights will be accepted provided that actual weight of material only will be paid for and not minimum car weight used for assessing freight tariff and provided further that car weights will not be acceptable for material to be passed through mixing plants.
- D. Vehicles used to haul material being paid for by weight shall be weighed

empty daily and at such additional times as required by Engineer. Each vehicle shall bear a plainly legible identification mark.

- E. Haul materials that are specified for measurement by the cubic yard measured in the vehicle in transport vehicles of such type and size that actual contents may be readily and accurately determined. Unless all vehicles are of uniform capacity, each vehicle must bear a plainly legible identification mark indicating its water level capacity. Load vehicles to at least their water level capacity. Loads hauled in vehicles not meeting above requirements or loads of a quantity less than the capacity of the vehicle, measured after being leveled off as above provided, will be subject to rejection, and no compensation will be allowed for such material.
- F. Quantities Based on Profile Elevations: Existing ground profiles shown on Drawings were taken from a topographic map drawn with contour intervals of 1 foot with supplementary spot elevations to nearest half foot.
- G. Quantities will be based on ground profiles shown. Field surveys will not be made to confirm accuracy of elevations shown.
- H. Where measurement of quantities depends on elevation of existing ground, elevations obtained during construction will be compared with those shown on Drawings. Variations of 1 foot or less will be ignored, and profiles shown on Drawings will be used for determining quantities.
- I. Units of measure shown on Bid Form shall be as follows, unless specified otherwise.

Item	Method of Measurement
AC	Acre—Field Measure by Engineer
CY	Cubic Yard—Field Measure by Engineer within limits specified or shown
CY-VM	Cubic Yard—Measured in Vehicle by Volume

Item	Method of Measurement
EA	Each—Field Count by Engineer
GAL	Gallon—Field Measure by Engineer
HR	Hour
LB	Pound(s)—Weight Measure by Scale
LF	Linear Foot—Field Measure by Engineer
MFBM	Thousand Foot Board Measure—[Delivery Invoice] [Field Measure by Engineer]
SF	Square Foot
SY	Square Yard
TON	Ton—Weight Measure by Scale (2,000 pounds)

1.8 PAYMENT - GENERAL

- A. Payment for all Lump Sum Work shown or specified in Contract Documents is included in the Contract Price. Payment will be based on a percentage complete basis for each line item of the accepted Schedule of Values.
- B. Payment for the various items of the Bid Schedule, as further specified herein, shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor and services, operations, and incidentals appurtenant to items of Work being described here and within the plans, specifications, and Contract Documents, as necessary to complete the various items of the Work all in accordance with the requirements of the Contract Documents, including all appurtenances thereto, and including all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the California Division of Industrial Safety and the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA). No separate payment will be made for any item that is not specifically set forth in the Bid Schedule, and all costs therefore shall be included in the contract price.

1.9 NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS

- A. Payment will not be made for following:
 1. Loading, hauling, and disposing of rejected material.
 2. Quantities of material wasted or disposed of in manner not called

- for under Contract Documents.
3. Rejected loads of material, including material rejected after it has been placed by reason of failure of Contractor to conform to provisions of Contract Documents.
 4. Material not unloaded from transporting vehicle.
 5. Defective Work not accepted by Owner.
 6. Material remaining on hand after completion of Work.

1.10 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

- A. Partial Payment: No partial payments will be made for materials and equipment delivered or stored unless Shop Drawings and preliminary operation and maintenance data is acceptable to Engineer.
- B. Final Payment: Will be made only for products incorporated in Work; remaining products, for which partial payments have been made, shall revert to Contractor unless otherwise agreed, and partial payments made for those items will be deducted from final payment.

1.11 PARTIAL PAYMENT FOR UNDELIVERED, PROJECT-SPECIFIC MANUFACTURED OR FABRICATED EQUIPMENT

- A. Notwithstanding above provisions, partial payments for undelivered (not yet delivered to Site or not stored in the vicinity of Site) products specifically manufactured for this Project, excluding off the shelf or catalog items, will be made for products listed below when all following conditions exist:
 1. Partial payment request is supported by written acknowledgment from Suppliers that invoice requirements have been met.
 2. Equipment is adequately insured, maintained, stored, and protected by appropriate security measures.
 3. Each equipment item is clearly marked and segregated from other items to permit inventory and accountability.
 4. Authorization has been provided for access to storage Site for Engineer and Owner.
 5. Equipment meets applicable Specifications of these Contract Documents.
- B. Payment of 15 percent of manufacturer's quoted price for undelivered, Project-specific manufactured equipment will be made following Shop Drawing approval. Thereafter, monthly payments will be made based on progress of fabrication as determined by Engineer, but in no case will total of payments prior to delivery exceed 75 percent of manufacturer's quoted price.
- C. Failure of Contractor to continue compliance with above requirements shall give cause for Owner to withhold payments made for such equipment from future partial payments.

1.12 RETENTION

- A. The Owner shall retain a percentage of each progress payment in accordance with Section 9-3 Partial and Final Payment of Part 1 Special Provisions – General of the Contract Documents. The retained amount is available for the protection and payment of the person(s), mechanics, subcontractors, or materialmen who perform labor upon the Contract or Work thereunder, and the persons who supply such person(s), or subcontractors with components and supplies for carrying on such Work.

- B. Pursuant to Section 22300 of the Public Contract Code of the State of California, the Contractor has the option, at its expense, to deposit securities with an Escrow Agent as a substitute for retention earnings required to be withheld by the City. Securities eligible for such substitution are bank or savings and loans certificates of deposit or such securities which are eligible for investment pursuant to Government Code Section 16430. As to any such security or securities so substituted for monies withheld, the Contractor shall be the beneficial owner of same and shall receive any interest thereon. Such security shall, at the request and expense of the Contractor, be deposited with the City or with a State or Federally Chartered bank as the escrow agent who shall pay such monies to the Contractor upon notification by the City that payment can be made. Such notification will be given at the expiration of 35 days from the date of acceptance of the work, or as prescribed by law, provided however, that there will be a continued retention of the necessary securities to cover such amounts as are required by law to be withheld by properly executed and filed notices to stop payment, or as may be authorized by the Contract to be further retained.

1.13 PHASE FUNDING

- A. See Attachment B of contract documents.

1.14 BID ITEMS

- A. **SR52 CROSSING OPEN CUT WITH CASINGS – LUMP SUM**
 - 1. No measurement shall be made for this item.
 - 2. Payment under this bid item shall be made as a Lump Sum price named in the Bid Schedule and shall be inclusive of all work:
 - a. All items stated within Specification 306-15.1
 - b. 72-inch diameter, $\frac{3}{4}$ " thick welded steel casing pipe.

- c. All items interior to the casing not accounting the 48-inch diameter welded steel pipe which will be paid for as part of Bid Item Force Main – 48” WSP CML & Cement Coated.
- d. 48-inch diameter, ¾” thick welded steel casing pipe.
- e. All items interior to the casing not accounting the 48-inch diameter welded steel pipe which will be paid for as part of Bid Item Brine/Centrates– 30” WSP CML & Cement Coated.

B. TUNNELING SAN CLEMENTE CANYON – LUMP SUM

- 1. No measurement shall be made for this item.
- 2. Payment under this bid item shall be made as a Lump Sum price named in the Bid Schedule and shall be inclusive of all work identified and associated with the improvements shown on drawing numbers 40067-157-D through 40067-159-D, 40067-170-D and referenced drawings, including but not limited to; tunneling, mobilization, tunnel shafts, Caltrans Encroachment Permit Requirements including monitoring requirements shown at the end of this section, furnishing and installing the steel casing, outfitting the shaft as needed to install the steel casing and/or carrier pipes, ground monitoring and instrumentation, surveying, excavation, storage, or disposal of soil and/or material during excavation of pits and tunnels, excavation and disposal of the tunnel muck and drilling fluid, contact grouting, furnishing and installing carrier pipes within the tunnel and shafts, testing and placing tunnel backfill, revegetation and erosion control, clearing and grubbing, temporary and final grading, installation of wheel stops identified in Note 3 on Drawing Number 40067-133-D and a 2-inch thick Class II base course applied to the existing parking area adjacent to the shaft location within Marian Bear Park. Adherence to Work Restrictions identified in the contract.
- 3. No separate or additional payment will be made for:
 - a. Additional excavation required to remove material which may fall or appears to endanger workers,
 - b. Increasing the tunnel or shafts dimensions where necessary to provide adequate room for workers and equipment,
 - c. Repair of casing
 - d. Rock required to fill voids caused by over excavation, or necessary to maintain a stable tunnel bottom for support of construction equipment or to control water during tunnel excavation.

C. TUNNELING ROSE CANYON (DUAL LUANCH) – LUMP SUM

1. No measurement shall be made for this item.
2. Payment under this bid item shall be made as a Lump Sum price named in the Bid Schedule and shall be inclusive of all work identified and associated with the improvements shown on drawing numbers 40067-160-D through 40067-165-D, 40067-170-D and referenced drawings, including but not limited to; tunneling, mobilization, tunnel shafts, MTS/NCTD Dual Right of Entry Permit requirements, furnishing and installing the steel casing, outfitting the shaft as needed to install the steel casing and/or carrier pipes, ground monitoring and instrumentation, surveying, excavation , storage, or disposal of soil and/or material during excavation of pits and tunnels, excavation and disposal of the tunnel muck and drilling fluid, contact grouting, furnishing and installing carrier pipes, within the tunnel and shafts, testing and placing tunnel backfill, revegetation and erosion control, clearing and grubbing, temporary and final grading, landscaping, temporary irrigation, establishing a temporary access trail and re-establishment of a permanent access trail. Adherence to Work Restrictions identified in the contract.
3. No separate or additional payment will be made for:
 - a. Additional excavation required to remove material which may fall or appears to endanger workers,
 - b. Increasing the tunnel or shafts dimensions where necessary to provide adequate room for workers and equipment,
 - c. Repair of casing
 - d. Rock required to fill voids caused by over excavation, or necessary to maintain a stable tunnel bottom for support of construction equipment or to control water during tunnel excavation.

D. TUNNELING I-805 – LUMP SUM

1. No measurement shall be made for this item.
2. Payment under this bid item shall be made as a Lump Sum price named in the Bid Schedule and shall be inclusive of all work identified and associated with the improvements shown on drawing numbers 40067-166-D through 40067-170-D and referenced drawings, including but not limited to; tunneling, mobilization, tunnel shafts, Caltrans Encroachment Permit Requirements including monitoring requirements shown at the end of this section, furnishing and installing the steel casing, outfitting the shaft as

needed to install the steel casing and/or carrier pipes, ground monitoring and instrumentation, surveying, excavation, storage, or disposal of soil and/or material during excavation of pits and tunnels, excavation and disposal of the tunnel muck and drilling fluid, contact grouting, furnishing and installing carrier pipes, within the tunnel and shafts, testing and placing tunnel backfill, revegetation and erosion control, clearing and grubbing, temporary and final grading, construction and removal of temporary concrete pad to protect existing NCWRP utilities from construction loads, coordination with NCWRP activities, adherence to Work Restrictions identified in the contract.

3. No separate or additional payment will be made for:
 - a. Additional excavation required to remove material which may fall or appears to endanger workers,
 - b. Increasing the tunnel or shafts dimensions where necessary to provide adequate room for workers and equipment,
 - c. Repair of casing
 - d. Rock required to fill voids caused by over excavation, or necessary to maintain a stable tunnel bottom for support of construction equipment or to control water during tunnel excavation.

E. FIBER OPTIC CABLE, CONDUIT, APPURTANANCES, INNERDUCT, AND FIBER PULL BOXES AND PATCH PANELS – LUMP SUM

1. No measurement shall be made for this item.
2. Payment is made for this item for the construction of:
 - a. The fiber optic conduit including trenching, backfill, warning tape, pull boxes, panels and panel support pedestals, pull rope, connections to existing conduit, terminations, and all other appurtenances necessary for the complete fiber optic conduit installation as shown on Contract Plans and specified in the Contract Documents and more specifically in Section 26 05 33.
 - b. The fiber optic cable including cable, connections to existing cable, terminations, testing and all other appurtenant work necessary for the complete fiber optic cable installation shown on Contract Plans and specified in Contract Documents and more specifically in Section 40 95 34.
3. Payment under this bid item shall be made as a Lump Sum price named in the Bid Schedule.

F. CATHODIC PROTECTION – LUMP SUM

1. No measurement shall be made for this item.
2. Payment is made for this item for the construction of the cathodic protection system:
 - a. Installation of deep well anode beds, rectifiers, traffic control plans, all permits, and all other appurtenant work necessary for the complete and operational cathodic protection system as shown on the Contract Plans and specified in the Contract Documents and more specifically in SSP Section 209-9.
 - b. Installation of pipe bonding wires to provide electrical continuity and cathodic protection test stations for pipeline testing including bond wires and 2 and 4 wire test stations, including flanges, and all other appurtenant work necessary for pipe bonding and cathodic protection test stations as shown on the Contract Plans and specified in the Contract Documents and more specifically in SSP Section 209-9.
3. Payment under this bid item shall be made as a Lump Sum price named in the Bid Schedule.

G. INTEGRATION PERIOD SUPPORT – LUMP SUM

1. No measurement shall be made for this item.
2. Payment for this item shall be made as a Lump Sum amount named in the Bid Schedule in accordance with Specification 01 91 14 TESTING, INTEGRATION AND STARTUP.

H. SDG&E SERVICE ORDER – ALLOWANCE

1. No measurement shall be made for this item.
2. Payment is made for this item from the allowance for SDG&E Service Orders and shall be inclusive of fees paid by the Contractor to SDG&E for new services related to the Cathodic Protection System. Payment under this bid item shall be made from the allowance amount named in the Bid Schedule.

I. MM HAZ-5 MUNITIONS SURVEY AND UXO IDENTIFICATION, TRAINING AND REPORTING PLAN – LUMP SUM

1. No measurement shall be made for this item.

2. Payment for this item shall be made as a Lump Sum amount named in the Bid Schedule for conducting UXO surveys, training and reporting in accordance with Mitigation Measure MM HAZ-5 as stated on Drawing 40067-320-D.

**J. REMOVE AND REPLACE EXISTING ELECTRICAL CROSSWALK
– LUMP SUM**

1. No measurement shall be made for this item.
2. Payment for this item shall be made as a Lump Sum amount named in the Bid Schedule for removing, and replacing any and all parts of the system to provide a fully functional mid-block crossing lighting system with pavement flashers. Contractor shall perform an investigation of the system and provide the ENGINEER a plan to repair the system from any damage caused by installation of construction. The location of the crosswalk is between Stations 1225+00 and 1226+00 on Drawing 40067-154-D.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

ENCROACHMENT PERMIT SURVEY GRID

TR-0151 (REV. 09/2006)

LEGEND:

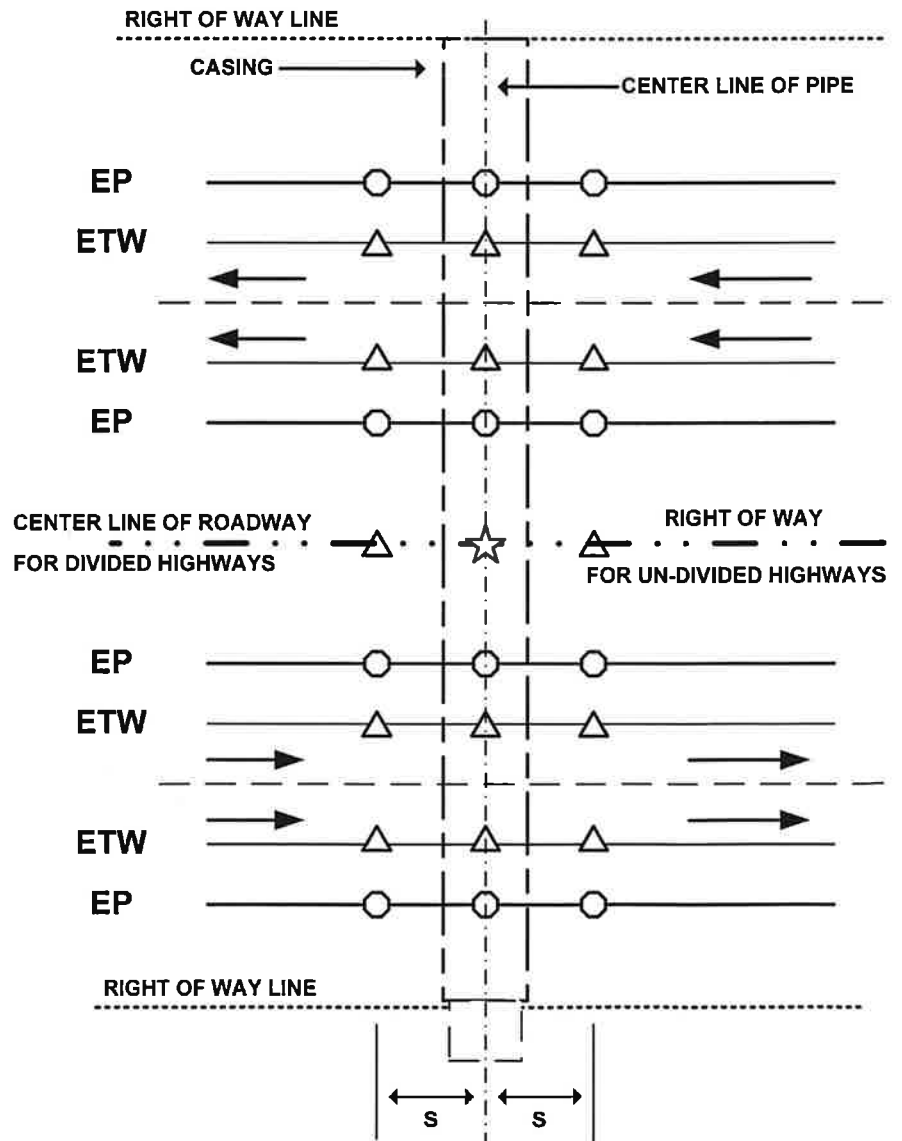
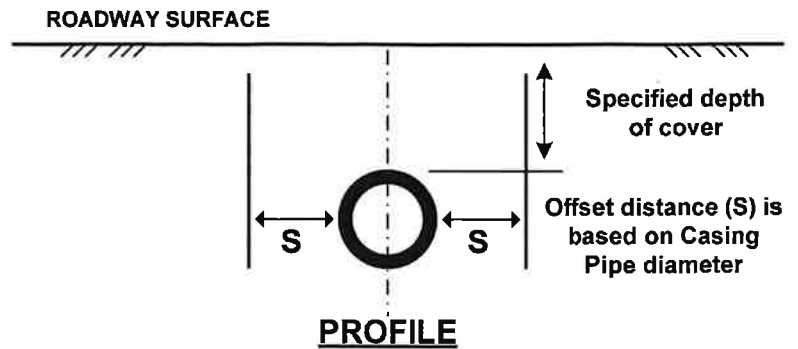
- Octagon Data Points required when the diameter is < 8'.
- △ Octagon & Triangle Data Points required when the diameter is > 8'.
- ☆ Settlement Rod may be required when the diameter is > 5'. (Settlement Rod Detail is located in Appendix E of the Encroachment Permits Manual)

- EP Edge of Pavement
- ETW Edge of Travel Way (Fog line, Yellow Stripe, etc.)
- S Offset Distance away from the pipe alignment, as follows:
 - 3' for casing pipe diameters < 30"
 - 5' for casing pipe diameters 30" - 72"
 - 10' for casing pipe diameters 72" - 108"
 - 15' for casing pipe diameters > 108"

NOTES:

Survey data is to be collected at the specific points along the casing alignment at the following times:

1. Prior to Start of Work.
2. Every two (2) hours continuously throughout the project.
3. Upon completion of the project.
4. Every two (2) months, during a six month period after the date of completion, and or As Required by the Department.



SECTION 01 32 00

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

11 GENERAL REQUIREMENTS

- A. It is expressly understood and agreed that the rate of progress and the time of completion of the work are of the essence for this contract. The work shall be executed with such progress as required to prevent any delay to this contract and to other projects or contractors working at the site. Compliance includes, but is not limited to, meeting contract milestone dates, compliance to scheduling submittals, working within any constraints and completion of all contract work within the allotted time.
- B. The work specified in this section includes the preparation, submittal, and acceptance of a Baseline Schedule, construction progress schedules, schedule updates, recovery schedules, Time Impact Analysis (TIA) and revisions to the construction progress schedule. The construction schedule shall conform to the time provisions specified in the special provisions of the contract documents and the requirements of all other specified work sequence constraints set forth in the contract documents.
- C. The Contractor shall prepare and submit a Baseline Construction Schedule in accordance with the requirements of this section. By preparing and submitting the Baseline Construction Schedule and monthly schedule updates, the Contractor represents that it can and intends to safely execute the contracted work and all portions thereof including all activities of subcontractors, equipment vendors, and suppliers including submittals and re-submittals within the specified times and constraints. The Contractor also represents that the bid price covers all costs associated with the execution of the Work in accordance with the construction schedule and contract documents.
- D. This specification includes the cost loaded schedule requirements, consistent with the PAYMENT PROCEDURES Section 01 29 00, which shall form the basis for the pay application report and all monthly payment requests. These referenced sections shall be correlated and linked when preparing the monthly progress payment. The Schedule of Values shall be generated from the Oracle Primavera P6 current accepted schedule.
- E. The City will review the schedule, and any updates or revisions, and any other schedule data for conformance to the Contract. Review and acceptance of the Baseline Construction Schedule and associated documents does not relieve the contractor of responsibility for the feasibility of the schedule, performance of any omitted work and completion of the work and milestones within the contract time.

12 DEFINITIONS

- A. **ACTIVITY:** A discrete work element of a project that can be identified for planning, scheduling, and controlling the construction project. Activities included in a construction schedule consume time and resources.
- B. **PREDECESSOR ACTIVITY:** An activity that precedes another activity in the network.
- C. **SUCCESSOR ACTIVITY:** An activity that follows another activity in the network.
- D. **CODE OF ACCOUNTS:** A unique lettering or numbering system in which letters or numbers are assigned to each unique component of the work breakdown structure.
- E. **HARD LOGIC:** Relationships with mandatory dependencies where the nature of the work itself dictates the order in which the activities should be performed. Construction of the walls before starting painting work is an example of mandatory dependency.
- F. **SOFT LOGIC:** Also known as Discretionary Dependencies or Preferential Logic. Preferential logic that controls the critical path using constraints and lags will not be allowed.
- G. **HARD CONSTRAINTS:** Override logical relationships and thereby prevent activities from being scheduled according to the logic. Hard Constraints include Mandatory Start, Mandatory Finish, Start On and Finish On.
- H. **CRITICAL PATH METHOD (CPM):** A method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of the Project.
- I. **CRITICAL ACTIVITIES:** Activities on the critical path. To avoid project delays, work must start and finish on the planned early start and finish dates.
- J. **CRITICAL PATH:** The longest connected chain of interdependent activities through the network schedule that establishes the maximum overall project duration or completion. There can only be one critical path for a project duration or a project milestone.
- K. **NEAR CRITICAL PATH:** The Near Critical Path shall be defined as the “longest path” plus 15 working days total float.
- L. **FLOAT:**
 - 1. The measure of leeway in starting and completing an activity. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the

successor activity.

2. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned project completion date or contract milestone.
- M. FRAGNET: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
- N. WORK AREA: An area of construction, a separate facility, or a similar significant construction element.
- O. CONTRACT MILESTONE: An activity or event that must be completed by a specific date and to which liquidated damages may apply. Contract start and completion dates are considered Contract Milestones.
- P. NETWORK DIAGRAM: A graphic diagram of a network schedule, showing activities and activity relationships.
- Q. SCHEDULE OF VALUES: A realistic statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment. The Schedule of Values should be produced from P6 and match the Cost Loading in the Schedule.
- R. COST-LOADING: The allocation of the Schedule of Values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total contract amount, unless otherwise approved by the City.
- S. RESOURCE LOADING: The allocation of manpower necessary for the completion of an activity as scheduled.
- T. WORK BREAKDOWN STRUCTURE (WBS): The WBS is a hierarchical structure of the Work to be performed under the contract.
- U. CALENDAR DAY: All days in a calendar year including weekends and holidays. Contract duration is measured in calendar days against contract milestones.
- V. PACING: An intentional slowing of work activities during a delay, or alleged delay, to project completion.
- W. INSTALLED MAJOR EQUIPMENT: All major equipment installed as part of the final constructed facility. See PAYMENT PROCEDURES Section 01 29 00 for definition of Major Equipment.
- X. CONSTRUCTION EQUIPMENT: All equipment utilized by the contractor to construct the facility but is not a part of the final constructed facility.

- Y. **BLACKOUT CALENDAR:** An activity calendar that applies the non-work option in Primavera P6 Activity Calendars to create non-working days, weeks, and/or months when work is restricted from occurring. The City requires the use of blackout calendars for restricted activities rather than adjusted logic and durations.

13 SCHEDULER QUALIFICATIONS

- A. The Contractor shall employ or retain the services of a full-time, onsite Senior Project Scheduler who shall have verifiable experience in construction work sequencing, productivity, and scheduling as well as preparing and maintaining detailed construction schedules using the most current version of Oracle Primavera P6 software. Within seven (7) calendar days after Notice to Proceed, the Contractor shall submit to the City Representative for review and acceptance, in accordance with the SUBMITTAL PROCEDURES Section 01 33 00 and the WEB BASED CONSTRUCTION DOCUMENT MANAGEMENT Section 01 33 22, the Project Scheduler's resume, including personal references from at least two (2) owner- representatives familiar with the Project Scheduler's work on previous water or wastewater treatment projects. The City reserves the right to reject the proposed scheduler based on the lack of qualifications as defined in this section. The Contractor's scheduler shall attend all schedule related meetings, including progress meetings, job walks when necessary to verify schedule progress, schedule review meetings and special meetings pertaining to scheduling of the Work. This person, along with the Contractor's management team, is expected to work closely with the City Representative to deliver acceptable products outlined in this section and comply with the Reports requirements of this section.
- B. If the Senior Construction Scheduler leaves the employment or retainage of the Contractor, the Contractor will be required to notify the City Representative in advance of the intended departure and fulfill the requirements of this subsection within thirty (30) calendar days of the departure of the Contractor's Senior Construction Scheduler. The City reserves the right to disapprove any candidate proposed for the Project. The City reserves the right to remove any member of the Contractor scheduling staff that is, in the City's opinion, not performing scheduling work in accordance with the scheduling requirements.

14 SCHEDULING CONFERENCES

- A. **PRE-CONSTRUCTION SCHEDULING CONFERENCE:**
1. Within thirty (30) calendar days after Notice to Proceed, the City Representative shall schedule and conduct a pre-construction scheduling conference to commence development of the required construction schedule. Attendance by the Contractor's Senior Construction Scheduler is mandatory. At the meeting, the requirements of this section will be reviewed with the Contractor; the Contractor shall present their

proposed methodology for the Baseline Construction Schedule, sequence of operations, and resource and cost/quantity loading methodology. The Contractor shall submit to the City Representative a written copy of its proposed WBS structure at this meeting. The City shall review the WBS structure within ten (10) calendar days after submission by the Contractor. The Contractor shall make all modifications to the proposed WBS structure that are requested by the City. The WBS shall be correlated with the Contractor's Schedule of Values and the cost loaded schedule. The Senior Scheduler shall develop other activity codes and values needed to comply with the reporting requirements listed herewith, subject to acceptance by the City. The Contractor shall bring to the Pre-Construction Scheduling Conference the Network Logic Diagram used in bid preparation. This will be used as a basis of discussion for the construction plan.

15 FLOAT

- A. Pursuant to the float sharing requirements of the Contract, use of float suppression techniques such as preferential sequencing, special lead/lag logic restraints, hard constraints, Start on or After and Start on or Before constraints, adding and/or removing working or non-working days from an accepted activity calendar, extended activity durations, or imposed dates, shall be cause for rejection of the Baseline Construction Schedule and any revisions or updates. The use of float time disclosed or implied using alternative float suppression techniques shall be shared as directed by the City.
- B. Float time is not for the exclusive use or benefit of either the City or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and the contract completion date. Contractor's use of float shall be pre-approved by the City prior to use.
- C. No time extensions will be granted nor delay damages paid unless a City-caused delay occurs which impacts the Project's critical path and the Contractor has complied with all related contract requirements. Other delays will be evaluated by the Contractor for concurrency to issues and be included as part of the Contractor's analysis.
- D. Submittal of an early completion schedule shall not provide a basis for the Contractor to claim an excusable delay for any time earlier than the contract completion date. Any early completion schedule shall be approved by a contract change order.

16 LOGIC AND LEVEL OF DETAIL

- A. The project schedule shall include activities of sufficient detail to accurately represent and clearly convey the Contractor's feasible plan for the timely completion of the full scope of the work. Activities performed on site shall have maximum durations of 20 days and a value of \$50,000. The Contractor shall be responsible for developing the logic of the Baseline Schedule and for updating the logic each month to accurately

reflect the progress of the work to date and the Contractor's current plan for the timely completion of the work. The schedule logic for each activity shall be constructed by determining which activities must be completed before any subsequent activity can start, which activities can occur simultaneously with the predecessor activity, which activities cannot start until another activity is complete, and the impact of all resource limitations on activity sequencing, activity durations, and activity dates. Every activity, except the project start and finish milestones, shall have a minimum of one predecessor and one successor. All paths through the project schedule shall proceed in the direction representing the progression of time; start to finish logic is disallowed. Activity lags shall not have a negative value. The use of lags shall be kept to a minimum and shall be subject to acceptance by the City. Redundant ties to preceding activities in a sequential series of activities will not be permitted.

- B. The activity descriptions shall be specific and discrete such that it cannot be confused with any other activity description. For example, "Form Concrete Wall" is too broad; there must be a description of the unique location of the wall. Similarly, activities that are discrete should not be combined.
- C. Finish to start logical relationships shall be predominantly used for schedule activities. The use of logical relationships with negative lags will not be allowed in the baseline schedule, in proposed revised schedules, or in the monthly updates.
- D. Milestones. Separately identify each Project milestone, conforming to the scheduling requirements as set forth in the Contract Documents, and assign a "finish no later than" constraint date. For Completion Deadlines, the activity description shall reference the appropriate Contract clause.
- E. No unspecified milestone constraints, other constraints, Float suppression techniques, or use of Project activity durations, logic ties, and/or sequences deemed unreasonable by the City, will be used in the Project Schedule.
- F. Any schedule showing an early completion date must show the time between the scheduled completion date(s) and the applicable Completion Deadline(s) as Float.

17 SCHEDULE SOFTWARE SETTINGS AND RESTRICTIONS

- A. Contractor shall use the most current version of Oracle Primavera P6 software to produce the contract schedules and reports as specified herein. In accordance with the SUBMITTAL PROCEDURES Section (01 33 00), the Contractor shall submit all schedules and associated documentation directly into the City-furnished, web-based, document control system in accordance with the WEB BASED CONSTRUCTION

DOCUMENT MANAGEMENT Section (01 33 22). The schedule files shall be submitted in Primavera's Proprietary Exchange (XER) format until such time as Primavera recommends transferring to their Extensible Markup Language (XML) format. Reports shall be in Adobe Portable Document Format (PDF).

B. ACTIVITY CONSTRAINTS:

1. Date/time constraint(s), other than those required by the contract, will not be allowed unless accepted by the City. Identify any constraints proposed and provide an explanation of the purpose of the constraint in the Narrative Report. Any finish constraints for City required milestones must use a 'Finish on or Before' type designation and have logic ties. Start on or After and Start on or Before constraints are discouraged. All Start on or After and Start on or Before constraints are subject to approval by the City representative. No hard constraints, which include Start on, Finish on, Mandatory Start, and Mandatory Finish, are allowed. The contractor shall not use any manual date entries that override schedule driven dates based on duration and network logic.

C. LAGS:

1. Lags will not be used when the creation of an activity will perform the same function (e.g., concrete cure time), instead an activity representing the gap between the completion of one activity and the start of another will describe the time gap.

D. DEFAULT PROGRESS DATA DISALLOWED:

1. Actual Start and Actual Finish dates on the CPM schedule shall match the dates provided from Contractor Quality Control Production Reports, Contractor daily reports and other contemporaneous project documentation.

E. SOFTWARE SETTINGS:

1. Schedule calculations and Out-of-Sequence progress (if applicable) shall be handled through Retained Logic, not Progress Override. All activity durations and float values will be shown in days. Activity progress will be shown using Remaining Duration. Default activity type set to "Task Dependent." User preference settings shall be set to hours with the show unit label box checked and zero decimal places. The "Durations Format" shall be set to days with the show durations label box checked, and zero decimal places.
2. The critical path shall be calculated by selecting the Longest Path as opposed to Total Float.

F. Activities unless otherwise approved will be "physical percent complete" type. Duration

percent complete will only be used on City-related activities such as submittal reviews.

- G. Duration Type shall be set to Fixed Duration and Units.
- H. The "Automatically Level resources when scheduling" box shall not be checked. All schedule submittals, and schedule related data of any kind, shall not be resource leveled and shall be the basis for rejection if submitted with resource leveling.
- I. The project critical path shall be displayed using both the 'Critical' and 'Longest Path' filters in P6.

18 COST LOADING

- A. The activities contained within the schedules shall be cost loaded, and they shall equal the Contract Total Price with Sub-Totals that match the Schedule of Values within the PAYMENT PROCEDURES Section 01 29 00. Contractor is required to cost load the construction schedule using price per unit. Equipment shall include installed and construction equipment specified as price of equipment that is worth over \$100,000. For example, the labor unit would be \$ per hour; the material unit would be material cost per unit installed. The non-labor resources shall be used exclusively on activities containing equipment. Equipment shall include installed and construction equipment specified as price of equipment. The resource coding and name shall distinguish between installed and construction equipment. An example of price per unit cost loading is shown below:
 - 1. One (1) labor unit = \$1 of labor
 - 2. Material unit of \$1 for 1 unit
 - 3. Equipment unit of \$1 for 1 unit
- B. Procured items, including installed equipment, should be budgeted as part of separate procurement activities such that the installation activity is not statused as started when the procured material is onsite and installation has not begun. Refer to the PAYMENT PROCEDURES Section 01 29 00 for more details. O&M and Training activities shall be their own cost-loaded schedule activities. Project record documentation (as-builts) shall also be a separate cost-loaded schedule activity.
- C. Overhead and profit shall be prorated evenly on all cost loaded activities. Alternatively, overhead may be treated as a Level of Effort activity or activities. The Contractor shall not unbalance the activity cost loading, nor shall the Contractor utilize Resource Leveling as a technique for extending activity durations. The approved Schedule of Values, as generated from the Cost Loading becomes the basis for the Payment Application.

- D. Every construction activity that contains labor shall be cost loaded.
- E. Fabricate and Deliver activities shall be cost loaded to cover the material or equipment costs. The Fabrication activities shall utilize a material or equipment resource.
- F. Commissioning activities shall be cost loaded using a labor resource.
- G. The cost loading and progress payments for long lead procurement items will be discussed at the pre-construction scheduling conference.
- H. Once the Schedule of Values is accepted with the Baseline Construction Schedule, requests for changes to the Baseline Schedule of Values will not be approved unless approved in writing by the City Representative.
- I. The Contractor shall submit with the Baseline Schedule the detailed budget documents reflecting the costs used as the basis of the cost loading contained therein.
- J. In Oracle Primavera P6, for actual monthly costs to store correctly, the Contractor must setup the financial period to equal the first and last date of the calendar month, regardless of the actual monthly cutoff date. Financial periods cannot bridge 2 months and must equal the full month. Financial dates table will be provided at the Preliminary Schedule meeting.
- K. Work Restrictions in Supplementary Special Provision 6-2.2 indicating activities that cannot be performed during specific periods of time due to operational or other City requirements shall be accommodated in the Baseline and Progress Schedules using blackout calendars. These Blackout Calendars must be developed incorporating the specific durations when work cannot be performed, according to the terms of each work restriction, and applied to the applicable activities. These Blackout Calendars will prevent work from extending into these restricted periods by shifting it until after the completion of the restriction.

19 RESOURCE LOADING

- A. Schedules shall include resource loading, also known as manpower loading, showing at a minimum, the composite crew, the classification (e.g., foreman, journeyman, etc.) of the individual craftsman comprising the crew, materials or equipment associated with each construction and commissioning activity shown on the schedule, plus any other information required by the City. Manpower shall be expressed as manhours.
- B. Manpower resources shall be listed in the Resource Library of the Primavera Software and the Contractor shall assign manpower resource loading by trade for each work activity of the schedule.
- C. The Contractor warrants that it will allocate resources and costs based upon Early Date

curves and Late Date curves as well as all area between these two curves. The Contractor also warrants that the cost of performing the work, based upon both curves, is included within its bid price.

- D. The Contractor shall submit with the Baseline Schedule the detailed budget documents reflecting labor hours used as the basis of the resource loading contained therein. The budget documents used to resource load the Baseline Construction Schedule shall be based upon the escrowed bid documents and reconcile thereto.
- E. Work performed by the prime contractor and all subcontractors with a contract value greater than or equal to two (2) percent of the Prime Contract Value shall use the following resources:
 - 1. Labor
 - 2. Materials
 - 3. Installed Major Equipment (refer to Section 1.02 Definitions)
 - 4. Construction Equipment (refer to Section 1.02 Definitions)
 - 5. Manhours
- F. The Prime Contractor, and each of the subcontractors with a contract value greater than or equal to two (2) percent of the Prime Contract Value, shall create separate Labor, Material and Nonlabor (Equipment) resources for the Prime Contractor and each subcontractor. The resources shall be titled with the name and/or trade of the Prime Contractor and subcontractors and shall match the responsibility activity code assigned to each activity.

1.10 ACTIVITY CALENDARS

- A. All calendars shall be given specific project names and defined clearly in Oracle Primavera P6. For example, "MCN Standard 5-day with Holidays," "MCN 6-day with Holidays," Calendars for different trades if used, should be specified. All calendars and activity coding within the schedule shall be "Global" rather than "Project" level and shall have a unique prefix of the City contract number.
- B. The Contractor shall utilize Blackout Calendars and apply the calendars to activities that may be impacted by the work restrictions stated in Section 6-2.2 of the Supplementary Special Provisions.

PART 2 - PRODUCTS

21 180-DAY SCHEDULE

- A. Within thirty (30) calendar days after Notice to Proceed, the Contractor shall submit to the City the Preliminary Construction Schedule for all work in the first One Hundred Eighty (180) calendar days following NTP, as well as a general approach for the remainder of the Work.
- B. Within sixty (60) days after Notice to Proceed, the Contractor shall submit to the Preliminary Construction Schedule cost and resource loaded. The remaining portion of the work may be summary activities assigned to the Contractor's planned baseline WBS structure and shall be cost-loaded to equal the full contract amount.
- C. The City Representative, Contractor and its Senior Project Scheduler shall meet within fourteen calendar days (14) of the submittal of the One Hundred Eighty (180) calendar day Construction Schedule to review and make any necessary adjustments or revisions. The Contractor shall submit the revised One Hundred Eighty (180) calendar day Construction Schedule within fourteen (14) calendar days after receiving comments. Such re-submittal shall be reviewed by the City Representative within seven calendar days (7) of receiving such re-submittal. The One Hundred Eighty (180) calendar day Construction Schedule, when revised, will represent the Contractor's planned means, methods, and sequences for performance of the Work required in the One Hundred Eighty (180) calendar days following NTP and is to be incorporated as the first One Hundred Eighty (180) days of the Contractor's Baseline Construction Schedule. The One Hundred Eighty (180) day schedule will include, but not be limited to work tasks that will or may be critical to performance within the Contract Time including, but not limited to, the following:
 - 1. Planning.
 - 2. Mobilization.
 - 3. Key shop drawing and sample submittals.
 - 4. Fabrication and delivery of key and long-lead procurement elements.
 - 5. Contractor and Subcontractor Activities
 - 6. Activities for the City, other contractors, utility providers, tenants, or other third parties.
 - 7. Specific phasing as required by Contract.
 - 8. Summary activities for the remaining duration of the contract.

- D. The 180-day schedule shall be cost loaded as described in the Cost Loading Section of this specification.
- E. The Contractor shall include a Schedule Narrative with the 180-Day Schedule submittal.

22 BASELINE CONSTRUCTION SCHEDULE

- A. The Baseline Construction Schedule shall be constructed to show sequence and duration of the activities the Contractor proposes to carry out the Work. The schedule shall be resource (manpower) and cost loaded and should indicate any restrictions on the availability of work areas. The Contractor shall utilize the Baseline Construction Schedule in planning, scheduling, coordinating, and performing the work under the Contract (including all activities of Subcontractors, equipment vendors, and Suppliers). The Baseline Construction Schedule is the basis of the Schedule of Values and 4-week look-ahead schedules. The approved 180-Day Schedule shall be incorporated into the Baseline Schedule without any changes or progress. The Baseline Schedule shall demonstrate the feasibility of the Contractor's Civil and Concrete plans. Among other elements, this plan shall demonstrate the ability to meet concrete pour, cure and strip requirements including restrictions on adjacent pours, the ability of the crane and concrete pumping equipment to reach all areas of the concrete work, and a logical plan for completing and exiting the work. The plan shall demonstrate all work including Mechanical and Electrical work and Commissioning phases.
- B. Within one hundred eighty (180) days after Notice to Proceed, the Contractor shall submit the Baseline Construction Schedule to the City, including a written narrative to further explain the plan as set forth in its CPM logic network and schedule. The Contractor shall schedule a workshop prior to submittal of the Baseline Construction Schedule to present the schedule plan. Within 5 working days from Baseline Schedule submittal, the Contractor shall conduct a Baseline Schedule presentation describing the schedule in detail and the Contractor's means & methods for construction. The City Representative shall accept or reject, in writing, the Contractor's Baseline Schedule within thirty (30) Calendar Days after receipt of all required information. If rejected, the Contractor shall make necessary modification to the Baseline Schedule and resubmit to the City within fourteen (14) Calendar Days. The City Representative shall accept or reject, in writing, the revised Baseline Construction Schedule within 14 calendar days of resubmittal. Once accepted, the Baseline Construction Schedule shall be used for monitoring and evaluating Contract performance, including, but not limited to progress, progress payments, changes, and delays.
- C. The Baseline Construction Schedule will be the Performance Measurement Baseline (PMB) for the project. This requires that the PMB will be maintained with any structural schedule changes in the Current schedule. This includes expansion and contraction in WBS and/or activities, detailing out summary cost items, and anything else that makes the PMB non-measurable.

- D. There shall be at least one continuous Critical Path in the Baseline Schedule, using the longest path definition that starts at the earliest occurring schedule activity in the network (i.e., NTP1) and ends at the latest occurring schedule activity in the network. No more than 20 percent of the activities may be critical or near critical. The Near Critical path shall be defined as within 15 working days of the critical path. If 20% of the activities become critical, present a plan to reduce the number of near-Critical Path activities to the client.
- E. The Baseline Construction Schedule shall demonstrate the final level of detail for each activity and shall contain the required relationships completely identified and the durations of each activity correctly depicted. The Baseline Construction Schedule shall be developed as follows:
1. The Baseline Construction Schedule shall contain no contract changes or delays which may have been incurred during the interim schedule development period. These changes will be entered at the first update after the baseline schedule has been accepted and a change to the contract time or duration was made via an approved change order.
 2. The Baseline Construction Schedule submitted for review and acceptance by the City shall contain no status and the data date shall be the contract notice to proceed date.
 3. The Baseline Construction Schedule shall clearly indicate the longest critical path of activities from notice to proceed to the contract completion date or contract milestone.
 4. The Baseline Construction Schedule will contain all cost information assigned to each of the specific activities at the final level of detail. Every construction activity that contains labor, construction equipment or permanent equipment shall be cost and resource loaded to permit initial generation of a cash flow curve and resource curve.
- F. The Baseline Schedule shall include summary activities and milestones for startup as defined in Part 1.5 of Section 01 91 14 TESTING, INTEGRATION AND STARTUP. The detailed Startup Schedule will be submitted and updated separately as described in Section 01 91 14 TESTING, INTEGRATION AND STARTUP, with links to the accepted Baseline Schedule summary activities and milestones for startup. 100 working days prior to the start of Pre-Commissioning, the Contractor shall submit detailed Startup Schedule which will link to the accepted Baseline Schedule summary activities and milestones for startup.
- G. The Comments made by the City Representative on the Baseline Construction Schedule, during review, will not relieve the Contractor from compliance with requirements of the

Contract Documents. To the extent that there are any conflicts between the accepted schedule and the requirements of the Contract Documents, the Contract Documents shall govern. The Baseline Schedule shall show the sequence and interdependence of activities required for complete performance of the Work, beginning with the date of the Contractor's Notice to Proceed date and concluding with the Contract Completion.

- H. The Baseline Construction Schedule shall reflect the Contractor's true plans for progressing and performing the work. The Contractor shall be responsible for the means, methods, and duration and certifies that the schedule duration and contract period is achievable and Contractor's estimate/bid, and/or budgets, are based upon sequences shown in the schedule.
- I. The Baseline Schedule shall provide the Contractor and the City with a tool to monitor and follow the progress of all phases of the Work. The Baseline Schedule submitted to the City shall comply with all limits imposed by the Scope of Work, with all contractually specified intermediate milestone and completion dates, and with all constraints, restraints or sequences included in the Contract. The Contractor shall obtain subcontractor written concurrence with its Baseline Construction Schedule for all subcontracts with a contract value of 2 percent or greater of the prime contract value.
- J. The Baseline Construction Schedule shall incorporate and include:
 - 1. Appropriate administrative activities and contract specified review periods (including the City and third parties) for all and phases and components of work.
 - 2. Required cost, resource and activity codes.
 - 3. Project milestones dates and overall construction activities and project completion dates.
 - 4. Project budget, schedule of values and the cost basis for progress payments.
 - 5. Commissioning activities.
 - 6. Punch list and final completion activities.
- K. Failure to include in the schedule any element of Work required for performance of Contract shall not excuse Contractor from completing all Work required within applicable time constraints, notwithstanding the City's acceptance of Contractor's Baseline Construction Schedule.
- L. Nothing in these requirements shall be deemed to negate or diminish Contractor's authority and responsibility to plan and schedule Work as required, subject to requirements of Contract Documents.

M. No construction activity shall be more than 20 working days duration. Exceptions may be approved by the City.

N. SUBMITTAL REVIEW TIME:

1. Include in the schedule the review times indicated in the SUBMITTAL PROCEDURES Section 01 33 00. Coordinate submittal review times in contractor's baseline construction schedule with submittal schedule. The schedule shall include a schedule activity for all submittals required by these specifications. Rejected submissions will require the contractor to add activities that start a second submission and review process.

23 SCHEDULE NAMING REQUIREMENTS

- A. To assist the City in consolidating the schedules from all the projects, a standard naming convention has been adopted. The Project name in P6 and the schedule file name should be the same as the following example:

MCN Baseline 01 Dec18 DD123118

Where:

MCN = the code for the project, in this case Morena Conveyance North
Baseline = the type of schedule submittal, which can also be Update, Recovery or Time Impact Analysis
01 = the submittal number or version
Dec18 = the month and year of the schedule submittal
DD = the Data Date, in this example Dec 31, 2018

The exported P6 data (XER) file shall use the same name as the Schedule ID

24 ACTIVITY CODES

- A. The project schedule shall utilize the following activity codes and code values. Unless otherwise specified, a value for each code shall be assigned to each activity. In the event it is unclear which code value assignment should be made for an activity, the City Representative will make the final decision. The Project ID (City Contract Number) shall be the prefix for all Activity Codes. All District-required Activity Codes should be global. Final configuration will be presented at the Pre-Construction scheduling meeting.

Activity Code	Description
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(Project ID) Phase	Phase of Work, Examples include Submit, Review & Approve, Fabrication, Deliver, Mobilization, Construction, Commissioning etc.
(Project ID) Work Area	Assign Area code to activities based upon the work area in which the activity occurs. Define work areas based on resource constraints or space constraints that would preclude a resource, such as a particular trade or craft work crew, from working in more than one work area at a time due to restraints on resources of space. Examples of Area code include different areas within a floor of a building, different floors within a building, and different buildings within a complex of buildings. Activities shall not have more than one Area code. Not all activities are required to be work area coded.
(Project ID) Responsibility	Assign a Responsibility code to all activities indicating who is responsible for performing the activity. Examples include Electrical, Mechanical, Plumbing, Fire Protection, the City, General Contractor Etc. Responsibility code may be named to the company performing the work.
(Project ID) System	Assign System code to the group of activities that comprise a system that will be Commissioned during the commissioning phase. Examples of a System are: Chemical Treatment System, Sprinkler System, HRSG System, SCADA System, Switchgear etc.
(Project ID) CSI	All procurement and submittal activities shall be assigned a 6 digit CSI code identifying Submittals, Purchase Orders, Fabrication and Delivery activities. The City uses CSI's Master Format 50 numbering system.
(Project ID) Cost ID	All cost loaded activities shall be assigned a cost code for the purpose of categorizing costs into accounts.
(Project ID) Change Orders	The Contractor shall use a City-provided change order code structure containing the change order number and a description of the change order.
CITY Project Code	The Contractor shall add the City's Project code to all activities. For MCN, for example, use the Code Value of "MCN" with a Description of "Morena Conveyance North (MCN)"
(Project ID) 180-Day Schedule	Assign an activity code to all activities to be reviewed and approved as part of the 180-Day Schedule, which includes all activities within the 180-day window

(Project ID) Major Equipment	Assign an activity code to all activities related to procurement of Major Equipment as defined in the Definitions and Terms found in the PAYMENT PROCEDURES Section (01 29 00)
CITY Access Requests	Assign an AR Code to all access request activities.
(Project ID) Milestones	The Contractor shall add a Milestones code to all milestones in the schedule.
(Project ID) Weather Sensitivity	Code (WS or NWS). Assign Category of Work Code to all Activities based upon Weather Sensitive Installation or Non-Weather Sensitive Installation.

25 ACTIVITY ID

- A. Every Activity ID in the baseline and updated schedules shall be preceded by a 3 or 4 letter prefix code followed by a dash. All suffix coding to the right of the dash is at the discretion of the Contractor. The prefix code for the Morena Conveyance North project is 'MCN-'.
- B. If for any reason an Activity ID is deleted or removed from the schedule, it may not be reused for another activity. Similarly, once the baseline construction schedule is accepted, activity descriptions may not be changed without the permission of the City Representative.

26 SCHEDULE SUBMITTALS

- A. In accordance with the SUBMITTAL PROCEDURES Section 01 33 00 and the WEB BASED CONSTRUCTION DOCUMENT MANAGEMENT Section 01 33 22, submit all required schedule submittals in the following format:
 1. One (1) electronic copy of the Oracle Primavera P6 XER file including all project layouts.
 2. One (1) PDF copy of all reports, bar-charts, time-scaled diagrams, histograms, s-curves and narrative.
- B. VARIANCE REPORT:
 1. With each updated schedule submission, provide a computer-generated Log Report listing all changes made between the previous schedule and current updated schedule. Identify the name of the previous schedule and name of the current schedule being compared showing all changes to the Schedule. This report will as a

minimum show changes for: Added & Deleted Activities, Original Durations, Calendars, Descriptions, Constraints (added, deleted or changed), Added/Deleted Resources, Costs, Added/Deleted Relationships, Changed Relationship Lags, a Critical Path Analysis, Float Analysis, Open Ended Activity Analysis. A narrative shall be included in the variance report stating the reason for the changes listed above.

- C. CPM REPORTS: Concurrent with the CPM schedule, submit in PDF format the reports listed below. The specific format of the required reports will be discussed at the Preconstruction Scheduling Conference.
1. Critical Path Gantt Chart as further described in Section 2.02.A
 2. Critical and Near Critical Path Gantt Chart as further described in Section 2.02.A
 3. Activity ID Report: List of all activities sorted by activity number.
 4. Activity Schedule Bar-chart: Sorted by phase, area, start and finish.
 5. Logic Report: List of preceding and succeeding activities for all activities, sorted by phase, area, start and finish.
 6. Total Float Report: List of all activities sorted by phase in descending order of total float, then descending finish.
 7. Schedule of Values Report generated from the Oracle Primavera P6 schedule grouped by the Cost ID activity code and filtered by “budgeted total cost is not equal to \$0.” Sort by Activity ID with the following columns:
 - a. Activity ID
 - b. Activity Name
 - c. Remaining Duration
 - d. Start
 - e. Finish
 - f. Cost Percent Complete
 - g. Physical Percent Complete
 - h. Previous Physical Percent Complete

- i. Budgeted Total Cost
 - j. Actual Total Cost
 - k. Actual This Period Total Cost
 - l. Previous Applications Total Cost
 - m. Remaining Total Cost
 - n. At Completion Total Cost
8. PROJECT CASH FLOW S-CURVE: Show the monthly budgeted costs, actual costs and estimate at completion. Include cash curves for early and late start and finish dates.
 9. MANPOWER HISTOGRAMS: Showing project overall labor hours per month and trade labor hours per month (carpenters, masons, electricians, laborers, foremen, etc.)
 10. MATERIAL AND EQUIPMENT STATUS REPORT: Showing the status of materials and equipment stored on-site and materials and equipment stored in bonded warehouse(s).

27 BASELINE NARRATIVE

- A. The Contractor shall provide a written narrative accompanying the electronic version of the Contractor's Baseline Schedule submission. This narrative shall explain the Contractor's approach for meeting all milestones and project completion dates. It shall also include a clear description of the critical path activities from beginning to end and describe anticipated crew sizes, production rate and anticipated problems of major activities along the critical path.
- B. In the written narrative, the contractor shall include the basis and assumptions used to develop the Contractor's Baseline Schedule. The contractor shall include crew sizes, equipment requirements, and anticipated delivery dates; restraints; critical path activities; activities requiring overtime or additional shifts; activities that contain time contingencies for impacts to be expected from normal rainfall; holidays and other non-work days; potential problem areas; permits; coordination required with the City and third party agencies; and long lead delivery items requiring more than 60 calendar days from order to delivery. The narrative shall also include a description of winterization activities necessary for work to continue through normally inclement weather periods.

28 PAYMENTS DURING THE 180 DAY AND BASELINE SCHEDULE PROCESSING

- A. The City will only process the Contractor's payment applications for Mobilization, Bonds and Insurance prior to the acceptance of the 180-Day Schedule. The accepted 180-Day Schedule shall be the basis for progress payment request until the duration of the 180-Day Schedule is exceeded, at which time the Contractor shall have an accepted Baseline Schedule in effect. Should the Contractor not have an accepted Baseline Schedule at the end of the 180-Day Schedule duration, the City will be unable to process payments until a Baseline schedule is accepted and stated. This paragraph remains in effect in addition to any payment deductions or withholds determined per paragraph 3.04.
- B. The City places a high value on the timely acceptance of the 180-Day and Baseline Schedules, and their usefulness to the City diminishes with late acceptance of these schedules. Accordingly, for every month that acceptance of the 180-Day Schedule is delayed beyond 95 calendar days after NTP, the payment amount for the 180-Day Schedule, as specified in the PAYMENTS PROCEDURES Section 01 29 00, will be reduced by 10% of the specified amount. For every month beyond 180 calendar days after NTP that an accepted Baseline Schedule is delayed, the payment amount for the Baseline Schedule, as specified in the PAYMENTS PROCEDURES Section 01 29 00, will be reduced by 10% of the specified amount.

29 SCHEDULE UPDATE PROCESS AND PAYMENTS

- A. Contractor to monthly update the approved Baseline Schedule to reflect the current status of the Project. The update shall include all information available and status of the Project as of the cut-off date established in the Preliminary Schedule Meeting. All Monthly Progress Schedules shall incorporate all schedule Revisions and changes previously approved by the City.
- B. Each Monthly Progress Schedule shall reflect all as-built activities performed as of the effective data date of the update schedule. The Monthly Progress Schedule shall include the period from the last update to the effective data date and for the remainder of the Project. The current period's activities shall be reported as they actually took place. In the updated schedule, Contractor shall indicate the actual dates that activities were started, completed, or split. Ongoing activities shall have an indication of the percent complete based on the amount of actual work performed, and the estimated remaining duration to complete such activities.
- C. Contractor shall certify that the progress shown on the schedule update accurately

represents Work completed through the cutoff date of the Submittal.

- D. If Work was performed out of sequence, implement changes to the schedule so that it correctly reflects the actual sequence of work. In the case of repairing logic for Work performed out of sequence, the City may consider the use of negative lags. Any such schedule corrections for out of sequence work shall be considered a Revision, and Contractor shall obtain written approval from the City prior to implementing those revisions to the Monthly Progress Schedule or any other type of schedule.
- E. The physical percentage completion status (and remaining duration) of activities shall be statused in the schedule Updates and the Monthly Progress Schedule independently from the status of the dollar amount assigned to the activity for cost (price) and progress payment purposes. For example, the status of an activity can be 50% complete (based on time of performance) and may have a remaining duration of 5 days of the original 10-day duration, but the cost assigned to that activity may have a different completion status, and the earned dollars could be more or less than 50% of the at-completion dollars assigned to that activity. Contractor shall set up the scheduling software to calculate the physical completion status of each activity related to time separately from the statusing of the value of dollars earned for progress payment purposes.
- F. The earned-to-date dollar amount must reflect the value of the work completed (which may not be directly proportional to the activity remaining duration or physical completion status), and consideration must be given to: 1) materials stored at the site or off site, but not incorporated into the work when payment prerequisites are met by Contractor, 2) reductions for non-compliant work, 3) reductions for failure to provide material testing or required certifications, 4) reductions for other reasons described by the Contract Documents, 5) when the value of the work remaining is naturally disproportionate to the performance time remaining. When the physical percentage complete of an activity is disproportionate to the earned-to-date dollar amount, the reasons for the variance shall be described in a Log field as part of the Monthly Progress Schedule data, and those Log field notations shall be displayed as a column in the APPLICATION FOR PAYMENT DETAIL.
- G. In addition to what is required for a schedule Update of work progress, the submission shall include a separate tabular report of all schedule activities that are cost loaded, and shall include the at-completion Total Cost, the proposed earned-this-period Cost amount, and the proposed earned-to-date Cost. The format and group subtotalling of the cost and payment accounting tabular report shall be submitted for review and acceptance by the City prior to the first Monthly Progress Schedule submission, and the City can request and Contractor shall implement revisions to the formatting and data displayed in the tabular report at any time thereafter to better serve the City's cost accounting system. The tabular report shall serve as the line item detail of the earned-to-date dollars

assigned to each activity through the schedule's data date, will be referred to as the APPLICATION FOR PAYMENT DETAIL document, and once approved by the City, will be an attachment to the Contractor SUMMARY OF TASKS submitted by Contractor as part of the monthly INVOICE AND INVOICE CERTIFICATE package.

- H. Two days prior to the Monthly Progress Schedule data date, submit draft Monthly Progress Schedule for review by the City. Review will be done during a meeting to go over the claimed amounts. During the meeting the City Representative will respond to Contractor's estimated earned-to-date dollar amounts, and any variances between Contractor's proposed earned-to-date dollars and the City's estimate will be discussed and resolved. A marked up copy of the tabular report of the resolution of any variances will be copied for each party. Those changes to the draft Monthly Progress Schedule earned-to-date dollars will be made to the schedule before the Monthly Progress Schedule is formally submitted. If follow-up is required to further a discussion or to present proof in order to resolve the earned-to-date dollar amount for an activity, it shall occur within two working days after the Meeting, and a resolution shall be reached before formal submission of the Monthly Progress Schedule. If there is a disagreement between City's and Contractor's estimated earned-to-date dollar amounts, Contractor shall use the City's earned-to-date figure.
- I. If at any time, Contractor or the City discovers an at-completion dollar amount (budget) assigned to an activity that is unreasonable or incorrect, either party can request that an adjustment be made. Such proposed adjustment shall be presented at the next Weekly Progress Meeting and discussed and treated like any other proposed schedule revision. Adjustments to the at-completion dollar amount for any activity will naturally require an equal adjustment to another activity such that the total Contract value does not change. Any proposed Revision to the at-completion dollar amount for any activity must be accepted by the City in writing prior to the change being made to the Monthly Progress Schedule. Contractor will maintain and make available to the City a record of all approved revisions to at-completion dollar amounts that displays each approved revision, and the adjustments to all activities affected by a revision.
- J. Contractor's monthly payment applications shall not be accepted and processed for payment by the City Representative without Baseline Schedule progress updates submitted in the time and manner required by this specification which accurately reflect the allowable costs due under the Contract Documents and are accepted by the City. Should the Baseline Schedule progress updates not be accepted due to the Contractor's failure to address all City provided comments, payment withholds and deducts will be applied as specified in paragraph 3.04 of this section.
- K. Please see the PAYMENT PROCEDURES Section 01 29 00 for the Schedule of Values approval process and coordination with invoice payment.

L. The Schedule Update Submittal shall include:

1. A detailed Gantt chart showing all activities organized by Work Breakdown Structure. The activity columns shall include Activity ID, Activity Name, Original Duration, Remaining Duration, Duration Percent Complete, Physical Percent Complete, Start, Finish, and Total Float. The critical path shall be clearly shown.
2. A Critical Path Gantt chart showing Longest Path grouped by WBS to level 1 only. The activity columns shall include Activity ID, Activity Name, Remaining Duration, Start, Finish, and Total Float. The critical path and relationship lines (logic) shall be clearly shown and based upon the critical and longest path.
3. A Critical and Near Critical Path Gantt using the “calculate multiple float paths” option in P6 with the “display multiple float paths ending with activity” set to each of the contract milestones. Set the number of float paths to thirty (30). Group the report by “Float Path” and filter for float value 15 days from the float value showing on each contract milestone. The activity columns on the tabular data portion of the schedule shall include Activity ID, Activity Name, Remaining Duration, Start, Finish, and Total Float. The critical path and relationship lines (logic) shall be clearly shown.
4. A Schedule Variance Report shall be submitted comparing the current schedule submittal with the previously accepted schedule. Display the baseline project bars and milestones in the Gantt Chart. Include the following categories:
 - a. Activity ID
 - b. Activity Name
 - c. Original Duration
 - d. BL Project Duration
 - e. Variance – BL Project Duration
 - f. Start
 - g. Finish
 - h. BL Project Start
 - i. BL Project Finish
 - j. Variance – BL Project Finish Date

5. Schedule of Values Report generated from the Oracle Primavera P6 schedule grouped by the Cost ID activity code and filtered by “budgeted total cost is not equal to \$0.” Sort by Activity ID with the following columns:
 - a. Activity ID
 - b. Activity Name
 - c. Remaining Duration
 - d. Start
 - e. Finish
 - f. Cost Percent Complete
 - g. Physical Percent Complete
 - h. Previous Physical Percent Complete
 - i. Budgeted Total Cost
 - j. Actual Total Cost
 - k. Actual This Period Total Cost
 - l. Previous Applications Total Cost
 - m. Remaining Total Cost
 - n. At Completion Total Cost
6. A Cashflow curve plotting actual invoicing against Baseline forecast cashflow and the update forecast to project completion. The cashflow shall include Show the monthly budgeted costs, actual costs and estimate at completion. Include cash curves for early and late start and finish dates.
7. A manpower histogram plotting actual labor hours against Baseline forecast labor hours over the entire project.
8. Material and Equipment Histograms: Showing the status of materials and equipment stored on-site and materials and equipment stored in bonded warehouse(s).
9. Construction Equipment Histograms: Show project overall equipment count per

month by major equipment category count per month (cranes, excavators, etc.).

- M. All changes to Schedule Updates must be accepted by the City Representative. If the Contractor desires to make a change to the current accepted Progress Update Schedule, the Contractor shall request permission from the City in writing, stating the reasons for the change as well as the specifics, such as revisions to activities, logic, durations, calendars, etc. Pending changes will be discussed at the Monthly Schedule Review (two days prior to last Friday) where the City may authorize their inclusion in the schedule without any determination of merit or responsibility.

- N. Out of sequence logic must be corrected before the Progress Update Schedule is submitted.

- O. Pending Changes shall have a City assigned Potential Change (PC) number. The Contractor shall incorporate PC activities into the schedule as Level of Effort (LOE) activities, with a zero-dollar value cost, in the update period in which the Contractor knew, or should have known of the change. The LOE shall be linked to the impacted base contract schedule activities. The change activity shall not be cost loaded until an agreement is reached between the Contractor and City as to cost. Should the PC impact the critical path, the Contractor shall submit a Time Impact Analysis (TIA) per the TIA provisions of these specifications. Upon acceptance of a TIA by the City Representative, the Contractor shall incorporate the detailed TIA schedule activities into the next Schedule Update retaining the original LOE activity. All Potential Change Activities shall be assigned a WBS and coding structure to distinguish said activities from base contract schedule activities. Upon PCs being incorporated into a Contract Change Order (CCO), the Contractor shall assign a WBS and Activity Code for each CCO, with its subset of PC numbers, with the sum cost loading of said PC activities equal to the value of the CCO. The sum of the base contract activities shall total the original contract value. The sum of the change activities shall total CCOs issued to date, plus remaining PCs pending CCO. In the case of deductive change, the base contract activity shall be broken into two activities with the same logic ties consisting of the original activity with the remaining base contract amount and second activity with the amount to be deducted, the sum of the two totaling the originally scheduled value. Add an offsetting deduct (negative cost) as a PC change activity. The deduct amount activity on the base contract section shall have the successor logic removed, with a “deduct” note in parenthesis added to the end of the activity description. The deduct activity shall remain open until the actual deduct activity in the change section is statused as complete upon the CCO being issued. Upon the CCO being issued, both activities shall be statused with the CCO issue date.

- P. Failure to include in the schedule any element of Work required for performance of Contract shall not excuse Contractor from completing all Work required within applicable time constraints, notwithstanding the City's acceptance of Contractor's Construction Schedule.

- Q. Contractor shall address City review comments and resubmit within 7 Calendar Days from receipt of review comments. Should the Contractor fail to timely incorporate the City schedule review comments prior to the due date for the next month's update, the Contractor shall proceed with the update and the outstanding schedule review comments from the prior month will be included in the current schedule update's review comments. The Contractor is responsible for including the City schedule review comments into all affected schedules.
- R. Schedule updates forecasting contract milestones 30 or more days late are subject to rejection.

2.10 NARRATIVE PROGRESS REPORTS

- A. A Cost Activity Report shall be prepared and submitted with each progress payment. The cost information shall be updated by activity and summarized for each month. The sum of all monthly costs shall be equal to the contract amount plus approved change orders.
- B. The Narrative Report shall be submitted with the monthly progress update and include:
1. The Contractor's transmittal letter.
 2. Schedule report indicating each activity on the CPM Schedule that has been:
 - a. Completed during this reporting period.
 - b. In progress during this reporting period.
 3. Scheduled for the next reporting period.
 4. Analysis, by critical path. (Note: critical path is longest path as described above.)
 - a. A listing of the current critical path.
 - b. Progress made on critical path activities in current CPM schedule
 - c. Explanations for any lack of Work on critical path activities planned to be performed during the last month.
 - d. Impact on other activities, milestones, and completion dates.
 5. Current and anticipated delays:
 - a. Cause of the delay.

- b. Corrective action and schedule adjustments taken or to be taken to correct the delay.
 - c. Impact of the delay on other activities, milestones, and completion dates.
 - d. Recommendations for recovery of the delays.
6. Any change in construction sequence, logic changes, relationship changes, or duration changes and the rationale associated with each change for City review and acceptance.
 7. Any corrective actions taken by the Contractor to address delays or potential delays
 8. Value of materials and equipment properly stored at the site but not yet incorporated in the Work.
 9. Identify interface items of work with another contract or with existing facilities or where third-party action or coordination is required.
 10. Pending issues and status of other items such as:
 - a. Permits.
 - b. Contract modifications.
 - c. Time extension requests.
 - d. Long-lead procurement items.
 11. Contract complete date status.
 12. Ahead of schedule and number of days.
 13. Behind schedule and number of days.
 14. Summary of project status including cumulative information to date, variance, and forecast at completion.
 15. Other project or scheduling concerns.

211 WEEKLY 4-WEEK LOOK-AHEAD SCHEDULE

- A. The weekly bar chart “Four Week Look-Ahead Schedule” submittal shall comply with

the following requirements:

1. Be produced using the latest version of Oracle Primavera P6 software and generated from the latest Monthly Schedule Update.
2. Updated weekly with a Monday Data Date.
3. The filter for the bar chart will be all activities that have started but not finished, plus all activities with a start or finish within minus 1 week and plus 4 weeks. Total float and the critical path shall clearly be shown.
4. Submit as a printed bar chart on 11-inch by 17-inch paper 24 hours prior to the weekly project meeting.
5. Identify any shutdowns/cutovers that may potentially impact stakeholders.
6. Be prepared to discuss the status of activities on the Four Week Look Ahead Schedule, including any key issues or delays at the weekly project meetings. The Contractor's Superintendent in charge of the work areas in the schedule shall review and sign off on the Four Week Look Ahead Schedule. The Superintendent shall be prepared to review the activities in the Four Week Look Ahead Schedule and discuss any foreseeable issues.
7. The Contractor may provide supplemental detail to elaborate on any schedule activity and must clearly represent this supplement detail as supplemental task information separate from the Oracle Primavera P6 generated schedule. The Contractor shall not in any way change the Activity ID and description in the schedule. For each activity on the Four Week Rolling Schedule, the Contractor shall list the corresponding schedule activity identification number from the current Monthly Progress Schedule Update.

2.12 RECOVERY SCHEDULE

A. When a periodic update indicates the project completion, or any intermediate contract milestone, is 1 to 15 days behind the current accepted schedule, the City reserves the right to request a recovery schedule. If the work falls more than 15 days behind the current accepted schedule, the Contractor is required to submit a Recovery Schedule taking steps necessary to improve progress at no additional cost to the City.

Recovery schedules may be submitted independently or included in the next Monthly Progress Update. Indicate changes to working hours per shift, labor per shift, shifts per working day, working days per week, or amount of construction equipment, or any combination of foregoing, sufficiently to achieve the contractual milestones in accordance with the current Contract requirements. If the Contractor chooses to include

the recovery schedule with the next Monthly Progress Update, the City Representative may reject the Monthly Progress Update or require revisions to be made to the recovery schedule before the Monthly Progress Schedule is accepted. Recovery Schedules shall be prepared by the Contractor regardless of the underlying cause for the delay and responsibility for the time.

B. The Recovery Schedule shall have the same data date as the submitted Monthly Progress Schedule, and the data prior to the data date shall be the same in both.

Concurrent with the submittal of the Monthly Progress Schedule for review by the City, Contractor shall submit the proposed Recovery Schedule. The Submittal shall also include a written, narrative format document detailing proposed changes to the Project Schedule and including reasons for the changes. This narrative document shall include at a minimum, the following:

1. Detailed description of the changes in the means and methods that Contractor intends to implement to recover from schedule delay; such as additional design staff, additional construction crews, additional equipment, extended working hours, additional shifts per day, or other means;
2. Detailed description of proposed changes in work activity sequences that will permit previously scheduled sequential work to be performed concurrently, or other scheduling changes, which will result in recovery of the schedule delay;
3. Identification of changes to specific activity original durations;
4. Identification of changes to activity relationships and/or schedule logic;
5. Identification of activities that have been added, deleted, or modified; and/or
6. Identification of changes to the Project Schedule's Critical Path.

2.13 TIME IMPACT ANALYSIS (TIA)

- A. When the Contractor asserts it has been or will be delayed, and as a result is requesting a time extension, the Contractor shall notify the City Representative of a potential delay and prepare and submit a TIA within fourteen (14) calendar days after the impact is known or should have been known.
- B. The TIA shall be submitted separately and based upon the current accepted schedule with a data date closest to and prior to the date when the Contractor knew, or should have known, of the impact. The current accepted schedule can be the Initial 180 Day Schedule, Baseline Schedule, or Monthly Schedule Update.
- C. If the Contractor is submitting time related costs of any kind and/or is requesting time due to a schedule delay, the submittal of a TIA is required.

- D. The Contractor shall submit to the City a written TIA illustrating the influence of each change or delay on any specified intermediate milestone date and the current projected completion date. Each TIA shall include a CPM schedule network (fragnet) indicating all necessary added activities, logic, duration and demonstrating how the Contractor proposes to incorporate the change or delay into the Schedule and any additional supporting evidence that the City deems necessary.
- E. The TIA submittal shall include a PDF fragnet comparing the current accepted schedule against the Contractor's claimed delay, showing the impact on the critical path. The fragnet must show all impacts leading up and including the contract milestones.
- F. The TIA shall include a narrative addressing entitlement including a description of the scope of the change as well as addressing compliance with all contract requirements for requesting a time extension. The schedule narrative at a minimum shall address the chronology of events (impact activities), compliance with notice requirements, schedule update used as the basis of analysis (or baseline schedule if applicable), critical path, identification of CPM schedule activities impacted, logic ties between impact activities and CPM schedule activities, fragnet, concurrency, and compensability if applicable.
- G. The Contractor shall submit one (1) electronic copy of the Oracle Primavera P6 schedule files in XER format, PDF copies of the fragments, and the narrative. Each TIA should be identified with a discrete ID number and description.
- H. Should the Contractor fail to request time and submit a contract compliant TIA per these specifications, the Contractor will have irrevocably waived its contract right to a time extension and time-related costs and will be responsible for all costs associated with mitigating said delay to complete the work within the contract time.
- I. It is expressly agreed and understood that the Contractor shall not be entitled to any time or compensation for potential delays, or delays, which:
 - 1. Can be avoided by re-sequencing work activities;
 - 2. Applying additional resources;
 - 3. Do not delay the project completion date or a project milestone; or
 - 4. Result from any method used to sequester float.
- J. Pacing is defined as an intentional slowing of work activities during a delay, or alleged delay, to project completion. Absent contemporaneous notice of intent to pace, including the contractor's rationale to pace and the City's concurrence, pacing of work activities will be construed as a concurrent delay for the purposes of assessing time extensions and delay costs."

- K. The Contractor shall incorporate City review comments and resubmit the TIA within 7 calendar days of receiving them.
- L. Upon acceptance of the TIA by the City Representative, the Contractor shall incorporate the TIA fragnet into the next monthly progress schedule update.

PART 3 - WEATHER

3.1 ANTICIPATED WEATHER DAYS

A. TIME ALLOWANCE FOR INCLEMENT WEATHER:

- 1. Time allowance for inclement weather: "Inclement weather" is a lost workday, caused by inclement weather conditions, and is defined as a day in which the Contractor's workforce cannot work 50 percent or more of the day thereby resulting in a delay to the critical path. The number of inclement weather days will be reflected in a schedule activity titled "Inclement Weather". The Contractor shall allow thirteen (13) working days per year within the Baseline Construction Schedule for inclement weather, the unused portion shall be considered as Float to be used by either party. The inclement weather activity's successor shall be the Substantial Completion milestone. The predecessor activities shall be the last project activities that occur before Substantial Completion. The Contractor shall notify the Resident Project Representative in writing when a lost workday has occurred due to inclement weather in accordance with the Baseline Construction Schedule update requirements. Any delays beyond the thirteen (13) working days per year shall not entitle the Contractor to any additional compensation. The sole remedy of the Contractor shall be to seek a non-compensable extension of time.

3.2 WEATHER CALENDAR AND ACCOUNTING OF DAYS

- A. The accounting of weather days shall occur once monthly corresponding to the Monthly Schedule Update. The City granted non-working days affecting the critical path attributable to weather shall be accounted for in the Weekly Statement of Contract Time, as prepared by the City, independent of the weather allowance. City granted weather days shall be added to the schedule monthly as a one work day Non-work days in the calendars with an actual date equal to the non-working day as reflected in the Weekly Statement of Contract Time. A monthly reconciliation will occur between the inclement weather allowance and actual weather impact, as reflected in the Weekly Statement of Contract Time. Should the Contractor meet all contract requirements for demonstrating unavoidable delay, the Contractor shall be granted a time extension for weather impact days, beyond the weather allowance days for the same time period, for activities on the

critical path.

- B. No contract time adjustment shall be made if actual non-working days attributable to weather affecting the critical path DOES NOT exceed the allowance. Unused weather allowance shall become project float.

33 COMPLIANCE AND FAILURE TO SUBMIT TIMELY SCHEDULES

- A. Because the City places a high value on the importance and use of project scheduling information as a management tool in achieving the completion of Work as planned, the City will deduct ten percent (10%) of the monthly Progress Payment, but not more than three percent (3%) of the contract value, for failure by the Contractor to submit accepted Baseline Schedules or the monthly Progress Update Schedules as required by these specifications. These deductions shall apply should the Contractor fail to address within the specified time frame schedule review comments, TIA review comments, recovery schedule requirements, and address any other requirements of these specifications and/or the City. These deductions are cumulative and will be made for each and every month that the Contractor fails to provide the required information. The Progress Update Schedules and narratives shall be accurate, reflect actual events on the project, and meet all requirements of these specifications. If the Contractor does not correct the deficiency by providing an acceptable schedule within the specified time frame from receiving the City's review comments, the deduction will become permanent via a deductive change order.

PART 4 -- PROJECT RECORD SCHEDULE

41 FINAL PROGRESS SCHEDULE

- A. The last monthly update of the project schedule shall be the project record (as-built) schedule. The project record schedule shall accurately show the completion of all work required by the contract and shall have a data date equivalent to the day after the actual date of the Contract Completion milestone. All project schedule activities shall be statused at one hundred percent (100%) complete and have actual start and actual finish dates. The project budgeted cost reflected in the project record schedule shall be the contract price, inclusive of all adjustments due to executed change orders. The project record schedule submittal shall meet all monthly update requirements and include an actual cost statement. The City's acceptance of the project record schedule shall be a condition precedent to acceptance of the contract by the City's Board of Directors and to the release of final payment and bonds by the City.
- B. This schedule submission shall be accompanied by a certification, signed by an officer of the company and the Contractor's Project Manager and Project Scheduler, stating "To the best of our knowledge, the enclosed final update of the Construction Progress

Schedule accurately reflects the actual start and completion dates and logical relationships of all activities contained herein and represents an accurate depiction of the way in which the project was constructed.”

****END OF SECTION****

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 DEFINITIONS

- A. Action Submittal: Written and graphic information submitted by Contractor that requires Engineer's approval.
- B. Deferred Submittal: Information submitted by Contractor for portions of design that are to be submitted to permitting agency for approval prior to installation of that portion of the Work, along with Engineer's review documentation that submittal has been found to be in general conformance with Project's design.
- C. Informational Submittal: Information submitted by Contractor that requires Engineer's review and determination that submitted information is in accordance with the Conditions of the Contract.

1.02 PROCEDURES

- A. Direct submittals as described in Section 01 33 22, Web Based Construction Document Management, unless specified otherwise.
 - 1. Via Construction Manager.
- B. Electronic Submittals: Submittals shall, unless specifically accepted, be made in electronic format.
 - 1. Each submittal shall be an electronic file in Adobe Acrobat Portable Document Format (PDF). Use the latest version available at time of execution of the Agreement.
 - 2. Electronic files that contain more than 10 pages in PDF format shall contain internal bookmarking from an index page to major sections of the document.
 - 3. PDF files shall be set to open "Bookmarks and Page" view. Magnification shall be set to "fit page".
 - 4. Add general information to each PDF file, including title, subject, author, and keywords.
 - 5. PDF files shall be set up to print legibly at 8.5-inch by 11-inch, 11-inch by 17-inch, or 22-inch by 34-inch. No other paper sizes will be accepted.
 - 6. Submit new electronic files for each resubmittal.
 - 7. Include a copy of the Transmittal of Contractor's Submittal form, located at end of section, with each electronic file.
 - 8. Owner will reject submittal that is not electronically submitted, unless specifically accepted.

9. Provide Construction Manager with authorization to reproduce and distribute each file as many times as necessary for Project documentation. Provide file password if security settings are used.
10. Detailed procedures for handling electronic submittals will be discussed at the preconstruction conference and shall be as required by Section 01 33 22, Web Based Construction Document Management.

C. Transmittal of Submittal:

1. Contractor shall:
 - a. Review each submittal and check for compliance with Contract Documents.
 - b. Stamp each submittal with uniform approval stamp before submitting to Construction Manager.
 - 1) Stamp to include Project name, submittal number, Specification number, Contractor's reviewer name, date of Contractor's approval, and statement certifying submittal has been reviewed, checked, and approved for compliance with Contract Documents.
 - 2) Construction Manager will not review submittals that do not bear Contractor's approval stamp and will return them without action.
2. Complete, sign, and transmit with each submittal package, one Transmittal of Contractor's Submittal form in format approved by Construction Manager.
3. Identify each submittal with the following:
 - a. Numbering and Tracking System:
 - 1) Sequentially number each submittal.
 - 2) Resubmission of submittal shall have original number with sequential alphabetic suffix.
 - b. Specification section and paragraph to which submittal applies.
 - c. Project title and Owner's project number.
 - d. Date of transmittal.
 - e. Names of Contractor, Subcontractor or Supplier, and manufacturer as appropriate.
4. Identify and describe each deviation or variation from Contract Documents.
5. All submittals shall be in the English language.

D. Format:

1. Do not base Shop Drawings on reproductions of Contract Documents.
2. Package submittal information by individual specification section. Do not combine different specification sections together in submittal package, unless otherwise directed in specification.
3. Present in a clear and thorough manner and in sufficient detail to show kind, size, arrangement, and function of components, materials, and devices, and compliance with Contract Documents.

4. Index with labeled tab dividers in orderly manner.
 5. Submit all text in the English language.
- E. Timeliness: Schedule and submit in accordance Schedule of Submittals, and requirements of individual specification sections.
- F. Processing Time:
1. Time for review shall commence on Construction Manager's receipt of submittal.
 2. Construction Manager will act upon Contractor's submittal and transmit response to Contractor not later than 20 working days after receipt, unless otherwise specified.
 3. Allow 30 working days for the review of deferred submittals by the Agency Having Jurisdiction (AHJ) after approval by the Design Engineer.
 4. Resubmittals will be subject to same review time.
 5. No adjustment of Contract Times or Price will be allowed as a result of delays in progress of Work caused by rejection and subsequent resubmittals.
- G. Resubmittals: Clearly identify each correction or change made.
- H. Incomplete Submittals:
1. Construction Manager will return entire submittal for Contractor's revision if preliminary review deems it incomplete.
 2. When any of the following are missing, submittal will be deemed incomplete:
 - a. Contractor's review stamp; completed and signed.
 - b. Transmittal of Contractor's Submittal; completed and signed.
 - c. Insufficient number of copies.
- I. Submittals not required by Contract Documents:
1. Will not be reviewed and will be returned stamped "Not Subject to Review."
 2. Construction Manager will keep one copy and return submittal to Contractor.
- J. Approved Materials List (AML):
1. See Section 4-1.3.6, "Preapproved Material" in The 2015 WHITEBOOK and as amended in the SSP for submittal requirements of materials in the City's AML.
- K. Working Drawings:

1. Submit Working Drawings listed in TABLE 2-5.3.2 of The 2015 WHITEBOOK in accordance with the requirements of The 2015 WHITEBOOK and The 2015 GREENBOOK.

1.03 ACTION SUBMITTALS

- A. Prepare and submit Action Submittals required by individual specification sections.
- B. Shop Drawings:
 1. Copies: Five copies of closed submittals as required under Section 01 33 22, Web Based Construction Document Management.
 2. Identify and Indicate:
 - a. Applicable Contract Drawing and Detail number, products, units and assemblies, and system or equipment identification or tag numbers.
 - b. Equipment and Component Title: Identical to title shown on Drawings.
 - c. Critical field dimensions and relationships to other critical features of Work. Note dimensions established by field measurement.
 - d. Project-specific information drawn accurately to scale.
 3. Manufacturer's standard schematic drawings and diagrams as follows:
 - a. Modify to delete information that is not applicable to the Work.
 - b. Supplement standard information to provide information specifically applicable to the Work.
 4. Product Data: Provide as specified in individual specifications.
 5. Deferred Submittal: See Drawings for list of deferred submittals.
 - a. Contractor-design drawings and product data related to permanent construction.
 - 1) Written and graphic information.
 - 2) Drawings.
 - 3) Cut sheets.
 - 4) Data sheets.
 - 5) Action item submittals requested in individual specification section.
 - b. Prior to installation of indicated structural or nonstructural element, equipment, distribution system, or component or its anchorage, submit required supporting data and drawings for review and acceptance by Engineer. Documentation of review and approval provided on Engineer's comment form, along with completed submittal, shall be filed with permitting agency by Contractor and approved by permitting agency prior to installation.
 6. Foreign Manufacturers: When proposed, include names and addresses of at least two companies that maintain technical service representatives close to Project.

C. Samples:

1. Copies: Two, unless otherwise specified in individual specifications.
2. Preparation:
 - a. Mount, display, or package Samples in manner specified to facilitate review of quality. Attach label on unexposed side that includes the following:
 - 1) Manufacturer name.
 - 2) Model number.
 - 3) Material.
 - 4) Sample source.
3. Manufacturer's Color Chart: Units or sections of units showing full range of colors, textures, and patterns available.
4. Full-size Samples:
 - a. Size as indicated in individual specification section.
 - b. Prepared from same materials to be used for the Work.
 - c. Cured and finished in manner specified.
 - d. Physically identical with product proposed for use.

D. Action Submittal Dispositions: Engineer will review, comment, stamp, and distribute as noted:

1. Approved:
 - a. Contractor may incorporate product(s) or implement Work covered by submittal.
 - b. Distribution: Electronic.
 - 1) One copy of closed submittal furnished to the Construction Manager.
2. Approved as Noted:
 - a. Contractor may incorporate product(s) or implement Work covered by submittal, in accordance with Engineer's notations.
 - b. Distribution: Electronic.
3. Partial Approval, Resubmit as Noted:
 - a. Make corrections or obtain missing portions, and resubmit.
 - b. Except for portions indicated, Contractor may begin to incorporate product(s) or implement Work covered by submittal, in accordance with Engineer's notations.
 - c. Distribution: Electronic.
4. Revise and Resubmit:
 - a. Contractor may not incorporate product(s) or implement Work covered by submittal.
 - b. Distribution: Electronic.

E. Trade Names or Equals

1. All proprietary materials, equipment and manufacturers identified in the Technicals are intended to establish the type, function, and quality required. Where one (1) or more proprietary name is provided, "or approved equal" shall also be included in that list. Submittals for trade

name equals shall follow the procedures identified in Section 4-1.6 of the 2015 Whitebook.

2. All “equal” products as stated in the Technicals shall mean “approved equal” products.

1.04 INFORMATIONAL SUBMITTALS

A. General:

1. Copies: Electronic.
2. Refer to individual specification sections for specific submittal requirements.
3. Construction Manager will review each submittal. If submittal meets conditions of the Contract, Construction Manager will forward copy to appropriate parties. If Construction Manager determines submittal does not meet conditions of the Contract and is therefore considered unacceptable, Construction Manager will provide review comments to Contractor, and require that submittal be corrected and resubmitted.

- ##### B. Equipment Procured Overseas: Within 60 Calendar Days of Notice to Proceed, submit a list of equipment that will require overseas shipping for project delivery. List shall include the value of shipped items.

C. Certificates:

1. General:
 - a. Provide notarized statement that includes signature of entity responsible for preparing certification.
 - b. Signed by officer or other individual authorized to sign documents on behalf of that entity.
2. Welding: In accordance with individual specification sections.
3. Installer: Prepare written statements on manufacturer’s letterhead certifying installer complies with requirements as specified in individual specification section.
4. Material Test: Prepared by qualified testing agency, on testing agency’s standard form, indicating and interpreting test results of material for compliance with requirements.
5. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in individual specification sections.
6. Manufacturer’s Certificate of Compliance:

- ##### D. Closeout Submittals: In accordance with Section 01 77 00, Closeout Procedures.

E. Contractor-design Data (related to temporary construction):

1. Written and graphic information.

2. List of assumptions.
 3. List of performance and design criteria.
 4. Summary of loads or load diagram, if applicable.
 5. Calculations.
 6. List of applicable codes and regulations.
 7. Name and version of software.
 8. Information requested in individual specification section.
- F. Deferred Submittals: See Drawings for list of deferred submittals.
1. Contractor-design data related to permanent construction:
 - a. List of assumptions.
 - b. List of performance and design criteria.
 - c. Summary of loads or load diagram, if applicable.
 - d. Calculations.
 - e. List of applicable codes and regulations.
 - f. Name and version of design software.
 - g. Factory test results.
 - h. Informational submittals requested in individual specification section.
 2. Prior to installation of indicated structural or nonstructural element, equipment, distribution system, or component or its anchorage, submit calculations and test results of Contractor-designed components for review by Engineer. Documentation of review and indication of compliance with general design intent and project criteria provided on Engineer's comment form as meets conditions of the Contract, along with completed submittal, shall be filed with permitting agency by Contractor and approved by permitting agency prior to installation.
- G. Manufacturer's Instructions: Written or published information that documents manufacturer's recommendations, guidelines, and procedures in accordance with individual specification section.
- H. Operation and Maintenance Data: As required in Section 01 78 23, Operation and Maintenance Data.
- I. Payment:
1. Application for Payment: In accordance with Section 01 29 00, Payment Procedures.
 2. Schedule of Values: In accordance with Section 01 29 00, Payment Procedures.
 3. **Schedule of Estimated Progress Payments: In accordance with Section 01 29 00, Payment Procedures.**
- J. Schedules:
1. Schedule of Submittals: Prepare separately or in combination with Progress Schedule as specified in Section 01 32 00, Construction Progress Documentation.

- a. Show for each, at a minimum, the following:
 - 1) Specification section number.
 - 2) Identification by numbering and tracking system as specified under Paragraph Transmittal of Submittal.
 - 3) Estimated date of submission to Construction Manager, including reviewing and processing time.
 - b. On a monthly basis, submit updated Schedule of Submittals to Construction Manager if changes have occurred or resubmittals are required.
 2. Progress Schedules: In accordance with Section 01 32 00, Construction Progress Documentation.
- K. Special Guarantee: Supplier's written guarantee as required in individual specification sections.
- L. Statement of Qualification:
 1. Evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, engineer, materials testing laboratory, specialty Subcontractor, trade, Specialist, consultant, installer, and other professionals.
Submittals Required by Laws, Regulations, and Governing Agencies:
 - a. Promptly submit promptly notifications, reports, certifications, payrolls, and otherwise as may be required, directly to the applicable federal, state, or local governing agency or their representative.
 - b. Transmit to Construction Manager for Owner's records one copy of correspondence and transmittals (to include enclosures and attachments) between Contractor and governing agency.
- M. Submittals Required by Laws, Regulations, and Governing Agencies:
 1. Promptly submit promptly notifications, reports, certifications, payrolls, and otherwise as may be required, directly to the applicable federal, state, or local governing agency or their representative.
 2. Transmit to Engineer for Owner's records one copy of correspondence and transmittals (to include enclosures and attachments) between Contractor and governing agency.
- N. Test, Evaluation, and Inspection Reports:
 1. General: Shall contain signature of person responsible for test or report.
 2. Factory:
 - a. Identification of product and specification section, type of inspection or test with referenced standard or code.
 - b. Date of test, Project title and number, and name and signature of authorized person.
 - c. Test results.

- d. If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
 - e. Provide interpretation of test results, when requested by Construction Manager.
 - f. Other items as identified in individual specification sections.
3. Field:
- a. As a minimum, include the following:
 - 1) Project title and number.
 - 2) Date and time.
 - 3) Record of temperature and weather conditions.
 - 4) Identification of product and specification section.
 - 5) Type and location of test, Sample, or inspection, including referenced standard or code.
 - 6) Date issued, testing laboratory name, address, and telephone number, and name and signature of laboratory inspector.
 - 7) If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
 - 8) Provide interpretation of test results, when requested by Construction Manager.
 - 9) Other items as identified in individual specification sections.
- O. Testing and Startup Data: In accordance with Section 01 91 14, Testing, Integration, and Startup.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 33 22
WEB BASED CONSTRUCTION DOCUMENT MANAGEMENT

PART 1 GENERAL

1.01 SUMMARY

- A. The Owner, Construction Manager, Engineer, and Contractor shall utilize PMWeb (PMWeb is a registered trademark of PMWeb, Inc.), for submission of all data and documents (unless specified otherwise herein) throughout the duration of the Contract.
1. PMWeb is a web-based electronic media site.
 2. PMWeb is paid for by the Owner.
 3. PMWeb will be made available to all Contractor's personnel, subcontractor personnel, suppliers, consultants, Construction Manager, and Engineer.
 4. The joint use of this system is to facilitate electronic exchange of information, automation of key processes, and overall management of Construction Phase Documentation.
 5. PMWeb shall be the primary official means of project information submission and management.
- B. User Access Limitations: The Construction Manager will initially manage the Contractor's access to PMWeb by allowing access and assigning user profiles to accepted Contractor personnel. User profiles will define levels of access into the system; determine assigned function based authorizations and user privileges. Subcontractors and suppliers will be given access to PMWeb by and through the Contractor. Entry of information exchanged and transferred between the Contractor and its subcontractors and suppliers on PMWeb shall be the responsibility of the Contractor.
- C. Joint Ownership of Data: Data entered in a collaborative mode (entered with the intent to share as determined by permissions and workflows within the PMWeb system) by the Owner, Construction Manager, Engineer, and Contractor will be jointly owned.
- D. Automated System Notification and Audit Log Tracking: Review comments made (or lack thereof) by the Owner on Contractor submitted documentation shall not relieve the Contractor from compliance with requirements of the Contract Documents. The Contractor is responsible for managing, tracking, and documenting the Work to comply with the requirements of the Contract Documents. Owner's acceptance via automated system notifications or audit logs extends only to the face value of the submitted documentation and does not constitute validation of the Contractor's submitted information.
- E. Submittals:

1. See Section 01 33 00, Submittal Procedures.
2. Preconstruction Submittals List of Contractor's key PMWeb personnel. Include descriptions of key personnel's roles and responsibilities for this Project. Contractor should also identify their organizations administrator on the list.

F. Computer Requirements:

1. The Contractor shall use computer hardware and software that meets the requirements of the PMWeb system as required to access and utilize PMWeb. As recommendations are modified by PMWeb, the Contractor will upgrade their system(s) to meet or exceed the recommendations. Upgrading of the Contractor's computer systems will not be justification for a cost or time modification to the Contract.
2. The Contractor shall ensure that connectivity to the PMWeb system is accomplished through DSL, cable, T-1 or wireless communications systems. The minimum bandwidth requirements for using the system is 128kb/s. It is recommended a faster connection be used when uploading pictures and files into the system.
3. PMWeb currently supports Mozilla's Firefox v3.0-3.5, Apple's Safari v3.0-3.5, and Microsoft's Internet Explorer v7.0 web browsers for accessing the application.

G. Contractor Responsibility:

1. The Contractor shall be responsible for the validity of their information placed in PMWeb and for the abilities of their personnel.
2. Accepted users shall be knowledgeable in the use of computers, including Internet Browsers, email programs, CAD drawing applications, and Adobe Portable Document Format (PDF) document distribution program.
3. The Contractor shall utilize the existing forms in PMWeb to the maximum extent possible. If a form does not exist in PMWeb the Contractor must include a form of their own or provided by the Construction Manager as an attachment to a submittal.
4. Adobe PDF documents will be created through electronic conversion rather than optically scanned whenever possible. The Contractor is responsible for the training of their personnel in the use of PMWeb (outside what is provided by the Owner) and the other programs indicated above as needed.

H. Connectivity Problems: Provide a list of Contractor's key PMWeb personnel for the Construction Manager's acceptance. Contractor is responsible for adding and removing users from the system. The Construction Manager reserves the right to perform a security check on all potential users. The Contractor will be allowed to add additional personnel and subcontractors to PMWeb after clearance by security check.

I. Training:

1. The Owner has arranged and paid for training to be provided to the Contractor.
2. Training consists of web-based seminars in conjunction with a conference call.
3. Contractor shall arrange and pay for the facilities and hardware/software required to facilitate their own training.

PART 2 PRODUCTS

2.01 DESCRIPTION

- A. PMWeb project management application (no or-equal).

PART 3 EXECUTION

3.01 PMWEB UTILIZATION

- A. PMWeb shall be utilized in connection with all document and information management required by these Contract Documents.

3.02 SUBMITTALS

- A. Shop Drawings:

1. Shop Drawing and design data documents shall be submitted PDF attachments to the PMWeb submittal work flow process and form. Examples of Shop Drawings include, but are not limited to:
 - a. Standard manufacturer installation drawings.
 - b. Drawings prepared to illustrate portions of the work designed or developed by the Contractor.
 - c. Steel fabrication, piece, and erection drawings.

- B. See Section 01 33 00, Submittal Procedures.

3.03 PRODUCT DATA

- A. Product catalog data and manufacturer's instructions shall be submitted as PDF attachments to the PMWeb submittal work flow process and form. Examples of product data include, but are not limited to:

1. Manufacturer's printed literature.
2. Preprinted product specification data and installation instructions.

3.04 ADMINISTRATIVE OR INFORMATIONAL SUBMITTALS

- A. All correspondence and preconstruction submittals shall be submitted using PMWeb. Examples of administrative submittals include, but are not limited to:

1. Permits.
 2. Requests for substitutions (RFS).
 3. List of contact personnel.
 4. Requests for Information (RFI).
- B. Network Analysis Schedules and associated reports and updates. Each schedule submittal specified in these Contract Documents shall be submitted as a native backed-up file (.PRX or .STX) of the scheduling program being used. The schedule shall also be posted as a PDF file in the format specified in these Contract Documents.
- C. Plans for safety, demolition, environmental protection, and similar activities.
- D. Quality Control Plan(s), Testing Plan and Log, Quality Control Reports, Production Reports, Quality Control Specialist Reports, Preparatory Phase Checklist, Initial Phase Checklist, Field Test reports, Summary reports, Rework Items List, etc.
- E. Meeting minutes for quality control meetings, progress meetings, pre-installation meetings, etc.
- F. Any general correspondence submitted.
- G. Project Photos: Project photos shall be posted monthly to PMWeb.

3.05 COMPLIANCE SUBMITTALS

- A. Test reports, certificates, and manufacture field report submittals shall be submitted on PMWeb as PDF attachments. Examples of compliance submittals include, but are not limited to:
1. Field test reports.
 2. Quality Control certifications.
 3. Manufacturer's documentation and certifications for quality of products and materials provided.

3.06 RECORD AND CLOSEOUT SUBMITTALS

- A. Operation and maintenance data and closeout submittals shall be submitted on PMWeb as PDF documents during the approval and review stage as specified, with actual set of documents submitted for final. Examples of record submittals include, but are not limited to:
1. Operation and Maintenance Manuals: Final documents shall be submitted as specified.
 2. Extra materials, spare stock, etc., submittal forms shall indicate when actual materials are submitted.

3.07 FINANCIAL SUBMITTALS

- A. Schedule of Value, Pay Estimates, and Change Request Proposals shall be submitted on PMWeb. Supporting material for Pay Estimates and Change Requests shall be submitted on PMWeb as PDF attachments. Examples of compliance submittals include, but are not limited to:
1. Contractor's Schedule of Values.
 2. Contractor's Monthly Progress Payment Requests.
 3. Contract Change proposals requested by the Owner.

3.08 SUBMITTAL PAPER COPIES

- A. Contractor shall deliver bound and tabbed paper copies of every closed submittal to the Construction Manager within 1 week of the Construction Manager closing a submittal with any disposition as follows:
1. Each copy shall have the closed PMWeb cover page including the disposition and any comments.
 2. Final copies of submittals returned with comments, but not requiring resubmittal shall incorporate revisions per the Engineer's comments.
 3. Number of Paper Copies:
 - a. Final O&M Manuals: Three copies as specified in the Section 01 78 23, Operation and Maintenance Data.
 - b. All Other Submittals: Five copies as specified in Section 01 33 00, Submittal Procedures.
 - c. For submittals with attachments over 30 megabytes in size, provide one CD of the submittal for each required paper copy.

END OF SECTION

**SECTION 01 77 00
CLOSEOUT PROCEDURES**

PART 1 GENERAL

1.01 SUBMITTALS

A. Informational Submittals:

1. Submit prior to application for final payment.
 - a. Record Documents: As described in Section 01 33 00, Submittal Procedures and as required in General Conditions.
 - b. Approved Shop Drawings and Samples: As described in Section 01 33 00, Submittal Procedures, Special bonds, Special Guarantees, and Service Agreements and as required in General Conditions.
 - c. Consent of Surety to Final Payment: As required in General Conditions.
 - d. Releases or Waivers of Liens and Claims: As required in General Conditions.
 - e. Releases from Agreements.
 - f. All documentation as required by all Funding Agencies.
 - g. Final Application for Payment: Submit in accordance with procedures, requirements stated in Section 01 29 00, Payment Procedures and requirements stated in the General Conditions.
 - h. Extra Materials: As required by individual specification sections.

1.02 RECORD DOCUMENTS

A. Quality Assurance:

1. Furnish qualified and experienced person, whose duty and responsibility shall be to maintain record documents.
2. Accuracy of Records:
 - a. Coordinate changes within record documents, making legible and accurate entries on each sheet of Drawings and other documents where such entry is required to show change.
 - b. Purpose of Project record documents is to document factual information regarding aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive Site measurement, investigation, and examination.
3. Make entries within 24 hours after receipt of information that a change in the Work has occurred.
4. Prior to submitting each request for progress payment, request Engineer's review and approval of current status of record documents. Failure to properly maintain, update, and submit record documents may

result in a deferral by Engineer to recommend whole or any part of Contractor's Application for Payment, either partial or final.

1.03 RELEASES FROM AGREEMENTS

- A. Furnish Owner written releases from property owners or public agencies where side agreements or special easements have been made, or where Contractor's operations have not been kept within the Owner's construction right-of-way.
- B. In the event Contractor is unable to secure written releases:
 - 1. Inform Owner of the reasons.
 - 2. Owner or its representatives will examine the Site, and Owner will direct Contractor to complete the Work that may be necessary to satisfy terms of the side agreement or special easement.
 - 3. Should Contractor refuse to perform this Work, Owner reserves right to have it done by separate contract and deduct cost of same from Contract Price, or require Contractor to furnish a satisfactory bond in a sum to cover legal Claims for damages.
 - 4. When Owner is satisfied that the Work has been completed in agreement with Contract Documents and terms of side agreement or special easement, right is reserved to waive requirement for written release if: (i) Contractor's failure to obtain such statement is due to grantor's refusal to sign, and this refusal is not based upon any legitimate Claims that Contractor has failed to fulfill terms of side agreement or special easement, or (ii) Contractor is unable to contact or has had undue hardship in contacting grantor.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 MAINTENANCE OF RECORD DOCUMENTS

- A. General:
 - 1. Promptly following commencement of Contract Times, secure from Owner at no cost to Contractor, one complete set of Contract Documents.
 - 2. Label or stamp each record document with title, "RECORD DOCUMENTS," in neat large printed letters.
 - 3. Record information concurrently with construction progress and within 24 hours after receipt of information that change has occurred. Do not cover or conceal Work until required information is recorded.
- B. Preservation:

1. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
2. Make documents and Samples available at all times for observation by Engineer.

C. Making Entries on Drawings:

1. Using an erasable colored pencil (not ink or indelible pencil), clearly describe change by graphic line and note as required.
 - a. Color Coding:
 - 1) Green when showing information deleted from Drawings.
 - 2) Red when showing information added to Drawings.
 - 3) Blue and circled in blue to show notes.
2. Date entries.
3. Call attention to entry by “cloud” drawn around area or areas affected.
4. Legibly mark to record actual changes made during construction, including, but not limited to:
 - a. Depths of various elements of foundation in relation to finished first floor data if not shown or where depth differs from that shown.
 - b. Horizontal and vertical locations of existing and new Underground Facilities and appurtenances, and other underground structures, equipment, or Work. Reference to at least two measurements to permanent surface improvements.
 - c. Location of internal utilities and appurtenances concealed in the construction referenced to visible and accessible features of the structure.
 - d. Locate existing facilities, piping, equipment, and items critical to the interface between existing physical conditions or construction and new construction.
 - e. Changes made by Addenda and Field Orders, Work Change Directive, Change Order, and Engineer’s written interpretation and clarification using consistent symbols for each and showing appropriate document tracking number.
5. Dimensions on Schematic Layouts: Show on record drawings, by dimension, the centerline of each run of items such as are described in previous subparagraph above.
 - a. Clearly identify the item by accurate note such as “cast iron drain,” “galv. water,” and the like.
 - b. Show, by symbol or note, vertical location of item (“under slab,” “in ceiling plenum,” “exposed,” and the like).
 - c. Make identification so descriptive that it may be related reliably to Specifications.

3.02 FINAL CLEANING

- A. At completion of the Work or of a part thereof and immediately prior to Contractor's request for certificate of Substantial Completion; or if no certificate is issued, immediately prior to Contractor's notice of completion, clean entire Site or parts thereof, as applicable.
1. Leave the Work and adjacent areas affected in a cleaned condition satisfactory to the Owner.
 2. Remove grease, dirt, dust, paint or plaster splatter, stains, labels, fingerprints, and other foreign materials from exposed surfaces.
 3. Repair, patch, and touch up marred surfaces to specified finish and match adjacent surfaces.
 4. Clean all windows.
 5. Clean and wax wood, vinyl, or painted floors.
 6. Broom clean exterior paved driveways and parking areas.
 7. Hose clean sidewalks, loading areas, and others contiguous with principal structures.
 8. Rake clean all other surfaces.
 9. Remove snow and ice from access to buildings.
 10. Replace air-handling filters and clean ducts, blowers, and coils of ventilation units operated during construction.
 11. Leave water courses, gutters, and ditches open and clean.
- B. Use only cleaning materials recommended by manufacturer of surfaces to be cleaned.

3.03 SUBSTANTIAL COMPLETION

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Construction Manager in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Construction Manager issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Construction Manager shall make an inspection of the Work to determine the status of completion. If Construction Manager does not consider the Work substantially complete, Construction Manager will notify Contractor in writing giving the reasons therefor.
- C. If Construction Manager considers the Work substantially complete, Construction Manager will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Construction Manager as to any provisions of the certificate or attached list. If, after considering such objections,

Construction Manager concludes that the Work is not substantially complete, Construction Manager will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Construction Manager considers the Work substantially complete, Construction Manager will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Construction Manager believes justified after consideration of any objections from Owner.

- D. At the time of delivery of the tentative certificate of Substantial Completion, Construction Manager will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Construction Manager in writing prior to Construction Manager's issuing the definitive certificate of Substantial Completion, Construction Manager's aforesaid recommendation will be binding on Owner and Contractor until final payment.

3.04 FINAL INSPECTION

Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Construction Manager will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

END OF SECTION

SECTION 01 78 23
OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Detailed information for the preparation, submission, and 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 Engineer's review.
- B. Final Data: Engineer-accepted data, submitted as specified herein.
- C. 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:
 - 1. Preliminary Data:
 - a. Do not submit until Shop Drawing for equipment or system has been reviewed and approved by Engineer.
 - b. Submit prior to shipment date.
 - 2. Final Data: Submit Instructional Manual Formatted data not less than 30 days prior to installation of equipment.
- B. Materials and Finishes Data:
 - 1. Preliminary Data: Submit at least 30 days prior to request for final inspection.
 - 2. Final Data: Submit within 15 days after final inspection.
 - 3. Record Data: Submit final Compilation Formatted and Electronic Media Formatted data prior to Substantial Completion of Project.

1.04 DATA FORMAT

- A. Prepare preliminary and final data in the form of an instructional manual. Prepare final data 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:
 - a. Project title.
 - b. Designate applicable system, equipment, material, or finish.
 - c. Identity of separate structure as applicable.
 - d. Identify volume number if more than one volume.
 - e. Identity of general subject matter covered in manual.
 - f. Identity of equipment number and Specification section.
4. Spine:
 - a. Project title.
 - b. Identify volume number if more than one volume.
5. Title Page:
 - a. Contractor name, address, and telephone number.
 - b. Subcontractor, Supplier, installer, or maintenance contractor's name, address, and telephone number, as appropriate.
 - 1) Identify area of responsibility of each.
 - 2) Provide name and telephone number of local source of supply for parts and replacement.
6. Table of Contents:
 - a. Neatly typewritten and arranged in systematic order with consecutive page numbers.
 - b. Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.
7. Paper: 20-pound minimum, white for typed pages.
8. Text: Manufacturer's printed data, or neatly typewritten.
9. Three-hole punch data for binding and composition; arrange printing so that punched holes do not obliterate data.
10. Material shall be suitable for reproduction, with quality equal to original. Photocopying of material will be acceptable, except for material containing photographs.

C. Data Compilation Format:

1. Compile all Engineer-accepted preliminary O&M data into a hard-copy, hard-bound set.
2. Each set shall consist of the following:
 - a. Binder: Commercial quality, permanent, three-ring or three-post binders with durable plastic cover.
 - b. Cover: Identify each volume with typed or printed title "OPERATION AND MAINTENANCE DATA, VOLUME NO. ___ OF ___", and list:

- 1) Project title.
- 2) Contractor's name, address, and telephone number.
- 3) If entire volume covers equipment or system provided by one Supplier include the following:
 - a) Identity of general subject matter covered in manual.
 - b) Identity of equipment number and Specification section.
- c. 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.
- d. Table of contents neatly typewritten, arranged in a systematic order:
 - 1) Include list of each product, indexed to content of each volume.
 - 2) Designate system or equipment for which it is intended.
 - 3) Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.
- e. Section Dividers:
 - 1) Heavy, 80 pound cover weight, tabbed with numbered plastic index tabs.
 - 2) Fly-Leaf:
 - a) For each separate product, or each piece of operating equipment, with typed description of product and major component parts of equipment.
 - b) List with Each Product:
 - (1) Name, address, and telephone number of Subcontractor, Supplier, installer, and maintenance contractor, as appropriate.
 - (2) Identify area of responsibility of each.
 - (3) Provide local source of supply for parts and replacement.
 - c) Identity of separate structure as applicable.
- f. 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):
 - a. After all preliminary data has been found to be acceptable to Engineer, submit Operation and Maintenance data in PDF format on CD.
 - b. Files to be exact duplicates of Engineer-accepted preliminary data. Arrange by specification number and name.
 - c. Files to be fully functional and viewable in most recent version of Adobe Acrobat.

1.05 SUBMITTALS

A. Informational:

1. Data Outline: Submit two copies of a detailed outline of proposed organization and contents of Final Data prior to preparation of Preliminary Data.
2. Preliminary Data:
 - a. Submit two copies for Engineer's review.
 - b. If data meets conditions of the Contract:
 - 1) One copy will be returned to Contractor.
 - 2) One copy will be forwarded to Resident Project Representative.
 - 3) One copy will be retained in Engineer's file.
 - c. If data does not meet conditions of the Contract:
 - 1) All copies will be returned to Contractor with Engineer's comments (on separate document) for revision.
 - 2) Engineer's comments will be retained in Engineer's file.
 - 3) Resubmit two copies revised in accordance with Engineer's comments.
3. Final Data: Submit two printed copies and an electronic copy in format specified herein.

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:
 - 1) Identify specific product or part installed.
 - 2) Identify data applicable to installation.
 - 3) Delete references to inapplicable information.
 - c. Function, normal operating characteristics, and limiting conditions.
 - d. Performance curves, engineering data, nameplate data, and tests.
 - e. Complete nomenclature and commercial number of replaceable parts.
 - f. 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.
 - g. Spare parts ordering instructions.
 - h. Where applicable, identify installed spares and other provisions for future work (e.g., reserved panel space, unused components, wiring, terminals).
2. As-installed, color-coded piping diagrams.

3. Charts of valve tag numbers, with the location and function of each valve.
4. Drawings: Supplement product data with Drawings as necessary to clearly illustrate:
 - a. Format:
 - 1) Provide reinforced, punched, binder tab; bind in with text.
 - 2) Reduced to 8-1/2 inches by 11 inches, or 11 inches by 17 inches folded to 8-1/2 inches by 11 inches.
 - 3) Where reduction is impractical, fold and place in 8-1/2-inch by 11-inch envelopes bound in text.
 - 4) Identify Specification section and product on Drawings and envelopes.
 - b. Relations of component parts of equipment and systems.
 - c. Control and flow diagrams.
 - d. Coordinate drawings with Project record documents to assure correct illustration of completed installation.
5. Instructions and Procedures: Within text, as required to supplement product data.
 - a. Format:
 - 1) Organize in consistent format under separate heading for each different procedure.
 - 2) Provide logical sequence of instructions for each procedure.
 - 3) Provide information sheet for Owner's personnel, including:
 - a) Proper procedures in event of failure.
 - b) Instances that might affect validity of guarantee or Bond.
 - b. Installation Instructions: Including alignment, adjusting, calibrating, and checking.
 - c. Operating Procedures:
 - 1) Startup, break-in, routine, and normal operating instructions.
 - 2) Test procedures and results of factory tests where required.
 - 3) Regulation, control, stopping, and emergency instructions.
 - 4) Description of operation sequence by control manufacturer.
 - 5) Shutdown instructions for both short and extended duration.
 - 6) Summer and winter operating instructions, as applicable.
 - 7) Safety precautions.
 - 8) Special operating instructions.
 - d. Maintenance and Overhaul Procedures:
 - 1) Routine maintenance.
 - 2) Guide to troubleshooting.
 - 3) Disassembly, removal, repair, reinstallation, and re-assembly.
6. Guarantee, Bond, and Service Agreement: In accordance with Section 01 77 00, Closeout Procedures.

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

1. Description of Unit and Component Parts:
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data, nameplate data, and tests.
 - c. Complete nomenclature and commercial number of replaceable parts.
 - d. Interconnection wiring diagrams, including control and lighting systems.
2. Circuit Directories of Panelboards:
3. Electrical service.
4. Control requirements and interfaces.
5. Communication requirements and interfaces.
6. List of electrical relay settings, and control and alarm contact settings.
7. Electrical interconnection wiring diagram, including as applicable, single-line, three-line, schematic and internal wiring, and external interconnection wiring.
8. As-installed control diagrams by control manufacturer.
9. Operating Procedures:
 - a. Routine and normal operating instructions.
 - b. Startup and shutdown sequences, normal and emergency.
 - c. Safety precautions.
 - d. Special operating instructions.
10. Maintenance Procedures:
 - a. Routine maintenance.
 - b. Guide to troubleshooting.
 - c. Adjustment and checking.
 - d. List of relay settings, control and alarm contact settings.
11. Manufacturer's printed operating and maintenance instructions.
12. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.

C. Maintenance Summary:

1. Compile individual Maintenance Summary for each applicable equipment item, respective unit or system, and for components or sub-units.
2. Format:
 - a. Use Maintenance Summary Form bound with this section or electronic facsimile of such.
 - b. Each Maintenance Summary may take as many pages as required.
 - c. Use only 8-1/2-inch by 11-inch size paper.
 - d. Complete using typewriter or electronic printing.
3. 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.
4. Recommended Spare Parts:

- a. Data to be consistent with manufacturer's Bill of Materials/Parts List furnished in O&M manuals.
- b. "Unit" is the unit of measure for ordering the part.
- c. "Quantity" is the number of units recommended.
- d. "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:
 - a. Catalog number, size, and composition.
 - b. Color and texture designations.
 - c. Information required for reordering special-manufactured products.
- 2. Instructions for Care and Maintenance:
 - a. Manufacturer's recommendation for types of cleaning agents and methods.
 - b. Cautions against cleaning agents and methods that are detrimental to product.
 - c. Recommended schedule for cleaning and maintenance.

B. Content for Moisture Protection and Weather Exposed Products:

- 1. Manufacturer's data, giving full information on products:
 - a. Applicable standards.
 - b. Chemical composition.
 - c. Details of installation.
- 2. Instructions for inspection, maintenance, and repair.

1.08 SUPPLEMENTS

A. The supplements listed below, following "End of Section", are part of this Specification.

- 1. Forms: Maintenance Summary Form.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

MAINTENANCE SUMMARY FORM

PROJECT: _____ CONTRACT NO.: _____

1. EQUIPMENT ITEM _____

2. MANUFACTURER _____

3. EQUIPMENT/TAG NUMBER(S) _____

4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) _____

5. NAMEPLATE DATA (hp, voltage, speed, etc.) _____

6. MANUFACTURER'S LOCAL REPRESENTATIVE _____

a. Name _____ Telephone No. _____

b. Address _____

7. MAINTENANCE REQUIREMENTS

Maintenance Operation Comments	Frequency	Lubricant (If Applicable)
List briefly each maintenance operation required and refer to specific information in manufacturer's standard maintenance manual, if applicable. (Reference to manufacturer's catalog or sales literature is not acceptable.)	List required frequency of each maintenance operation.	Refer by symbol to lubricant required.

SECTION 01 91 14
TESTING, INTEGRATION, AND STARTUP

PART 1 GENERAL

1.01 STARTUP

- A. The goal of startup is to verify proper performance and operation of the Facility.
- B. Testing, integration, and startup are complex portions of the Work required for satisfactory completion and require thorough planning and proper execution.
- C. Phase 1 Commissioning Model for the Morena Pump Station startup in the context of the overall Program integration and acceptance plan is attached at the end of this specification section.

1.02 DEFINITIONS

- A. Acceptance Testing: A contractually required, specific and measurable test, often with liquidated damages attached, to demonstrate a system or facility performs to its intended function (e.g. flow amounts, duration and quality criteria are met). A successor activity to Performance Testing. All major defects are resolved at this point.
- B. Distributed Control System Provider (DCSP): Entity who is responsible for the development and programming of the Facility DCS.
- C. Auxiliary Systems: Subsystems and systems selected by the Owner as critical to the operation and function of the Work. Auxiliary systems are more specifically identified in the Contract Documents.
- D. Commissioning:
 - 1. The disciplined and systematic process of assuring that all components, subsystems and systems of a constructed unit are designed, installed, tested and operated in conformance with the design intent, and functional intent and operational requirements of the Owner.
 - 2. This includes:
 - a. Proof testing of design intent using static check sheets, dynamic check sheets and defined procedures to ensure compliance with design drawings, data sheets and specifications.
 - b. Achieving a smooth and safe transition from an inert state to a completely tested, clean, leak tight, operable and safe unit ready for startup and performance testing.
 - c. All testing shown on Attachment 1 Commissioning Model.

- E. Components: Individual items of equipment or portions of the Work that when combined with other components make up subsystems or systems. Components may be minor items such as pressure gauges, or they may be significant items such as pump motors.
- F. Contract Documents: Construction Contract, Specifications and Drawings.
- G. Facility: The combined equipment and systems located to perform a specified function e.g. Morena Pump Station (MPS).
- H. Factory Acceptance Testing (FAT): All testing required to be conducted at the fabricator's / manufacturer's / vendor's off-site locations, witnessed or unwitnessed. Includes all such testing, regardless of the specific descriptive title used for said testing in the Contract Documents.
- I. Final Completion: Refer to the Contract Requirements and Supplementary Provisions
- J. Functional Testing: A test of a given component, subsystem or system to confirm its operation meets specifications and Contract requirements. Often a prerequisite to Performance and Acceptance Testing.
- K. Integration Period: This is the period occurring after Intermediate Substantial Completion and before Substantial Completion during which the MPS will be tested and operated as part of the overall Pure Water Program system, including the Morena Force Main and Brine/Centrates Pipeline, the NCPWF Influent Pump Station and Influent Conveyance, the NCWRP Expansion, the Metropolitan Biosolids Center Improvements, NCPWF and the North City Pure Water Pipeline, and Dechlorination Facilities.
- L. Intermediate Substantial Completion: The time at which the Project's operating facilities or systems are sufficiently complete to send screened and oxygenated wastewater flows to the NCWRP. All functional tests that can be performed with potable water shall be complete and facilities shall be fully operable to allow for a flow increase to the NCWRP for 120 days. Refer to Attachment 1 for commissioning model planned. The Contractor shall support all activities within the Integration period as described in Section 01 91 14, Testing, Integration, and Startup. Refer to Contract requirements and Supplementary Provisions.
- M. Joint Test Group (JTG): Workgroup consisting of personnel from the Engineer, Construction Manager, Owner, Contractor, and Subcontractors whose goal is to facilitate pre-startup and startup of the Facility. This work group shall also support the Integration Period testing as part of a larger work group from other Facilities.
- N. Major Equipment Systems: Systems, subsystems, or major equipment components selected by the Owner as critical to the operation and function of the

Work. Major equipment systems are more specifically identified in the Contract Documents.

- O. Manufacturer's Installation Inspection: Preliminary inspection conducted by Manufacturer or Manufacturer's accepted representative to confirm proper installation of components, systems, and subsystems.
- P. Mechanical/Electrical Functional Testing: Testing performed to confirm general performance of mechanical and electrical systems. Hydrostatic leak testing of pipes is an example. Electrical testing specified in Division 26 05 33, Electrical, shall be considered Mechanical/Electrical Functional Testing.
- Q. Performance Test: A defined test of a system, systems or facility over a period of 7 days, unless otherwise specified, to demonstrate the system or facility is fully operational and meets all specifications, performance objectives and Contract requirements. Performance testing will be done with NCPWF influent (tertiary treated wastewater) pumped from the NCWRP, as defined with these Contract Documents.
- R. Staging Site Demonstration: Startup phase during which the DCSP performs an FAT to test the proper communication and action of the DCSP-developed software system. This testing will be conducted offsite.
- S. Startup: The act of starting or operating a component, subsystem or system and testing its functionality and performance against defined metrics.
- T. Subsystems: A group of related equipment that performs a defined function and is an element of a larger system.
- U. Substantial Completion: Upon satisfactory completion of the 30-Day Systemwide facility Acceptance Test, See Attachment 1 Phase 1 Commissioning Model. Refer to Contract requirements and Supplementary Provisions.
- V. Systems: A group of related components, equipment or subsystems that perform a defined function or set of functions within a facility.
- W. Training: Classroom and equipment area instruction by Manufacturer or Manufacturer accepted representative intended to educate the Owner on the proper operation and maintenance of components, systems, and subsystems.
- X. Unit Process: Portion of the facility that performs a specific process function, such as high purity oxygen, screening facilities.
- Y. Beneficial Use: Utilization of a system, unit process, or facility by the Owner. Refer to Supplemental Special Provisions for further definition and extended warranty requirements for equipment placed into Beneficial Use.

1.03 SUBMITTALS

A. Action Submittals:

1. Startup Personnel Qualifications: The qualifications submittal for the Startup Manager and Project Integrator shall be provided at the Preconstruction Conference.
2. Startup Management Plan: Submitted within 60 days after Notice to Proceed.
3. Overall Facility Startup Plan.
4. Factory Acceptance Test Plans.
5. Acceptance Test Plans.
6. Startup Schedule:
 - a. Schedule shall be a detailed Oracle Primavera P6 schedule linked to the milestones and key startup activities contained in the Construction Schedule as specified in Section 01 32 00 Construction Progress Documentation.
 - b. The Startup Schedule shall include each phase of testing of for the systems defined herein.
 - c. Schedule shall be submitted in both XER and PDF format and updated monthly.
 - d. The detailed Startup Schedule shall be submitted no later than 6 months prior to the start of ORT Part 1 in the accepted Baseline Schedule, as specified in Section 01 32 00 Construction Progress Documentation.
7. Startup Results Submittal:
 - a. Include the following:
 - 1) Final minutes from all JTG meetings.
 - 2) Results documentation from all Factory Acceptance Testing.
 - 3) Completed test plans (endorsed by Construction Manager and Contractor).
 - 4) Record of all Training:
 - a) Training requests.
 - b) Agendas.
 - c) Sign in sheets.
 - d) Handouts.
 - e) Electronic copy of all training presentations.
 - 5) Record of all Manufacturer Services/Inspections.
 - 6) Record of all testing not covered above.

1.04 JOINT TEST GROUP (JTG)

A. Purpose:

1. The purpose of the JTG is to facilitate communication and collaboration between all parties required to successfully complete startup including but not limited to the following:

- a. Prepare test plans.
- b. Conduct testing.
- c. Oversee testing.
- d. Assign individual or multiple JTG personnel tasks associated with startup to be completed outside of the JTG workshops.

B. Personnel:

1. The following Owner personnel will participate in the JTG:
 - a. Engineer.
 - b. DCSP.
 - c. Owner's Representatives:
 - 1) Construction representative.
 - 2) Operations representative.
 - d. Construction Manager.
 - e. Owner Startup Manager.
 - f. Others as required.
2. The Contractor shall assign the following personnel to the JTG:
 - a. Contractor Startup Manager.
 - b. Project Integrator.
 - c. Electrical Subcontractor Management Representative.
 - d. Ozone Supplier Management Representative.
 - e. MF Supplier Management Representative.
 - f. RO Supplier Management Representative.
 - g. UV Advanced Oxidation Supplier Management Representative.

C. The JTG will participate in the following meetings:

1. Startup Preparation Workshops:
 - a. Status of equipment submittals and startup plan for overall facility.
 - b. Development of team.
 - c. Frequency: Every 2 weeks.
 - d. Duration: 4 hours minimum.
 - e. Start Date: 4 weeks after Notice to Proceed.
2. Startup Planning Workshops:
 - a. Preparation of test plans.
 - b. Review of equipment shop drawings.
 - c. Frequency: Every week.
 - d. Duration: 8 hours minimum.
 - e. Start Date: 6 months before anticipated commencement of functional testing.
3. Factory Acceptance Test Prep Workshops:
 - a. Preparation of factory test plans.
 - b. Address scheduling.
 - c. Frequency: Once per required FAT.
 - d. Duration: 8 hours minimum.
 - e. Start Date: 2 months prior to anticipated FAT date.

4. Pre-Startup Execution Workshops:
 - a. Finalize planning for startup activities.
 - b. Finalize test plans.
 - c. Address any supplier/manufacturer issues.
 - d. Frequency: Every week.
 - e. Duration: 8 hours minimum.
 - f. Start Date: 1 month before anticipated commencement of functional testing.
5. Startup Execution Workshops:
 - a. Current status of testing.
 - b. Identification of specific needs.
 - c. Identification and resolution of issues.
 - d. Frequency: Daily.
 - e. Duration: 4 hours minimum.
 - f. Start Date: Commencement of functional testing, through completion of 30-Day Facility Acceptance Testing.

D. Authority:

1. The Construction Manager will be the final authority on all disputes. Construction Manager's authority is not intended to compromise or change the Contractor's rights and responsibilities as described elsewhere in these Contract Documents.
2. The JTG may not independently amend or change the Contract Documents. However, the Contract Documents may be amended or changed according to the Contract Documents, based on JTG recommendations approved by the Construction Manager.

E. Contractor Participation:

1. The Contractor is required to participate in all JTG meetings and shall dedicate the required time and personnel to complete tasks assigned by the JTG. This shall include, but not be limited to the development of all startup and testing plans identified as being required to be led by the Contractor.
2. The Contractor shall include, in his lump sum bid, all costs associated with onsite and offsite testing described in these Specifications including travel, subsistence, lodging, etc.

1.05 ORGANIZATION OF STARTUP PHASES

- A. The following table summarizes the various phases of startup:

Description	Duration	Preceding Constraints	Comments
Submittals	As required to meet testing schedule		
Factory Acceptance Testing	As required to meet testing schedule	Approved submittals required prior to testing.	
Staging Site Demonstration	180 days	Delivery of DCS components to DCSP staging site. Completion of all FATs.	Done by DCSP
Mechanical/Electrical Functional Testing and Equipment Testing	As required to meet testing schedule for individual unit process	Complete all FATs. Complete equipment and piping installation. Approved submittals required prior to testing (including O&Ms).	Includes hydrostatic testing
PIC Operational Readiness Test Part 1	As required to meet testing schedule	Manufacturer's installation assistance and inspection. Completion of PICS Operational Readiness Test Part 1. Completion of staging site demonstration test and loading of application software. Approved submittals required prior to testing (including O&Ms).	

Description	Duration	Preceding Constraints	Comments
PIC Operational Readiness Test Part 2	As required to meet testing schedule	<p>Completion of PICS Operational Readiness Test Part 1.</p> <p>Completion of staging site demonstration test and loading of application software.</p> <p>Approved submittals required prior to testing (including O&Ms).</p>	
Functional and Performance Testing on Unit Processes	As required to meet testing schedule	<p>Completion of PIC Operational Readiness Test Part 2.</p> <p>Approved submittals required prior to testing (including O&Ms).</p>	See Attachment 1 for graphical presentation
Training	As specified	Completion of all functional and performance testing.	
Facility Commissioning	As required	Completion of Functional and Performance Testing of Unit Processes and Auxiliary Systems, and Pump Station, and Training.	
Integration Period Testing and Commissioning	120 days	<p>Intermediate Substantial Completion.</p> <p>Interfacing Facilities Ready to Test.</p>	Integrating the NCWRP, NCPWF, MPS, NCPWPS and MBC facilities

Description	Duration	Preceding Constraints	Comments
Facility Acceptance Test	30 days	Completion of commissioning of the unit processes. Manufacturer's CPI. Training. Approved submittals required prior to testing (including O&Ms).	

1.06 WORK RELATED TO THE FACILITY

- A. During the period between Intermediate Substantial Completion and Substantial Completion, the Owner will conduct integration procedures associated with the Facility and its coordinated operation with NCWRP, NCPWF, NCPWPS including the Dechlorination Facility, and Metropolitan Biosolids Center, and systems being constructed by others, such as the communications and control interface and COMNET upgrade. This integration will generally consist of communications system verification and a verification that the facilities can operate as one overall system.

1.07 CONTRACTOR STARTUP PERSONNEL

- A. Contractor shall provide personnel, both supervisory and from the applicable trades, who are experienced in startup, testing, and commissioning for the execution of the work described in these Contract Documents.
- B. Startup Manager: Only assigned duties are those specifically related to planning and execution of startup activities in support of the Work. The Startup Manager shall have the necessary experience to fully understand all startup requirements and the authority to dedicate Contractor's resources as required to execute the Work.
 1. The Contractor shall allocate the costs for the Startup Manager as a monthly allocation starting at the project limited NTP and terminating at Final Completion.
 2. Once the Owner and Construction Manager accept the Startup Manager, the Contractor shall not change the Startup Manager throughout the full period of performance of the Work, beginning after the limited NTP, without the express written permission of Construction Manager and Owner.
 3. The minimum scope of services to be managed and/or executed by the Startup Manager shall include the following tasks:

- a. Formation of an onsite startup team of supervisory staff, including the Contractor's Project Integrator, qualified in each and every element of the startup process required as part of the Work. This staff shall prepare all Contractor-performed startup and testing documentation and direct the associated startup activities, including all required Contractor and Subcontractor personnel required for testing. This requirement is also applicable to all factory testing, whether witnessed by Construction Manager or not.
 - b. Complete planning, development, and where required, the preparation of all Startup and Test Plans, testing procedures, schedules, and related prerequisite, and final documentation for startup activities required by the Contract Documents. This requirement is applicable to all required startup and/or testing plans, reports, and procedures, regardless of the specific portion of the Contract Documents where they may be specified or otherwise required.
 - c. Overall coordination and scheduling of all startup and testing activities. This shall include the development of detailed startup and testing schedules, integrated with Contractor's CPM schedule. It shall also include all coordination with the Owner and Construction Manager for operation of the system to accommodate test flows and joint testing activities.
 - d. Coordination of all manufacturers' startup activities and certification of proper installation and/or function as required by the Contract Documents.
 - e. Coordination, direction, and management of the actual day-to-day testing.
 - f. Review and certify all test results. Prepare and/or compile all versions of all test reports and related submittals. Prior to being submitted to the Construction Manager, all test reports shall be certified by the Startup Manager that the reports and associated test results comply with the Contract Documents.
 - g. Coordinate all testing and startup with the Engineer, Construction Manager, and Owner.
 - h. Integration with the vendor packaged control systems.
- C. Project Integrator: Only assigned duties are those specifically required to plan and execute the installation, interconnection, integration, and startup of the various PICS devices, panels, components, systems, and subsystems required for the Work. The Project Integrator shall have the necessary experience to fully understand all PICS and related devices, panels, components, systems, and subsystems installation, integration, and startup requirements and the authority to dedicate Contractor's resources as required to execute the Work.
- a. The Project Integrator shall not be the same person as the System Integrator for the Instrumentation and Control system.

2. The Contractor shall allocate the costs for the Project Integrator as a monthly allocation starting at the project limited NTP and terminating at Final Completion.
3. Once the Owner, RPR, and the Construction Manager accept the Project Integrator, the Contractor shall not change the Project Integrator throughout the full period of performance of the Work without the express written permission of RPR, the Construction Manager and Owner.
4. The minimum scope of services to be managed and/or executed by the Project Integrator shall include the following tasks:
 - a. Integration of all Process Instrumentation and Control System (PICS) components and related devices, panels, components, systems, and subsystems required to be provided as part of the Work, regardless of the actual supplier or prepackage nature of the supply.
 - b. Integration and coordination of the Process Instrumentation and Control System with all components provided as packaged systems or supplied with individual equipment suppliers.

D. The Startup Manager and the Project Integrator may not be the same person.

1.08 THE STARTUP MANAGEMENT PLAN

- A. The Contractor Startup Manager shall conduct a startup coordination workshop and prepare and submit a Startup Management Plan that describes how Contractor will accomplish the minimum scope of services and manage the daily startup activities. The coordination workshop shall, at a minimum, include the Contractor's Startup Manager, Project Integrator, and Project Superintendent. The requirements for Startup requirements for the Work will be reviewed at the workshop. The Startup Management Plan shall be prepared immediately following the workshop and shall include a detailed description, including procedures and examples of how the Startup Team will manage the interface between Contractor's trades, Contractor's management, Contractor's subcontractors, Contractor's PLC programmers, Construction Manager's field team, Owner, and the DCSP programming team. The workshop shall be conducted within 4 weeks of Notice to Proceed. The draft Startup Management Plan shall be completed and submitted within 4 weeks of the startup coordination workshop. The plan will be reviewed and processed for acceptance in accordance with Section 01 33 00, Submittal Procedures.

1.09 THE STARTUP AND TEST PLANS

- A. The Contractor under the guidance of the JTG will develop specific plans for the testing of all elements of the Facility. These plans shall outline the detailed sequence of activities necessary to confirm the proper operation of every component, system, and subsystem.
- B. Test plans will be prepared for each phase of startup where testing is required including, but not limited to the following:

1. Factory acceptance testing.
2. Staging site demonstration.
3. Manufacturer's installation inspection.
4. Mechanical/electrical functional testing.
5. Operational Readiness Test Part 1.
6. Operational Readiness Test Part 2.
7. Functional and performance testing on the following unit processes shall have individual test plans for each unit process with its auxiliary systems.
 - a. Screening Facility.
 - b. High Purity Oxygen.
 - c. Influent and Overflow flow control.
8. Pump Performance Testing
9. Pre-Selected Equipment Permit Testing and Extended Performance Tests.

C. Test plans will be developed as described below:

1. The Overall Startup Plan shall include six main sections arranged as follows:
 - a. Overall Startup Plan Summary.
 - b. Factory Acceptance Testing.
 - c. Operational Readiness Testing.
 - d. Functional and Performance Testing.
 - e. Systemwide 120-Day Integration Period. Startup Schedule.
2. The contents and requirements pertaining to each section are described below. It is expected that each section could require multiple volumes, depending on the size and complexity of the Work.
3. Overall Startup Plan Summary:
 - a. The Overall Startup Plan Summary is the master startup plan document. It includes a brief summary of all testing and startup activities and provides the basic organization of the startup and testing program. It shall be submitted in advance of any other test plans except for Factory Acceptance Test Plans as described herein.
 - b. The Overall Startup Plan Summary shall include the following:
 - 1) Introduction with a narrative description of the overall testing and startup program planned for implementation by the Contractor. Tables and flowcharts in addition to those described below should be included to clearly illustrate the Contractor's intent for the testing and startup program.
 - 2) List of major Acceptance Test Plan categories. Factory Acceptance Testing shall be a specific subset for each category. At a minimum, a separate acceptance test plan shall be prepared for the following four categories:
 - a) All hydrostatic testing of piping and appurtenances, pipelines, aqueducts, valves, water holding structures, pressure vessels, tanks, and any other component, subsystem, or system specified to be hydrostatic or pressure tested.

- b) Unless otherwise indicated in the Contract Documents, all other testing.
 - c. In addition to the breakdown listed above, the Contractor may propose to further divide, or group, the testing into categories assigned by process area or physical site delineation. However, said division or grouping must be agreed to, in writing, by the Construction Manager prior to the initial submittal of the Overall Startup Plan Summary. The Construction Manager will be the sole judge as to the acceptability of the additional division or grouping of testing proposed by the Contractor.
 - 1) Complete listing of component, subsystem, and system tests within each Test Plan category. Special focus should be placed on a complete listing of tests for all major equipment items and all auxiliary systems identified in the Contract Document. In any case, all components, sub-systems, and systems and their associated testing shall be included in the listing.
 - 2) Complete listing of Factory Acceptance Testing (witnessed and unwitnessed). All specified Factory Acceptance Testing will be required to be successfully completed to achieve Substantial Completion. It may be to the Contractor's benefit to obtain concurrence on the listing of Factory Acceptance Testing early in the project. In that case, this section would simply be a copy of the material already agreed to, with any updates.
 - 3) Flowchart the full testing program from Factory Acceptance Testing and initial shakedown through Acceptance Testing and ending at Substantial Completion. The flowchart shall demonstrate the precedence, or order, by which the testing will take place. The order of testing shall be such that it is consistent with the requirements of the Contract Documents.
 - 4) Provide a preliminary schedule illustrating the timeline associated with the flowchart described above. This schedule does not need to be CPM based as it will be replaced with schedules developed according to requirements stated below for the Startup Schedule.
- 4. Factory Acceptance Test Plan:
 - a. The Factory Test Plan shall be a comprehensive description of the complete test setup, procedures, analyses, and reporting program for each factory test required for the Work. Detailed step by step procedures describing all activities in the test process shall be included for all factory tests, witnessed or unwitnessed. Unwitnessed readiness tests prior to witnessed PIC Factory Acceptance Test are exempt from this requirement. However, all other shop or factory tests, witnessed, or unwitnessed, that require testing to demonstrate compliance with the Contract Documents and require submittal of test results, must have a Factory Acceptance Test Plan accepted by the Engineer and Construction Manager at least 4 weeks prior to the test.

- b. At a minimum, the following shall be included for each Factory Acceptance Test Plan:
- 1) Identification information for the component, subsystem, or system being tested. All applicable tag numbers shall be included.
 - 2) A narrative description of the purpose and goals of the test.
 - 3) Pass/Fail criteria.
 - 4) A listing and copy of all pertinent reference documents (Contract Documents and industry standards or specifications applicable to the testing).
 - 5) Complete description, including drawings, for all test stands and/or test apparatuses.
 - 6) Credentials of test personnel.
 - 7) Descriptions of all test equipment.
 - 8) Descriptions and product information, including calibration certificates, for all test instruments.
 - 9) Step-by-step detailed procedures of how the test will be conducted. The level of detail shall be sufficient for any witness with a rudimentary technical aptitude to be able to follow the steps and develop confidence that the tests were being performed as planned. All steps are significant, and all steps shall be included in the procedures.
 - 10) Copies of the actual data logs and/or data recording forms that will be used for the test.
 - 11) A complete disclosure of all calculation methodologies.
 - 12) Sample computations or analyses with results in the same format as the final report. This item is intended to demonstrate how data collected will be used to generate final results. A sample shall be included for each type of computation required for the test and analysis of results.
 - 13) A detailed outline of the final factory testing report.
- c. Each factory test shall be described separately. Factory Acceptance Test Plans are the only portion of the Startup and Test Plans that will be accepted prior to acceptance of the Overall Startup Plan Summary. Also, Factory Acceptance Test Plans will be allowed to be submitted and reviewed individually. However, the Overall Startup Plan Summary is required to summarize the factory testing program and all submittal numbers for individually submitted Factory Acceptance Test Plans shall be accurately accounted for in that document.
- d. This section is not intended to supersede the specific requirements for PIC/DCS Factory Acceptance Tests (FATs) described for the Work. However, Factory Acceptance Test Plans shall be provided for the PIC/DCS FATs in accordance with these requirements. In the case of conflict, the specific testing requirements of the FATs in the PIC/DCS specification sections shall prevail. All other Factory Acceptance

Testing Plans shall strictly comply with this section unless otherwise approved by the Construction Manager.

D. Contractor shall execute these test plans with the witnessing of the Construction Manager and/or Engineer and/or Owner.

E. For startup and testing purposes, the following designations are made:

1. Main Unit Processes:
 - a. High Purity Oxygen.
 - b. Screening Facility.
 - c. Influent and Overflow Sewer System.
 - d. DCS/Control:
 - 1) DCS with UPS.
 - 2) Instruments.
 - 3) Interconnection and control cables/wiring.
 - 4) Appurtenant communication and interconnection devices and equipment.
 - 5) Fiber Optic Communications Systems.
2. Auxiliary Systems:
 - a. Main Piping:
 - 1) Associated main discharge pipe valves and piping out to NCWRP, and other facility interfaces
 - 2) Yard piping.
 - 3) Appurtenant instruments, devices, valves, and piping.
 - b. Building Systems (all structures, as applicable):
 - 1) Bridge cranes.
 - 2) Hoists.
 - 3) HVAC.
 - 4) Potable water.
 - 5) Non-potable utility water.
 - 6) Lighting.
 - 7) Sump pumps.
 - 8) Miscellaneous instruments and devices (i.e., flood switches).
 - c. Corrosion Control: Coating materials.
 - d. Landscaping:
 - 1) Controllers.
 - 2) Appurtenant instruments, devices, valves, sprinklers, and piping.
 - e. Security Systems:
 - 1) Access control devices.
 - 2) Cameras.
 - 3) Door and Hatch Switches
 - 4) Other security devices.
 - f. Fire Protection:
 - 1) Automatic call systems.

- 2) Detection devices.
- 3) Fire protection devices.

F. Contractor shall submit the completed test reports as part of the Startup Results Submittal.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL STARTUP AND TESTING REQUIREMENTS

- A. Contractor is responsible for the complete testing, check out, startup, and commissioning of all elements of the Facility. Verify these activities through daily inspection reports, test records/reports, onsite vendor certifications, specified testing, and by other appropriate means. Startup and Testing Plans and Test Reports shall include specific language to demonstrate that the requirements stated herein are planned, executed, and accomplished. The requirements below are complementary to those indicated elsewhere in the Contract Documents.
- B. Engineer and Construction Manager shall be solely responsible for determining the party responsible for conducting any and all corrective actions and for determining the party responsible for any and all delays.
- C. Facility Startup Meetings:
 1. Schedule and attend a minimum of twenty facility startup meetings. The first of such meetings shall be held prior to submitting Facility Startup Plan and shall include preliminary discussions regarding such plan.
 2. Agenda items shall include, but not limited to, content of Facility Startup Plan, coordination needed between various parties in attendance, and potential problems associated with startup.
 3. Attendees will include:
 - a. Contractor.
 - b. Contractor's designated quality control representative.
 - c. Subcontractors and equipment manufacturer's representatives whom Contractor deems to be directly involved in facility startup.
 - d. Construction Manager.
 - e. Engineer's Representative.
 - f. Owner's operational personnel.
 - g. Others as required by Contract Documents or as deemed necessary by Contractor or City.
- D. Provide temporary valves, gauges, piping, test equipment and other materials and equipment required for testing and startup.

- E. Owner will:
 - 1. Provide water, power, chemicals, and other items as required for startup, unless otherwise indicated.
 - 2. Operate process units and facility with support of Contractor.
 - 3. Provide labor and materials as required for laboratory analyses.

3.02 FACTORY ACCEPTANCE TESTING

- A. Contractor shall coordinate the timing and location of all Factory Acceptance Testing (FAT) including, but not limited to the following items:
 - 1. High Purity Oxygen
 - 2. Screens
 - 3. Vertical Turbine Pumps
 - 4. Any other systems containing PLC's or complex control panels as identified by the Construction Manager.
- B. The JTG will prepare the test plans for each FAT or review manufacturer standard test plans in accordance with these Contract Documents. The Contractor's Startup Manager shall be the lead representative for the development of these test plans.
- C. The following Contractor personnel are required to attend all FATs:
 - 1. Startup Manager.
 - 2. Project Integrator.
 - 3. Manufacturer Representative(s).

3.03 STAGING SITE DEMONSTRATION

- A. The DCSP shall provide the required items for the development of the application software programming.

3.04 MANUFACTURER'S INSTALLATION INSPECTION

- A. When Contractor has completed installation of components, systems, or subsystems, they shall schedule a manufacturer inspection. This manufacturer or approved manufacturer's representative shall certify that the component, system, or subsystem is properly installed and that testing of the component, system, or subsystem may commence.
- B. Preparation:
 - 1. Complete installation before testing.
 - 2. Furnish qualified manufacturers' representatives, when required by individual Specification sections.
 - 3. Cleaning and Checking:
 - a. Prior to beginning functional testing:

- 1) Calibrate testing equipment in accordance with manufacturer's instructions.
 - 2) Inspect and clean equipment, devices, connected piping, and structures to ensure they are free of foreign material.
 - 3) Lubricate equipment in accordance with manufacturer's instructions.
 - 4) Turn rotating equipment by hand when possible to confirm that equipment is not bound.
 - 5) Open and close valves by hand and operate other devices to check for binding, interference, or improper functioning.
 - 6) Check power supply to electric-powered equipment for correct voltage.
 - 7) Adjust clearances and torque.
 - 8) Test piping for leaks.
4. Ready-to-test determination will be by Engineer and Construction Manager based at least on the following:
- a. Acceptable Operation and Maintenance Data.
 - b. Notification by Contractor of equipment readiness for testing.
 - c. Receipt of Manufacturer's Certificate of Proper Installation, if so specified.
 - d. Adequate completion of work adjacent to, or interfacing with, equipment to be tested, including Membrane Equipment System.
 - e. Availability and acceptability of manufacturer's representative, when specified, to assist in testing of respective equipment.
 - f. Satisfactory fulfillment of other specified manufacturer's responsibilities.
 - g. Equipment and electrical tagging complete.
 - h. Delivery of all spare parts and special tools.

3.05 MECHANICAL/ELECTRICAL FUNCTIONAL TESTING

- A. After each mechanical system is completely installed, the Contractor shall confirm proper installation according to these Contract Documents. Mechanical system testing shall include, but not be limited to the following system types:
1. Piping (buried and exposed).
 2. HVAC systems.

3.06 OPERATIONAL READINESS TEST PART 1

- A. This work shall consist of manual verification of controls, verification of instrument calibration, and the completion of all loop checks.
- B. The Operational Readiness Test Part 1 shall be performed by the PIC Integrator to test and document the PIC, excluding DCSP provided applications software, is ready for operation.

3.07 OPERATIONAL READINESS TEST PART 2

- A. The Operational Readiness Test shall be a coordinated effort between the Contractor, PIC System Integrator, and DCSP to confirm the PIC, including the applications software is ready for operation.

3.08 FUNCTIONAL TESTING ON UNIT PROCESSES

- A. Functional Testing shall include successful completion of all specified testing and related work required by the Contract Documents. Successful Functional Testing will demonstrate that all portions of the unit processes or auxiliary systems are functional, operational, installed as specified, and perform their intended function.
- B. Demonstration of the ability of all portions of the facilities to successfully operate, as specified, over their full range of capacity or capability is required as part of Functional Testing. Functional Testing shall include all balancing, adjustments, specified tests (both factory and field), tuning, and startup activities not included in Performance Testing.
- C. Functional testing shall be performed using the process flow stream indicated in Attachment 1.
- D. Functional Testing shall include testing of all specified shutdown conditions, failure conditions, pumping station power fail and restart, bypass conditions, and failure resets. Functional Testing shall include all equipment testing for operating parameters. Functional Testing shall not be considered complete until all testing produces successful results and all documentation of tests and all manufacturer's certifications required by the Contract Documents are submitted and accepted by the Construction Manager. Functional Testing shall be successfully completed prior to conducting and Performance Testing or Facility Commissioning.
- E. Equipment Testing shall be conducted as part of Functional Testing.
 - 1. Furnish the services of an experienced and authorized representative of the manufacturer or supplier of each item of equipment indicated in the equipment schedules (excluding manually-operated valves smaller than 24 inches in size, injectors, tanks, batch-type disc meters, rotameters, and other minor items of equipment specifically exempted by the Engineer or Construction Manager in writing), who shall visit the Site of the Work and inspect, check, adjust if necessary, and approve the equipment installation. In each case, arrange to have the supplier or manufacturer's representative revisit the Site as often as necessary until any and all trouble is corrected, and the equipment installation and operation are satisfactory to the Construction Manager.
 - 2. Contractor shall require that each manufacturer's representative furnish to the Construction Manager a written report addressed to the City certifying that the equipment has been properly installed and lubricated, is in accurate alignment, is free from any undue stress imposed by connecting piping or

anchor bolts and has been operated satisfactorily over its full range of capability and under full-load conditions.

3. Contractor shall require that the electrical and/or instrumentation subcontractor and the adjustable speed drive supplier furnish a written and signed report to the Construction Manager certifying that the motor control logic for the equipment items that reside in motor control centers, control panels, control boards, microprocessors, computers, and the like furnished by the electrical and/or instrumentation Subcontractor have been properly tested and calibrated. The report shall certify that the control logic for equipment startup, shutdown, sequencing, resets, interlocks, and emergency shutdown has been tested and is properly operating. The Contractor shall also sign said certification.

3.09 EQUIPMENT PERFORMANCE TESTING

- A. Testing specified within specific equipment specifications to verify performance requirements of a piece of equipment.
- B. This testing shall be performed by the equipment supplier with support from the Contractor.
- C. The method for testing to validate the performance requirements shall be provided in submitted and approved test plan submittals.

3.10 SYSTEM PERFORMANCE TESTING

- A. Testing of the defined main unit process systems over the specified period of time to demonstrate that the unit process is fully operation and meets all specifications, performance objectives and Contract requirements.
- B. Complete the performance testing of each upstream unit process prior to performance testing of a downstream unit process in order to provide each unit process with the required influent water quality conditions for operation.
- C. Submit a performance testing plan that incorporates the sequences and water supplies shown in Attachment 1 and provide temporary connections as required for the testing operations indicated.
- D. Each unit process system shall continuously meet performance requirements specified and shall operate without fault, failure, or defect for a continuous period.
 1. Individual equipment/system failures that are corrected within 24 hours and do not prevent the entire process from continuously satisfying the established operational requirements shall not require the consecutive-day test to be restarted unless the failure recurs.
 2. Restart the consecutive test period for any of the following conditions:
 - a. Any failure of the complete unit process system to meet operational requirements.

- b. When malfunctions or deficiencies cause shutdown or partial operation of the unit process system.
- c. Any individual equipment/system failure that meets any of the following conditions:
 - 1) Requires more than 24 hours to correct.
 - 2) Recurs within the 24-hour correction period requiring further correction.
- d. Immediately correct defects in material, workmanship, or equipment/system which became evident during Performance Testing.

E. Performance Testing Requirements and Durations.

- 1. Conduct tests as specified in this Section and as required in the process startup specification sections for each main unit process system. As indicated in Attachment 1, unless otherwise approved by the Construction Manager, performance testing will commence upon completion of the increase of flow to the NCWRP.
- 2. Main Unit Process Tests. – 7 continuous days
- 3. The specified test duration represents the continuous operation of the system.

F. Temporary Facilities.

- 1. Install temporary piping, valves, hoses, supports and materials as required for testing.
- 2. Permanent facilities use potable water for various processes,

3.11 FACILITY COMMISSIONING

A. Facility Commissioning Testing:

- 1. The disciplined and systematic process of assuring that all components, subsystems and systems of a constructed unit are designed, installed, tested and operated in conformance with the design intent, and functional intent and operational requirements of the Owner.
- 2. Notify Construction Manager, Engineer and Owner in writing at least 10 days prior to scheduled date of test.
- 3. Commissioning shall not commence until equipment has been accepted by Construction Manager and Engineer as having satisfied performance test requirements specified.
- 4. Type of fluid, gas, or solid for testing shall be as specified.
- 5. Unless otherwise indicated, furnish labor, materials, and supplies for conducting the test and taking samples and performance measurements.
- 6. Prepare Test Reports summarizing test method and results.
- 7. When, in Construction Manager's and Engineer's opinion, the integrated facility operates as specified and is accepted as to conforming to Contract

requirements. Such acceptance will be evidenced by Construction Manager's and Engineer's signature on Facility Commissioning Report.

3.12 TRAINING

- A. All components, systems, or subsystems require separate training by the manufacturer.
- B. Training for each component, system, or subsystem shall be a minimum of 4 hours if no specific requirements are described in the individual specification sections.
- C. All training shall be requested at least 14 days in advance of proposed training date.
 - 1. Proposed training shall be requested by the Contractor in an acceptable format including the following information as a minimum:
 - a. Description of training.
 - b. Name and contact information of trainer.
 - c. Location of training.
 - d. Proposed date.
 - e. Alternative dates (if applicable).
 - f. Proposed start time.
 - g. Proposed duration.
 - h. Proposed detailed agenda including topics, times, breaks, etc.
- D. All training shall be scheduled through the Construction Manager.
- E. If suitable training facilities are not available at the Facility, Contractor shall arrange and pay for training offsite.

3.13 INTEGRATION PERIOD TESTING

- A. A 120-Day time period commencing 120 days after Intermediate Substantial Completion during which the overall Pure Water Program system will be tested and operated, including the Morena Conveyance, the NCWRP Expansion, NCPWF Influent Pump Station and Conveyance, NCPWF the Metropolitan Biosolids Center Improvements, the NCPW Pump Station and the NCPWPL, and Dechlorination Facilities. The project milestone for the commencement of the 120 Day Integration Period is 120 days after Intermediate Substantial Completion. The overall logic of the 120-Day Integration Period is shown on Attachment 1 – Phase 1 Commissioning Model.
- B. The testing during this period shall be led by the Construction Manager (CM). The JTG shall support the CM in the development of the test plans and in the Integration Period testing process.

- C. The costs for the support during the Integration Period shall be covered under a lump sum Bid Item
- D. Successful completion of the Integration Period testing shall be a prerequisite to Substantial Completion.
- E. The Contractor is advised that the entire time between Intermediate Substantial Completion and Substantial Completion will be considered the Integration Period, even though the NCPWF Acceptance Test is not expected to be conducted until sometime during the later portion of the period. All Work applicable to the period between Intermediate Substantial Completion and Substantial Completion shall apply to all activities conducted during that period whether specifically designated for any particular activity or not.
- F. The Contractor shall provide personnel on a 3-shift, 24-hour per day basis to maintain the Work as directed by the Construction Manager during the Integration Period. The Contractor shall provide a minimum of 2 persons (actual distribution to be as directed by the Construction Manager) for each 8-hour shift. This coverage shall be for 24 hours per day, 7 days per week for the full duration of the period unless otherwise designated by the Construction Manager. Personnel shall be properly trained, experienced, and qualified to maintain the Work. The Contractor shall submit credentials of said personnel demonstrating proper training and qualifications. The Construction Manager shall be the sole judge as to the suitability of the personnel to be provided.
- G. An estimated quantity of 5760 hours has been allocated for the designated maintenance personnel during the Integration Period at the hourly rate of the Contractor's support staff. Time paid for these maintenance personnel will be verified and approved by the Construction Manager.
- H. Construction Manager may elect to increase or decrease the number of maintenance personnel to be provided at any time during the Integration Period. Any allowance hours not used by the Contractor due to a reduction in the number of personnel will be deducted from the total allowance amount. There shall be no damages for any lost compensation due to reduction of the number of allowance hours actually used during the Integration Period.
- I. Contractor shall maintain the Work as directed by the Construction Manager. Flow rates, delivery locations, equipment used, and other related operational aspects of the system shall be closely coordinated with the Construction Manager and the City.
- J. Contractor shall keep on 24-hour standby and provide all crews, materials, and equipment required to repair, replace adjust, balance, modify and provide other services as may be required to immediately correct all failures or malfunctions of any kind.

- K. In addition to maintenance personnel, Contractor shall keep on standby and provide technicians who were actually involved in the installation of the local fiber optic/DCS network, serial links, instruments, and all control wiring at the various facilities included in the Work. A minimum of two technicians shall be onsite 8 hours per day, 6 days per week, during the Integration Period and on call 24 hours per day, 7 days per week. All technicians used during the Period shall have a thorough understanding of the system and be capable of taking corrective action as may be needed.
- L. Authorized representatives of equipment suppliers or manufacturers shall certify that all corrective actions for all defects, malfunctions, faulty equipment operation, calibration, adjustment, or related flaws are complete and acceptable.

3.14 FACILITY ACCEPTANCE TEST

- A. The Facility Acceptance Test, commencing immediately upon completion of the 120-Day Integration Period as shown on Attachment 1, shall be a 30-day operational run of the completed systems demonstrating that all portions of the facility operate continuously as intended.
- B. All aspects of the Work and all Project facilities must be functional and operate in automatic mode 24 hours per day, 7 days per week during the acceptance test at varying flow rates established by the Construction Manager.
- C. Unless indicated otherwise, if any item fails or malfunctions during the test, the item shall be repaired, and the test restarted at time zero with no credit given for the operating time before the aforementioned failure or malfunction. Malfunctions meeting all of the following conditions, in the opinion of the Owner/Construction Manager, will not be considered grounds for restarting the test at time zero:
 - 1. Malfunctions that do not cause any interruption of the continuous operation of any other components, subsystems, systems, and equipment during the acceptance test.
 - 2. Malfunctions that are corrected without causing or requiring any components, subsystems, systems, and equipment to cease operations during the acceptance.
 - 3. Malfunctions that are corrected properly and permanently, in the opinion of the Owner and Construction Manager, within 4 hours of the time the malfunction is detected (the 4-hour period includes the time required to locate the cause of the malfunction and shall begin upon Contractor's notification from the Construction Manager that a malfunction exists and shall end when the item is corrected and the system is successfully placed back into operation).
- D. Time lost during the test for equipment repairs, wiring corrections, control point settings, or other reasons that are not determined by the Construction Manager to

be grounds to restart the test shall be justifiable cause for extending the test duration by an amount of time equal to the time required to repair the problems.

- E. Operation of the system for the acceptance test shall be conducted on a schedule or plan of operations developed by the JTG and supported by Contractor as specified. The Contractor shall provide personnel to operate the Work and support said testing activities to be performed jointly with the Construction Manager in accordance with a test plan prepared by the JTG.
- F. During the test, furnish the services of authorized representatives of the manufacturers, in addition to those services required in support of other testing, as necessary, to correct faulty equipment operation, calibration, adjustment, or related flaws.
- G. Contractor's acceptance test personnel shall include qualified representatives for the electrical and instrumentation crews as indicated for Acceptance Testing.
- H. The Contractor's warrantee period.

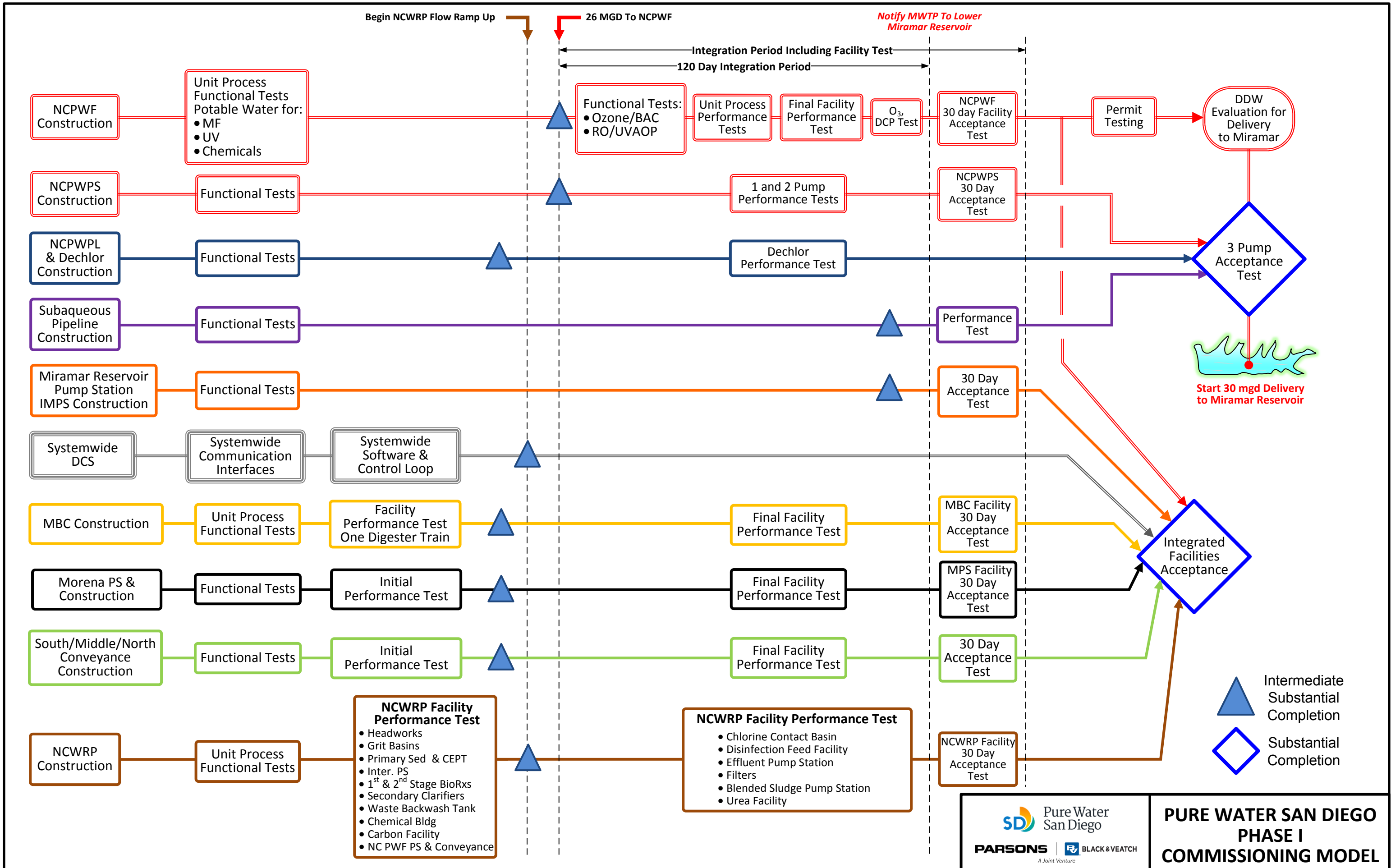
3.15 WITNESSING AND SUPERINTENDENCE

- A. The Engineer, Owner, Construction Manager, and others as necessary shall be allowed to witness all testing conducted during any phase of startup.
- B. The Contractor shall maintain overall superintendence of the Work during all phases of startup.
- C. The Contractor shall promptly and permanently repair damage to any portion of the Work during startup and testing.
 - 1. All repair work shall be performed by the manufacturer or with manufacturer's approved published methods.
- D. The Contractor shall perform all scheduled maintenance in strict compliance with manufacturers' published procedures and with products acceptable to manufacturers.
- E. Authorized representatives of equipment suppliers or manufacturers shall certify that all corrective actions for all defects, malfunctions, faulty equipment operation, calibration, adjustment, or related flaws are complete and acceptable.
- F. The Contractor shall keep on 24-hour local standby and provide all crews, materials, and equipment required to repair, replace adjust, balance, modify and provide other services as may be required to immediately correct all failures or malfunctions of any kind.

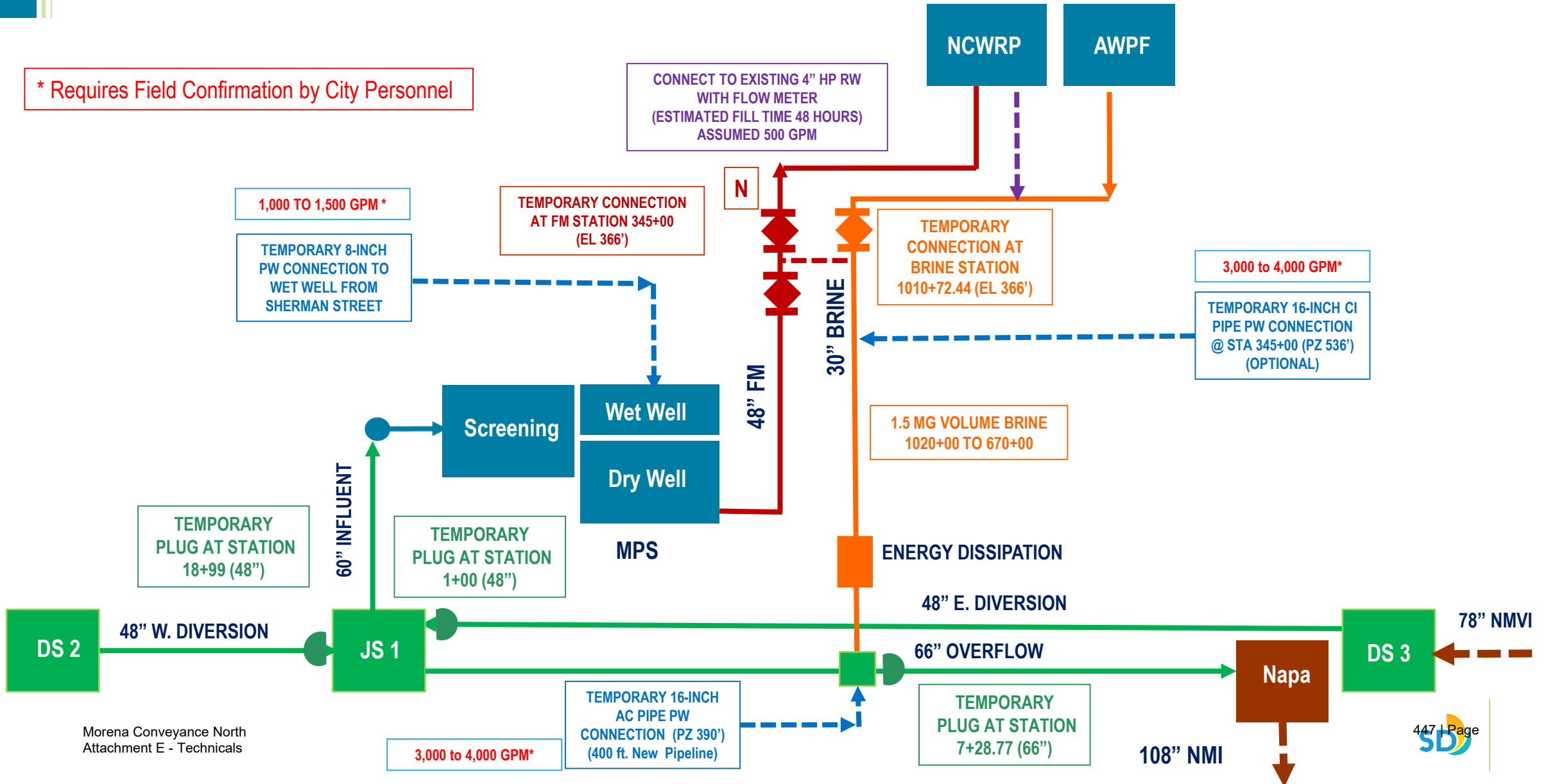
3.16 SUPPLEMENT

- A. The supplement listed below, following “End of Section,” is part of this Specification.
1. Attachment 1, Phase 1 Commissioning Model
 2. Attachment 2, Proposed MPS Testing System Schematic

END OF SECTION



PROPOSED MPS TESTING SYSTEM SCHEMATIC



SECTION 26 05 33 RACEWAY AND BOXES

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards that shall be complied with for work in this section:
1. American Association of State Highway and Transportation Officials (AASHTO): HB, Standard Specifications for Highway Bridges.
 2. ASTM International (ASTM):
 - a. A123/123M, Standard Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products.
 - b. A167, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - c. A240/A240M, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
 - d. C857, Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.
 - e. D149, Standard Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies.
 3. Telecommunications Industry Association (TIA): 569B, Commercial Building Standard for Telecommunications Pathways and Spaces.
 4. National Electrical Contractor's Association, Inc. (NECA): Installation standards.
 5. National Electrical Manufacturers Association (NEMA):
 - a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
 - b. C80.1, Electrical Rigid Steel Conduit (ERSC).
 - c. C80.3, Steel Electrical Metallic Tubing (EMT).
 - d. C80.5, Electrical Rigid Aluminum Conduit (ERAC).
 - e. C80.6, Electrical Intermediate Metal Conduit (EIMC).
 - f. RN 1, Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
 - g. TC 2, Electrical Polyvinyl Chloride (PVC) Conduit.
 - h. TC 3, Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing.
 - i. TC 6, Polyvinyl Chloride (PVC) Plastic Utilities Duct for Underground Installation.
 - j. TC 14, Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.
 6. National Fire Protection Association (NFPA): 70, National Electrical Code (NEC).

7. Underwriters Laboratories Inc. (UL):
 - a. 1, Standard for Safety for Flexible Metal Conduit.
 - b. 5, Standard for Safety for Surface Metal Raceways and Fittings.
 - c. 6, Standard for Safety for Electrical Rigid Metal Conduit – Steel.
 - d. 6A, Standard for Safety for Electrical Rigid Metal Conduit – Aluminum, Red Brass and Stainless.
 - e. 360, Standard for Safety for Liquid-Tight Flexible Steel Conduit.
 - f. 514B, Standard for Safety for Conduit, Tubing, and Cable Fittings.
 - g. 651, Standard for Safety for Schedule 40 and 80 Rigid PVC Conduit and Fittings.
 - h. 651A, Standard for Safety for Type EB and A Rigid PVC Conduit and HDPE Conduit.
 - i. 797, Standard for Safety for Electrical Metallic Tubing – Steel.
 - j. 870, Standard for Safety for Wireways, Auxiliary Gutters, and Associated Fittings.
 - k. 1242, Standard for Safety for Electrical Intermediate Metal Conduit – Steel.
 - l. 1660, Standard for Safety for Liquid-Tight Flexible Nonmetallic Conduit.
 - m. 1684, Standard for Safety for Reinforced Thermosetting Resin Conduit (RTRC) and Fittings.
 - n. 2024, Standard for Safety for Optical Fiber and Communication Cable Raceway.

1.02 SUBMITTALS

A. Action Submittals:

1. Manufacturer's Literature:
 - a. Rigid galvanized steel conduit.
 - b. Intermediate metal conduit.
 - c. Electric metallic tubing.
 - d. Rigid aluminum conduit.
 - e. PVC Schedule 40 conduit.
 - f. PVC Schedule 80 conduit.
 - g. PVC-coated rigid galvanized steel conduit.
 - h. Flexible metal, liquid-tight conduit.
 - i. Flexible metal, nonliquid-tight conduit.
 - j. Conduit fittings.
 - k. Wireways.
 - l. Surface metal raceway.
 - m. Device boxes for use in hazardous areas.
 - n. Junction and pull boxes used at or below grade.
 - o. Large junction and pull boxes.
 - p. Terminal junction boxes.
2. Precast Handholes:

- a. Dimensional drawings and descriptive literature.
- b. Traffic loading calculations.
- c. Accessory information.
- 3. Equipment and machinery proposed for bending metal conduit.
- 4. Method for bending PVC conduit less than 30 degrees.
- 5. Seismic anchorage and bracing drawings and cut sheets
- 6. Conduit Layout:
 - a. Provide drawings for underground and concealed conduits including, but not limited to ductbanks, under floor slabs, concealed in floor slabs, and concealed in walls.
 - b. Provide plan and section showing arrangement and location of conduit and duct bank required for:
 - 1) Low and medium voltage feeder and branch circuits.
 - 2) Instrumentation and control systems.
 - 3) Communications systems.
 - 4) Empty conduit for future use.
 - c. Reproducible; scale not greater than 1 inch equals 20 feet.

B. Informational Submittals:

- 1. Seismic anchorage and bracing calculations
- 2. Component and attachment testing seismic certificate of compliance
- 3. Manufacturer's certification of training for PVC-coated rigid galvanized steel conduit installer.

1.03 QUALITY ASSURANCE

A. 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 scope of standards published by Underwriters Laboratories, Inc. shall conform to those standards and shall have an applied UL listing mark.

- B. PVC-Coated, Rigid Galvanized Steel Conduit Installer: Certified by conduit manufacturer as having received minimum 2 hours of training on installation procedures.

PART 2 PRODUCTS

2.01 CONDUIT AND TUBING

A. Rigid Galvanized Steel Conduit (RGS):

1. Meet requirements of NEMA C80.1 and UL 6.
 2. Material: Hot-dip galvanized with chromated protective layer.
- B. Intermediate Metal Conduit (IMC):
1. Meet requirements of NEMA C80.6 and UL 1242.
 2. Material: Hot-dip galvanized with chromated and lacquered protective layer.
- C. Electric Metallic Tubing (EMT):
1. Meet requirements of NEMA C80.3 and UL 797.
 2. Material: Hot-dip galvanized with chromated and lacquered protective layer.
- D. Rigid Aluminum Conduit:
1. Meet requirements of NEMA C80.5 and UL 6A.
 2. Material: Type 6063, copper-free aluminum alloy.
- E. PVC Schedule 40 Conduit:
1. Meet requirements of NEMA TC 2 and UL 651.
 2. UL listed for concrete encasement, underground direct burial, concealed or direct sunlight exposure, and 90 degrees C insulated conductors.
- F. PVC Schedule 80 Conduit:
1. Meet requirements of NEMA TC 2 and UL 651.
 2. UL listed for concrete encasement, underground direct burial, concealed or direct sunlight exposure, and 90 degrees C insulated conductors.
- G. Fiberglass Conduit:
1. Meet requirements of NEMA TC 14 and UL 1684.
 2. Winding: Single circuit with angle as close to 54.75 as possible.
 3. Resin System: Epoxy based using and anhydride curing agent.
 4. Use carbon black as ultraviolet inhibitor.
 5. Toxicity: Conduit shall not contain compounds that can release halogens in more than trace amounts when burning.
 6. Dielectric Strength: Exceed 400 volts per mil when tested in accordance with ASTM D149.
 7. Jointing System: Two-part epoxy adhesive supplied by conduit manufacturer.
 8. Manufacturers:
 - a. Champion Fiberglass.
 - b. Osburn Associates.
 - c. FRE Composites, Inc.

- H. PVC-Coated Rigid Galvanized Steel Conduit:
 - 1. Meet requirements of NEMA RN 1 and ETL.
 - 2. Material:
 - a. Meet requirements of NEMA C80.1 and UL 6.
 - b. Exterior Finish: PVC coating, 40-mil nominal thickness; bond to metal shall have tensile strength greater than PVC.
 - c. Interior finish: Urethane coating, 2-mil nominal thickness.
 - 3. Threads: Hot-dipped galvanized and factory coated with urethane.
 - 4. Bendable without damage to interior or exterior coating.

- I. Flexible Metal, Liquid-Tight Conduit:
 - 1. UL 360 listed for 105 degrees C insulated conductors.
 - 2. Material: Galvanized steel with extruded PVC jacket.

- J. Flexible Metal, Nonliquid-Tight Conduit:
 - 1. Meet requirements of UL 1.
 - 2. Material: Galvanized steel.

- K. Innerduct:
 - 1. Resistant to spread of fire, per requirements of UL 2024.
 - 2. Smooth or corrugated HDPE.
 - 3. Textile Manufacturer: Maxcell.

2.02 FITTINGS

- A. Rigid Galvanized Steel and Intermediate Metal Conduit:
 - 1. General:
 - a. Meet requirements of UL 514B.
 - b. Type: Threaded, galvanized. Set screw and threadless compression fittings not permitted.
 - 2. Bushing:
 - a. Material: Malleable iron with integral insulated throat, rated for 150 degrees C.
 - b. Manufacturers and Products:
 - 1) Appleton; Series BU-I.
 - 2) O-Z/Gedney; Type HB.
 - 3. Grounding Bushing:
 - a. Material: Malleable iron with integral insulated throat rated for 150 degrees C, with solderless lugs.
 - b. Manufacturers and Products:
 - 1) Appleton; Series GIB.
 - 2) O-Z/Gedney; Type HBLG.

4. Conduit Hub:
 - a. Material: Malleable iron with insulated throat with bonding screw.
 - b. UL listed for use in wet locations.
 - c. Manufacturers and Products:
 - 1) Appleton, Series HUB-B.
 - 2) O-Z/Gedney; Series CH.
 - 3) Meyers; ST Series.
5. Conduit Bodies:
 - a. Sized as required by NFPA 70.
 - b. Manufacturers and Products (For Normal Conditions):
 - 1) Appleton; Form 35 threaded unilets.
 - 2) Crouse-Hinds; Form 7 or Form 8 threaded condulets.
 - 3) Killark; Series O electrolets.
 - 4) Thomas & Betts; Form 7 or Form 8.
 - c. Manufacturers (For Hazardous Locations):
 - 1) Appleton.
 - 2) Crouse-Hinds.
 - 3) Killark.
6. Couplings: As supplied by conduit manufacturer.
7. Unions:
 - a. Concrete tight, hot-dip galvanized malleable iron.
 - b. Manufacturers and Products:
 - 1) Appleton; Series SCC bolt-on coupling or Series EC three-piece union.
 - 2) O-Z/Gedney; Type SSP split coupling or Type 4 Series, three-piece coupling.
8. Conduit Sealing Fitting:
 - a. Manufacturers and Products:
 - 1) Appleton; Type EYF, EYM, or ESU.
 - 2) Crouse-Hinds; Type EYS or EZS.
 - 3) Killark; Type EY or Type EYS.
9. Drain Seal:
 - a. Manufacturers and Products:
 - 1) Appleton; Type EYD.
 - 2) Crouse-Hinds; Type EYD or Type EZD.
10. Drain/Breather Fitting:
 - a. Manufacturers and Products:
 - 1) Appleton; Type ECDB.
 - 2) Crouse-Hinds; ECD.
11. Expansion Fitting:
 - a. Manufacturers and Products:
 - 1) Deflection/Expansion Movement:
 - a) Appleton; Type DF.
 - b) Crouse-Hinds; Type XD.
 - 2) Expansion Movement Only:
 - a) Appleton; Type XJ.
 - b) Crouse-Hinds; Type XJ.

- c) Thomas & Betts; XJG-TP.
- 12. Cable Sealing Fitting:
 - a. To form watertight nonslip cord or cable connection to conduit.
 - b. For Conductors with OD of 1/2 inch or Less: Neoprene bushing at connector entry.
 - c. Manufacturers and Products:
 - 1) Appleton; CG-S.
 - 2) Crouse-Hinds; CGBS.
- B. Electric Metallic Tubing:
 - 1. Meet requirements of UL 514B.
 - 2. Type: Steel body and locknuts with steel or malleable iron compression nuts. Set screw and drive-on fittings not permitted.
 - 3. Electro zinc-plated inside and out.
 - 4. Raintight.
 - 5. Coupling Manufacturers and Products:
 - a. Appleton; Type 95T.
 - b. Crouse-Hinds.
 - c. Thomas & Betts.
 - 6. Connector Manufacturers and Products:
 - a. Appleton; Type ETP.
 - b. Crouse-Hinds.
 - c. Thomas & Betts.
- C. Rigid Aluminum Conduit:
 - 1. General:
 - a. Meet requirements of UL 514B.
 - b. Type: Threaded, copper-free. Set screw fittings not permitted.
 - 2. Insulated Bushing:
 - a. Material: Cast aluminum, with integral insulated throat, rated for 150 degrees C.
 - b. Manufacturer and Product: O-Z/Gedney; Type AB.
 - 3. Grounding Bushing:
 - a. Material: Cast aluminum with integral insulated throat, rated for 150 degrees, with solderless lugs.
 - b. Manufacturer and Product: O-Z/Gedney; Type ABLG.
 - 4. Conduit Hub:
 - a. Material: Cast aluminum, with insulated throat.
 - b. UL listed for use in wet locations.
 - c. Manufacturers and Products:
 - 1) O-Z/Gedney; Type CHA.
 - 2) Thomas & Betts; Series 370AL.
 - 3) Meyers; Series SA.
 - 5. Conduit Bodies:

- a. Manufacturers and Products (For Normal Conditions):
 - 1) Appleton; Form 85 threaded unilets.
 - 2) Crouse-Hinds; Mark 9 or Form 7-SA threaded condulets.
 - 3) Killark; Series O electrolets.
 - b. Manufacturers (For Hazardous Locations):
 - 1) Appleton.
 - 2) Crouse-Hinds.
 - 3) Killark.
 - 6. Couplings: As supplied by conduit manufacturer.
 - 7. Conduit Sealing Fitting:
 - a. Manufacturers and Products:
 - 1) Appleton; Type EYF-AL or EYM-AL.
 - 2) Crouse-Hinds; Type EYS-SA or EZS-SA.
 - 3) Killark; Type EY or Type EYS.
 - 8. Drain Seal:
 - a. Manufacturers and Products:
 - 1) Appleton; Type EYDM-A.
 - 2) Crouse-Hinds; Type EYD-SA or Type EZD-SA.
 - 9. Drain/Breather Fitting:
 - a. Manufacturers and Products:
 - 1) Appleton; Type ECDB.
 - 2) Crouse-Hinds; ECD.
 - 10. Expansion Fitting:
 - a. Manufacturers and Products:
 - 1) Deflection/Expansion Movement: Steel City; Type DF-A.
 - 2) Expansion Movement Only: Steel City; Type AF-A.
 - 11. Cable Sealing Fittings:
 - a. To form watertight nonslip cord or cable connection to conduit.
 - b. Bushing: Neoprene at connector entry.
 - c. Manufacturer and Product: Appleton; CG-S.
- D. PVC Conduit and Tubing:
- 1. Meet requirements of NEMA TC 3.
 - 2. Type: PVC, slip-on.
- E. Fiberglass Conduit:
- 1. Manufactured by same process as conduit.
 - 2. Supplied by conduit manufacturer.
- F. PVC-Coated Rigid Galvanized Steel Conduit:
- 1. Meet requirements of UL 514B.
 - 2. Fittings: Rigid galvanized steel type, PVC coated by conduit manufacturer.

3. Conduit Bodies: Cast metal hot-dipped galvanized or urethane finish. Cover shall be of same material as conduit body. PVC coated by conduit manufacturer.
 4. Finish: 40-mil PVC exterior, 2-mil urethane interior.
 5. Overlapping pressure-sealing sleeves.
 6. Conduit Hangers, Attachments, and Accessories: PVC-coated.
 7. Manufacturers:
 - a. Robroy Industries.
 - b. Ocal.
 8. Expansion Fitting:
 - a. Manufacturer and Product: Ocal; OCAL-BLUE XJG.
- G. Flexible Metal, Liquid-Tight Conduit:
1. Metal insulated throat connectors with integral nylon or plastic bushing rated for 105 degrees C.
 2. Insulated throat and sealing O-rings.
 3. Manufacturers and Products:
 - a. Thomas & Betts; Series 5331.
 - b. O-Z/Gedney; Series 4Q.
- H. Flexible Metal, Nonliquid-Tight Conduit:
1. Meet requirements of UL 514B.
 2. Body: Galvanized steel or malleable iron.
 3. Throat: Nylon insulated.
 4. 1-1/4-Inch Conduit and Smaller: One screw body.
 5. 1-1/2-Inch Conduit and Larger: Two screw body.
 6. Manufacturer and Product: Appleton; Series 7400.
- I. Flexible Coupling, Hazardous Locations:
1. Approved for use in atmosphere involved.
 2. Rating: Watertight and UL listed for use in Class I, Division 1 areas.
 3. Outer bronze braid and an insulating liner.
 4. Conductivity equal to a similar length of rigid metal conduit.
 5. Manufacturers and Products:
 - a. Crouse-Hinds; Type ECGJH or Type ECLK.
 - b. Appleton; EXGJH or EXLK.
- J. Watertight Entrance Seal Device:
1. New Construction:
 - a. Material: Oversized sleeve, malleable iron body with sealing ring, pressure ring, grommet seal, and pressure clamp.
 - b. Manufacturer and Product: O-Z/Gedney; Type FSK or Type WSK, as required.

2. Cored-Hole Application:
 - a. Material: Assembled dual pressure disks, neoprene sealing ring, and membrane clamp.
 - b. Manufacturer and Product: O-Z/Gedney; Series CSM.

2.03 OUTLET AND DEVICE BOXES

- A. Sheet Steel: One-piece drawn type, zinc-plated or cadmium-plated.
- B. Cast Metal:
 1. Box: Malleable iron or Cast ferrous metal.
 2. Cover: Gasketed, weatherproof, malleable iron, or cast ferrous metal, with stainless steel screws.
 3. Hubs: Threaded.
 4. Lugs: Cast Mounting.
 5. Manufacturers and Products, Nonhazardous Locations:
 - a. Crouse-Hinds; Type FS or Type FD.
 - b. Appleton; Type FS or Type FD.
 - c. Killark.
 6. Manufacturers and Products, Hazardous Locations:
 - a. Crouse-Hinds; Type GUA or Type EAJ.
 - b. Appleton; Type GR.
- C. Cast Aluminum:
 1. Material:
 - a. Box: Cast, copper-free aluminum.
 - b. Cover: Gasketed, weatherproof, cast copper-free aluminum with stainless steel screws.
 2. Hubs: Threaded.
 3. Lugs: Cast mounting.
 4. Manufacturers and Products, Nonhazardous Locations:
 - a. Crouse-Hinds; Type FS-SA or Type FD-SA.
 - b. Appleton; Type FS or Type FD.
 - c. Killark.
 5. Manufacturers and Products, Hazardous Locations:
 - a. Crouse-Hinds; Type GUA-SA.
 - b. Appleton; Type GR.
- D. PVC-Coated Cast Metal:
 1. Type: One-piece.
 2. Material: Malleable iron, cast ferrous metal, or cast aluminum.
 3. Coating:
 - a. Exterior Surfaces: 40-mil PVC.
 - b. Interior Surfaces: 2-mil urethane.
 4. Manufacturers:

- a. Robroy Industries.
 - b. Ocal.
- E. Nonmetallic:
 - 1. Box: PVC.
 - 2. Cover: PVC, weatherproof, with stainless steel screws.
 - 3. Manufacturer and Product: Carlon; Type FS or Type FD, with Type E98 or Type E96 covers.

2.04 JUNCTION AND PULL BOXES

- A. Outlet Box Used as Junction or Pull Box: As specified under Article Outlet and Device Boxes.
- B. Conduit Bodies Used as Junction Boxes: As specified under Article Fittings.
- C. Large Sheet Steel Box:
 - 1. NEMA 250, Type 1.
 - 2. Box: Code-gauge, galvanized steel.
 - 3. Cover: Full access, screw type.
 - 4. Machine Screws: Corrosion-resistant.
- D. Large Cast Metal Box:
 - 1. NEMA 250, Type 4.
 - 2. Box: Cast malleable iron, with drilled and tapped conduit entrances and exterior mounting lugs.
 - 3. Cover: Nonhinged with screws.
 - 4. Gasket: Neoprene.
 - 5. Hardware and Machine Screws: ASTM A167, Type 316 stainless steel.
 - 6. Manufacturers and Products, Surface Mounted Nonhinged Type:
 - a. Crouse-Hinds; Series W.
 - b. O-Z/Gedney; Series Y.
- E. Large Cast Metal Box, Hazardous Locations:
 - 1. NEMA 250 Type 7 or Type 9 as required for Class, Division, and Group involved.
 - 2. Box: Cast ferrous metal, electro-galvanize finished or copper-free aluminum with drilled and tapped conduit entrances.
 - 3. Cover: Nonhinged with screws.
 - 4. Hardware and Machine Screws: ASTM A167, Type 316 stainless steel.
 - 5. Manufacturers and Products:
 - a. Crouse-Hinds; Type EJB.
 - b. Appleton; Type AJBEW.

F. Large Cast Aluminum Box:

1. NEMA 250 Type 4.
2. Box: Cast copper-free aluminum, with drilled and tapped conduit entrances and exterior mounting lugs.
3. Cover: Nonhinged.
4. Gasket: Neoprene.
5. Hardware and Machine Screws: ASTM A167, Type 316 stainless steel.
6. Manufacturers and Products, Surface Mounted Type:
 - a. Crouse-Hinds; Series W-SA.
 - b. O-Z/Gedney; Series YS-A, YL-A.
 - c. Killark.

G. Large Stainless Steel Box:

1. NEMA 250 Type 4X.
2. Box: 14-gauge, ASTM A240/A240M, Type 316 stainless steel.
3. Cover: Nonhinged with screws.
4. Hardware and Machine Screws: ASTM A167, Type 316 stainless steel.
5. Manufacturers:
 - a. Hoffman Engineering Co.
 - b. Robroy Industries.
 - c. Wiegman.

H. Large Steel Box:

1. NEMA 250 Type 12.
2. Box: 12-gauge steel, with white enamel painted interior and gray primed exterior, over phosphated surfaces. Provide gray finish as approved by Engineer.
3. Cover: Hinged with screws.
4. Hardware and Machine Screws: ASTM A167, Type 316 stainless steel.
5. Manufacturers:
 - a. Hoffman Engineering Co.
 - b. Robroy Industries.
 - c. Wiegman.

I. Concrete Box, Nontraffic Areas:

1. Box: Reinforced, cast concrete with extension.
2. Cover: Steel diamond plate with locking bolts.
3. Cover Marking: ELECTRICAL, TELEPHONE, or as shown.
4. Size: 10 inches by 17 inches, minimum.
5. Manufacturers and Products:
 - a. Utility Vault Co.; Series 36-1017.
 - b. Christy, Concrete Products, Inc.; N9.
 - c. Quazite; "PG" Style.

- J. Concrete Box, Traffic Areas:
 - 1. Box: Reinforced, cast concrete with extension and bottom slab.
 - 2. Cover: Steel checked plate; H/20 loading with screw down.
 - 3. Cover Marking: ELECTRICAL, TELEPHONE, or as shown.
 - 4. Manufacturers and Products:
 - a. Christy, Concrete Products, Inc.; B1017BOX.
 - b. Utility Vault Co.; 3030 SB.

2.05 TELEPHONE TERMINAL CABINET

- A. Material: Code-gauge galvanized steel box with hinged doors and 3/4-inch fire-resistant plywood backboard, meeting requirements of telephone service provider.
- B. Finish: Provide gray finish as approved by Engineer.
- C. Minimum Size: 18 inches high by 18 inches wide by 6 inches deep.

2.06 TELEPHONE AND DATA OUTLET

- A. Provide outlet boxes and cover plates meeting requirements of TIA 569B.

2.07 TERMINAL JUNCTION BOX

- A. Cover: Hinged, unless otherwise shown.
- B. Interior Finish: Paint with white enamel or lacquer.
- C. Terminal Blocks:
 - 1. Separate connection point for each conductor entering or leaving box.
 - 2. Spare Terminal Points: 25 percent, minimum.

2.08 METAL WIREWAYS

- A. Meet requirements of UL 870.
- B. Type: Steel-enclosed, lay-in type.
- C. Cover: Removable, screw type.
- D. Rating: Indoor.
- E. Finish: Rust inhibiting phosphatizing primer and gray baked enamel.

- F. Hardware: Plated to prevent corrosion; screws installed toward the inside protected by spring nuts or otherwise guarded to prevent wire insulation damage.
- G. Knockouts: Without knockouts, unless otherwise indicated.
- H. Manufacturers:
 - 1. Circle AW.
 - 2. Hoffman.
 - 3. Square D.

2.09 PRECAST HANDHOLES

- A. Concrete Strength: Minimum, 3,000 psi compressive, in 28 days.
- B. Loading: AASHTO, H-20 in accordance with ASTM C857.
- C. Drainage:
 - 1. Slope floors toward drain points, leaving no pockets or other nondraining areas.
 - 2. Provide drainage outlet or sump at low point of floor constructed with a heavy, cast iron, slotted or perforated hinged cover, and a minimum 4-inch outlet and outlet pipe.
- D. Raceway Entrances:
 - 1. Provide on all four sides.
 - 2. Provide knockout panels or precast individual raceway openings.
 - 3. At entrances where raceways are to be installed by others, provide minimum 12-inch-high by 24-inch-wide knockout panels for future raceway installation.
- E. Embedded Pulling Iron:
 - 1. Material: 3/4-inch-diameter stock, fastened to overall steel reinforcement before concrete is placed.
 - 2. Location:
 - a. Wall: Opposite each raceway entrance and knockout panel for future raceway entrance.
 - b. Floor: Centered below handhole cover.
- F. Cable Racks:
 - 1. Arms and Insulators: Adjustable, of sufficient number to accommodate cables for each raceway entering or leaving handhole, including spares.
 - 2. Wall Attachment:

- a. Adjustable inserts in concrete walls. Bolts or embedded studs not permitted.
- b. Insert Spacing: Maximum 3 feet on center for inside perimeter of handhole.
- c. Arrange in order that spare raceway ends are clear for future cable installation.

G. Handhole Frames and Covers:

- 1. Material: Steel, hot-dipped galvanized.
- 2. Cover Type: Solid, bolt-on of checkered design.
- 3. Cover Loading: AASHTO H-20.
- 4. Cover Designation: Burn by welder, on upper side in integral letters, minimum 2 inches in height, appropriate titles:
 - a. 600 Volts and Below: ELECTRIC LV.
 - b. TELEPHONE.

H. Hardware: Steel, hot-dip galvanized.

I. Furnish knockout for ground rod in each handhole.

J. Manufacturers:

- 1. Utility Vault Co.
- 2. Penn-Cast Products, Inc.
- 3. Concrete Conduit Co.
- 4. Associated Concrete Products, Inc.
- 5. Pipe, Inc.

2.10 ACCESSORIES

A. Duct Bank Spacers:

- 1. Modular Type:
 - a. Nonmetallic, interlocking, for multiple conduit sizes.
 - b. Suitable for all types of conduit.
 - c. Manufacturers:
 - 1) Underground Device, Inc.
 - 2) Carlon.
- 2. Template Type:
 - a. Nonmetallic, custom made one-piece spacers.
 - b. Suitable for all types of conduit.
 - c. Material: HDPE or polypropylene, 1/2-inch minimum thickness.
 - d. Conduit openings cut 1 inch larger than conduit outside diameter.
 - e. Additional openings for stake-down, rebar, and concrete flow through as required.
 - f. Manufacturer and Product: SP Products; Quik Duct.

B. Identification Devices:

1. Raceway Tags:
 - a. Material: Permanent, nonferrous metal.
 - b. Shape: Round.
 - c. Raceway Designation: Pressure stamped, embossed, or engraved.
 - d. Tags relying on adhesives or taped-on markers not permitted.
2. Warning Tape:
 - a. Material: Polyethylene, 4-mil gauge with detectable strip.
 - b. Color: Red.
 - c. Width: Minimum 6 inches.
 - d. Designation: Warning on tape that electric circuit is located below tape.
 - e. Identifying Letters: Minimum 1-inch-high permanent black lettering imprinted continuously over entire length.
 - f. Manufacturers and Products:
 - 1) Panduit; Type HTDU.
 - 2) Reef Industries; Terra Tape.
3. Buried Raceway Marker:
 - a. Material: Sheet bronze, consisting of double-ended arrows, straight for straight runs and bent at locations where runs change direction.
 - b. Designation: Engrave to depth of 3/32 inch; ELECTRIC CABLES, in letters 1/4-inch high.
 - c. Minimum Dimension: 1/4 inch thick, 10 inches long, and 3/4 inch wide.

C. Raceway Coating: Clean and paint in accordance with Supplemental Special Provision, Section 210, Painting and Coating.

D. Heat Shrinkable Tubing:

1. Material: Heat-shrinkable, cross-linked polyolefin.
2. Semi-flexible with meltable adhesive inner liner.
3. Color: Black.
4. Manufacturers:
 - a. Raychem.
 - b. 3M.

E. Wraparound Duct Band:

1. Material: Heat-shrinkable, cross-linked polyolefin, precoated with hot-melt adhesive.
2. Width: 50 mm minimum.
3. Manufacturer and Product: Raychem; Type TWDB.

PART 3 EXECUTION

3.01 GENERAL

- A. Comply with NECA Installation Standards.
- B. Crushed or deformed raceways not permitted.
- C. Maintain raceway entirely free of obstructions and moisture.
- D. Immediately after installation, plug or cap raceway ends with watertight and dust-tight seals until time for pulling in conductors.
- E. Aluminum Conduit: Do not install in direct contact with concrete. Install in PVC sleeve or cored hole through concrete walls and slabs.
- F. Sealing Fittings: Provide drain seal in vertical raceways where condensate may collect above sealing fitting.
- G. Avoid moisture traps where possible. When unavoidable in exposed conduit runs, provide junction box and drain fitting at conduit low point.
- H. Group raceways installed in same area.
- I. Proximity to Heated Piping: Install raceways minimum 12 inches from parallel runs.
- J. Follow structural surface contours when installing exposed raceways. Avoid obstruction of passageways.
- K. Run exposed raceways parallel or perpendicular to walls, structural members, or intersections of vertical planes.
- L. Block Walls: Do not install raceways in same horizontal course or vertical cell with reinforcing steel.
- M. Install watertight fittings in outdoor, underground, or wet locations.
- N. Paint threads and cut ends, before assembly of fittings, galvanized conduit, PVC-coated galvanized conduit, or IMC installed in exposed or damp locations with zinc-rich paint or liquid galvanizing compound.
- O. Metal conduit shall be reamed, burrs removed, and cleaned before installation of conductors, wires, or cables.
- P. Do not install raceways in concrete equipment pads, foundations, or beams without Engineer approval.

- Q. Horizontal raceways installed under floor slabs shall lie completely under slab, with no part embedded within slab.
- R. Install concealed, embedded, and buried raceways so that they emerge at right angles to surface and have no curved portion exposed.
- S. Install conduits for fiber optic cables, telephone cables, and Category 6 data cables in strict conformance with the requirements of TIA 569B.

3.02 INSTALLATION IN CAST-IN-PLACE STRUCTURAL CONCRETE

- A. Minimum Cover: 2 inches, including fittings.
- B. Conduit placement shall not require changes in reinforcing steel location or configuration.
- C. Provide nonmetallic support during placement of concrete to ensure raceways remain in position.
- D. Conduit larger than 1 inch shall not be embedded in concrete slabs, walls, foundations, columns, or beams unless approved by Engineer.
- E. Slabs and Walls (Requires Engineer Approval):
 - 1. Trade size of conduit not to exceed one-fourth of slab or wall thickness.
 - 2. Install within middle two-fourths of slab or wall.
 - 3. Separate conduit less than 2-inch trade size by a minimum ten times conduit trade size, center-to-center, unless otherwise shown.
 - 4. Separate conduit 2-inch and greater trade size by a minimum eight times conduit trade size, center-to-center, unless otherwise shown.
 - 5. Cross conduit at an angle greater than 45 degrees, with minimum separation of 1 inch.
 - 6. Separate conduit by a minimum six times the outside dimension of expansion/deflection fittings at expansion joints.
 - 7. Conduit shall not be installed below the maximum water surface elevation in walls of water holding structures.
- F. Columns and Beams (Requires Engineer Approval):
 - 1. Trade size of conduit not to exceed one-fourth of beam thickness.
 - 2. Conduit cross-sectional area not to exceed 4 percent of beam or column cross section.

3.03 CONDUIT APPLICATION

- A. Diameter: Minimum 3/4 inch.
- B. Exterior, Exposed:

1. Rigid galvanized steel.
 2. Rigid aluminum.
 3. Intermediate metal.
 4. PVC-coated rigid galvanized steel.
- C. Interior, Exposed:
1. Rigid galvanized steel.
 2. Rigid aluminum.
 3. Intermediate metal.
 4. Electric metallic tubing for ceiling portion of lighting circuits.
 5. PVC-coated rigid galvanized steel.
- D. Interior, Concealed (Not Embedded in Concrete):
1. Rigid galvanized steel.
 2. Rigid aluminum.
 3. Intermediate metal.
 4. Electric metallic tubing.
- E. Aboveground, Embedded in Concrete Walls, Ceilings, or Floors:
1. Rigid galvanized steel.
 2. Intermediate metal.
- F. Direct Earth Burial:
1. PVC Schedule 40.
 2. PVC Schedule 80.
 3. PVC-coated rigid galvanized steel.
 4. Fiberglass.
- G. Concrete-Encased Ductbank:
1. Rigid galvanized steel.
 2. Intermediate metal.
 3. PVC Schedule 40.
 4. PVC Schedule 80.
- H. Under Slabs-On-Grade:
1. PVC-coated rigid galvanized steel.
- I. Transition from Underground or Concrete Embedded to Exposed: PVC-coated rigid steel conduit.
- J. Under Equipment Mounting Pads: Rigid galvanized steel conduit.

- K. Exterior Light Pole Foundations: PVC-coated rigid steel conduit.
- L. Corrosive Areas:
 - 1. PVC-coated rigid galvanized steel.
- M. Hazardous Gas Areas:
 - 1. Rigid galvanized steel.

3.04 FLEXIBLE CONNECTIONS

- A. For motors, wall or ceiling mounted fans and unit heaters, dry type transformers, electrically operated valves, instrumentation, and other locations approved by Engineer where flexible connection is required to minimize vibration:
 - 1. Conduit Size 4 Inches or Less: Flexible, liquid-tight conduit.
 - 2. Conduit Size Over 4 Inches: Nonflexible.
 - 3. Wet or Corrosive Areas: flexible metal liquid-tight.
 - 4. Dry Areas: Flexible, metallic liquid-tight.
 - 5. Hazardous Areas: Flexible coupling suitable for Class I, Division 1 areas.
- B. Suspended Lighting Fixtures in Dry Areas: Flexible steel, nonliquid-tight conduit.
- C. Outdoor Areas, Process Areas Exposed to Moisture, and Areas Required to be Oil tight and Dust-Tight: Flexible metal, liquid-tight conduit.
- D. Flexible Conduit Length: 18 inches minimum, 60 inches maximum; sufficient to allow movement or adjustment of equipment.

3.05 PENETRATIONS

- A. Make at right angles, unless otherwise shown.
- B. Notching or penetration of structural members, including footings and beams, not permitted.
- C. Apply heat shrinkable tubing or single layer of wraparound duct band to metallic conduit protruding through concrete floor slabs to a point 2 inches above and 2 inches below concrete surface.
- D. Concrete Walls, Floors, or Ceilings (Aboveground): Provide nonshrink grout dry-pack, or use watertight seal device.
- E. Entering Structures:

1. General: Seal raceway at first box or outlet with oakum or expandable plastic compound to prevent entrance of gases or liquids from one area to another.
2. Concrete Roof or Membrane Waterproofed Wall or Floor:
 - a. Provide a watertight seal.
 - b. Without Concrete Encasement: Install watertight entrance seal device on each side.
 - c. With Concrete Encasement: Install watertight entrance seal device on accessible side.
 - d. Securely anchor malleable iron body of watertight entrance seal device into construction with one or more integral flanges.
 - e. Secure membrane waterproofing to watertight entrance seal device in a permanent, watertight manner.
3. Corrosive-Sensitive Areas:
 - a. Seal conduit entering equipment panel boards and field panels containing electronic equipment.
 - b. Seal penetration with ASTM C 920 elastomeric joint sealant
4. Existing or Precast Wall (Underground): Core drill wall and install watertight entrance seal device.
5. Nonwaterproofed Wall or Floor (Underground, without Concrete Encasement):
 - a. Provide Schedule 40 galvanized pipe sleeve, or watertight entrance seal device.
 - b. Fill space between raceway and sleeve with expandable plastic compound or oakum and lead joint, on each side.
6. Handholes:
 - a. Metallic Raceways: Provide insulated grounding bushings.
 - b. Nonmetallic Raceways: Provide bell ends flush with wall.
 - c. Install such that raceways enter as near as possible to one end of wall, unless otherwise shown.

3.06 SUPPORT

- A. Support from structural members only, at intervals not exceeding NFPA 70 requirements. Do not exceed 10 feet in any application. Do not support from piping, pipe supports, or other raceways.
- B. Multiple Adjacent Raceways: Provide ceiling trapeze. For trapeze-supported conduit, allow 30 percent extra space for future conduit.
- C. Application/Type of Conduit Strap:
 1. Aluminum Conduit: Aluminum or stainless steel.
 2. Rigid Steel or EMT Conduit: Zinc coated steel, pregalvanized steel or malleable iron.
 3. PVC-Coated Rigid Steel Conduit: PVC-coated metal.

- D. Provide and attach wall brackets, strap hangers, or ceiling trapeze as follows:
 - 1. Wood: Wood screws.
 - 2. Hollow Masonry Units: Toggle bolts.
 - 3. Concrete or Brick: Expansion shields, or threaded studs driven in by powder charge, with lock washers and nuts.
 - 4. Steelwork: Machine screws.
 - 5. Location/Type of Hardware:
 - a. Dry, Noncorrosive Areas: Galvanized.
 - b. Wet, Noncorrosive Areas: Stainless steel.
 - c. Corrosive Areas: 316 Stainless steel.
- E. Nails or wooden plugs inserted in concrete or masonry for attaching raceway not permitted. Do not weld raceways or pipe straps to steel structures. Do not use wire in lieu of straps or hangers.
- F. Support aluminum conduit on concrete surfaces with stainless steel or nonmetallic spacers, or aluminum or nonmetallic framing channel.

3.07 BENDS

- A. Install concealed raceways with a minimum of bends in the shortest practical distance.
- B. Make bends and offsets of longest practical radius. Bends in conduits and ducts being installed for fiber optic cables shall be not less than 20 times cable diameter, 15 inches minimum.
- C. Install with symmetrical bends or cast metal fittings.
- D. Avoid field-made bends and offsets, but where necessary, make with acceptable hickey or bending machine. Do not heat metal raceways to facilitate bending.
- E. Make bends in parallel or banked runs from same center or centerline with same radius so that bends are parallel.
- F. Factory elbows may be installed in parallel or banked raceways if there is change in plane of run, and raceways are same size.
- G. PVC Conduit:
 - 1. Bends 30 Degrees and Larger: Provide factory-made elbows.
 - 2. 90-Degree Bends: Provide rigid steel elbows, PVC-coated where direct buried.
 - 3. Use manufacturer's recommended method for forming smaller bends.

- H. Flexible Conduit: Do not make bends that exceed allowable conductor bending radius of cable to be installed or that significantly restricts conduit flexibility.

3.08 EXPANSION/DEFLECTION FITTINGS

- A. Provide on raceways at structural expansion joints and in long tangential runs.
- B. Provide expansion/deflection joints for 50 degrees F maximum temperature variation.
- C. Install in accordance with manufacturer's instructions.

3.09 PVC CONDUIT

- A. Solvent Welding:
 - 1. Apply manufacturer recommended solvent to joints.
 - 2. Install in order that joint is watertight.
- B. Adapters:
 - 1. PVC to Metallic Fittings: PVC terminal type.
 - 2. PVC to Rigid Metal Conduit or IMC: PVC female adapter.
- C. Belled-End Conduit: Bevel unbelled end of joint prior to joining.

3.10 PVC-COATED RIGID STEEL CONDUIT

- A. Install in accordance with manufacturer's instructions.
- B. Tools and equipment used in cutting, bending, threading and installation of PVC-coated rigid conduit shall be designed to limit damage to PVC coating.
- C. Provide PVC boot to cover exposed threading.

3.11 WIREWAYS

- A. Install in accordance with manufacturer's instructions.
- B. Locate with cover on accessible vertical face of wireway, unless otherwise shown.
- C. Applications:
 - 1. Metal wireway in indoor dry locations.

3.12 TERMINATION AT ENCLOSURES

- A. Cast Metal Enclosure: Install manufacturer's premolded insulating sleeve inside metallic conduit terminating in threaded hubs.
- B. Nonmetallic, Cabinets, and Enclosures:
 - 1. Terminate conduit in threaded conduit hubs, maintaining enclosure integrity.
 - 2. Metallic Conduit: Provide ground terminal for connection to maintain continuity of ground system.
- C. Sheet Metal Boxes, Cabinets, and Enclosures:
 - 1. General:
 - a. Install insulated bushing on ends of conduit where grounding is not required.
 - b. Provide insulated throat when conduit terminates in sheet metal boxes having threaded hubs.
 - c. Utilize sealing locknuts or threaded hubs on sides and bottom of NEMA 3R and NEMA 12 enclosures.
 - d. Terminate conduits at threaded hubs at the tops of NEMA 3R and NEMA 12 boxes and enclosures.
 - e. Terminate conduits at threaded conduit hubs at NEMA 4 and NEMA 4X boxes and enclosures.
 - 2. Rigid Galvanized, Intermediate or Aluminum Conduit:
 - a. Provide one lock nut each on inside and outside of enclosure.
 - b. Install grounding bushing at source enclosure.
 - c. Provide bonding jumper from grounding bushing to equipment ground bus or ground pad.
 - 3. Electric Metallic Tubing: Provide gland compression, insulated connectors.
 - 4. Flexible Metal Conduit: Provide two screw type, insulated, malleable iron connectors.
 - 5. PVC-Coated Rigid Galvanized Steel Conduit: Provide PVC-coated, liquid-tight, metallic connector.
- D. Motor Control Center, Switchboard, Switchgear, and Free-Standing Enclosures:
 - 1. Terminate metal conduit entering bottom with grounding bushing; provide grounding jumper extending to equipment ground bus or grounding pad.

3.13 UNDERGROUND RACEWAYS

- A. Grade: Maintain minimum grade of 4 inches in 100 feet, either from one handhole, or pull box to the next, or from a high point between them, depending on surface contour.
- B. Cover: Maintain minimum 2-foot cover above conduit and concrete encasement, unless otherwise shown.
- C. Provide concrete encasement for all underground conduits except conduit for lighting, access gates, cameras, and individual runs to fans and instruments at screening facility may be direct buried.
- D. Make routing changes as necessary to avoid obstructions or conflicts.
- E. Couplings: In multiple conduit runs, stagger so couplings in adjacent runs are not in same transverse line.
- F. Union type fittings not permitted.
- G. Spacers:
 - 1. Provide preformed, nonmetallic spacers designed for such purpose, to secure and separate parallel conduit runs in a trench or concrete encasement.
 - 2. Install at intervals not greater than that specified in NFPA 70 for support of the type conduit used, but in no case greater than 10 feet.
- H. Support conduit so as to prevent bending or displacement during backfilling or concrete placement.
- I. Transition from Underground to Exposed: PVC-coated rigid steel conduit.
- J. Installation with Other Piping Systems:
 - 1. Crossings: Maintain minimum 12-inch vertical separation.
 - 2. Parallel Runs: Maintain minimum 12-inch separation.
 - 3. Installation over valves or couplings not permitted.
- K. Provide expansion fittings that allow minimum of 4 inches of movement in vertical conduit runs from underground where exposed conduit will be fastened to or will enter building or structure.
- L. Provide expansion/deflection fittings in conduit runs that exit building or structure belowgrade. Conduit from building wall to fitting shall be PVC-coated rigid steel.
- M. Concrete Encasement:

1. As specified in Section 303 of 2015 Greenbook and 2015 Whitebook and SSPs, Cast-in-Place Concrete.
2. Concrete Color: Red.

N. Backfill:

1. As specified in Section 303 of 2015 Greenbook and 2015 Whitebook and SSPs , Trench Backfill.
2. Do not backfill until inspected by Engineer.

3.14 UNDER SLAB RACEWAYS

- A. Make routing changes as necessary to avoid obstructions or conflicts.
- B. Support raceways so as to prevent bending or displacement during backfilling or concrete placement.
- C. Install raceways with no part embedded within slab and with no interference with slab on grade construction.
- D. Raceway spacing, in a single layer or multiple layers:
 1. 3 inches clear between adjacent 2-inch or larger raceway.
 2. 2 inches clear between adjacent 1-1/2-inch or smaller raceway.
- E. Individual Raceways and Single Layer Multiple Raceways: Install at lowest elevation of backfill zone with spacing as specified herein. Where conduits cross at perpendicular orientation, installation of conduits shall not interfere with placement of under slab fill that meets compaction and void limitations of earthwork specifications.
- F. Under slab raceways that emerge from below slab to top of slab as exposed, shall be located to avoid conflicts with structural slab rebar. Coordinate raceway stub ups with location of structural rebar.
- G. Fittings:
 1. Union type fittings are not permitted.
 2. Provide expansion/deflection fittings in raceway runs that exit building or structure below slab. Locate fittings 18 inches, maximum, beyond exterior wall. Raceway type between building exterior wall to fitting shall be PVC-coated rigid steel.
 3. Couplings: In multiple raceway runs, stagger so couplings in adjacent runs are not in same traverse line.

3.15 OUTLET AND DEVICE BOXES

A. General:

1. Install plumb and level.

2. Install suitable for conditions encountered at each outlet or device in wiring or raceway system, sized to meet NFPA 70 requirements.
3. Open no more knockouts in sheet steel device boxes than are required; seal unused openings.
4. Install galvanized mounting hardware in industrial areas.

B. Size:

1. Depth: Minimum 2 inches, unless otherwise required by structural conditions. Box extensions not permitted.
 - a. Hollow Masonry Construction: Install with sufficient depth such that conduit knockouts or hubs are in masonry void space.
2. Ceiling Outlet: Minimum 4-inch octagonal device box, unless otherwise required for installed fixture.
3. Switch and Receptacle: Minimum 2-inch by 4-inch device box.

C. Locations:

1. Drawing locations are approximate.
2. To avoid interference with mechanical equipment or structural features, relocate outlets as directed by Engineer.
3. Light Fixture: Install in symmetrical pattern according to room layout, unless otherwise shown.

D. Mounting Height:

1. General:
 - a. Dimensions given to centerline of box.
 - b. Where specified heights do not suit building construction or finish, adjust up or down to avoid interference.
 - c. Do not straddle CMU block or other construction joints.
2. Light Switch:
 - a. 48 inches above floor.
 - b. When located next to door, install on lock side of door.
3. Thermostat: 54 inches above floor.
4. Telephone Outlet:
 - a. 15 inches above floor.
 - b. 6 inches above counter tops.
 - c. Wall Mounted: 52 inches above floor.
5. Convenience Receptacle:
 - a. General Interior Areas: 15 inches above floor.
 - b. General Interior Areas (Counter Tops): Install device plate bottom or side flush with top of backsplash, or 6 inches above counter tops without backsplash.
 - c. Industrial Areas, Workshops: 48 inches above floor.
 - d. Outdoor Areas: 24 inches above finished grade.
6. Special-Purpose Receptacle: 48 inches above floor or as shown.

7. Switch, Motor Starting: 48 inches above floor, unless otherwise indicated on Drawings.

E. Flush Mounted:

1. Install with concealed conduit.
2. Install proper type extension rings or plaster covers to make edges of boxes flush with finished surface.
3. Holes in surrounding surface shall be no larger than required to receive box.

F. Supports:

1. Support boxes independently of conduit by attachment to building structure or structural member.
2. Install bar hangers in frame construction or fasten boxes directly as follows:
 - a. Wood: Wood screws.
 - b. Concrete or Brick: Bolts and expansion shields.
 - c. Hollow Masonry Units: Toggle bolts.
 - d. Steelwork: Machine screws.
3. Threaded studs driven in by powder charge and provided with lock washers and nuts are acceptable in lieu of expansion shields.
4. Provide plaster rings where necessary.
5. Boxes embedded in concrete or masonry need not be additionally supported.

G. Install separate junction boxes for flush or recessed lighting fixtures where required by fixture terminal temperature.

H. Boxes Supporting Fixtures: Provide means of attachment with adequate strength to support fixture.

3.16 JUNCTION AND PULL BOXES

A. General:

1. Install plumb and level.
2. Installed boxes shall be accessible.
3. Do not install on finished surfaces.
4. Use outlet boxes as junction and pull boxes wherever possible and allowed by applicable codes.
5. Use conduit bodies as junction and pull boxes where no splices are required and allowed by applicable codes.
6. Install pull boxes where necessary in raceway system to facilitate conductor installation.
7. Install where shown and where necessary to terminate, tap-off, or redirect multiple conduit runs.

8. Install in conduit runs at least every 150 feet or after the equivalent of three right-angle bends.

B. Flush Mounted:

1. Install with concealed conduit.
2. Holes in surrounding surface shall be no larger than required to receive box.
3. Make edges of boxes flush with final surface.

C. Mounting Hardware:

1. Noncorrosive Dry Areas: Galvanized.
2. Noncorrosive Wet Areas: 316 Stainless steel.
3. Corrosive Areas: 316 Stainless steel.

D. Supports:

1. Support boxes independently of conduit by attachment to building structure or structural member.
2. Install bar hangers in frame construction or fasten boxes directly as follows:
 - a. Wood: Wood screws.
 - b. Concrete or Brick: Bolts and expansion shields.
 - c. Hollow Masonry Units: Toggle bolts.
 - d. Steelwork: Machine screws.
3. Threaded studs driven in by powder charge and provided with lock washers and nuts are acceptable in lieu of expansion shields.
4. Boxes embedded in concrete or masonry need not be additionally supported.

E. At or Below Grade:

1. Install boxes for below grade conduit flush with finished grade in locations outside of paved areas, roadways, or walkways.
2. If adjacent structure is available, box may be mounted on structure surface just above finished grade in accessible but unobtrusive location.
3. Obtain Engineer's written acceptance prior to installation in paved areas, roadways, or walkways.
4. Use boxes and covers suitable to support anticipated weights.

3.17 TELEPHONE TERMINAL CABINET

- A. Install with top of cabinet 6 feet above floor.

- B. Door Opening: 120 degrees, minimum.

3.18 TELEPHONE AND DATA OUTLET

- A. Provide empty 4-11/16-inch square, deep outlet box.
- B. Provide blank single gang raised device cover if cables are not installed.

3.19 HANDHOLES

- A. Excavate, shore, brace, backfill, and final grade in accordance with Section 303 of 2015 Greenbook and 2015 Whitebook and SSPs, Trench Backfill.
- B. Do not install until final raceway grading has been determined.
- C. Install such that raceway enters at nearly right angle and as near as possible to end of wall, unless otherwise shown.
- D. Identification: Field stamp covers with handhole number as shown. Stamped numbers to be 1-inch minimum height.

3.20 EMPTY RACEWAYS

- A. Provide permanent, removable cap over each end.
- B. Provide PVC plug with pull tab for underground raceways with end bells.
- C. Provide nylon pull cord.
- D. Identify, as specified in Article Identification Devices, with waterproof tags attached to pull cord at each end, and at intermediate pull point.

3.21 IDENTIFICATION DEVICES

- A. Raceway Tags:
 - 1. Identify Raceway Schedule designation.
 - 2. For exposed raceways, install tags at each terminus, near midpoint, and at minimum intervals of every 50 feet, whether in ceiling space or surface mounted.
 - 3. Install tags at each terminus for concealed raceways.
 - 4. Provide noncorrosive wire for attachment.
- B. Warning Tape: Install approximately 12 inches above underground or concrete-encased raceways. Align parallel to, and within 12 inches of, centerline of run.
- C. Buried Raceway Marker:
 - 1. Install at grade to indicate direction of underground raceway.

2. Install at bends and at intervals not exceeding 100 feet in straight runs.
3. Embed and secure to top of concrete base, sized 14 inches long, 6 inches wide, and 8 inches deep; top set flush with finished grade.

3.22 PROTECTION OF INSTALLED WORK

- A. Protect products from effects of moisture, corrosion, and physical damage during construction.
- B. Provide and maintain manufactured watertight and dust-tight seals over conduit openings during construction.
- C. Touch up painted conduit threads after assembly to cover nicks or scars.
- D. Touch up coating damage to PVC-coated conduit with patching compound approved by manufacturer. Compound shall be kept refrigerated according to manufacturers' instructions until time of use.

END OF SECTION

SECTION 40 95 34

FIBER OPTICS AND INSTALLATION

PART 1 - GENERAL

1.1 WORK IN THIS SECTION

- A. The work of the following Section applies to the work of this Section.
 - 1. Section 26 05 33 Raceway and Boxes
- B. Fiber optic cable shall consist of optical fibers, strength members, and jacketing. Associated components shall include optical fiber connectors, optical patch panels, terminal bay cabinets, and splice closures as indicated. Fiber optic cables shall be installed exclusively in inner duct. The Fiber Optic CONTRACTOR (FC) shall install the fiber optic cabling in new raceways, concrete-encased duct-banks, conduits, manhole systems in strict accordance with drawings, notes and other specification sections where applicable. Where new raceway is required within structures to support fiber optic cables, those conduits shall be either EMT, GRC or PVC coated GRC, as appropriate for the process area and as specified in Division 26. Fiber optic Termination Panels and Patch panels shall be located in new facility buildings in strict accordance with drawings, notes and other specification sections where applicable. References in this section to 'cable' shall refer to fiber optic cable.
- C. FC shall provide LC connectors unless otherwise specified.

1.2 SCOPE

- A. The intent of this Specification is that the Fiber Optic CONTRACTOR (FC) will provide a complete and operational, turn-key Fiber Optic based Backbone network, capable of supporting GigaBit plus communications in support of the specified DCS systems at each facility, and locations as shown on drawings.
- B. The FC shall furnish all materials, tools, equipment, consumables and supplies and shall perform all labor required to complete the work in this Specification.
- C. The FC shall integrate the fiber optic backbone network, with each existing or new facility DCS LAN and WAN, Wide Area Network, Firewalls, Switches and Routers, as shown on drawings and as directed by City COMNET network support staff.

1.3 WORK SHALL COMPLY WITH THE FOLLOWING SPECIFICATIONS, CODES AND STANDARDS

- A. ASTM INTERNATIONAL (ASTM)
 - 1. ASTM C 338 (1993; R 2003), Standard Test Method Softening Point of Glass.

2. ASTM D 4976 (2004a) Standard Specification for Polyethylene Plastics Molding and Extrusion Materials.

B. ELECTRONIC INDUSTRIES ALLIANCE (EIA)

1. EIA 455-168A (1992) FOTP-168 Chromatic Dispersion Measurement of Multimode Graded-Index and Single-Mode Optical Fibers by Spectral Group Delay Measurement in the Time Domain
2. EIA 455-169A (2001) FOTP-169 Chromatic Dispersion Measurement of Optical Fibers by the Phase-Shift Method
3. EIA 455-25C (1996) FOTP-25 Repeated Impact Testing of Single-Mode Fiber Optic Cables and Cable Assemblies
4. EIA 455-30B (1991) Frequency Domain Measurement of Multitude Optical Fiber Information Transmission Capacity
5. EIA 455-33A (1988) FOTP-33 Fiber Optic Cable Tensile Loading and Bending Test
6. EIA 455-41 (1993) FOTP-41 Compressive Loading Resistance of Fiber Optic Cables
7. EIA 455-46A (1990) FOTP-46 Spectral Attenuation Measurement for Long-Length, Graded-Index Optical Fibers
8. EIA 455-47B (1992) FOTP-47 Output For Field Radiation Pattern Measurement
9. EIA 455-80B (1996) FOTP-80 Cutoff Wavelength of Un-cabled Single-Mode Fiber by Transmitted Power
10. EIA 455-81B (2000) FOTP-81 Compound Flow (Drip) Test for Filled Fiber Optic Cable
11. EIA 455-82B (1991) FOTP-82 Fluid Penetration Test for Fluid-Blocked Fiber Optic Cable

C. TELECOMMUNICATIONS INDUSTRIES ASSOCIATION (TIA)

1. EIA/TIA 455-165A (1993) Standard for Mode-Field Diameter Measurement by Near-Field Scanning Technique
2. TIA 455-104A (1993, R 2005) Standard for Fiber Optic Cable Cyclic Flexing Test
3. TIA 455-78B (2002) Optical Fibers - Part 1-40: Measurement Methods and Test Procedures – Attenuation
4. TIA/EIA 492 AAAA
5. TIA/EIA 492 CAAB
6. ANSI/TIA/EIA-526-7 Optical Power Loss Measurements of Installed Single-mode Fiber Cable Plant.

7. ANSI/TIA/EIA-568 Commercial Building Telecommunications Cabling Standard
 8. TIA/EIA-568-B.2, Transmission performance specification for 4 pair 100 Ohm Category 6 cabling
 9. TIA 568-C.3 Optical Fiber Cabling Components Standard.
 10. ANSI/TIA/EIA-569-A Commercial Building Standard for Telecommunications Pathways and Spaces
 11. ANSI/TIA 569-B Commercial Building Standard for Telecommunications Pathways and Spaces
 12. ANSI/TIA/EIA-606 The Administration Standards for the Telecommunications Infrastructure of Commercial Building
 13. ANSI/TIA/EIA-607 Commercial Building Grounding and Bonding Requirements for Telecommunications
 14. ANSI/TIA/EIA-TSB-67 Telecommunications System Bulletin Technical Systems Bulletin, Transmission Performance Specifications for Field Testing of Unshielded Twisted Pair Cabling Systems.
 15. TIA/EIA 604-12 FOCIS-12 Fiber Optic Connector Intermateability Standard, Type MT-RJ.
 16. TIA/EIA 604-2 FOCIS-2 Fiber Optic Connector Intermateability Standard, Type ST.
 17. TIA/EIA 604-3 FOCIS-3 Fiber Optic Connector Intermateability Standard, Type SC and SC-APC.
 18. TIA/EIA-598-B Optical Fiber Cable Color Coding.
- D. ISO: ISO/IEC 11801 (2002) Information Technology – General Cabling for Customer Premises.
- E. ITU: ITU-T G.652 Characteristics of single-mode optical fiber and cable
- F. IEC: IEC 60793-2-50 Type B1.3.
- G. BUILDING INDUSTRY CONSULTING SERVICE INTERNATIONAL (BICSI)
1. BICSI, Telecommunications Distribution Methods Manual
 2. BICSI, Cabling Installation Manual
- H. NATIONAL FIRE PROTECTION ASSOCIATION: NFPA-70, National Electric Code.
- I. UNDERWRITERS LABORATORY: All Fiber Optic Cable and equipment furnished by the FC in this Section shall be listed by and shall bear the label of Underwriters' Laboratories, Incorporated, (UL) or of an independent testing laboratory acceptable to the City of San Diego (City).

1.4 SUBMITTALS

A. General

1. All submittals shall be provided in accordance with the general provision Submittal Procedures, as a minimum, and in accordance with specialty submittal requirement below.
2. All submittal of this section shall be provided with six (6) hard copies and one (1) soft copy (CD).

B. Informational Submittals:

1. Preconstruction Submittals: The following preconstruction submittals shall be submitted to the City's representative for approval and approved prior to installation of any fiber optic cable:
 - a. Qualifications of personnel working with fiber optic cable
 - b. Quality Assurance Plan
 - 1) Pre-Installation Test Plan, Fiber Optic Cabling
 - 2) Post-Installation Test Plan, Fiber Optic Cabling
 - 3) Primavera P6 Fiber Optic Cable Master Installation Schedule, inclusive of all work related to this Specification Section
2. Product Data: The following Product submittals shall be submitted to the City's representative for approval and approved prior to issuing any Purchase Orders for all applicable Fiber Optic Products. Data shall include a complete list (Bill of Material – BOM) of all material, parts, special tools, consumables and supplies, each with current unit prices, source of supply, and vendors contact information, including telephone numbers. Manufacturer's product data shall be submitted for the following items:
 - a. Fiber Optic Cable
 - b. Splice Organizers
 - c. Pre-Connected Cable Assembly
 - d. Fiber Optic Terminal Cabinets
 - e. Optical Patch Panel Assemblies
 - f. Fiber Optic Line/Patch Cables
 - g. Inner Duct
 - h. Cable Supports and Management Systems
 - i. Cable Trays/Ladder Rack
 - j. All other mounting hardware
 - k. Fire stopping Material
 - l. Identification tape

m. Testing equipment

C. Action Submittals:

1. Test Reports: FC shall submit test reports for approval, to the City’s representative, not later than 14 calendar days after the completion of each test. Test Reports shall be submitted as follows:
 - a. Factory Test Certificates.
 - b. Fiber Optic Cable Bi-Directional, Optical Time Domain Reflectometer (OTDR) pre-installation tests, “on-reel” on site. No cable installation shall occur until the “on-reel” test report has been submitted and approved by City representative.
 - c. Fiber Optic Cable Bi-Directional, Optical Time Domain Reflectometer (OTDR) post-installation tests, Installed and terminated.
 - d. Unidirectional End-to-End Attenuation Tests.
 - e. Unidirectional End-to-End Bandwidth Tests.
 - 1) The OTDR, Attenuation and Bandwidth ‘tests’ result information for each link shall be recorded in the memory of the field-test instrument upon completion of the test, and immediately transferred to CD/DVD in the presence of the City representative, to provide non-volatile backup. The CD/DVC shall be transmitted to the City representative immediately upon completion of daily testing.
 - 2) The test result records saved within the field-test instrument shall be transferred into a Windows™-based database utility that allows for the maintenance, inspection and archiving of these test records.
 - 3) These results shall be transferred to the PC or laptop unaltered, i.e., “as saved by the tester” at the end of each test. The popular ‘csv’ format (comma separated value format) does not provide adequate protection and shall not be acceptable. The database for the completed job shall be stored and delivered to the City representative on CD/DVD; this CD/DVD shall include the software tools, complete with applicable licenses, required to view, inspect, and print any selection of test reports.
2. Pulling Plan: The FC shall submit a proposed Fiber Optic Cable Pulling Plan. The Pulling Plan shall be submitted for approval to the City’s representative not later than 30 calendar days after project award, prior to the scheduled start of cable and conduit placement.
 - a. The Pull Plan: Will identify all Fiber raceway segments to be pulled, including layout drawings along the pipeline alignment for conduit and handholes/pull boxes locations.

- b. Plans show suggested pullbox locations along the pipeline alignment, however actual locations must be calculated by the FC and approved by the City.
 - c. Will identify the proposed methodology of placement for each segment.
 - d. Will show proposed ‘unique Reel Number Identifications’, ‘cable start and stop footage measurements’, Cable(s) ID number, as well as cable type and fiber count.
 - e. Will show calculated pulling tension for the segment and proposed methodology for measuring pulling tension in each segment.
 - f. State manufactures maximum allowed pulling tension for each segment.
 - g. Calculated amount of lubrication required.
 - h. Detailed description of pull operation methods for all conduit runs.
 - i. Exact locations of splice points
3. Cable Testing Plan: The FC shall submit written procedures outlining the steps and methods that shall be used for the various tests the cable shall undergo during and after installation. Include a sample copy of each test form to be used in the test procedure

1.5 QUALIFICATIONS

- A. FC may place cable with FC’s own forces or through a sub-contractor. However, all personnel installing inner-duct work, or cable shall be performed by personnel who have experience in placing fiber optic cabling in conduit, cable trays, and underground duct systems installations in compliance with TIA 568-C.3.
- B. Installer certified by the Fiber Optic Association and Building Industry Consulting Services International.
- C. Installer will have recent experience with all aspects of the fiber optic cable system as specified, including the installation of cable and testing of fiber optics and the installation and testing of all components.
- D. Tester:
 - 1. Experience with projects utilizing fiber optic cable in compliance with TIA 568-C.3.
 - a. Technician:
 - 1) Successfully completed training program, which includes testing with an Optical Time Domain Reflectometer (OTDR).
 - 2) Certificate of completion of training issued by one of following organizations:
 - a) Manufacturer of fiber optic cable and fiber optic connectors.
 - b) Manufacturer of test equipment used for field certification.

- E. Fiber optic cable splices, terminations and testing shall be made by certified cable splicers who have experience in fusion and in-line compression splicing and terminating fiber optic cables. Personnel working pursuant to this section, may, at the City representative option, be required to demonstrate technical competence by performing sample work and/or by displaying their state qualifications/certificates. FC personnel may be required, at no additional cost to the City, to provide sample work shall involving performing acceptable sample splices and terminations, in the presence of the City representative.
- F. Manufacturer:
 - 1. Cable:
 - a. ISO 9001 or QF TL 9000 registered, whichever applies to material.
 - b. Experience manufacturing optical fiber cable.
 - 2. Housing: ISO 9001 or QF TL 9000 registered.
 - 3. Connector:
 - a. ISO 9001 or QF TL 9000 registered.
 - b. Experience with manufacturing and supporting connector technology that does not require epoxy or polishing in field.
 - 4. Jumper Cable: ISO 9001 and QF TL 9000 registered.

1.6 QUALITY ASSURANCE PLAN

- A. FC shall prepare a Quality Assurance Plan. The Plan shall include as a minimum:
 - 1. Shall include a schedule of when tests will be performed relative to installation milestones, specific test procedure that will be used, a list of test equipment that will be used including manufacturer, model number, range, resolution accuracy and shall conform to the specified requirements.
 - 2. List and show all test equipment Calibration certificates, valid within the last 180 calendar days.
 - 3. Show detailed procedures defining methods to ensure compliance to contract drawings and specifications by drawing control, inspection and procurement records.
 - 4. Show when and how each system will be tested, material testing procedures and certification records.
 - 5. Shall address whether cladding modes have been stripped prior to testing, source wavelength (peak), spectral width full width/half maximum (FWHM), mode structure, fiber end preparation, and bandwidth measurements of fiber links both greater and less than 1 kilometer.
- B. Test plan shall be submitted and approved by the City representative in a timely fashion to the PMT, and 'Approved' at least 30 calendar days prior to the start of the Earliest Test Plan item.

1.7 STORAGE AND HANDLING

- A. Care shall be exercised in handling materials during construction.
- B. The FC shall be solely responsible for proper handling and storage of all fiber Optic cabling and Fiber Optic apparatus. The FC shall ensure that all Fiber Optic cable reels are ordered, received and stored with hard reel-shields in place. Reels received without reel-shields may, at the sole discretion of the City, be required to be returned.
- C. Fiber Optic cabling shall be stored in a clean, dry environment, approved by the City representative, until installation. Fiber Optic cable reels shall be stored with proper orientations such that large reels do not create a crush-weight on fiber.
- D. Adequate care shall be exercised when handling and storing reels of cable to prevent damage to the cable. Cable with dents, flat spots, or other sheath distortions shall not be installed
- E. Fiber Optic ancillary apparatus, such as connectors, splice cases, patch panels, terminal enclosures, etc. shall be stored indoors in a clean, dry environment at all times.
- F. Package the cable on a reel with inner hub diameter greater than the recommended minimum-bending diameter of the cable.
- G. Package shall be sturdy enough to endure reasonable handling in the process of shipping and storage.
- H. Securely attach tags or clearly and permanently stencil or label each reel, with the following information: customer order number, customer job number, customer reel number, termination, ship date, manufacturer's name, factory reel number, manufacturer's cable code (type and fiber count), length of cable, weight of cable and reel.
- I. Seal the ends of all cable to prevent the escape of filling compound and to prevent the entry of moisture during shipping, handling, storage and installation.

1.8 SPECIAL GUARANTEE

- A. In making any warranty repairs, the Contractor shall utilize technical services as necessary. Repairs shall be completed within 5 days after written notification by Owner.

PART 2 - PRODUCT

2.1 OPTICAL FIBERS

- A. Named Types:
 - 1. Single Mode Type: Single-Mode (SM) fiber must be the equivalent graded index optical glass. Core diameter of the fiber shall be approximately 8.7 (μm) micrometer. Cladding diameter shall be 125 (μm) plus or minus 3 micrometer (μm). Core cladding offset shall be less than 1 micrometer.

Minimum tensile strength of the fiber after primary protective coating shall be greater than 350,000 kilopascal (50,000 psi). Softening point of the clad material of the optical fiber shall be 1630 degrees C plus or minus 50 degrees C in accordance with ASTM C 338, or the optical fiber shall meet the requirements in paragraph entitled, "Splice Compatibility Test." Corning's SMF-28e Single-mode or equal.

- B. Fiber Primary Protective Coating: Optical fiber shall be coated with suitable material to preserve the intrinsic high tensile strength of the glass fiber. Outside diameter of the coated optical fiber shall be 250 plus or minus 15 micrometers. Coating material shall be readily removable, mechanically or chemically, without damaging the optical fibers when the removal is desired.
- C. Optical Fiber Color-Code Coating: Primary protective coated SM fibers shall be coated with a color-code coating for individual fiber identification. Maximum outside diameter of color-code coated fiber shall be less than 300 micrometers.
- D. Colorants: Color concentrates or inks used to color code the optical fibers and the loose buffer tube shall not be susceptible to migration and chemical reaction with surrounding compounds.

2.2 FIBER OPTIC CABLE

- A. Fiber Optic Cable specified under this section shall be provided and staged by the DCSP. However, the fiber optic cable shall be installed by the fiber optic subcontractor and that Work shall be performed, inclusive of all fiber terminations, fiber optic pre-installation testing and fiber optic post installation testing. All testing to be witnessed by the City's representative and the DCSP.
- B. Cable Length: Cable shall be manufactured continuous with no factory splices. FC, at FC's own discretion, may use 'master-reels', or individual segment reels, as long as proper identification, handling and storage methods are utilized. All cable reels shall have factory-affixed reel identifiers.
- C. Materials and Construction:
 - 1. Materials used within a given cable shall be compatible with all other materials used in the same cable when such materials come into intimate contact. All cable components used shall have no adverse effect on optical transmission or on the mechanical integrity characteristics of the fiber placed in the cable. All materials used shall be non-toxic, non-corrosive, and shall present no dermal hazard.
 - 2. Minimum required material components applied to fiber optic cable construction shall be central core member, color-coded optical fiber, color-coded loose tube design with:
 - a. Gel-filling, gel-filling around loose tube, inner jacket, pulling strength members, and outer jacket.
 - b. Or, designed to comply with ICEA S-104-696, "Standard for Indoor-Outdoor Optical Fiber Cable." ICEA-696

- c. In addition, variations in sequence and construction structural components will be considered when necessary.
 - d. The fiber shall be manufactured by the outside vapor deposition (OVD) process.
- D. Central Core Member: A central core member shall be included to serve as a cable core foundation to reduce strain on the fibers but not to serve as a pulling strength member. Material of the central core member shall be non-metallic.
- E. Named Types:
 - 1. 12-fiber cable shall contain single mode (SM) fibers, as required and as shown on drawings, listed for plenum or building riser applications, with water-swallowable strength yarns and a flame retardant outer jacket, Type Corning FREEDM One, or equal, for inside building only.
 - 2. 24-fiber, 36-fiber, 48-fiber or above, shall contain single mode (SM) fibers, as required and as shown on drawings. Cable core configuration shall be comprised of loose buffer tubes, each containing six fibers. Six fibers in each loose buffer tube shall be color coded using the first colors of the standard Munsell color code, Blue, Orange, Green, Brown. Loose buffer tubes shall be color coded using the standard Munsell color code, Blue, Orange, Green, and Brown.
- F. Loose Tube Buffering: Color-code coated fibers shall be surrounded with a loose tube buffering for protection from external mechanical and environmental influences. Loose tube buffering shall be color coded for the tube identification.
- G. Inner Jacket: Buffer tubes shall be located concentrically around the cable central core member and covered with a polyethylene inner jacket. Polyethylene inner jacket shall be polyethylene in accordance with ASTM D 4976. Space between the buffer tubes and inner jacket shall be filled with a gel compound, or swellable yarns to prevent moisture, or water intrusion in the inner jacket.
- H. Pulling Strength Member: Aramid type material shall be used as pulling strength members in the cable to provide pulling strength of at least 1800 Newton (400 pounds) for the cable, during the installation process.
- I. Cable Outer Jacket: Black, high-molecular weight, polyethylene materials in accordance with ASTM D 4976 shall be applied longitudinally over all the inner jacket and sheathing strength member to form the cable outer jacket. Outer jacket shall be smooth, concentric, non-nutrient to fungus, and free from holes, splits, blisters, or other imperfections.
- J. Overall outside diameter of any cable type shall not exceed 0.75 inch.

2.3 CABLE IDENTIFICATION SYMBOL

- A. General:
 - 1. An ID shall be hot stamped on the outer jacket of the fiber optic cable at periodic intervals shall be at least every 5 feet.

2. Color shall be white.

B. Identification Approach:

1. Some Cable identification is easily stamped on the cabling at the factory, while other information is not so easily accomplished.
 - a. Each cable shall have embossed on the outer jacket of the cable, in white lettering, the following; The Manufacturer's ID or Model Number of the cable. The Type of cable e.g SM. The number of fibers in the cable. The Footage Marker of the cable. All of the above shall be stamped on the cable at intervals of five (5) feet.
 - b. At FC option, each cable shall have the ISA Cable Identification Number, as shown on the drawings, either: (1) embossed on the outer jacket of the cable, in white lettering, or (2) alternately place onto the cable a printed label, of the wrap-on self-laminating type, which contains the unique ISA Cable Identification Number. If option 1 is used, Cable Identification stamping shall be at intervals of five (5) feet. If option 2 is used, Cable Identification tags shall be placed at each end of the cable within five (5) feet of the terminus and at the entrance and exit points of all intermediate points as follows: Pull-boxes, handholes, manholes, cable-tray, splice cases, etc.

C. Cable Reel Identifier:

1. Each cable reel shall be uniquely identified on the exterior of each fiber optic reel by the manufacturer. In addition, the beginning and ending cable reel footage identifiers shall be placed on the exterior of the reel by the manufacturer.
2. When preparing the Pulling Plan, the FC shall use this unique cable identifier, as well as the proposed starting and ending footages, for each conduit segment to be pulled.

2.4 REPLACEMENT CABLE

- A. In addition, a reel of each size (FO count), and type, of cable furnished by the FC, not less than .5 kilometers in length, shall be provided. This cable shall be turned over to the City representative immediately after on-reel, bi-directional, 'on-site OTDR testing is completed.

2.5 PRE-CONNECTED CABLE ASSEMBLY

- A. FC shall supply factory assembled pre-connectorized cable assembly to interface FO cables with the patch panel bulkhead feed-through receptacle. FC shall terminate all fibers, used as well as spares. FC shall supply and install dust caps for all terminated fibers.
- B. Single fiber optic cable assembly shall be comprised of a single fiber connector terminated on the three (3) meter length of single fiber, single mode cable. Single fiber cable shall contain a buffered optical fiber.

- C. Connector/cable interface on the single cable assemblies shall be able to withstand a tensile force of 110 Newton (25 pounds) without detrimental effects on the connector loss characteristics.
- D. Each connectorized cable assembly shall have a loss of less than or equal to 0.5 dB

2.6 OPTICAL PATCH PANEL ASSEMBLIES

- A. All cable terminations shall be made in optical patch panel assemblies. Patch panel assemblies shall be of the pre-assembled chassis type with associated rack-mounting hardware.
- B. To facilitate the transition between outside plant cable and the pre-connectorized cable assemblies, the fibers shall be fusion spliced and housed in a splice tray within the patch panel assembly. Splice tray shall be positioned in the optical patch panel assembly per manufactures recommendation. Splice attenuation shall not exceed 0.2 db. Splice shall be covered with a protective sleeve.
- C. FO Patch Panels are to be located 'within' the Fiber Optic Terminal Cabinets (FOTC) enclosures as shown on drawings; typically located adjacent to the DCS PCM cabinet.

2.7 FIBER OPTIC TERMINAL CABINETS

- A. FOTCs shall be front access only.
- B. Cabinet's frame shall consist of vertical and horizontal tubular aluminum extrusions with a minimum wall thickness of .150. Front to rear aluminum extruded corners shall be at least .125 thick.
- C. Rear door, top panel, and side panels shall be a minimum 316 Stainless Steel.
- D. FOTC shall be NEMA 12 or NEMA 4X, based on Area Classification. Where Area Classifications dictate NEMA 4X, the cable entry shall be sealed with EYS type fittings and sealed only after final cable testing.
- E. Ten (10) feet of fiber shall be coiled prior to termination to Patch Panel within the FOTC. This requires cable handling and dressing mechanisms within the FOTC that shall be subject to City representative approval as part of the enclosure submittal.
- F. FOTC shall be floor mounted, or wall mounted, and seismically rated and braced.
- G. FOTCs shall provide for strain relief of incoming cables as well as providing connector panels and connector couplings adequate to accommodate the number of fibers to be terminated.
- H. All FOTCs shall incorporate radius control mechanisms to limit bending of the fibers to the manufacturer's recommended minimums.
- I. Couplers shall be mounted on a panel that, in turn, snaps into the housing assembly.

- J. FOTCs shall have a common key lock that opens all FOTCs installed for this project, or a common City lockset as directed by City representative.
- K. FOTCs shall be rack-mounted, unless specified otherwise in the drawings. Sizes are 12-fiber, 24-fiber, 36-fiber, 48-fiber or 72-fiber.

2.8 SPLICE ORGANIZERS

- A. Single mode fibers shall be fusion spliced with a protective sleeve covering and stored in an organizer with a minimum of 450 millimeters (18 inches) spare coiled buffer tubing.

2.9 FIBER OPTIC CONNECTORS AND BREAKOUT KITS

A. Connectors:

- 1. FOT fiber optic single mode yellow connectors (LC/APC – angle polish) shall be suitable for optical circuits.
 - a. Connectors: Attenuation per mated pair shall not exceed 0.75 dB (individual) and 0.5 dB (average). They shall sustain a minimum of 200 mating cycles per EIA/TIA – 455-21 without violating specifications. Connectors shall meet the following performance criteria:

<u>Test (dB)</u>	<u>Procedure</u>	<u>Max. Attenuation</u>	<u>Change</u>
Cable Retention	FOTP-6	0.2 dB	
Durability	FOTP-21	0.2 dB	
Impact	FOTP-2	0.2 dB	
Thermal Shock	FOTP-3	0.2 dB	
Humidity	FOTP -5	0.2 dB	

- 2. Manufacturer: ACON, Sumitomo Electric, Tyco

B. Breakout Kits:

- 1. Heat-shrinkable, polymeric insulating material over the connection area and a high dielectric strength mastic to seal the ends against ingress of moisture and contamination.
- 2. Accommodate a range of cable sizes for both in-line and stub-type configurations.
- 3. Independent of cable manufacturer's tolerances.
- 4. Acceptable Manufacturer:
 - a. Belden.
 - b. Corning.
 - c. Approved Equal.

2.10 FIBER OPTIC LINE/PATCH CABLES

- A. All fiber optic patch cords shall be duplex zip cords, factory terminated and 100 percent tested.
- B. All fiber optic patch cords shall match fiber optic panel termination connector, i.e., green SC/APC to green SC/APC for angle polish.

2.11 FIBER OPTIC INNER DUCT

- A. This specification applies to the following:
 - 1. Flexible, Plenum and Riser-rated inner duct
 - 2. Flexible, Plenum and Riser-rated MaxCell Cells
- B. Pull cord: Each inner duct shall come with pull cord. Pull cord shall be 1/4-inch polypropylene or equivalent with a minimum tensile strength of 1250 pounds. Pull cord shall be installed in the inner duct prior to delivery to the construction site. The pull cord shall extend 6 feet beyond the termination at each end.
- C. Conduit and inner duct plugs: The Fiber Optic conduit plugs will be Jack Moon Duct Plug from TYCO or equal. Inner duct will be affixed to the interior of the Duct Plug by an approved means, in accordance with MaxCell or TYCO technical bulletins.

2.12 ACCESSORIES

- A. Hardware: Provide cable clamps, strain reliefs, blocking and grommet kits, closures, and fan outs for complete installation.

PART 3 - EXECUTION

3.1 FACTORY TEST

- A. Fiber optical cable shall comply with the optical and mechanical test requirements of this section.
- B. The MANUFACTURER shall certify OTDR test, optical, and mechanical performance for each reel. Manufacturers' Certification shall be delivered with the fiber optic cable when it arrives.
 - 1. Factory testing documentation shall be submitted to the City representative upon receipt of cable, and before any on-site OTDR testing commences.
- C. Optical Performance:
 - 1. Single-Mode Fibers in the Cable:
 - a. Optical attenuation of each optical fiber in the cable (reeled) shall be no greater than 0.5 dB/Km at 850 nm, plus or minus 50 nm, optical spectrum window. Attenuation shall be measured on completed cable reel length, and normalized linearly to 1 Km. Measurement method

shall be in accordance with TIA 455-78B, at central wavelength 850 nm nominal.

- b. Pulse dispersion of each optical fiber in the cable (reeled) shall be no greater than 3.5 picoseconds/nm-Km within the emissive region of 1285-1330 nm. Measurement method shall be in accordance with EIA 455-168A and EIA 455-169A.
- c. Mode field diameter at 850 nm optical spectrum window shall be within 10 plus or minus 1 micrometer. Measurement method shall be in accordance with EIA/TIA 455-165A at central wavelength 850 nm nominal. When this requirement is not met, the fusion splice compatibility test shall be applied.
- d. Cut-off wavelength for 850 nm optical spectrum window shall be within 1200 plus or minus 70 nm. Measurement method shall be in accordance with EIA 455-80B.

D. Mechanical Performance:

1. Minimum Bend Radius: Cable shall be able to withstand bending to a minimum radius of 10 times the cable outer diameter without tensile load applied, and of 20 times the cable outer diameter with maximum tensile load applied (during installation), without damage to cable components or degradation of the optical fiber performance at room temperature.
2. Tensile Strength: Fiber optical cable shall withstand a pull force of at least 1800 Newtons (400 pounds force per square inch) to be applied to the pulling strength member during the installation, and a tensile load of at least 300 Newtons during operation without incurring any damage or detriment to fiber optical cable and optical performance. Tensile strength test shall be in accordance with EIA 455-33A.
3. Flexing or Bending Cycles: Fiber optical cable shall withstand at least 20 bending cycles at minimum bend radius without damage to the fiber optic cable components or degrading optical performance. Cyclic flexing test shall be in accordance with TIA 455-104A.
4. Crush Resistance: Minimum crush resistance of the fiber optical cable shall be greater than 650 Newton/centimeter (cm) without damage to cable components or degrading optical performance. Crush resistance test shall be in accordance with EIA 455-41.
5. Impact Resistance: Fiber optical cable shall be capable of withstanding 20 impacts, at five Newton-meters force, without damage to cable components, or degradation of optical performance. Impact resistance test shall be in accordance with EIA 455-25C.
6. Gel Filling Compound Drip Test: Optical cable shall be tested for the ability of the gel filling compound in the interior of the inner jacket and loose tube buffer to resist flow at the temperature range of minus 40 degrees C to 60 degrees C in accordance with EIA 455-81B.

7. Fluid Penetration: Optical cable shall be capable of preventing the entry and axial migration of pressurized water when subjected to fluid penetration testing in accordance with EIA 455-82B.

3.2 TEMPERATURE ENVIRONMENT

- A. Fiber optical cable shall comply with the mechanical performance requirements herein while used in duct applications where the temperature varies from minus 8 degrees C to plus 38 degrees C. Optical performance degradation shall be less than five percent of the optical performance requirements in the temperature range of minus 20 degrees C to plus 60 degrees C. Fiber optical cable shall not be damaged in storage where the temperature may vary from minus 40 degrees C to plus 65 degrees C.

3.3 FIBER SPLICES

- A. The use of fiber optic splicing is to be minimized. The FC shall perform all cable splicing with certified personnel approved by the City representative. Outside plant fiber splices shall be fusion type and made along the fiber route where shown on the design drawings, or when FC reel lengths and related cable 'budget' are not a concern. FC shall ensure that Splices shall exhibit an insertion loss not greater than 0.2 dB. All splice measurements shall be made at appropriate frequencies for cable type. All splices shall be mounted in trays within splice enclosures.
- B. Completed splice shall be covered with a protective sleeve heat shrink type to restore the protective properties of the fiber coating and buffering. Deviations to the splice, location and pulling plans, will be permitted upon approval by the City representative, and shall be provided at no additional cost to City.
- C. All fiber colors shall be continuous from end to end. No switching or staggering of color scheme within the cable at splice points shall be allowed.
- D. Cables shall be brought out of manhole, handhole or intermediate pull-box in a controlled environment to perform the fiber fusion splice operation. Splice shall be completed by returning the cable to the manhole, etc. such that the excess cable does not impede future entrance and utilization of the enclosure. Cable shall be secured within the enclosure at intervals not in excess of 3 ft. utilizing standard galvanize racking hardware, provided by the FC. Racking hardware shall maintain minimum bend radius requirements.
- E. Field verification of all cable measurements end-to-end, before installation, is required to avoid any and all mid-span splices.

3.4 CABLE TERMINATIONS

- A. In accordance with TIA 568-C.3.
- B. Fan out fiber cable to allow direct connectorization of connectors.
 1. Sleeve over individual fibers with transparent furcation tubes.
 2. At point of convergence of furcation tubes, provide strain relief with metal or high density plastic fan-out collar.

C. Breakout Kits:

1. Terminate cables using manufacturer supplied breakout kits.
2. Terminate in accordance with manufacturer's recommendations.

D. Slack:

1. Fiber Centers, Hubs, and Switches: Minimum, 3-meter slack fiber at each end, coiled neatly in cable management equipment.
2. Communications Management Outlets: Minimum, 1-meter slack fiber, coiled neatly in outlet box.

E. Connectors:

1. Terminate 100 percent fibers in each cable to specified connector.
2. Connect into fiber management system.

3.5 CABLE DRESSING

A. Lacing and Bundling:

1. Lace and bundle individual optical fiber cables in panels and electrical equipment at intervals not greater than six inches, spread into trees and connected to their respective terminals.
2. Lacing shall be made up with plastic cable ties.
3. Lacing is not necessary in plastic panel wiring duct.
4. Bundle individual optical fiber cables crossing hinges into groups not exceeding eight fibers and arrange so that they will be protected from chafing when the hinged member is moved.

B. Slack:

1. Provide slack in handholes.
2. Slack shall be sufficient to allow cables to be routed along the walls of the box.
3. Amount of slack shall be equal to largest dimension of the box or as indicated on the drawings, whichever is larger.
4. Where plastic panel wiring duct is provided for wire runs, lacing is not required.
5. Do not use plastic panel wiring duct in handholes.

C. Individual Fibers:

1. Break out individual fibers from multi-fiber cables utilizing Breakout Kits as specified by cable manufacturer.
2. Terminate individual fibers with connectors as required by the utilization equipment.
3. Install connectors using manufacturer's recommended tools.

- D. Unless otherwise indicated, bond armoring of multi-fiber cables to the chassis ground bus at the control panel or per NEC at other locations. Provide terminals for running grounding wires through junction boxes.
- E. Install and terminate cable in compliance with the manufacturer's recommendations.

3.6 UNDERGROUND CABLE INSTALLATION

- A. It is the responsibility of the FC to install all fiber optic cabling, in raceway, ductbanks, conduits, etc. provided and installed by others, per Section 26 05 33, Raceway and Boxes. It is the responsibility of the FC to inspect all raceway and ensure that raceway has been installed in accordance with bend radius requirements and that all raceway is mandreled and clean, ready of cable installation. When placing Fiber Optic cabling the FC shall ensure that proper roller stands and sheaves are used to prevent strain or damage to the cabling during installation.
- B. In the event that the FC's installation crews witness any anomaly to the fiber during installation they are to immediately stop installation and notify the City's representative.
- C. Securing Cable:
 - 1. Immediately after cable placement, a permanent identification tag shall be attached to visible cable sections. Cables shall be checked to ensure that the markings are intact.
 - 2. Cables and equipment shall be supported and secured as indicated in the design drawings. Where the specific method of support is not shown, supports and fasteners shall be used to secure cables and equipment in position. Metallic supports and fasteners shall be Stainless Steel. All cables shall be routed along the interior sides of manholes and shall be secured such that no more than a 4" catenary is evident between fasteners.
 - 3. No fewer than four, and preferably eight (8), cable/racking hooks shall be required per manhole and shall be provided by the FC.
 - 4. Clamps and straps consisting of stainless steel clamps and black-nylon ty-wraps shall be used as necessary to properly secure the cable
 - 5. Sequential cable markings along the cable, prior to and after each end of splice point, shall be recorded on the sequential cable form and submitted for approval.
- D. Bending:
 - 1. Caution shall be used by the FC when bending cable to avoid kinks or other damage to the sheath. Bend radius shall be as large as possible with a minimum of 10 times the cable diameter. Minimum radius shall be increased when necessary to meet cable manufacturer's recommendation. Cables shall not rest against any sharp edges.

2. Minimum bending radii shall not be exceeded as specified by the cable manufacturer during placement.

E. Pulling:

1. Complete the pulling of optical fiber cable into conduit or trays without damaging or putting undue stress on the cable insulation.
2. Soapstone, talc or UL listed pulling compounds are acceptable lubricants for pulling optical fiber cable.
3. Grease is not acceptable.
4. Raceway/conduit construction shall be complete, cleaned, and protected from the weather before cable is placed.
5. Pulling lines shall be attached to both cable ends when cable is destined for bi-directional pull, and fitted with factory-installed pulling eyes. Cables not equipped with a pulling eye shall have the pulling line attached to the cable end by means of a cable grip. Core hitches shall not be used.
6. Cable reels shall be located and aligned so that the cable is pulled out from the top of the reel into the duct or conduit in a long, smooth bend without twisting. Cable shall not be pulled from the bottom of the reel. A cable feeder guide of proper dimensions shall be used at the mouth to guide the cable into the duct or conduit.
7. Rigging shall be set up at the pulling end so that the pulling line and cable exit on a line parallel with the duct or conduit to prevent either from rubbing against the edge or mouth. Cable ends shall not be pulled around sheave wheels. When the sheave or pulley cannot be positioned to obtain sufficient cable end slack for proper racking and splicing with the pulling line attached to the end of the cable, a split cable grip may be used to obtain the necessary slack.
8. Unless direct burial cable, conductors shall be protected from earth, concrete or asphalt during a pull by plastic or canvas tarp covering the ground.
9. The FC shall perform all cable installation in conformance with the cable manufacturer's installation guidelines. Do not exceed cable manufacturer's recommendations for maximum pulling tensions. Where indicated in the Pulling Plan cable tension shall be monitored with a manometer.

F. Lubricant:

1. The FC shall use pulling lubricant to minimize pulling tension and prevent sheath damage when pulling cables into ducts and conduits. Lubricant shall be applied to the cable sheath with a lubricator. When pulling has been completed, the exposed cable ends shall be wiped clean of lubricant.
2. Lubricants shall be compatible with and intended for use with plastic-sheathed cables. Soap and grease type lubricants shall not be allowed.

3. All equipment and the pulling set shall be checked to minimize interruptions once pulling begins. Cable shall be pulled without stopping until the required amount of the cable has been placed. When the pulling operation is halted before the pull is completed, the tension of the pulling line shall not be released. When pulling is resumed, the inertia of the cable shall be overcome by increasing the tension in small steps a few seconds apart until the cable is in motion. Cable shall be paid from the top of the reel by rotating the reel in the feed direction at the rate of pull. Cable shall not be stripped off the reel by hand-pulling.

G. Damage and Defects:

1. FC shall use a tension monitoring device (Manometer) to ensure that the maximum pulling tension that may be applied to the cable to be pulled into a conduit section is not exceeded, unless cable is being pulled by hand. Any damage to the cable due to exceeding the maximum tension will require a new cable furnished by the FC at FC's own cost.
2. Cable shall be carefully inspected by the FC for sheath defects or other irregularities as it is paid out from the reel. When defects are detected, pulling shall stop immediately and the cable section shall be repaired or replaced at the sole discretion of the City representative. A system of communications shall be maintained between pulling and feed locations so that pulling can be stopped instantly, when required.
3. Cable shall be hand guided through intermediate manholes and into the next duct section when making pull-through. Proper rigging shall be used in the intermediate manhole to keep the pulling line and cable aligned with the exit duct to prevent the line or cable from rubbing against the edge of the duct. Cables in pull-through manholes shall be set up and racked before the cable ends in adjacent manholes are set up and racked.
4. Cable ends pulled into manholes, vaults, or terminal locations that are not to be racked or otherwise permanently positioned immediately shall be tied in fixed positions to prevent damage to the cables and provide adequate working space.

H. Seal:

1. Ducts or inner duct in which cable is placed shall be sealed with appropriate plugs or seals as specified elsewhere. This material shall be inserted between the cable and the duct and in all unused ducts, in order to prevent damage to the cable sheath and to prevent the entrance of dirt or water into the Ducts from the manhole or vault.
2. Cables shall be provided in continuous lengths as required to accomplish the required installation without splices from termination to termination, except where field splices are specifically shown on approved field installation design submittals.

3.7 CABLE INSTALLATION IN CABLE TRAYS

- A. Except where shown by the design engineer, fiber optic cables shall not be installed in the same cable tray with ac power cables containing power in excess of 208 volts to ensure physical safety of FC installers, and subsequent safety of City personnel.
- B. The cable tray pathways shall be as specified in Section 26 05 33, Raceway and Boxes.
- C. Cables placed in cable trays shall be installed in a neat and orderly manner.
- D. Cables in vertical trays shall be individually retained with Velcro straps at a maximum of 6 ft. on center.
- E. Provide and install cable management and support as required.

3.8 CABLE INSTALLATION IN CONDUIT

- A. All conduits housing fiber optic cable shall be at least 3/4 inch in size. The conduit should be sized appropriately in accordance with the EIA/TIA 569A. Conduits are installed by others, per Section 26 05 33, Raceway and Boxes.
- B. Any conduits housing fiber optic cable shall have an inside bend radius of at least ten times the internal diameter of the conduit or the manufacturers specified bend radius of the fiber, whichever is greater.
- C. All conduits housing fiber optic cable shall be terminated with an insulated bushing to prevent damage to the conductor during installation or shall be terminated with a Jack Moon (Tyco) sealing plug after cable installation.
- D. All conduits, and inner duct, installed for fiber optic cable must be installed by others with a nylon pull cord.
- E. All conduit and trays shall be supported to the structure, independent of other services. Refer to Section 26 05 33, Raceway and Boxes., Electrical, regarding conduit support.
- F. All conduits that are larger than two inches and will house fiber optic cable must be filled with inner duct or MaxCell equivalent cells prior to the installation of the fiber optic cable. See the following table:

Conduit Size	# of Inner ducts
3" conduit	3-1" inner ducts
4" conduit	3-1" plus 1-1/4" inner ducts
5" conduit	3-1" plus 2-1/4" inner ducts

3.9 BACKBONE CABLE SERVICE COILS

- A. Install backbone cable service coils with length of ten (10) feet and a coiled diameter as required by manufacturer at each end of all new fiber optic cables to control excess cable lengths before terminating fiber strands.

- B. Install backbone cable service coils in 24' x 24' x 6' NEMA 1 enclosure within four feet of cable entrance inside of room. Use four adhesive holders and hook and loop fasteners to bind fiber service coil in four places with separation of 90 degrees and secure the slack fiber to the interior of the junction box. Tie wraps are not permitted.

3.10 FIRE STOPPING

- A. Provide fireproof seals where required in accordance with the National Fire Protection Association (NFPA) and the National Electric Code (NEC), Article 200-221 and EIA/TIA 569 standards.
 - 1. Fireproofing around raceways or conduits shall be provided by others as called for on design drawings and Section 26 05 33, Raceway and Boxes.

3.11 TESTING

- A. Pre-Installation Testing, Fiber Optic Cables
 - 1. The FC is responsible for conducting full pre-installation testing of the Fiber Optic Cabling in accordance with this section and section 1.04.B
 - 2. Pre-Installation testing will be accomplished, bi-directionally, utilizing an Optical Time Domain Reflectometer (OTDR) and will be accomplished on each fiber, of each cable while still on the shipping reel. Pre-installation testing will be accomplished without any apparatus, connectors, etc., with the exception of the OTDR Launch cord/cable, affixed to the fiber under test.
 - 3. Prior to commencement of pre-installation testing, the FC will submit a Testing Plan which will address testing methodology for both Pre-and Post Installation testing. This plan should specify all parameters under which the FC will be testing the cables. All test equipment, test procedures, and testing techniques shall be specified in the Test Plan
 - 4. Note: no fiber optic cable may be placed until:
 - a. The Test Plan is submitted and approved by City representative.
 - b. The Pre-Installation OTDR testing is complete for all cables.
 - c. The OTDR Test Report, CD/DVR, report software, etc. for Pre-Installation Testing has been submitted to the City representative.
 - d. The FC receives written notice that the City's representative is ready and in place (Approval to Proceed)
 - 5. The City's representative will witness all pre-installation fiber optic testing. The City's representative will perform no less than 25 percent spot-witnessing of Pre-Testing and may, at FC's sole option, witness 100 percent of the testing.
 - 6. During testing the FC will log each cable, by reel and/or cable identification number, and will provide a testing sign-off sheet for each reel tested. FC will continue to reference this same reel and/or Cable ID number in FC's pulling

plan such that testing data can be tracked to each cable segment(s) for post-installation testing.

7. During testing the City's representative may suspend testing at any time, if in FC's sole opinion, testing is not being conducted in accordance with this section, or the Testing Plan.
 8. During testing the City's representative may fail any reel of cable that has obvious flaws as determined by the OTDR. Should the cable flaw be within the first or last 10 percent of the reel length being tested, or if in the sole opinion of the City's representative there is sufficient usable length on the reel, the FC may be allowed to re-spool the usable cable and re-test it at another time. If in the sole opinion of the City's representative a cable reel is 'rejected', the FC shall replace, and retest, that length of rejected cable at the FC's sole expense.
 9. At the conclusion of Pre-Installation Testing the FC and the City representatives, will immediately sign each of the Reel Testing Sheets.
 10. At the conclusion of Pre-Installation Testing the FC will immediately download the OTDR data, in the presence of the City representative, and burn that data to CD/DVD for record purposes. One Copy of the Disk will be turned over to the City representative.
 11. The Hard Copy Report of the Pre-Installation OTDR Test will be provided in accordance with the Submittal Requirements in Section 1.03
- B. Post-Installation Testing Fiber Optic Cables:
1. The FC is responsible for conducting full Post-Installation testing of the Fiber Optic Cabling in accordance with this section.
 2. Post-Installation testing will be accomplished, bi-directionally, utilizing an Optical Time Domain Reflectometer (OTDR) and will be accomplished on each fiber, of each cable on the fully installed cable network. Post-Installation testing will be accomplished with each segment cable connectorized and attached to its respective bulkhead fitting at the Fiber Optic Patch Panel associated with each end of the cable. Additionally, the OTDR launch cord/cable will be affixed to the Patch Panel at one end of the fiber under test and a landing/cord cable at the other to make cable definition obvious.
 3. Prior to commencement of Post-Installation testing, the FC will have submitted a Testing Plan which will address testing methodology for Post Installation testing. This plan should specify all parameters under which the FC will be testing the cables.
 4. The FC shall provide written notice of FC's intent to perform Post-Installation Testing of Fiber Optic Cabling a minimum of thirty (30) calendar days prior. Note: Submission of the Testing Plan or test reports does not constitute written notice for this purpose.

5. The FC shall not proceed with Post-Installation testing until he receives written notice that the City representative is ready and in place (Approval to Proceed).
6. The City's representative will witness 100 percent of the Post-Installation testing.
7. During testing the FC will log each cable segment by cross-referencing to the Pre-Installation testing real and/or cable identification number and will provide a testing sign-off sheet for each Cable Segment tested.
8. During testing the City's representative may suspend testing at any time, if in FC's sole opinion, testing is not being conducted in accordance with this section or the Testing Plan.
9. During testing the City's representative may fail any Cable Segment that has obvious flaws as determined by the OTDR. Should the cable flaw be associated with connectorization or faulty Patch Panel Bulkheads, the FC will be given the opportunity to repair and retest that segment at a later time. If in the sole opinion of the City's representative a Cable Segment is 'rejected', the FC shall remove the defective cable, replace it with a new Pre-Tested cable, and retest that Cable Segment at the FC's sole expense.
10. At the conclusion of Post-Installation Testing the FC, and the City representative, will immediately sign each of the Cable Segment Testing Sheets.
11. At the conclusion of Post-Installation Testing the FC, will immediately download the OTDR data, in the presence of the City representative, and burn that data to CD/DVD for record purposes. One Copy of the Disk will be turned over to the City representative.
12. The Hard Copy Report of the Post-Installation OTDR Test will be provided in accordance with the Submittal Requirements in Section 1.03

3.12 TEST REQUIREMENTS

- A. Test equipment used for verifying installation testing shall be calibrated by a certified testing company within 30 days of use. Calibration certification shall be provided to the City's representative immediately prior to the start of testing.
- B. Single Mode OTDR Test: The OTDR shall conform to the following minimum requirements:
 1. Operating wavelengths: Single-mode at 850 and 1,300 nanometers plus or minus 20 nanometers in accordance with ANSI/TIA/EIA-526-7, Method A.1, Two Reference Jumper or the equivalent method. All single-mode links shall be certified with test tools using laser light sources at 850 nm and 1300 nm.
 2. Attenuation Range (one way): minimum 5 dB at 1,300 nm
 3. Attenuation Resolution: 0.01 dB
 4. Accuracy: plus 0.5 dB.

5. OTDRs shall have digital readout capability and shall have a means of providing a permanent record in the form of both electronic and hardcopy printout report displaying the OTDR trace graph.
 6. Test results:
 - a. Reflective events (connections) shall not exceed 0.5 dB.
 - b. Non-reflective events (splices) shall not exceed 0.3 dB.
 - c. End-to-End Attenuation Tests: An attenuation measurement test set shall consist of an optical power meter and an optical power source. Attenuation measurement test set shall be in accordance with the applicable National Bureau of Standards (NBS) standards for a stable optical source. Meter may be analog or digital. End-to-end attenuation test reading shall be included on the test reference loss. The attenuation/insertion loss test shall be in single-direction only, in accordance with TIA/EIA-526-7, Method A -1.
- C. Measurement test set shall conform to the following minimum requirements:
1. Operating wavelengths: Single-mode at 850 and 1,300 nanometers plus or minus 10 nanometers.
 2. Attenuation Range: at least 30 dB at 1,300 nm
 3. Attenuation Resolution: 0.01dB
 4. Accuracy: The accuracy of the attenuation measurement test set shall be plus or minus 5 percent.
 5. Optical source shall be capable of coupling sufficient power into the fiber so that the light received at the meter is within the meter delectability limits.
- D. End-to-End Bandwidth Tests:
1. Bandwidth test shall conform to the following minimum requirements:
 - a. Operating wavelengths: Single-mode at 850 and 1,300 plus or minus 10 nanometers
 - b. Bandwidth range: minimum 1000 megahertz
 - c. Bandwidth Resolution: 1 megahertz
 - d. Accuracy: plus or minus 0.5 megahertz
 - e. Measurement Method: Swept Frequency
- E. Magnified Optical End Face inspection:
1. Fiber end faces shall be inspected after connectorization but before termination at 250X or 400 X magnifications. 250X magnification are suitable for inspecting single mode fibers. 400X magnification may be used for detailed examination of single mode fibers.
 2. Scratched, pitted or dirty connectors shall be diagnosed and corrected.

END OF SECTION

SUPPLEMENTARY SPECIAL PROVISIONS
APPENDICES

APPENDIX A

ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT (EIR/EIS)

Environmental/Mitigation Requirements

1. *Air Quality*

MM-AQ-1 The following best management practices shall be implemented during construction to comply with applicable San Diego Air Pollution Control District (SDAPCD) rules and regulations and to further reduce daily construction emissions:

- Best management practices that could be implemented during construction to reduce particulate emissions and reduce soil erosion and trackout include the following:
 - a. Cover or water, as needed, any on-site stockpiles of debris, dirt, or other dusty material.
 - b. Use adequate water and/or other dust palliatives on all disturbed areas in order to avoid particle blow-off. Due to current drought conditions, the contractor shall consider use of a SDAPCD-approved dust suppressant where feasible to reduce the amount of water to be used for dust control. Use of recycled water in place of potable water shall also be considered provided that the use is approved by the City of San Diego and other applicable regulatory agencies prior to initiation of construction activity.¹ Use of recycled water shall be in compliance with all applicable City of San Diego Rules and Regulation for Recycled Water (City of San Diego 2016a), particularly for the protection of public health per the California Code of Regulations, Title 22, Division 4.
 - c. Wash down or sweep paved streets as necessary to control trackout or fugitive dust.
 - d. Cover or tarp all vehicles hauling dirt or spoils on public roads if sufficient freeboard is not available to prevent material blow-off during transport.
 - e. Use gravel bags and catch basins during ground-disturbing operations.
 - f. Maintain appropriate soil moisture, apply soil binders, and plant stabilizing vegetation.

MM-AQ-2 The following measures shall be adhered to during construction activities associated with the North City Project to reduce oxides of nitrogen (NO_x):

- a. All diesel-fueled construction equipment shall be equipped with Tier 3 or better (i.e., Tier 4 Interim or Tier 4 Final) diesel engines.
- b. The engine size of construction equipment shall be the minimum size suitable for the required job.

¹ The use of recycled water for construction purposes requires approval of the City and other regulatory agencies on a case-by-case basis. The permit shall be obtained prior to beginning construction. Recycled water used for construction purposes may only be used for soil compaction during grading operations, dust control, and consolidation and compaction of backfill in trenches for non-potable water, sanitary sewer, storm drain, gas and electric pipelines. Equipment operators shall be instructed about the requirements contained herein and the potential health hazards involved with the use of recycled water. Water trucks, hoses, drop tanks, etc. shall be identified as containing non-potable water and not suitable for drinking. Determinations as to specific uses to be allowed shall be in accordance with the standards set forth in Title 22, Division 4 of the California Code of Regulations and with the intent of this ordinance to preserve the public health. The City may, at its discretion, set forth specific requirements as conditions to providing such services and/or require specific approval from the appropriate regulatory agencies (City of San Diego 2016a).

- c. Construction equipment shall be maintained in accordance with the manufacturer's specifications.

MM-AQ-3

The City shall implement odor control systems at the NCWRP Expansion, Morena Pump Station, and Morena Wastewater Forcemain specifically designed to abate the potential odors of the facility. Odor control systems would be similar to those currently employed at City of San Diego wastewater treatment facilities to reduce odor impacts. The following odor control systems or equivalent measures shall be implemented to mitigate nuisance odors:

- a. North City Water Reclamation Plant Expansion and the Morena Pump Station: NaOCl/NaOH Wet Scrubber plus carbon or Biofilter plus carbon.
- b. Air/vacuum relief valves at high points along the wastewater forcemain: ferric chloride and/or High Purity Oxygen injection.

Alternatively, odors could be abated through the addition of chemicals such as iron chloride, nitrate, hydrogen peroxide, sodium hypochlorite, high purity oxygen, magnesium hydroxide, and/or caustic solutions to reduce the liquid phase concentration and thus, reduce the amount volatilized into the gas phase.

2. *Biological Resources*

MM-BIO-2

Habitat Revegetation. Habitat revegetation and erosion control treatments will be installed within temporary disturbance areas in native habitat, in accordance with the San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012) and the San Diego Municipal Code, Land Development Code—Landscape Standards (City of San Diego 2016). The Conceptual Revegetation Plan (Appendix P, of Appendix C) was prepared by a Restoration Specialist. Habitat revegetation will feature native species that are typical of the area, and erosion control features will include silt fence and straw fiber rolls, where appropriate. The revegetation areas will be monitored and maintained for 25 months to ensure adequate establishment and sustainability of the plantings/seedings.

Revegetation Plan(s) and Specifications:

1. Landscape Construction Documents (LCD) shall be prepared on D-sheets and submitted to the City of San Diego Development Services Department, Landscape Architecture Section (LAS) for review and approval. LAS shall consult with Mitigation Monitoring Coordination (MMC) and obtain concurrence prior to approval of LCD. The LCD shall consist of revegetation, planting, irrigation and erosion control plans; including all required graphics, notes, details, specifications, letters, and reports as outlined below.
2. Landscape Revegetation Planting and Irrigation Plans shall be prepared in accordance with the San Diego Land Development Code (LDC) Chapter 14, Article 2, Division 4, the LDC Landscape Standards submittal requirements, and Attachment "B" (General Outline for Revegetation/ Restoration Plans) of the City of San Diego's LDC Biology Guidelines (April 2012). The Principal Qualified Biologist (PQB) shall identify and adequately document all pertinent information concerning the revegetation goals and requirements, such as but not limited to, plant/seed palettes, timing of installation, plant installation specifications,

method of watering, protection of adjacent habitat, erosion and sediment control, performance/ success criteria, inspection schedule by City staff, document submittals, reporting schedule, etc. The LCD shall also include comprehensive graphics and notes addressing the ongoing maintenance requirements (after final acceptance by the City). For areas where a water source is not available irrigation can be completed by a water truck. Additionally, it is recommended that planting/seeding occur in the fall or early winter, to the maximum extent practical, in order to minimize the amount of water truck visits needed.

3. The Revegetation Installation Contractor (RIC), Revegetation Maintenance Contractor (RMC), Construction Manager (CM) and Grading Contractor (GC), where applicable shall be responsible to insure that for all grading and contouring, clearing and grubbing, installation of plant materials, and any necessary maintenance activities or remedial actions required during installation and the 120-day plant establishment period are done per approved LCD. The following procedures at a minimum, but not limited to, shall be performed:
 - a. The RMC shall be responsible for the maintenance of the upland mitigation area for a minimum period of 120 days.
 - b. At the end of the 120-day period the PQB shall review the revegetation area to assess the completion of the short-term plant establishment period and submit a report for approval by MMC. If the 120-day plant establishment period success criteria has not been met, an extension may be warranted at the discretion of the PQB.
 - c. MMC would provide approval in writing to begin the 25-month maintenance and monitoring program.
 - d. Existing indigenous/native species shall not be pruned, thinned, or cleared in the revegetation/mitigation area.
 - e. The revegetation site shall not be fertilized.
 - f. The RIC is responsible for reseeding (if applicable) if weeds are not removed, within one week of written recommendation by the PQB.
 - g. Weed control measures shall include the following: (1) hand removal, (2) cutting, with power equipment, and (3) chemical control. Hand removal of weeds is the most desirable method of control and would be used wherever possible.
 - h. Damaged areas shall be repaired immediately by the RIC/RMC. Insect infestations, plant diseases, herbivory, and other pest problems would be closely monitored throughout the 25-month maintenance period. Protective mechanisms such as metal wire netting shall be used as necessary. Diseased and infected plants shall be immediately disposed of off site in a legally acceptable manner at the discretion of the PQB or Qualified Biological Monitor (City approved). Where possible, biological controls would be used instead of pesticides and herbicides.

MM-BIO-3 Nesting Birds. To avoid any direct impacts any species identified as a candidate, sensitive, or special status species in the MSCP or other local or regional plans, policies or regulations, or by CDFW or USFWS, removal of habitat that supports active nests in the proposed area of disturbance should occur outside of the breeding season for these species (February 1 to September 15). If removal of habitat in the proposed area of

disturbance must occur during the breeding season, the Qualified Biologist shall conduct a pre-construction survey to determine the presence or absence of nesting birds on the proposed area of disturbance. The pre-construction survey shall be conducted within 10 calendar days prior to the start of construction activities (including removal of vegetation). The applicant shall submit the results of the pre-construction survey to the City's Development Services Department for review and approval prior to initiating any construction activities. If nesting birds are detected, a letter report or mitigation plan in conformance with the City's Biology Guidelines and applicable State and Federal Law (i.e. appropriate follow up surveys, monitoring schedules, and construction barriers/buffers, etc.) shall be prepared and include proposed measures to be implemented to ensure that take of birds or eggs is avoided. The report or mitigation plan shall be submitted to the City for review and approval and implemented to the satisfaction of the City. The City's MMC Section and Biologist shall verify and approve that all measures identified in the report or mitigation plan are in place prior to and/or during construction.

MM-BIO-4a Coastal California Gnatcatcher. Prior to the preconstruction meeting, the Assistant Deputy Director (ADD) or MMC shall verify that the MHPA boundaries and the Project requirements regarding the coastal California gnatcatcher, as specified below, are shown on the construction plans.

No clearing, grubbing, grading, or other construction activities shall occur during the coastal California gnatcatcher breeding season (March 1 to August 15), until the following requirements have been met to the satisfaction of the ADD/MMC:

1. A Qualified Biologist (possessing a valid Endangered Species Act Section 10(a)(1)(a) Recovery Permit) shall survey those habitat areas within the MHPA that would be subject to construction noise levels exceeding 60 decibels [dB(A)] hourly average for the presence of the coastal California gnatcatcher. Surveys for coastal California gnatcatcher shall be conducted pursuant to the protocol survey guidelines established by the USFWS within the breeding season prior to the commencement of any construction. If coastal California gnatcatchers are present, then the following conditions must be met:
 - a. Between March 1 and August 15, no clearing, grubbing, or grading of occupied coastal California gnatcatcher habitat shall be permitted. Areas restricted from such activities shall be staked or fenced under the supervision of a Qualified Biologist; and
 - b. Between March 1 and August 15, no construction activities shall occur within any portion of the site where construction activities would result in noise levels exceeding 60 dB(A) hourly average at the edge of occupied coastal California gnatcatcher habitat. An analysis showing that noise generated by construction activities would not exceed 60 dB(A) hourly average at the edge of occupied habitat must be completed by a Qualified Acoustician (possessing current noise engineer license or registration with monitoring noise level experience with listed animal species) and approved by the ADD/MMC at least 2 weeks prior to the commencement of construction activities. Prior to the commencement of construction activities during the breeding season, areas restricted from such activities shall be staked or fenced under the supervision of a Qualified Biologist; or

- c. At least 2 weeks prior to the commencement of construction activities, under the direction of a Qualified Acoustician, noise attenuation measures (e.g., berms, walls) shall be implemented to ensure that noise levels resulting from construction activities would not exceed 60 dB(A) hourly average at the edge of habitat occupied by the coastal California gnatcatcher. Concurrent with the commencement of construction activities and the construction of necessary noise attenuation facilities, noise monitoring shall be conducted at the edge of the occupied habitat area to ensure that noise levels do not exceed 60 dB(A) hourly average. If the noise attenuation techniques implemented are determined to be inadequate by the Qualified Acoustician or Biologist, then the associated construction activities shall cease until such time that adequate noise attenuation is achieved or until the end of the breeding season (August 16). Construction noise monitoring shall continue to be monitored at least twice weekly on varying days, or more frequently depending on the construction activity, to verify that noise levels at the edge of occupied habitat are maintained below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB(A) hourly average. If not, other measures shall be implemented in consultation with the biologist and the ADD/MMC, as necessary, to reduce noise levels to below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB(A) hourly average. Such measures may include, but are not limited to, limitations on the placement of construction equipment and the simultaneous use of equipment.
2. If coastal California gnatcatchers are not detected during the protocol survey, the Qualified Biologist shall submit substantial evidence to the ADD/MMC and applicable resource agencies which demonstrates whether or not mitigation measures such as noise walls are necessary between March 1 and August 15 as follows:
 - a. If this evidence indicates that the potential is high for coastal California gnatcatcher to be present based on historical records or site conditions, then Condition 1(a) shall be adhered to as specified above.
 - b. If this evidence concludes that no impacts to this species are anticipated, no mitigation measures would be necessary.

MM-BIO-4b Coastal California Gnatcatcher. Ambient noise levels on MCAS Miramar, in particular in the vicinity of the airfield, exceed typical construction noise level. On MCAS Miramar, construction noise levels are not anticipated to exceed ambient noise levels. Potential impacts associated with construction activities on MCAS Miramar would be mitigated through the following:

1. Qualified Biologist (possessing a valid federal Endangered Species Act (FESA) Section 10(a)(1)(a) Recovery Permit) shall conduct a pre-construction survey within suitable habitat. Between February 15 and August 31, no clearing, grubbing, or grading of occupied coastal California gnatcatcher habitat shall be permitted. Areas restricted from such activities shall be staked or fenced under the supervision of a Qualified Biologist; and
2. For potential impacts associated with construction noise, presence or absence of coastal California gnatcatcher would be determined by pre-construction surveys conducted by a Qualified Biologist adjacent to the Project area. Coastal sage scrub outside of the impact area would be flagged to protect it from construction equipment as directed by the Project Biologist. Between February 15 and August 31, no noise-

generating construction activities that exceed ambient noise levels would occur in close proximity to occupied habitat. If necessary, other measures shall be implemented in consultation with the Project Biologist as necessary, to reduce noise levels. Measures may include, but are not limited to, limitations on the placement of construction equipment and the simultaneous use of equipment.

Introduction to MM-BIO-6

Project construction within 500 feet of the San Diego River, Rose Creek, San Clemente Creek and any other sensitive riparian areas may have adverse indirect impacts on least Bell's vireo and southwestern willow flycatcher if construction occurs during the breeding season from March 15 through September 15 for least Bell's vireo and May 1 through September 1 for southern willow flycatcher and the species are determined to be present.

MM-BIO-6 Riparian Birds. Prior to the preconstruction meeting, the Assistant Deputy Director (ADD) or MMC shall verify that MHPA boundaries and the Project requirements regarding the least Bell's vireo and southwestern willow flycatcher, as specified below, are shown on the construction plans.

No clearing, grubbing, grading, or other construction activities shall occur during the least Bell's vireo breeding season (March 15 to September 15) and southwestern willow flycatcher breeding season (May 1 to September 1), until the following requirements have been met to the satisfaction of the ADD/MMC:

1. A Qualified Biologist (possessing a valid Endangered Species Act Section 10(a)(1)(a) Recovery Permit) shall survey those habitat areas within the MHPA that would be subject to construction noise levels exceeding 60 decibels [dB(A)] hourly average for the presence of the least Bell's vireo and southwestern willow flycatcher. Surveys for least Bell's vireo and southwestern willow flycatcher shall be conducted pursuant to the protocol survey guidelines established by the USFWS within the breeding season prior to the commencement of any construction. If least Bell's vireo, and/or southwestern willow flycatcher are present, then the following conditions must be met:
 - a. Between March 15 to September 15 for least Bell's vireo and May 1 to September 1 for southwestern willow flycatcher, no clearing, grubbing, or grading of occupied habitat shall be permitted. Areas restricted from such activities shall be staked or fenced under the supervision of a Qualified Biologist; and
 - b. Between March 15 to September 15 for least Bell's vireo and/or May 1 to September 1 for southwestern willow flycatcher no construction activities shall occur within any portion of the site where construction activities would result in noise levels exceeding 60 dB(A) hourly average at the edge of occupied habitat. An analysis showing that noise generated by construction activities would not exceed 60 dB(A) hourly average at the edge of occupied habitat must be completed by a Qualified Acoustician (possessing current noise engineer license or registration with monitoring noise level experience with listed animal species) and approved by the ADD/MMC at least 2 weeks prior to the commencement of construction activities. Prior to the commencement of construction activities during the breeding season, areas restricted from such activities shall be staked or fenced under the supervision of a Qualified Biologist; or

- c. At least 2 weeks prior to the commencement of construction activities, under the direction of a Qualified Acoustician, attenuation measures (e.g., berms, walls) shall be implemented to ensure that noise levels resulting from construction activities would not exceed 60 dB(A) hourly average at the edge of habitat occupied by the least Bell's vireo, and/or southwestern willow flycatcher. Concurrent with the commencement of construction activities and the construction of necessary noise attenuation facilities, noise monitoring shall be conducted at the edge of the occupied habitat area to ensure that levels do not exceed 60 dB(A) hourly average. If the noise attenuation techniques implemented are determined to be inadequate by the Qualified Acoustician or Biologist, then the associated construction activities shall cease until such time that adequate noise attenuation is achieved or until the end of the breeding season (August 16). Construction noise monitoring shall continue to be monitored at least twice weekly on varying days, or more frequently depending on the construction activity, to verify that noise levels at the edge of occupied habitat are maintained below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB(A) hourly average. If not, other measures shall be implemented in consultation with the biologist and the ADD/MMC, as necessary, to reduce noise levels to below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB(A) hourly average. Such measures may include, but are not limited to, limitations on the placement of construction equipment and the simultaneous use of equipment.
2. If least Bell's vireo and/or southwestern willow flycatcher are not detected during the protocol survey, the Qualified Biologist shall submit substantial evidence to the ADD/MMC and applicable resource agencies which demonstrates whether or not mitigation measures such as noise walls are necessary between March 15 to September 15 for least Bell's vireo and/or May 1 to September 1 for southwestern willow flycatcher adherence to the following is required:
 - a. If this evidence indicates that the potential is high for least Bell's vireo and/or southwestern willow flycatcher to be present based on historical records or site conditions, then Condition 1(a) shall be adhered to as specified above.
 - b. If this evidence concludes that no impacts to this species are anticipated, no mitigation measures would be necessary.

Introduction to MM-BIO-9

Mitigation measure MM-BIO-9 will be included in the design and construction documents for each Project component and will reduce the potential for short-term and long-term indirect impacts to sensitive vegetation communities. A biological monitor will be present during construction within or adjacent to sensitive resources and would ensure that the Project adheres to and implements the appropriate measures to protect sensitive resources.

MM-BIO-9 The following measures will be included in the design and construction documents for each Project component to reduce potential impacts to sensitive resources:

- a. **Qualified Biologist.** The owner/permittee shall provide a letter to the City's Mitigation Monitoring Coordination (MMC) section stating that a Project Biologist (Qualified

Biologist) as defined in the City of San Diego Municipal Code, Land Development Code—Biology Guidelines (City of San Diego 2012), has been retained to implement the Project's biological monitoring program. The letter shall include the names and contact information of all persons involved in the biological monitoring of the Project.

- b. **Preconstruction Meeting.** The Qualified Biologist shall attend the preconstruction meeting, discuss the Project's biological monitoring program, and arrange to perform any follow up mitigation measures and reporting including site-specific monitoring, restoration or revegetation, and additional fauna/flora surveys/salvage.
- c. **Documentation.** The Qualified Biologist shall submit all required documentation to MMC verifying that any special mitigation reports including but not limited to, maps, plans, surveys, survey timelines, or buffers are completed or scheduled per City Biology Guidelines, Multiple Species Conservation Program (MSCP), Environmentally Sensitive Lands Ordinance, project permit conditions; California Environmental Quality Act (CEQA); National Environmental Policy Act (NEPA); endangered species acts (federal Endangered Species Act and California Endangered Species Act); and/or other local, state or federal requirements.
- d. **Biological Construction Mitigation/Monitoring Exhibit.** The Qualified Biologist shall present a Biological Construction Mitigation/Monitoring Exhibit (BCME), which includes the biological documents above. In addition, the BCME would include restoration/revegetation plans, plant salvage/relocation requirements (e.g., burrowing owl exclusions, etc.), avian or other wildlife surveys/survey schedules (including general avian nesting and U.S. Fish and Wildlife (USFWS) protocol), timing of surveys, wetland buffers, avian construction avoidance areas/noise buffers/barriers, other impact avoidance areas, and any subsequent requirements determined by the Qualified Biologist and the City Assistant Deputy Director (ADD)/MMC. The BCME shall include a site plan, written and graphic depiction of the Project's biological mitigation/monitoring program, and a schedule. The BCME shall be approved by MMC and referenced in the construction documents.
- e. **Construction Fencing.** Prior to construction activities, the Qualified Biologist shall supervise the placement of orange construction fencing or equivalent along the limits of disturbance adjacent to sensitive biological habitats and verify compliance with any other project conditions as shown on the BCME. This phase shall include flagging plant specimens and delineating buffers to protect sensitive biological resources (e.g., habitats/flora and fauna species, including nesting birds) during construction. Appropriate steps/care should be taken to minimize attraction of nest predators to the site.
- f. **On-site Education.** Prior to commencement of construction activities, the Qualified Biologist shall meet with the owner/permittee or designee and the construction crew and conduct an on-site educational session regarding the need to avoid impacts outside of the approved construction area and to protect sensitive flora and fauna (e.g., explain the avian and wetland buffers, flag system for removal of invasive species or retention of sensitive plants, and clarify acceptable access routes/methods and staging areas).
- g. **Biological Monitoring.** During construction, a Qualified Biologist would be present to assist in the avoidance of impacts to native vegetation, jurisdictional aquatic resources, sensitive plants and wildlife, and nesting birds. Specific biological monitoring and or

mitigation measures for sensitive wildlife, sensitive vegetation communities, and jurisdictional aquatic resources are described further in the mitigation measures.

- h. **Cover Trenches.** General biological monitoring shall include verifying that the contractor has covered all steep-walled trenches or excavations over night or after shift. If trenches or excavations cannot be covered, the monitor would verify that the contractor has installed exclusionary fencing (e.g., silt fence) around the trenches or excavation areas or installed ramps to prevent entrapment of wildlife (e.g., reptiles and mammals). If animals are encountered within any trenches or excavated areas, they would be removed by the biological monitor, if possible, or provided with a means of escape (e.g., a ramp or sloped surface) and allowed to disperse. In addition, the biological monitor would provide training to construction personnel to increase awareness of the possible presence of wildlife beneath vehicles and equipment and to use best judgment to avoid killing or injuring wildlife. The biological monitor would be available to assist with moving wildlife, if necessary.
- i. **Nighttime Construction.** To reduce impacts to nocturnal species in those areas where they have a potential to occur, nighttime construction activity within undeveloped areas containing sensitive biological resources would be minimized whenever feasible and shielded lights would be utilized when necessary. Construction nighttime lighting would be subject to City Outdoor Lighting Regulations per San Diego Land Development Code (LDC) Section 142.0740.
- j. **Best Management Practices/Erosion/Runoff.** The City will incorporate methods to control runoff, including a Stormwater Pollution Prevention Plan (SWPPP) to meet National Pollutant Discharge Elimination System (NPDES) regulations or batch discharge permit from the City. Implementation of stormwater regulations are expected to substantially control adverse edge effects (e.g., erosion, sedimentation, habitat conversion) during and following construction both adjacent and downstream from the study area. Typical construction Best Management Practices (BMPs) specifically related to reducing impacts from dust, erosion, and runoff generated by construction activities would be implemented. During construction, material stockpiles shall be placed such that they cause minimal interference with on-site drainage patterns. This will protect sensitive vegetation from being inundated with sediment-laden runoff. Dewatering shall be conducted in accordance with standard regulations of the Regional Water Quality Control Board (RWQCB). An NPDES permit, issued by RWQCB to discharge water from dewatering activities, shall be required prior to start of dewatering. This will minimize erosion, siltation, and pollution within sensitive communities. Design of drainage facilities shall incorporate long-term control of pollutants and stormwater flow to minimize pollution and hydrologic changes.
- k. **Toxics/Project Staging Areas/Equipment Storage.** Projects that use chemicals or generate by-products such as pesticides, herbicides, and animal waste, and other substances that are potentially toxic or impactful to native habitats/flora/fauna (including water) shall incorporate measures to reduce impacts caused by the application and/or drainage of such materials into the MHPA. No trash, oil, parking, or other construction/development-related material/activities shall be allowed outside any approved construction limits. Where applicable, this requirement shall be incorporated into leases on publicly owned property when applications for renewal occur. Provide a note in/on the CDs that states: "All construction-related activity that

may have potential for leakage or intrusion shall be monitored by the Qualified Biologist/Owners Representative or Resident Engineer to ensure there is no impact to the MHPA.”

3. *Health and Safety/Hazards*

MM-HAZ-1 A Construction Fire Prevention/Protection Plan shall be prepared by the City of San Diego or its contractors prior to construction of the North City Project, as determined necessary by the City of San Diego. Construction within or immediately adjacent to areas of dense foliage during periods of low humidity and/or high winds (Red Flag Warning periods) shall be prohibited. During all other non-Red Flag Warning periods, necessary brush fire prevention and management practices shall be incorporated and shall address common construction-related ignition prevention and hot-works (any spark-, heat-, or flame-producing activity) policies, as well as necessary fire prevention equipment to be on site during all construction activities. Details of the Construction Fire Prevention/Protection Plan shall be determined as site plans for each component are finalized to the satisfaction of the City of San Diego Fire Marshal. Plans shall also contain fire safety information to be disseminated to construction crews during regular safety meetings. Fire prevention techniques shall be applied during construction as deemed necessary by the City of San Diego Fire Marshal based on the vegetation (fuels) within the site and surrounding areas.

MM-HAZ-2 A Hazardous Materials Reporting Form shall be prepared, as determined necessary by the City of San Diego, and a Hazardous Materials Review conducted by the Development Services Department for each North City Project component in compliance with the City of San Diego’s Information Bulletin 116.

MM-HAZ-4 In the event that hazardous substances are encountered during construction, construction activities in the area shall immediately cease. All applicable procedures outlined in the City of San Diego “WHITEBOOK” Part 1 – General Provisions (A), Section 7-22, Encountering or Releasing Hazardous Substances shall be followed (City of San Diego 2015). In the case that groundwater contaminated with petroleum is encountered, the requirements of Section 7-8.6.6 of the “WHITEBOOK” shall be followed.

These procedures and requirements include, but are not limited to:

1. Comply with all applicable federal, state, and local laws and regulations and notification requirements.
2. Follow the guidelines of the current edition of the County of San Diego Department of Environmental Health (DEH) SAM Manual in the event that contaminated soil is encountered.
3. Immediately notify the Engineer, who in turn shall contact the City’s Environmental Services Department, Hazardous Materials Management Program.
4. In areas of known petroleum-contaminated soil, monitoring for the presence of contamination shall be the contractor’s responsibility, and an operational Photo Ionization Device shall be used at all times.

5. All suspected contaminated soil shall be stockpiled at a location approved by the Engineer and the HMMP on a relatively impervious surface.
6. Contaminated soil shall be disposed of dependent on classification and as approved by the Hazardous Substances Management Plan.

MM-HAZ-5 Prior to construction, the City shall conduct a survey where excavation is proposed to occur outside of roadway right-of-way for trenchless construction of the Morena Pipelines at Rose Canyon within the Camp Matthews Formerly Used Defense Site – Range Complex No.1 to identify potential munitions impacts. If the survey results indicate a potential risk for encountering munitions during excavation, an unexploded ordnances (UXO) identification, training, and reporting plan will be prepared and implemented during construction.

4. *Historical Resources*

The mitigation measures (MMs) provided in this section have been designed to fulfill the requirements of Section 106 of the National Historic Preservation Act, the CEQA Guidelines, and the City of San Diego Historic Resource Guidelines. The City of San Diego will be the lead agency implementing cultural resource mitigation measures and will provide information to the Bureau of Reclamation for their ongoing Section 106 oversight and consultation obligations.

MM-HIS-2 The following shall be implemented to protect known archaeological resources that have not been evaluated for significance or that have been evaluated as significant under Section 106 and CEQA:

I. Prior to Start of Construction

- A. Identified cultural resources that have not been evaluated for significance or that have been evaluated as significant under Section 106 of the NHPA and CEQA, will be avoided through project design. These include resources that were either found outside of the work limits or for which significance evaluation did not identify significant archaeological deposits within the work limits.
 1. Prior to the start of construction, the PI archaeologist shall ensure that resource-specific avoidance measures are implemented to prevent unanticipated impacts. These measures may include exclusionary fencing, environmentally sensitive areas (ESA) signage, or other measures deemed appropriate and as specified in the CRMTP.
 2. Only one resource, P-37-013630, overlaps the impact area. This resource was evaluated, and a small portion of the site located on a rocky knoll was identified as significant under Criterion D of Section 106 and Criterion 4 of CEQA. The remainder of the site area did not contain significant deposits. Therefore, avoidance of significant impacts/adverse effects to this resource will include exclusion of construction-related activities within or immediately near to the area containing significant deposits.

MM-HIS-3 To reduce potential impacts to unknown archaeological resources and/or grave sites during construction of all Project components (i.e., Components Common to the Project Alternatives, Miramar Reservoir Alternative, and San Vicente Reservoir Alternative) the following measures shall be implemented:

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

A. Entitlements Plan Check

1. Prior to permit issuance or bid opening/bid award, whichever is applicable, the Assistant Deputy Director (ADD) environmental designee shall verify that the requirements for archaeological monitoring and Native American monitoring have been noted on the applicable construction documents through the plan check process.

B. Letters of Qualification have been submitted to ADD

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

II. Prior to Start of Construction

A. Verification of Records Search

1. The PI shall provide verification to MMC that a site-specific records search (0.25-mile radius) has been completed. Verification includes, but is not limited to a copy of a confirmation letter from South Coastal Information Center, or, if the search was in-house, a letter of verification from the PI stating that the search was completed.
2. The letter shall introduce any pertinent information concerning expectations and probabilities of discovery during trenching and/or grading activities.
3. The PI may submit a detailed letter to MMC requesting a reduction to the 0.25-mile radius.

B. PI Shall Attend Preconstruction Meetings

1. Prior to beginning any work that requires monitoring, the applicant shall arrange a Preconstruction Meeting that shall include the PI, Native American consultant/monitor (where Native American resources may be impacted), Construction Manager (CM), Grading Contractor, Resident Engineer (RE), Building Inspector (BI), if appropriate, and MMC. The qualified archaeologist and Native

American monitor shall attend any grading/excavation related Preconstruction Meetings to make comments and/or suggestions concerning the archaeological monitoring program with the CM and/or Grading Contractor.

- a. If the PI is unable to attend the Preconstruction Meeting, the applicant shall schedule a focused Preconstruction Meeting with MMC, the PI, RE, CM, if appropriate, prior to the start of any work that requires monitoring.
2. Acknowledgment of Responsibility for Curation (Capital Improvement Program or Other Public Projects)

The applicant shall submit a letter to MMC acknowledging their responsibility for the cost of curation associated with all phases of the archaeological monitoring program.

3. Identify Areas to be Monitored
 - a. Prior to the start of any work that requires monitoring, the PI shall submit an Archaeological Monitoring Exhibit (AME) (with verification that the AME has been reviewed and approved by the Native American consultant/monitor when Native American resources may be impacted) based on the appropriate construction documents (reduced to 11×17) to MMC identifying the areas to be monitored, including the delineation of grading/excavation limits.
 - b. The AME shall be based on the results of a site-specific records search as well as information regarding the age of existing pipelines, laterals and associated appurtenances, and/or any known soil conditions (native or formation).
 - c. MMC shall notify the PI that the AME has been approved.

4. When Monitoring Will Occur
 - a. Prior to the start of any work, the PI shall also submit a construction schedule to MMC through the RE indicating when and where monitoring will occur.
 - b. The PI may submit a detailed letter to MMC prior to the start of work or during construction requesting a modification to the monitoring program. This request shall be based on relevant information such as review of final construction documents which indicate conditions such as age of existing pipe to be replaced, depth of excavation and/or site graded to bedrock, etc., which may reduce or increase the potential for resources to be present.

5. Approval of AME and Construction Schedule

After approval of the AME by MMC, the PI shall submit to MMC written authorization of the AME and Construction Schedule from the CM.

III. During Construction

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

1. The Archaeological Monitor shall be present full-time during all soil-disturbing and grading/excavation/trenching activities that could result in impacts to archaeological resources as identified on the AME. **The CM is responsible for notifying the RE, PI, and MMC of changes to any construction activities such as in the case of a potential safety concern within the area being monitored. In certain circumstances Occupational Safety and Health Administration safety requirements may necessitate modification of the AME.**
2. The Native American consultant/monitor shall determine the extent of their presence during soil-disturbing and grading/excavation/trenching activities based on the AME and provide that information to the PI and MMC. If prehistoric resources are encountered during the Native American consultant/monitor's absence, work shall stop, and the Discovery Notification Process detailed in Section III.B–III.C and IV.A–IV.D shall commence.
3. The PI may submit a detailed letter to MMC during construction requesting a modification to the monitoring program when a field condition such as modern disturbance post-dating the previous grading/trenching activities, presence of fossil formations, or when native soils are encountered that may reduce or increase the potential for resources to be present.
4. The archaeological and Native American consultant/monitor shall document field activity via the Consultant Site Visit Records. The Consultant Site Visit Records shall be emailed by the CM to the RE the first day of monitoring, the last day of monitoring, monthly (Notification of Monitoring Completion), and in the case of ANY discoveries. The RE shall forward copies to MMC.

B. Discovery Notification Process

1. In the event of a discovery, the Archaeological Monitor shall direct the contractor to temporarily divert all soil-disturbing activities, including but not limited to digging, trenching, excavating, or grading activities in the area of discovery and in the area reasonably suspected to overlay adjacent resources and immediately notify the RE or CM, as appropriate.
2. The Archaeological Monitor shall immediately notify the PI (unless monitor is the PI) of the discovery.
3. The PI shall immediately notify MMC by phone of the discovery, and shall also submit written documentation to MMC within 24 hours by email with photos of the resource in context, if possible.
4. No soil shall be exported off site until a determination can be made regarding the significance of the resource specifically if Native American resources are encountered.

C. Determination of Significance

1. The PI and Native American consultant/monitor, where Native American resources are discovered shall evaluate the significance of the resource. If Human Remains are involved, follow protocol in Section IV below.
 - a. The PI shall immediately notify MMC by phone to discuss significance determination and shall also submit a letter to MMC indicating whether additional mitigation is required.
 - b. If the resource is significant, the PI shall submit an Archaeological Data Recovery Program (ADRP) and obtain written approval of the program from MMC, CM, and RE. The ADRP and any mitigation must be approved by MMC, RE, and/or CM before ground-disturbing activities in the area of discovery will be allowed to resume. **Note: If a unique archaeological site is also an historical resource as defined in CEQA Guidelines Section 15064.5, then the limits on the amount(s) that a Project applicant may be required to pay to cover mitigation costs as indicated in CEQA Section 21083.2 shall not apply.**
 - (1) Note: For pipeline trenching and other linear projects in the public Right-of-Way, the PI shall implement the Discovery Process for Pipeline Trenching projects identified below under "D."
 - c. If the resource is not significant, the PI shall submit a letter to MMC indicating that artifacts will be collected, curated, and documented in the Final Monitoring Report. The letter shall also indicate that that no further work is required.
 - (1) Note: For pipeline trenching and other linear projects in the public right-of-way, if the deposit is limited in size, both in length and depth; the information value is limited and is not associated with any other resource; and there are no unique features/artifacts associated with the deposit, the discovery should be considered not significant.
 - (2) Note: For pipeline trenching and other linear projects in the public right-of-way, if significance cannot be determined, the Final Monitoring Report and Site Record (DPR Form 523A/B) shall identify the discovery as potentially significant.

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

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

1. Procedures for documentation, curation, and reporting
 - a. One hundred percent (100%) of the artifacts within the trench alignment and width shall be documented in situ, to include photographic records, plan view of the trench and profiles of side walls, recovered, photographed after cleaning and analyzed and curated. The remainder

of the deposit within the limits of excavation (trench walls) shall be left intact.

- b. The PI shall prepare a Draft Monitoring Report and submit to MMC via the RE as indicated in Section VI-A.
- c. The PI shall be responsible for recording (on the appropriate State of California Department of Parks and Recreation forms DPR 523 A/B) the resource(s) encountered during the Archaeological Monitoring Program in accordance with the City's HRG. The DPR forms shall be submitted to the South Coastal Information Center for either a Primary Record or SDI Number and included in the Final Monitoring Report.
- d. The Final Monitoring Report shall include a recommendation for monitoring of any future work in the vicinity of the resource.

IV. Discovery of Human Remains

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

A. Notification

1. Archaeological Monitor shall notify the RE or CM as appropriate, MMC, and the PI, if the monitor is not qualified as a PI. MMC will notify the appropriate Senior Planner in the Environmental Analysis Section of the Development Services Department to assist with the discovery notification process.
2. The PI shall notify the Medical Examiner after consultation with the RE, either in person or via telephone.

B. Isolate discovery site

1. Work shall be directed away from the location of the discovery and any nearby area reasonably suspected to overlay adjacent human remains until a determination can be made by the Medical Examiner in consultation with the PI concerning the provenience of the remains.
2. The Medical Examiner, in consultation with the PI, will determine the need for a field examination to determine the provenience.
3. If a field examination is not warranted, the Medical Examiner will determine with input from the PI, if the remains are or are most likely to be of Native American origin.

C. If human remains are determined to be Native American

1. The Medical Examiner will notify the Native American Heritage Commission (NAHC) within 24 hours. By law, only the Medical Examiner can make this call.
2. NAHC will immediately identify the person or persons determined to be the Most Likely Descendant (MLD) and provide contact information.

3. The MLD will contact the PI within 24 hours or sooner after the Medical Examiner has completed coordination, to begin the consultation process in accordance with CEQA Guidelines Section 15064.5(e) and the California Public Resources and Health and Safety Codes.
 4. The MLD will have 48 hours to make recommendations to the property owner or representative, for the treatment or disposition with proper dignity, of the human remains and associated grave goods.
 5. Disposition of Native American human remains will be determined between the MLD and the PI, and, if:
 - a. The NAHC is unable to identify the MLD, OR the MLD failed to make a recommendation within 48 hours after being notified by the Commission, OR
 - b. The landowner or authorized representative rejects the recommendation of the MLD and mediation in accordance with California Public Resources Code Section 5097.94(k), by the NAHC fails to provide measures acceptable to the landowner, THEN
 - c. To protect these sites, the landowner shall do one or more of the following:
 - (1) Record the site with the NAHC,
 - (2) Record an open space or conservation easement, or
 - (3) Record a document with the County.
 - d. Upon the discovery of multiple Native American human remains during a ground-disturbing land development activity, the landowner may agree that additional conferral with descendants is necessary to consider culturally appropriate treatment of multiple Native American human remains. Culturally appropriate treatment of such a discovery may be ascertained from review of the site utilizing cultural and archaeological standards. Where the parties are unable to agree on the appropriate treatment measures, the human remains and items associated and buried with Native American human remains shall be reinterred with appropriate dignity, pursuant to Section 5.c.
- D. If human remains are not Native American
1. The PI shall contact the Medical Examiner and notify them of the historic era context of the burial.
 2. The Medical Examiner will determine the appropriate course of action with the PI and City staff (California Public Resources Code, Section 5097.98).
 3. If the remains are of historic origin, they shall be appropriately removed and conveyed to the San Diego Museum of Man for analysis. The decision for internment of the human remains shall be made in consultation with MMC, Environmental Analysis Section, the applicant/landowner, any known descendant group, and the San Diego Museum of Man.

V. Night and/or Weekend Work

- A. If night and/or weekend work is included in the contract
 1. When night and/or weekend work is included in the contract package, the extent and timing shall be presented and discussed at the Preconstruction Meeting.
 2. The following procedures shall be followed.
 - a. No Discoveries

In the event that no discoveries were encountered during night and/or weekend work, the PI shall record the information on the Consultant Site Visit Record and submit to MMC by email by 8 a.m. of the next business day.
 - b. Discoveries

All discoveries shall be processed and documented using the existing procedures detailed in Sections III – During Construction, and IV – Discovery of Human Remains. Discovery of human remains shall always be treated as a significant discovery.
 - c. Potentially Significant Discoveries

If the PI determines that a potentially significant discovery has been made, the procedures detailed under Section III – During Construction and IV – Discovery of Human Remains shall be followed.
 - d. The PI shall immediately contact the RE and MMC, or by 8 a.m. of the next business day to report and discuss the findings as indicated in Section III-B, unless other specific arrangements have been made.
- B. If night and/or weekend work becomes necessary during the course of construction
 1. The CM shall notify the RE, as appropriate, a minimum of 24 hours before the work is to begin.
 2. The RE, or CM, as appropriate, shall notify MMC immediately.
- C. All other procedures described above shall apply, as appropriate.

VI. Post Construction

- A. Submittal of Draft Monitoring Report
 1. The PI shall submit two copies of the Draft Monitoring Report (even if negative), prepared in accordance with the HRG (Appendix C/D) that describes the results, analysis, and conclusions of all phases of the Archaeological Monitoring Program (with appropriate graphics) to MMC via the RE for review and approval within 90 days following the completion of monitoring. **It should be noted that if the PI is unable to submit the Draft Monitoring Report within the allotted 90-day time frame as a result of delays with analysis, special study results or other complex issues, a schedule shall be submitted to MMC establishing agreed due dates and the provision for submittal of monthly status reports until this measure can be met.**

- a. For significant archaeological resources encountered during monitoring, the ADRP or Pipeline Trenching Discovery Process shall be included in the Draft Monitoring Report.
- b. Recording Sites with State of California Department of Parks and Recreation

The PI shall be responsible for recording (on the appropriate State of California Department of Parks and Recreation forms DPR 523 A/B) any significant or potentially significant resources encountered during the Archaeological Monitoring Program in accordance with the City's HRG, and submittal of such forms to the South Coastal Information Center with the Final Monitoring Report.

2. MMC shall return the Draft Monitoring Report to the PI via the RE for revision or for preparation of the Final Report.
3. The PI shall submit revised Draft Monitoring Report to MMC via the RE for approval.
4. MMC shall provide written verification to the PI of the approved report.
5. MMC shall notify the RE or CM, as appropriate, of receipt of all Draft Monitoring Report submittals and approvals.

B. Handling of Artifacts

1. The PI shall be responsible for ensuring that all cultural remains collected are cleaned and catalogued
2. The PI shall be responsible for ensuring that all artifacts are analyzed to identify function and chronology as they relate to the history of the area; that faunal material is identified as to species; and that specialty studies are completed, as appropriate.

C. Curation of artifacts: Accession Agreement and Acceptance Verification

1. The PI shall be responsible for ensuring that all artifacts associated with the survey, testing and/or data recovery for this project are permanently curated with an appropriate institution. This shall be completed in consultation with MMC and the Native American representative, as applicable.
2. When applicable to the situation, the PI shall include written verification from the Native American consultant/monitor indicating that Native American resources were treated in accordance with state law and/or applicable agreements. If the resources were reinterred, verification shall be provided to show what protective measures were taken to ensure no further disturbance occurs in accordance with Section IV – Discovery of Human Remains, Subsection C.
3. The PI shall submit the Accession Agreement and catalogue record(s) to the RE or CM, as appropriate for donor signature with a copy submitted to MMC.
4. The RE or CM, as appropriate shall obtain signature on the Accession Agreement and shall return to PI with copy submitted to MMC.

5. The PI shall include the Acceptance Verification from the curation institution in the Final Monitoring Report submitted to the RE or CM and MMC.

D. Final Monitoring Report(s)

1. The PI shall submit one copy of the approved Final Monitoring Report to the RE or CM as appropriate, and one copy to MMC (even if negative), within 90 days after notification from MMC of the approved report.
2. The RE shall in no case issue the Notice of Completion until receiving a copy of the approved Final Monitoring Report from MMC which includes the Acceptance Verification from the curation institution.

5. *Noise*

MM-NOI-1 The following best management practices shall be implemented to reduce noise associated with construction of the North City Project:

1. All noise-producing equipment and vehicles using internal combustion engines shall be equipped with mufflers; air-inlet silencers where appropriate; and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory specification. Mobile or fixed "package" equipment (e.g., arc-welders, air compressors) shall be equipped with shrouds and noise control features that are readily available for that type of equipment.
2. All mobile or fixed noise-producing equipment used on the Project facilities that are regulated for noise output by a local, state, or federal agency shall comply with such regulation while in the course of project activity.
3. Idling equipment shall be kept to a minimum and moved as far as practicable from noise-sensitive land uses.
4. Electrically powered equipment shall be used instead of pneumatic or internal combustion powered equipment, where feasible.
5. Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive receptors.
6. Construction site and access road speed limits shall be established and enforced during the construction period.
7. The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only.
8. Construction hours, allowable workdays, and the phone number of the job superintendent shall be clearly posted at all construction entrances to allow surrounding property owners to contact the job superintendent if necessary. In the event the City receives a complaint, appropriate corrective actions shall be implemented and a report of the action provided to the reporting party.
9. Pumps and associated equipment (e.g., portable generators etc.) shall be shielded from sensitive uses using local temporary noise barriers or enclosures, or shall otherwise be designed or configured so as to comply with applicable municipal code nighttime noise

standards. The specific location and design of such barriers will be determined in conjunction with construction plans for individual projects.

MM-NOI-2 Construction activities shall not occur between the hours of 7:00 p.m. and 7:00 a.m. or on legal holidays or on Sundays unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator, in accordance with City of San Diego Municipal Code Section 59.5.0404. All terms and conditions of said permit shall be complied with.

MM-NOI-3 In order to avoid daytime traffic jams or service outages, nighttime work will be planned to minimize the number and type of operating equipment, restrict the movement of equipment adjacent to the noise-sensitive receivers, and minimize noise from back-up alarms.

7. *Public Utilities*

MM-PU-1 The City of San Diego Public Utilities Department shall consult with other City departments and other utility service providers to avoid interference with facilities. Special design considerations, such as a casing, may be necessary if the interfering utility is a sewer or reclaimed water line to ensure protection of utility lines.

8. *Transportation, Circulation and Parking*

MM-TRAF-1 A Transportation Demand Management (TDM) Plan shall be prepared to limit the number of construction worker trips that travel through the impacted intersections or roadways during peak periods. The following lists a series of TDM strategies that may be appropriate during Project construction.

- Implement a ride-sharing program to encourage carpooling among workers.
- Adjust work schedules so workers do not access the site during the peak hours.
- Provide off-site parking locations for workers outside of the area with shuttle services to bring them on site.
- Provide subsidized transit passes for construction workers.

APPENDIX B
FIRE HYDRANT METER PROGRAM

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1. **PURPOSE**

1.1 To establish a Departmental policy and procedure for issuance, proper usage and charges for fire hydrant meters.

2. **AUTHORITY**

2.1 All authorities and references shall be current versions and revisions.

2.2 San Diego Municipal Code (NC) Chapter VI, Article 7, Sections 67.14 and 67.15

2.3 Code of Federal Regulations, Safe Drinking Water Act of 1986

2.4 California Code of Regulations, Titles 17 and 22

2.5 California State Penal Code, Section 498B.0

2.6 State of California Water Code, Section 110, 500-6, and 520-23

2.7 Water Department Director

Reference

2.8 State of California Guidance Manual for Cross Connection Programs

2.9 American Water Works Association Manual M-14, Recommended Practice for Backflow Prevention

2.10 American Water Works Association Standards for Water Meters

2.11 U.S.C. Foundation for Cross Connection Control and Hydraulic Research Manual

3. **DEFINITIONS**

3.1 **Fire Hydrant Meter:** A portable water meter which is connected to a fire hydrant for the purpose of temporary use. (These meters are sometimes referred to as Construction Meters.)

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- 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.

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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.

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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.

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2. Construction and maintenance related activities (see Tab 2).
 - b. No customer inside or outside the boundaries of the City of San Diego Water Department shall resell any portion of the water delivered through a fire hydrant by the City of San Diego Water Department.
 - c. The City of San Diego allows for the issuance of a temporary fire hydrant meter for a period not to exceed 12 months (365 days). An extension can only be granted in writing from the Water Department Director for up to 90 additional days. A written request for an extension by the consumer must be submitted at least 30 days prior to the 12 month period ending. No extension shall be granted to any customer with a delinquent account with the Water Department. No further extensions shall be granted.
 - d. Any customer requesting the issuance of a fire hydrant meter shall file an application with the Meter Section. The customer must complete a "Fire Hydrant Meter Application" (Tab 1) which includes the name of the company, the party responsible for payment, Social Security number and/or California ID, requested location of the meter (a detailed map signifying an exact location), local contact person, local phone number, a contractor's license (or a business license), description of specific water use, duration of use at the site and full name and address of the person responsible for payment.
 - e. At the time of the application the customer will pay their fees according to the schedule set forth in the Rate Book of Fees and Charges, located in the City Clerk's Office. All fees must be paid by check, money order or cashiers check, made payable to the City Treasurer. Cash will not be accepted.
 - f. No fire hydrant meters shall be furnished or relocated for any customer with a delinquent account with the Water Department.
 - g. After the fees have been paid and an account has been created, the

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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

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for removal of the meter.

- c. Meter Section staff will remove the meter and backflow prevention assembly and return it to the Meter Shop. Once returned to the Meter Shop the meter and backflow will be tested for accuracy and functionality.
- d. Meter Section Staff will contact and notify Customer Services of the final read and any charges resulting from damages to the meter and backflow or its appurtenance. These charges will be added on the customer's final bill and will be sent to the address of record. Any customer who has an outstanding balance will not receive additional meters.
- e. Outstanding balances due may be deducted from deposits and any balances refunded to the customer. Any outstanding balances will be turned over to the City Treasurer for collection. Outstanding balances may also be transferred to any other existing accounts.

5. **EXCEPTIONS**

- 5.1 Any request for exceptions to this policy shall be presented, in writing, to the Customer Support Deputy Director, or his/her designee for consideration.

6. **MOBILE METER**

- 6.1 Mobile meters will be allowed on a case by case basis. All mobile meters will be protected by an approved backflow assembly and the minimum requirement will be a Reduced Pressure Principal Assembly. The two types of Mobile Meters are vehicle mounted and floating meters. Each style of meters has separate guidelines that shall be followed for the customer to retain service and are described below:

- a) **Vehicle Mounted Meters:** Customer applies for and receives a City owned Fire Hydrant Meter from the Meter Shop. The customer mounts the meter on the vehicle and brings it to the Meter Shop for

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inspection. After installation is approved by the Meter Shop the vehicle and meter shall be brought to the Meter Shop on a monthly basis for meter reading and on a quarterly basis for testing of the backflow assembly. Meters mounted at the owner's expense shall have the one year contract expiration waived and shall have meter or backflow changed if either fails.

b) **Floating Meters:** Floating Meters are meters that are not mounted to a vehicle. **(Note: All floating meters shall have an approved backflow assembly attached.)** The customer shall submit an application and a letter explaining the need for a floating meter to the Meter Shop. The Fire Hydrant Meter Administrator, after a thorough review of the needs of the customer, (i.e. number of jobsites per day, City contract work, lack of mounting area on work vehicle, etc.), may issue a floating meter. At the time of issue, it will be necessary for the customer to complete and sign the "Floating Fire Hydrant Meter Agreement" which states the following:

- 1) The meter will be brought to the Meter Shop at 2797 Caminito Chollas, San Diego on the third week of each month for the monthly read by Meter Shop personnel.
- 2) Every other month the meter will be read and the backflow will be tested. This date will be determined by the start date of the agreement.

If any of the conditions stated above are not met the Meter Shop has the right to cancel the contract for floating meter use and close the account associated with the meter. The Meter Shop will also exercise the right to refuse the issuance of another floating meter to the company in question.

Any Fire Hydrant Meter using reclaimed water shall not be allowed use again with any potable water supply. The customer shall incur the cost of replacing the meter and backflow device in this instance.

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7. **FEE AND DEPOSIT SCHEDULES**

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

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

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

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

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

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

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

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 10 OF 10	EFFECTIVE DATE October 15, 2002
	SUPERSEDES DI 55.27	DATED April 21, 2000

- 8.5 If damage occurs to Water Department property (i.e. fire hydrant meter, backflow, various appurtenances), the cost of repairs or replacements will be charged to the customer of record (applicant).

Water Department Director

- Tabs: 1. Fire Hydrant Meter Application
2. Construction & Maintenance Related Activities With No Return To Sewer
3. Notice of Discontinuation of Service

APPENDIX

Administering Division: Customer Support Division

Subject Index: Construction Meters
Fire Hydrant
Fire Hydrant Meter Program
Meters, Floating or Vehicle Mounted
Mobile Meter
Program, Fire Hydrant Meter

Distribution: DI Manual Holders



Application for Fire Hydrant Meter (EXHIBIT A)

(For Office Use Only)

NS REQ	FAC#
DATE	BY

METER SHOP (619) 527-7449

Meter Information

Application Date	Requested Install Date:
------------------	-------------------------

Fire Hydrant Location: (Attach Detailed Map//Thomas Bros. Map Location or Construction drawing.) <u>Zip:</u>	T.B.	G.B. (CITY USE)
Specific Use of Water:		
Any Return to Sewer or Storm Drain, if so, explain:		
Estimated Duration of Meter Use: <input type="text"/>	<input type="checkbox"/>	Check Box if Reclaimed Water

Company Information

Company Name:			
Mailing Address:			
City:	State:	Zip:	Phone: ()
*Business license#		*Contractor license#	
A Copy of the Contractor's license OR Business License is required at the time of meter issuance.			
Name and Title of Billing Agent: <small>(PERSON IN ACCOUNTS PAYABLE)</small>			Phone: ()
Site Contact Name and Title:			Phone: ()
Responsible Party Name:			Title:
Cal ID#			Phone: ()
Signature:		Date:	
<small>Guarantees Payment of all Charges Resulting from the use of this Meter. Insures that employees of this Organization understand the proper use of Fire Hydrant Meter</small>			

Fire Hydrant Meter Removal Request	Requested Removal Date:
Provide Current Meter Location if Different from Above:	
Signature:	Title: Date:
Phone: ()	Pager: ()

<input type="checkbox"/> City Meter	<input type="checkbox"/> Private Meter	
Contract Acct #:	Deposit Amount: \$ 936.00	Fees Amount: \$ 62.00
Meter Serial #	Meter Size: 05	Meter Make and Style: 6-7
Backflow #	Backflow Size:	Backflow Make and Style:
Name:	Signature:	Date:

WATER USES WITHOUT ANTICIPATED CHARGES FOR RETURN TO SEWER

Auto Detailing
Backfilling
Combination Cleaners (Vactors)
Compaction
Concrete Cutters
Construction Trailers
Cross Connection Testing
Dust Control
Flushing Water Mains
Hydro Blasting
Hydro Seeing
Irrigation (for establishing irrigation only; not continuing irrigation)
Mixing Concrete
Mobile Car Washing
Special Events
Street Sweeping
Water Tanks
Water Trucks
Window Washing

Note:

1. If there is any return to sewer or storm drain, then sewer and/or storm drain fees will be charges.

Date

Name of Responsible Party
Company Name and Address
Account Number: _____

Subject: Discontinuation of Fire Hydrant Meter Service

Dear Water Department Customer:

The authorization for use of Fire Hydrant Meter # _____, located at *(Meter Location Address)* ends in 60 days and will be removed on or after *(Date Authorization Expires)*. Extension requests for an additional 90 days must be submitted in writing for consideration 30 days prior to the discontinuation date. If you require an extension, please contact the Water Department, or mail your request for an extension to:

City of San Diego
Water Department
Attention: Meter Services
2797 Caminito Chollas
San Diego, CA 92105-5097

Should you have any questions regarding this matter, please call the Fire Hydrant Hotline at (619) _____ - _____.

Sincerely,

Water Department

APPENDIX C

MATERIALS TYPICALLY ACCEPTED BY CERTIFICATE OF COMPLIANCE

MATERIALS TYPICALLY ACCEPTED BY CERTIFICATE OF COMPLIANCE

1. Soil amendment
2. Fiber mulch
3. PVC or PE pipe up to 16 inch diameter
4. Stabilizing emulsion
5. Lime
6. Preformed elastomeric joint seal
7. Plain and fabric reinforced elastomeric bearing pads
8. Steel reinforced elastomeric bearing pads
9. Waterstops (Special Condition)
10. Epoxy coated bar reinforcement
11. Plain and reinforcing steel
12. Structural steel
13. Structural timber and lumber
14. Treated timber and lumber
15. Lumber and timber
16. Aluminum pipe and aluminum pipe arch
17. Corrugated steel pipe and corrugated steel pipe arch
18. Structural metal plate pipe arches and pipe arches
19. Perforated steel pipe
20. Aluminum underdrain pipe
21. Aluminum or steel entrance tapers, pipe downdrains, reducers, coupling bands and slip joints
22. Metal target plates
23. Paint (traffic striping)
24. Conductors
25. Painting of electrical equipment
26. Electrical components
27. Engineering fabric
28. Portland Cement
29. PCC admixtures
30. Minor concrete, asphalt
31. Asphalt (oil)
32. Liquid asphalt emulsion
33. Epoxy

APPENDIX D

SAMPLE CITY INVOICE WITH CASH FLOW FORECAST

WBS #:	B18108
Date Submitted:	10/10/2018
NTP Date:	3/23/2018
Final Statement of WD Date:	5/23/2020
Contract #:	K-XX-XXXX-XXX-X
Contract Amount:	\$5,617,000

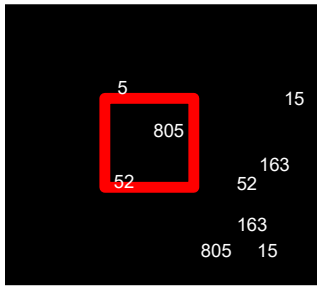
Construction Cash Flow Forecast
 "Sewer and Water Group Job 965 (W)"

Year	January	February	March	April	May	June	July	August	September	October	November	December
2018				15,000	25,000	52,000	52,000	100,000	10,000	100,000	100,000	100,000
2019	10,000	10,000	85,000	58,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000	1,000,000
2020	100,000	100,000	100,000	1,000,000	1,000,000							
2021												
2022												
2023												
2024												
2025												

SAMPLE REFERENCE

APPENDIX E
LOCATION MAPS

THIS MAP/DATA IS PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Note: This product may contain information from the SANDAG Regional Information System which cannot be reproduced without the written permission of SANDAG. This product may contain information reproduced with permission granted by RAND MCNALLY & COMPANYY® to SANDAG. This map is copyrighted by RAND MCNALLY & COMPANYY®. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without the prior, written permission of RAND MCNALLY & COMPANYY.



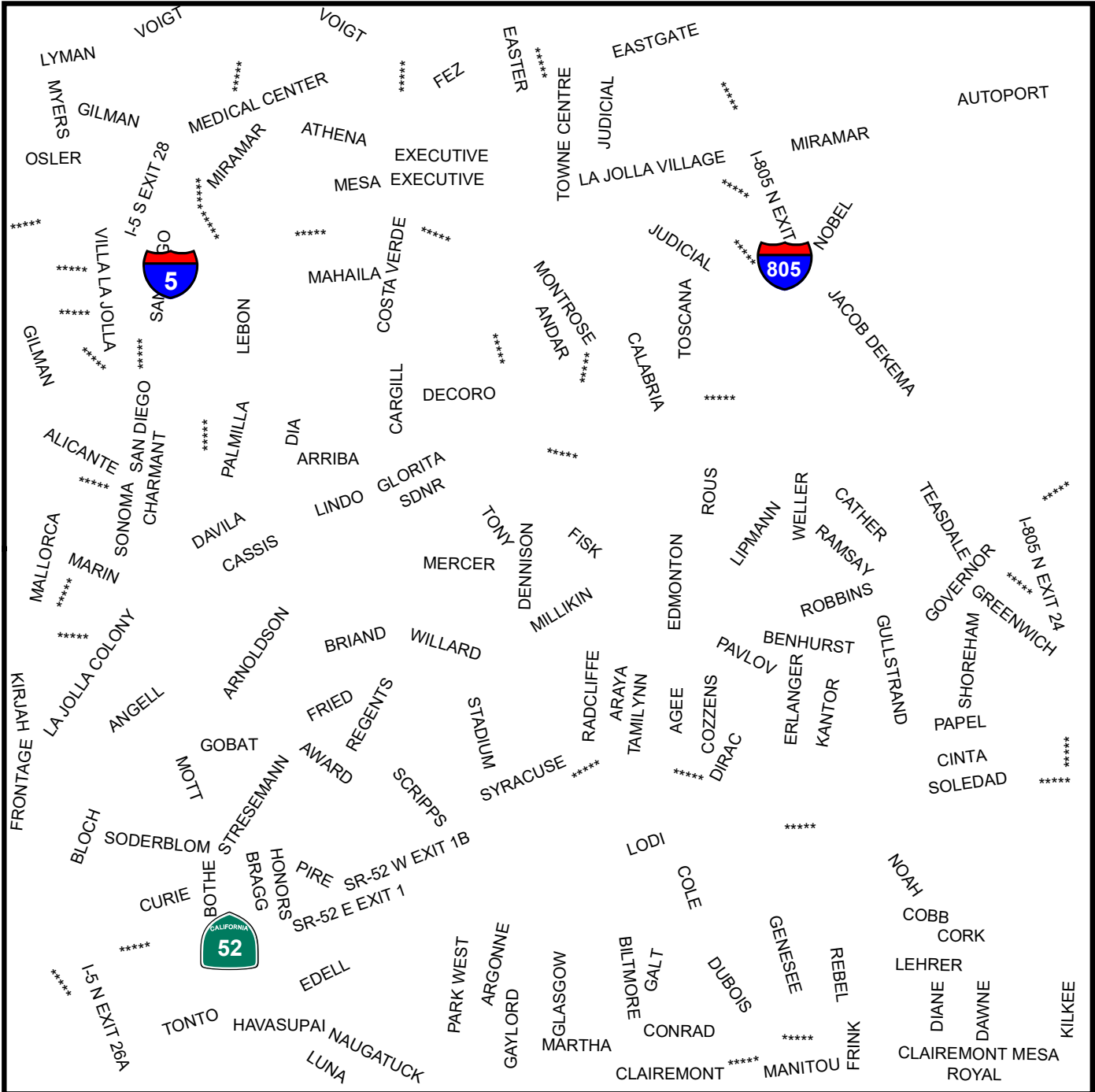
Morena Conveyance North (Package B3)

SENIOR ENGINEER
Nabil Batta
858-614-4524

PROJECT MANAGER
Juan Elli Bermudo
858-614-5802

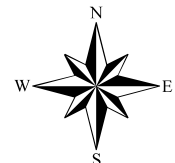
PROJECT ENGINEER
Darin Sanchez
858-292-6420

FOR QUESTIONS ABOUT THIS PROJECT
Call: 619-533-4207
Email: engineering@sandiego.gov



Legend

- Morena Conveyance North - Force Main and Brine
- Morena Conveyance Middle (Outside of Contract)
- North City Water Reclamation Plant



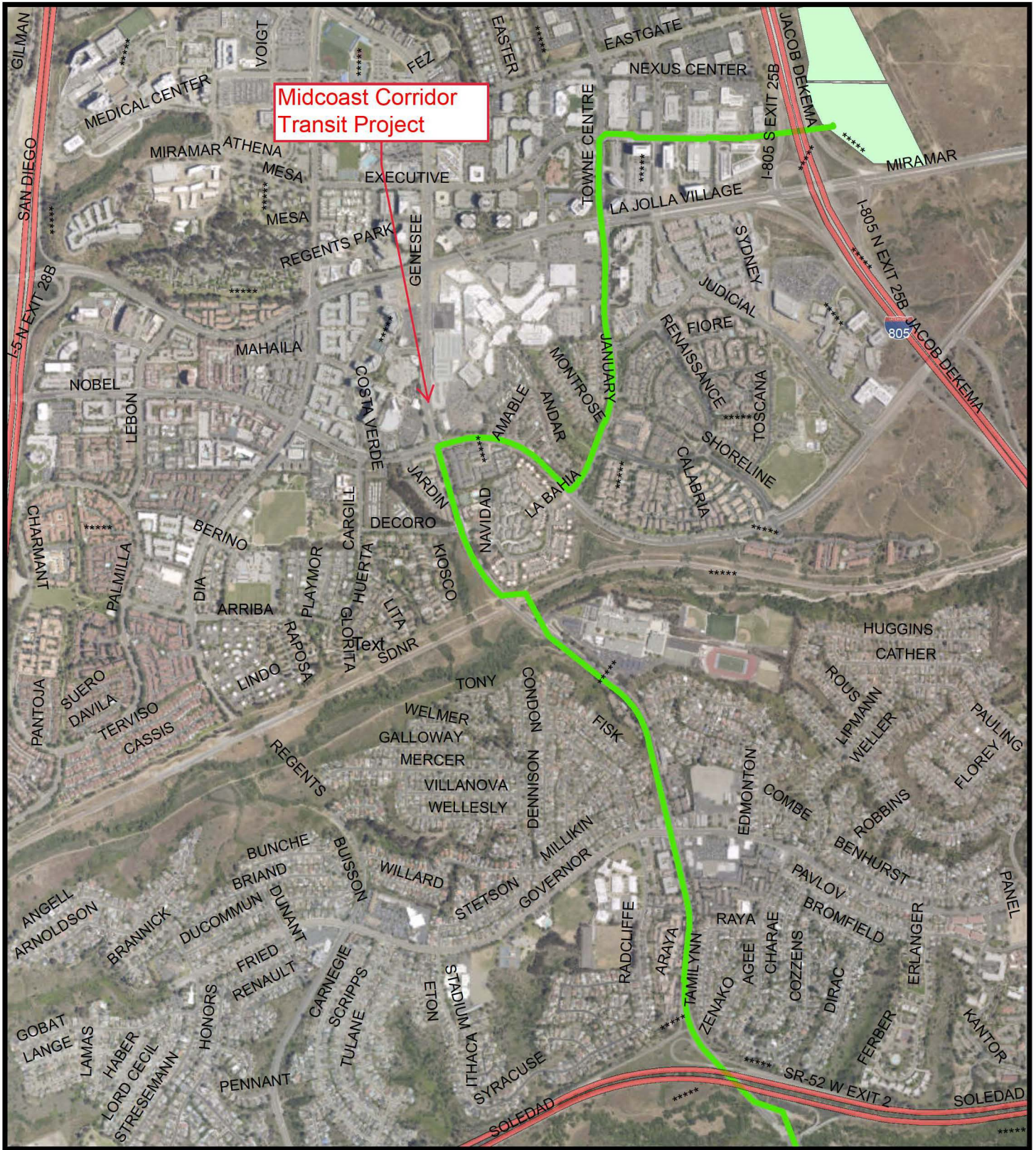
COMMUNITY NAME: University City, Clairemont

COUNCIL DISTRICT: 1, 6

SAP ID: B15141 (S)(W)

APPENDIX F
ADJACENT PROJECT MAPS

Adjacent Projects



Legend

- Morena Conveyance North
- NCWRP

COMMUNITY NAME: University City, Clairemont

COUNCIL DISTRICT: 1, 6

SAP ID: B15141 (S)(W)

APPENDIX G

CONTRACTOR'S DAILY QUALITY CONTROL INSPECTION REPORT

Appendix G

City of San Diego
Asphalt Concrete Overlay

Contractor's Daily Quality Control Inspection Report

Project Title: _____ Date: _____

Locations: 1. _____
2. _____
3. _____

Asphalt Mix Specification: Attached Supplier: _____

Dig out Locations: 1. _____
2. _____
3. _____

Tack Coat Application Rate @ Locations:
1. _____
2. _____
3. _____

Asphalt Temperature at Placement @ Locations:
1. _____
2. _____
3. _____

Asphalt Depth @Locations:
1. _____
2. _____
3. _____

Compaction Test Result @Locations:
1. _____
2. _____
3. _____

Location and nature of defects:

- 1. _____
- 2. _____
- 3. _____

Remedial and Corrective Actions taken or proposed for Engineer's approval:

- 1. _____
- 2. _____
- 3. _____

Date's City Laboratory representative was present:

- 1. _____
- 2. _____
- 3. _____

Verified the following:

- 1. Proper Storage of Materials & Equipment
- 2. Proper Operation of Equipment
- 3. Adherence to Plans and Specs
- 4. Review of QC Tests
- 5. Safety Inspection

Initials:

- _____
- _____
- _____
- _____
- _____

Deviations from QCP_____ (see attached)

Quality Control Plan Administrator's Signature:

Date Signed:

City of San Diego
Rubber Polymer Modified Slurry
Contractor's Daily Quality Control Inspection Report

Project Title: _____ Date: _____

Ambient Temperature (Start of Work): _____ Time: _____

Environmental Considerations: _____

Locations (Address Range/Cross Streets):

1. _____
2. _____
3. _____

Approved Mix Design: _____

Material Suppliers: _____

RPMS Type(s): _____

Slurry Machine #'s: _____

Estimated Cure Time (Break) of Slurry: _____

Pre-Mix (Per 100 Counts)

Gate Setting/Emulsion %: _____

Aggregate Weight: _____

Cement % (by weight of aggregate): _____

Crumb Rubber % (by volume of cement): _____

Machine Inspection

Leaks: _____

Sprayers: _____

Emulsion Filter: _____

Carbon Black: _____

Spreader Box Inspection

Cleanliness: _____

Augers: _____

Rubbers: _____

Fabric: _____

Runners: _____

City of San Diego
Rubber Polymer Modified Slurry
Contractor's Daily Quality Control Inspection Report

Project Conditions

Crack Fill: _____

Asphalt Deficiencies: _____

Cleanliness: _____

Impediments/Other: _____

Communication to Client/ Resident Engineer

Crack Fill: _____

Asphalt Deficiencies: _____

Cleanliness: _____

Impediments/Other: _____

Test Lab

Tech: _____ Time on Site: _____

Notes

QCP Administrator Signature:

Date Signed:

APPENDIX H
MONTHLY DRINKING WATER DISCHARGE MONITORING FORM

DRINKING WATER DISCHARGE MONITORING FORM

(Use for All Discharges to the Storm Drain)

All discharge activities related to this project comply with the State Water Resources Control Board ORDER WQ 2014-0194-DWQ, STATEWIDE GENERAL NPDES PERMIT FOR DRINKING WATER SYSTEMS DISCHARGES as referenced by (http://www.waterboards.ca.gov/water_issues/programs/npdes/docs/drinkingwater/final_statewide_wqo2014_0194_dwq.pdf), and as follows:

Project Name:				WBS No.:				Watershed No.					
Qualified Person Conducting Tests:						signature							
BMPs MUST BE IN PLACE PRIOR TO ANY SCHEDULED DISCHARGE								By signing, I certify that all of the statements and conditions for drinking water discharge events are correct.					
Event #1													
Discharge Location ¹	Category ² (Select one)	Notification ³ (Select all that apply)	BMPs in Place ⁴ (Select all that apply)	Volume ⁵ (gal)	Sampling ⁶ (take samples at 10 mins, 50-60 mins & last 10 mins)				Exceedence ⁷			Notes Report exceedence to RE & complete page 2 of 2	
					Measure	Unit	Time	Result	Limit	No	Yes		
Inlet Location Date: Start Time: Date: End Time:	Superchlorinated <small>(Chlorine added for disinfection)</small>	TSW <small>(All Categories)</small>	Sweep flow path <small>(gutter, street, etc.)</small>	Total	Chlorine	mg/L			0.1 mg/L= Exceedence				
	Large Volume <small>(≥ 325,850 gal)</small>	PUD <small>(All Categories)</small>	Dechlorination <small>(diffusers, chemicals, etc.)</small>				Reused <small>(if any)</small>						
	Well Dev/Rehab <small>(Not Typical)</small>	Water Board <small>(Large Volume Only)</small>	Inlet Protection	Erosion Controls		Turbidity	NTU			20 NTU= Exceedence 225 NTU= Exceedence for Ocean			
	Small Volume/Other <small>(No Sampling Required)</small>	County <small>(≥100,000 gal & within ¼ mile of ocean/bay; or if enters the County's MS4)</small>						Sediment Controls					
					pH	Unit			Range 6.5 to 8.5				
Event #2													
Discharge Location ¹	Category ² (Select one)	Notification ³ (Select all that apply)	BMPs in Place ⁴ (Select all that apply)	Volume ⁵ (gal)	Sampling ⁶ (take samples at 10 mins, 50-60 mins & last 10 mins)				Exceedence ⁷			Notes Report exceedence to RE & complete page 2 of 2	
					Measure	Unit	Time	Result	Limit	No	Yes		
Inlet Location Date: Start Time: Date: End Time:	Superchlorinated <small>(Chlorine added for disinfection)</small>	TSW <small>(All Categories)</small>	Sweep flow path <small>(gutter, street, etc.)</small>	Total	Chlorine	mg/L			0.1 mg/L= Exceedence				
	Large Volume <small>(≥ 325,850 gal)</small>	PUD <small>(All Categories)</small>	Dechlorination <small>(diffusers, chemicals, etc.)</small>				Reused <small>(if any)</small>						
	Well Dev/Rehab <small>(Not Typical)</small>	Water Board <small>(Large Volume Only)</small>	Inlet Protection	Erosion Controls		Turbidity	NTU			20 NTU= Exceedence 225 NTU= Exceedence for Ocean			
	Small Volume/Other <small>(No Sampling Required)</small>	County <small>(≥100,000 gal & within ¼ mile of ocean/bay; or if enters the County's MS4)</small>						Sediment Controls					
					pH	Unit			Range 6.5 to 8.5				

Instructional Notes found on the Page 2 of 2

Submit completed Form to RE

Construction Management & Field Services Division

Receiving Water Monitoring

(Complete only if limits exceed on Page 1 of 2)

Event #1	
1) Go to the location where the discharge enters the receiving water.	
<input type="checkbox"/> Accessible <input type="checkbox"/> Unable to Determine <input type="checkbox"/> No Safe Access	
2) If accessible, take photos and complete the visual monitoring below. If unable to determine, stop here. If no safe access, stop here.	
3) Visual Monitoring: Is the discharge into the receiving water...	
...causing erosion	<input type="checkbox"/> Yes <input type="checkbox"/> No
...carrying floating or suspended matter	<input type="checkbox"/> Yes <input type="checkbox"/> No
...causing discoloration	<input type="checkbox"/> Yes <input type="checkbox"/> No
...causing and impact to the aquatic life present	<input type="checkbox"/> Yes <input type="checkbox"/> No
...observed with visible film	<input type="checkbox"/> Yes <input type="checkbox"/> No
...observed with an sheen or coating	<input type="checkbox"/> Yes <input type="checkbox"/> No
...causing potential nuisance conditions	<input type="checkbox"/> Yes <input type="checkbox"/> No
3) If all answers are NO, stop here.	
4) If any answers are YES, Notify the RE immediately for further action	

Event #2	
1) Go to the location where the discharge enters the receiving water.	
<input type="checkbox"/> Accessible <input type="checkbox"/> Unable to Determine <input type="checkbox"/> No Safe Access	
2) If accessible, take photos and complete the visual monitoring below. If unable to determine, stop here. If no safe access, stop here.	
3) Visual Monitoring: Is the discharge into the receiving water...	
...causing erosion	<input type="checkbox"/> Yes <input type="checkbox"/> No
...carrying floating or suspended matter	<input type="checkbox"/> Yes <input type="checkbox"/> No
...causing discoloration	<input type="checkbox"/> Yes <input type="checkbox"/> No
...causing and impact to the aquatic life present	<input type="checkbox"/> Yes <input type="checkbox"/> No
...observed with visible film	<input type="checkbox"/> Yes <input type="checkbox"/> No
...observed with an sheen or coating	<input type="checkbox"/> Yes <input type="checkbox"/> No
...causing potential nuisance conditions	<input type="checkbox"/> Yes <input type="checkbox"/> No
3) If all answers are NO, stop here.	
4) If any answers are YES, Notify the RE immediately for further action	

Instructional Notes

- 1) Log the location of the inlet or discharge point. For example: Albatross St & 5th Av. Log the start date and time and the end date and time of the discharge.
- 2) Log the discharge category. "Superchlorinated" are discharges where additional chlorine is added in order to adequately disinfect and sanitize drinking water system facilities. This does NOT include potable water containing residual chlorine from the water treatment process. "Large Volume" discharges are greater than 325,850 gallons of total volume for one event. "Well Dev/Rehab" are discharges of potable ground water from a well. This is not typical. If none of these categories apply, then select "Small Volume/Other."
- 3) Notifications of the location, date, time, category, and estimated volume of discharge must be made to the contacts and per the requirements below:

Contact	When to Notify	Email
TSW	3 days prior to all discharges	SWPPP@SanDiego.gov
PUD	3 days prior to all discharges	CompReports@SanDiego.gov Rdavenport@SanDiego.gov
San Diego Water Board	3 days prior to Large Volume discharges	SanDiego@WaterBoards.ca.gov Ben.Neill@WaterBoards.ca.gov
County of San Diego	3 days prior if 100,000 gal and within 1/4 mile of ocean/bay	DEH: Joseph.Palmer@SDCounty.ca.gov Dominique.Edwards@SDCounty.ca.gov
	3 days prior if enter county MS4 or unincorporated County	WPP: Nicholas.DeValle@SDCounty.ca.gov LUEG.Watersheds@sdcounty.ca.gov

- 4) At a minimum, sweep gutters prior to starting discharge and use dechlorination BMPs. The contractor and RE must monitor and determine if BMPs need to be removed or modified. For example if inlet protection is causing flooding at a storm drain inlet, contractor may elect to remove BMPs. Document any modification to BMPs in the notes
- 5) Total volume must be logged for all discharges. If discharge water is reused for other purposes such as watering a golf course, log that volume under "Reused"
- 6) Sampling is required for categories per the following table:

Category	Measure	Sample Frequency
Superchlorinated	Chlorine, Turbidity, pH	first 10 min, 50-60 min, last 10 min
Large Volume	Chlorine Turbidity	first 10 min, 50-60 min, last 10 min
Well Dev/Rehab	Chlorine Turbidity	first 10 min, 50-60 min, last 10 min
Small Volume/Other	None required	N/A

- 7) Effluent limitations must be monitored not to exceed per the following table:

Measure	Method	Limit
Chlorine	Field Measure	0.10 mg/L-Cl
Turbidity	Visual Estimate	20 NTU for inland waters
		225 NTU for ocean 100 NTU for wells
pH	Field Measure	6.5 - 8.5

APPENDIX I

SAMPLE CERTIFICATION LETTER FOR AMERICAN IRON AND STEEL (AIS) COMPLIANCE

SAMPLE CERTIFICATION LETTER

The following information is provided as a sample letter of **step** certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. XXXX
2. XXXX
3. XXXX

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. XXXX
2. XXXX
3. XXXX

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

APPENDIX J
HAZARDOUS WASTE LABEL/FORMS

HAZARDOUS WASTE

STATE AND FEDERAL LAW PROHIBITS IMPROPER DISPOSAL
IF FOUND, CONTACT THE NEAREST POLICE, OR PUBLIC SAFETY
AUTHORITY, OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY
OR THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES

GENERATOR NAME _____
ADDRESS _____ 24 HR. PHONE () _____
CITY _____ STATE _____ ZIP _____
EPA ID NO. _____ MANIFEST DOCUMENT NO. _____
EPA WASTE NO. _____ CA WASTE NO. _____ ACCUMULATION START DATE _____ / /

CONTENTS, COMPOSITION _____
PROPER DOT SHIPPING NAME _____
TECHNICAL NAME (S) _____
UNNA NO. WITH PREFIX _____

PHYSICAL STATE | HAZARDOUS PROPERTIES FLAMMABLE TOXIC
 SOLID LIQUID CORROSIVE REACTIVE OTHER _____

HANDLE WITH CARE!
CONTAINS HAZARDOUS OR TOXIC WASTES

INCIDENT/RELEASE ASSESSMENT FORM ¹

If you have an emergency, Call 911

Handlers of hazardous materials are required to report releases. The following is a tool to be used for assessing if a release is reportable. Additionally, a non-reportable release incident form is provided to document why a release is not reported (see back).

Questions for Incident Assessment:

	YES	NO
1. Was anyone killed or injured, or did they require medical care or admitted to a hospital for observation?	<input type="checkbox"/>	<input type="checkbox"/>
2. Did anyone, other than employees in the immediate area of the release, evacuate?	<input type="checkbox"/>	<input type="checkbox"/>
3. Did the release cause off-site damage to public or private property?	<input type="checkbox"/>	<input type="checkbox"/>
4. Is the release greater than or equal to a reportable quantity (RQ)?	<input type="checkbox"/>	<input type="checkbox"/>
5. Was there an uncontrolled or unpermitted release to the air?	<input type="checkbox"/>	<input type="checkbox"/>
6. Did an uncontrolled or unpermitted release escape secondary containment, or extend into any sewers, storm water conveyance systems, utility vaults and conduits, wetlands, waterways, public roads, or off site?	<input type="checkbox"/>	<input type="checkbox"/>
7. Will control, containment, decontamination, and/or clean up require the assistance of federal, state, county, or municipal response elements?	<input type="checkbox"/>	<input type="checkbox"/>
8. Was the release or threatened release involving an unknown material or contains an unknown hazardous constituent?	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the incident a threatened release (a condition creating a substantial probability of harm that requires immediate action to prevent, reduce, or mitigate damages to persons, property, or the environment)?	<input type="checkbox"/>	<input type="checkbox"/>
10. Is there an increased potential for secondary effects including fire, explosion, line rupture, equipment failure, or other outcomes that may endanger or cause exposure to employees, the general public, or the environment?	<input type="checkbox"/>	<input type="checkbox"/>

If the answer is YES to any of the above questions – report the release to the California Office of Emergency Services at 800-852-7550 and the local CUPA daytime: (619) 338-2284, after hours: (858) 565-5255. Note: other state and federal agencies may require notification depending on the circumstances.

Call 911 in an emergency

If all answers are NO, complete a Non Reportable Release Incident Form (page 2 of 2) and keep readily available. Documenting why a “no” response was made to each question will serve useful in the event questions are asked in the future, and to justify not reporting to an outside regulatory agency.

If in doubt, report the release.

¹ This document is a guide for accessing when hazardous materials release reporting is required by Chapter 6.95 of the California Health and Safety Code. It does not replace good judgment, Chapter 6.95, or other state or federal release reporting requirements.

NON REPORTABLE RELEASE INCIDENT FORM

1. RELEASE AND RESPONSE DESCRIPTION

Incident # _____

Date/Time Discovered	Date/Time Discharge	Discharge Stopped <input type="checkbox"/> Yes <input type="checkbox"/> No
Incident Date / Time:		
Incident Business / Site Name:		
Incident Address:		
Other Locators (Bldg, Room, Oil Field, Lease, Well #, GIS)		
Please describe the incident and indicate specific causes and area affected. Photos Attached?: <input type="checkbox"/> Yes <input type="checkbox"/> No		
Indicate actions to be taken to prevent similar releases from occurring in the future.		

2. ADMINISTRATIVE INFORMATION

Supervisor in charge at time of incident:	Phone:
Contact Person:	Phone:

3. CHEMICAL INFORMATION

Chemical	Quantity <input type="checkbox"/> GAL <input type="checkbox"/> LBS <input type="checkbox"/> FT ³
Chemical	Quantity <input type="checkbox"/> GAL <input type="checkbox"/> LBS <input type="checkbox"/> FT ³
Chemical	Quantity <input type="checkbox"/> GAL <input type="checkbox"/> LBS <input type="checkbox"/> FT ³
Clean-Up Procedures & Timeline:	
Completed By:	Phone:
Print Name:	Title:

EMERGENCY RELEASE FOLLOW - UP NOTICE REPORTING FORM

A	BUSINESS NAME	FACILITY EMERGENCY CONTACT & PHONE NUMBER () -					
B	INCIDENT DATE	MO	DAY	YR	TIME OES NOTIFIED	(use 24 hr time)	OES CONTROL NO.
C	INCIDENT ADDRESS LOCATION			CITY / COMMUNITY	COUNTY	ZIP	
D	CHEMICAL OR TRADE NAME (print or type)				CAS Number		
D	CHECK IF CHEMICAL IS LISTED IN 40 CFR 355, APPENDIX A <input type="checkbox"/>				CHECK IF RELEASE REQUIRES NOTIFICATION UNDER 42 U.S.C. Section 9603 (a) <input type="checkbox"/>		
D	PHYSICAL STATE CONTAINED <input type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input type="checkbox"/> GAS		PHYSICAL STATE RELEASED <input type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input type="checkbox"/> GAS		QUANTITY RELEASED		
D	ENVIRONMENTAL CONTAMINATION <input type="checkbox"/> AIR <input type="checkbox"/> WATER <input type="checkbox"/> GROUND <input type="checkbox"/> OTHER			TIME OF RELEASE	DURATION OF RELEASE — DAYS — HOURS — MINUTES		
E	ACTIONS TAKEN						
F	KNOWN OR ANTICIPATED HEALTH EFFECTS (Use the comments section for addition information)						
<input type="checkbox"/> ACUTE OR IMMEDIATE (explain) _____							
<input type="checkbox"/> CHRONIC OR DELAYED (explain) _____							
<input type="checkbox"/> NOTKNOWN (explain) _____							
G	ADVICE REGARDING MEDICAL ATTENTION NECESSARY FOR EXPOSED INDIVIDUALS						
H	COMMENTS (INDICATE SECTION (A - G) AND ITEM WITH COMMENTS OR ADDITIONAL INFORMATION)						
I	CERTIFICATION: I certify under penalty of law that I have personally examined and I am familiar with the information submitted and believe the submitted information is true, accurate, and complete.						
REPORTING FACILITY REPRESENTATIVE (print or type) _____							
SIGNATURE OF REPORTING FACILITY REPRESENTATIVE _____ DATE: _____							

EMERGENCY RELEASE FOLLOW-UP NOTICE REPORTING FORM INSTRUCTIONS

GENERAL INFORMATION:

Chapter 6.95 of Division 20 of the California Health and Safety Code requires that written emergency release follow-up notices prepared pursuant to 42 U.S.C. § 11004, be submitted using this reporting form. Non-permitted releases of reportable quantities of Extremely Hazardous Substances (listed in 40 CFR 355, appendix A) or of chemicals that require release reporting under section 103(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 [42 U.S.C. § 9603(a)] must be reported on the form, as soon as practicable, but no later than 30 days, following a release. The written follow-up report is required in addition to the verbal notification.

BASIC INSTRUCTIONS:

- The form, when filled out, reports follow-up information required by 42 U.S.C § 11004. Ensure that all information requested by the form is provided as completely as possible.
- If the incident involves reportable releases of more than one chemical, prepare one report form for each chemical released.
- If the incident involves a series of separate releases of chemical(s) at different times, the releases should be reported on separate reporting forms.

SPECIFIC INSTRUCTIONS:

Block A: Enter the name of the business and the name and phone number of a contact person who can provide detailed facility information concerning the release.

Block B: Enter the date of the incident and the time that verbal notification was made to OES. The OES control number is provided to the caller by OES at the time verbal notification is made. Enter this control number in the space provided.

Block C: Provide information pertaining to the location where the release occurred. Include the street address, the city or community, the county and the zip code.

Block D: Provide information concerning the specific chemical that was released. Include the chemical or trade name and the Chemical Abstract Service (CAS) number. Check all categories that apply. Provide best available information on quantity, time and duration of the release.

Block E: Indicate all actions taken to respond to and contain the release as specified in 42 U.S.C. § 11004(c).

Block F: Check the categories that apply to the health effects that occurred or could result from the release. Provide an explanation or description of the effects in the space provided. Use Block H for additional comments/information if necessary to meet requirements specified in 42 U.S.C. § 11004(c).

Block G: Include information on the type of medical attention required for exposure to the chemical released. Indicate when and how this information was made available to individuals exposed and to medical personnel, if appropriate for the incident, as specified in 42 U.S.C. § 11004(c).

Block H: List any additional pertinent information.

Block I: Print or type the name of the facility representative submitting the report. Include the official signature and the date that the form was prepared.

MAIL THE COMPLETED REPORT TO:

**State Emergency Response Commission (SERC)
Attn: Section 304 Reports
Hazardous Materials Unit
3650 Schriever Avenue
Mather, CA 95655**

NOTE: Authority cited: Sections 25503, 25503.1 and 25507.1, Health and Safety Code. Reference: Sections 25503(b)(4), 25503.1, 25507.1, 25518 and 25520, Health and Safety Code.

EXHIBIT C
LICENSE DATA SHEET

State Contractor License Classification and Number: _____

Name of License Holder: _____

Expiration Date: _____

City of San Diego Business License Number: _____

Expiration Date: _____

APPENDIX L
SAMPLE OF PUBLIC NOTICE



CONSTRUCTION NOTICE

PROJECT TITLE

Work on your street will begin within one week to replace the existing water mains servicing your community.

The work will consist of:

- Saw-cutting and trench work on Ingulf Street from Morena Boulevard to Galveston Street to install new water mains, water laterals and fire hydrants.
• Streets where trenching takes place will be resurfaced and curb ramps will be upgraded to facilitate access for persons with disabilities where required.
• This work is anticipated to be complete in your community by December 2016.

How your neighborhood may be impacted:

- Water service to some properties during construction will be provided by a two-inch highline pipe that will run along the curb. To report a highline leak call 619-515-3525.
• Temporary water service disruptions are planned. If planned disruptions impact your property, you will receive advance notice.
• Parking restrictions will exist because of the presence of construction equipment and materials.
• "No Parking" signs will be displayed 72 hours in advance of the work.
• Cars parked in violation of signs will be TOWED.

Hours and Days of Operation:

Monday through Friday X:XX AM to X:XX PM.

City of San Diego Contractor:

Company Name, XXX-XXX-XXXX



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Work on your street will begin within one week to replace the existing water mains servicing your community.

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• "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

To contact the City of San Diego: SD Public Works 619-533-4207 | engineering@sandiego.gov | sandiego.gov/CIP

APPENDIX M

ADVANCED METERING INFRASTRUCTURE (AMI) DEVICE PROTECTION

Protecting AMI Devices in Meter Boxes and on Street Lights

The Public Utilities Department (PUD) has begun the installation of the Advanced Metering Infrastructure (AMI) technology as a new tool to enhance water meter reading accuracy and efficiency, customer service and billing, and to be used by individual accounts to better manage the efficient use of water. **All AMI devices shall be protected per Section 402-2, "Protection", of the 2018 Whitebook.**

AMI technology allows water meters to be read electronically rather than through direct visual inspection by PUD field staff. This will assist PUD staff and customers in managing unusual consumption patterns which could indicate leaks or meter tampering on a customer's property.

Three of the main components of an AMI system are the:

- A. Endpoints, see Photo 1:

Photo 1



B. AMI Antenna attached to Endpoint (antenna not always required), see Photo 2:



Network Devices, see Photo 3:

Photo 3



AMI endpoints transmit meter information to the AMI system and will soon be on the vast majority of meters in San Diego. These AMI devices provide interval consumption data to the PUD's Customer Support Division. If these devices are damaged or communication is interrupted, this Division will be alerted of the situation. The endpoints are installed in water meter boxes, coffins, and vaults adjacent to the meter. A separate flat round antenna may also be installed through the meter box lid. This antenna is connected to the endpoint via cable. The following proper installation shall be implemented when removing the lid to avoid damaging the antenna, cable, and/or endpoint. Photo 4 below demonstrates a diagram of the connection:

Photo 4



The AMI device ERT/Endpoint/Transmitter shall be positioned and installed as discussed in this Appendix. If the ERT/Endpoint/Transmitter is disturbed, it shall be re-installed and returned to its original installation with the end points pointed upwards as shown below in Photo 5.

The PUD's code compliance staff will issue citations and invoices to you for any damaged AMI devices that are not re-installed as discussed in the Contract Document

Photo 5 below shows a typical installation of an AMI endpoint on a water meter.

Photo 5

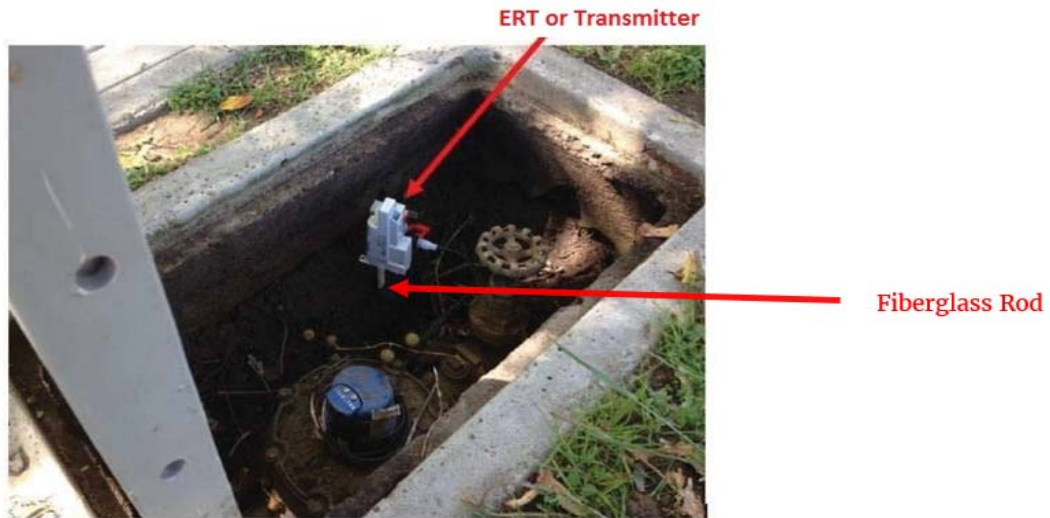


Photo 6 below is an example of disturbance that shall be avoided:

Photo 6



You are responsible when working in and around meter boxes. If you encounter these endpoints, use proper care and do not disconnect them from the registers on top of the water meter. If the lid has an antenna drilled through, do not change or tamper with the lid and inform the Resident Engineer immediately about the location of that lid. Refer to Photo 7 below:

Photo 7



Another component of the AMI system are the Network Devices. The Network Devices are strategically placed units (mainly on street light poles) that collect interval meter reading data from multiple meters for transmission to the Department Control Computer. **If you come across any of these devices on street lights that will be removed or replaced (refer to Photos 8 and 9 below), notify AMI Project Manager Arwa Sayed at (619) 362-0121 immediately.**

Photo 8 shows an installed network device on a street light. On the back of each Network Device is a sticker with contact information. See Photo 9. **Call PUD Water Emergency Repairs at 619-515-3525 if your work will impact these street lights.** These are assets that belong to the City of San Diego and you shall be responsible for any costs of disruption of this network.

Photo 8



Network Device

Photo 9



If you encounter any bad installations, disconnected/broken/buried endpoints, or inadvertently damage any AMI devices or cables, notify the Resident Engineer immediately. The Resident Engineer will then immediately contact the AMI Project Manager, Arwa Sayed, at (619) 362-0121.

APPENDIX N

SWPPP CONSTRUCTION BMP MAINTENANCE LOG

SWPPP Construction BMP Maintenance Log

Examples of construction BMP maintenance activities include but are not limited to tasks listed below. The contractor is ultimately responsible for compliance with the Storm Water Standards Manual and/or the Construction General Permit, and for ensuring all BMPs function per manufacturer's specifications. Use the attached log to schedule and document maintenance activities. The log shall be kept with the project SWPPP document at all times.

Construction BMP Maintenance Activities

- Maintain stabilized construction entrances/exits
- Redress gravel/rock to full coverage and remove any sediment accumulation
- Remove and replace geotextile/compost blanket/plastic with holes or tears
- Redress and restabilize erosion or rilling greater than 1-inch deep
- Reapply hydraulic stabilization products to full coverage
- Remove and replace silt fence/fiber roll/gravel bags/etc. with holes or tears
- Reinstall or replace silt fence/fiber roll/etc. with sags
- Remove sediment accumulation from perimeter controls
- Remove sediment accumulation from storm drain inlet protection and check dams
- Remove sediment accumulation from energy dissipators
- Repair or remove any vehicle/equipment that leaks
- Remove any accumulation in drip pans or containment
- Empty concrete washouts when they reach 75% capacity
- Empty waste disposal containers when they reach 95% capacity

Construction BMP Maintenance Log

Project Title:

WBS/IO No:

WDID:

Scheduled Date/Time	Completion Date/Time	Location	Maintenance Tasks Performed	Logged By

ATTACHMENT F
RESERVED

ATTACHMENT G
CONTRACT AGREEMENT

CONTRACT AGREEMENT

CONSTRUCTION CONTRACT

This Phase-Funded contract is made and entered into between THE CITY OF SAN DIEGO, a municipal corporation, herein called "City", and _____, herein called "Contractor" for construction of **Morena Conveyance North**; Bid No. **K-21-1848-DBB-3**; in the total amount _____ (\$ _____), which is comprised of the Base Bid consisting of an amount not to exceed \$_____.

IN CONSIDERATION of the payments to be made hereunder and the mutual undertakings of the parties hereto, City and Contractor agree as follows:

1. The following are incorporated into this contract as though fully set forth herein:
 - (a) The attached Faithful Performance and Payment Bonds.
 - (b) The attached Proposal included in the Bid documents by the Contractor.
 - (c) Reference Standards listed in the Instruction to Bidders and the Supplementary Special Provisions (SSP).
 - (d) Phased Funding Schedule Agreement, Long-Term Maintenance and Monitoring Agreement.
 - (e) That certain documents entitled **Morena Conveyance North**, on file in the office of the City Clerks Department as Document No. **B-15141** 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 **Morena Conveyance North**, Bid Number **K-21-1848-DBB-3**, San Diego, California.
3. For such performances, the City shall pay to Contractor the amounts set forth at the times and in the manner and with such additions or deductions as are provided for in this contract, and the Contractor shall accept such payment in full satisfaction of all claims incident to such performances.
4. No claim or suit whatsoever shall be made or brought by Contractor against any officer, agent, or employee of the City for or on account of anything done or omitted to be done in connection with this contract, nor shall any such officer, agent, or employee be liable hereunder.
5. This contract is effective as of the date that the Mayor or designee signs the agreement.

CONTRACT AGREEMENT (continued)

IN WITNESS WHEREOF, this Agreement is signed by the City of San Diego, acting by and through its Mayor or designee, pursuant to Resolution No. R - _____ or Municipal Code _____ authorizing such execution.

THE CITY OF SAN DIEGO

APPROVED AS TO FORM

Mara W. Elliott, City Attorney

By _____

By _____

Print Name: _____
Mayor or designee

Print Name: _____
Deputy City Attorney

Date: _____

Date: _____

CONTRACTOR

By _____

Print Name: _____

Title: _____

Date: _____

City of San Diego License No.: _____

State Contractor's License No.: _____

DEPARTMENT OF INDUSTRIAL RELATIONS (DIR) REGISTRATION NUMBER: _____

ATTACHMENT H

ESCROW BID DOCUMENTS

1. ESCROW BID DOCUMENTS

1.1. Definition and Purpose

The Escrow Bid Documents (EBD) are a compilation of all the documentary information generated in preparation of bid prices for this project. EBDs will be used to assist in the negotiation of price adjustments and variations and in the settlement of disputes, claims and other controversies. They will not be used for pre-award evaluation of the Contractor's anticipated methods of construction or to assess the Contractor's qualifications for performing the Work.

1.2. General

1.2.1. All bidders shall submit a copy of the EBD within 4 working days of the bid opening.

1.2.2. The successful bidder agrees, as a condition of award of the Contract, that the Escrow Bid Documents constitute the only complete documentary information used in preparation of his bid. No other bid preparation information shall be considered in resolving disputes.

1.2.3. Nothing in the Escrow Bid Documents shall change or modify the terms or conditions of the Contract.

1.3. Ownership

1.3.1. The EBDs are and shall always remain the property of the Contractor subject only to joint review by the City and the Contractor, except as provided for herein.

1.3.2. The City stipulates and expressly acknowledges that the EBDs, as defined herein, constitute trade secrets. This acknowledgment is based on the City's express understanding that the information contained in the EBDs is not known outside the Contractor's business, is known only to a limited extent and only by a limited number of employees of the Contractor, is safeguarded while in the Contractor's possession, and is extremely valuable to competitors by virtue of its reflecting the Contractor's contemplated techniques of construction.

1.3.3. The City acknowledges that EBDs and the information contained therein are made available to the City only because such action is an express prerequisite to award of the Contract. The City acknowledges that the EBDs include a compilation of information used in the Contractor's business, intended to give the Contractor an opportunity to obtain an advantage over competitors who do not know of or use the contents of the documentation. The City agrees to safeguard the EBDs and all information contained therein to the fullest extent permitted by law.

1.3.4. The City agrees to safeguard the EBDs and all information contained therein from any California Public Act Request to the fullest extent permitted by law.

1.4. Format and Contents

1.4.1. Bidders may submit EBDs in their usual cost estimating format. It is not intended that extra work is required in preparing the bid but to ensure that the EBDs will be

adequate to enable complete and proper understanding and proper interpretation for their intended use. The EBDs shall be in the English language only.

- 1.4.2.** The EBDs shall clearly itemize the estimated costs of performing the work of each item contained in the Bid Schedule. Items should be separated into sub-items as required to present a complete and detailed cost estimate and allow a detailed cost review. The EBDs shall include all quantity take-offs, crews, equipment, calculations of rates of production and progress, copies of quotations from sub-contractors and suppliers, and memoranda, narratives, consultants reports, add/deduct sheets and all other information used by the Contractor to arrive at the prices contained in the bid. Estimated costs shall be broken down into the Contractor's usual estimate categories such as direct labor, repair labor, equipment operation, equipment ownership, expendable materials, permanent material and subcontract costs as appropriate. Plant and equipment and indirect costs should be detailed in the Contractor's usual format. The Contractor's allocation of plant and equipment, indirect costs, contingencies, mark-up and other items to each bid item shall be clearly indicated.
- 1.4.3.** The EBDs shall clearly show in calculations, text, or both, the relationship between baseline indications presented in the Contract Documents and assumptions that form the basis for the Contractor's means, methods, equipment selection, rates of production, and costs.
- 1.4.4.** All costs shall be identified. For bid items where the extended amount is less than \$10,000, estimated unit costs are acceptable without a detailed cost estimate, provided that labor, equipment, materials and subcontracts, as applicable, are included and provided that indirect costs, contingencies, and mark-up, as applicable, are allocated.
- 1.4.5.** Bid Documents provided by the City should not be included in the EBDs unless needed to comply with the above requirements.

1.5. Submittal

- 1.5.1.** All bidders shall submit their EBDs within 4 working days of the bid opening. The EBDs shall be submitted in a sealed container (e.g., sealed envelope, box or carton sealed with tape, locked strongbox, etc.), and the container shall be clearly marked on the outside with the Bidder's name, date of submittal, project name, Contract Number and the words "Escrow Bid Documents". The EBDs shall be submitted to:

Engineering and Capital Projects – Contracts Division
525 B Street, Suite 750 (7th Floor)
San Diego, California, 92101
Attention: Stephen Samara

- 1.5.2.** The EBDs shall be signed by an individual authorized by the bidder to execute the bid, stating that the material in the Escrow Bid Documentation constitutes all the documentary information used in the preparation of the bid and that he or she has personally examined the contents of the EBDs submission and has found that the documents are complete:

ESCROW BID DOCUMENTS CERTIFICATION

THE UNDERSIGNED HEREBY CERTIFIES THAT THE BID DOCUMENTATION CONTAINED HEREIN CONSTITUTES ALL THE INFORMATION USED IN PREPARATION OF THE BID AND THAT I HAVE PERSONALLY EXAMINED THESE CONTENTS AND HAVE FOUND THAT THIS BID DOCUMENTATION IS COMPLETE.

SIGNATURE: _____

NAME: _____
(Print)

TITLE: _____

FIRM: _____

DATE: _____

- 1.5.3.** Prior to award of the contract, the EBDs of the apparent low bidder will be examined, organized and inventoried by representatives of the City, and members of the Contractor’s staff who are knowledgeable in how the bid was prepared. This examination is to ensure that the EBDs are authentic, legible, and complete (as defined in 1.4). It will not include review of and will not constitute approval of proposed construction methods, estimating assumptions, or interpretations of the contract documents. Examination will not alter any condition(s) or term(s) of the Contract.
- 1.5.4.** If the Contract is not awarded to the apparent low bidder, the EBDs of the next apparent low bidder to be considered for award shall be processed, as described above.
- 1.5.5.** The City may reject the bid as non-responsive and ineligible for further consideration if the necessary EBDs are not submitted.
- 1.5.6.** If the bidder's proposal is based on subcontracting any part of the Work, each subcontractor whose total subcontract price exceeds five percent of the total contract price proposed by the bidder, shall provide separate EBDs to be included with those of the bidder. These documents will be opened and examined in the same manner and at the same time as the examination described above for the apparent successful bidder. The failure to submit subcontractor EBDs may render contractor’s bid non-responsive.

1.5.7. If the Contractor wishes to substitute a subcontractor for a portion of the Work which exceeds five percent of the total contract price proposed by the bidder after award, the City retains the right to require the Contractor to submit EBDs from the subcontractor before the subcontract is approved. This section is not intended to and shall not be interpreted as a waiver by the City of any of the requirements or provisions of public contract code section 4100 et seq. known as the Subletting and Subcontracting Fair Practices Act.

1.6. Storage

1.6.1. Absent a request from the Contractor to place the EBDs in possession of a third-party escrow agent, the EBDs will be stored by the City of San Diego, Public Works Department, Contracts Division. Upon written request from the Contractor, the EBDs shall be placed in escrow with a mutually agreeable institution for the life of the Contract, unless examination is required, which shall be conducted in accordance with this section. The cost of storage by third-party escrow agent will be borne by the Contractor.

1.7. Examination

1.7.1. The EBDs shall be examined by both the City and the Contractor, at any time deemed necessary by either the City or the Contractor, to assist in the negotiation of price adjustments and change orders, or the settlement of disputes.

1.7.2. Examination of the EBDs is subject to the following conditions:

1.7.2.1. As trade secrets, the EBDs are proprietary and confidential as described above

1.7.2.2. The City and the Contractor shall each designate, in writing to the other party a minimum of ten days prior to examination, representatives who are authorized to examine the EBDs. No other person shall have access to examine the EBDs.

1.7.2.3. Examination of the EBDs will take place only in the presence of duly designated representatives of both the City and the Contractor.

1.7.2.4. As escrow bid documents shall be examined by both the City and the Contractor to assist in the negotiation of price adjustments and change orders or the settlement of disputes as either party sees fit.

1.8. Final Disposition

1.8.1. The EBDs will be returned to the awarded Contractor upon completion and final settlement of the contract.

1.8.2. The EBDs submitted by unsuccessful bidders will be returned unopened, unless opened as provided for above, following execution of the Contract.

ATTACHMENT I

PROJECT LABOR AGREEMENT

CITY OF SAN DIEGO
PROJECT LABOR AGREEMENT
FOR CONSTRUCTION OF PURE WATER PROGRAM
PHASE I PROJECTS

Effective Date: June 16, 2020

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CITY OF SAN DIEGO
PROJECT LABOR AGREEMENT
FOR CONSTRUCTION OF PURE WATER PROGRAM
PHASE I COVERED PROJECTS

This Project Labor Agreement (hereinafter, “PLA” or “Agreement”) is entered into this 16th day of June, 2020 by and between the San Diego Building and Construction Trades Council (hereinafter “Council”), and the signatory Craft Unions (hereinafter, together with the Council, collectively, the “Union” or “Unions”), and the Contractors performing work on Covered Projects that are subject to this Agreement. The City of San Diego is not a signatory Party to this Agreement, but shall be considered a “negotiating party” and will be responsible for implementing and administering the Agreement as described herein together with the Council, Unions and Contractors.

ARTICLE 1

RECITALS

WHEREAS, the City desires the completion of the Pure Water Program Phase I Projects in a professional, safe, efficient, and economical manner, without undue delay or work stoppage; and

WHEREAS, the successful completion of the City’s Pure Water Program Phase I Projects are of the utmost importance to the rate payers and the City; and

WHEREAS, the Parties have pledged their full commitment to work towards a mutually satisfactory completion of the Pure Water Program Phase I Projects; and

WHEREAS, large numbers of workers of various skills will be required in the performance of the construction work on the Pure Water Program Phase I Projects, including workers affiliated with and/or represented by the Unions; and

WHEREAS, it is recognized that on construction projects with multiple contractors and bargaining units on the job site at the same time over an extended period of time, the potential for work disruption is substantial without an overriding commitment to maintain continuity of work; and

WHEREAS, the Parties agree that by establishing and stabilizing wages, hours, and working conditions for the workers employed on the Pure Water Program Phase I Projects, a

satisfactory, continuous, and harmonious relationship will exist among labor and management that will lead to the efficient and economical completion of Covered Projects; and

WHEREAS, in recognition of the special needs of the Project Work and to maintain a spirit of harmony, labor-management relations, peace, and stability during the term of this PLA, the Parties agree to establish effective and binding methods for the settlement of all misunderstandings, disputes and grievances without any strikes, slowdowns, work interruptions, or disruption of Project Work, and the Contractors agree not to engage in any lockout.

WHEREAS, the City places high priority upon the development of comprehensive programs for the recruitment, training, and employment of City Residents and Targeted Workers, and also recognizes the ability of local Apprenticeship Programs to provide meaningful and sustainable careers in the building and construction industry. The Parties will encourage City Residents and Targeted Workers to participate in Project Work through programs and procedures jointly developed to prepare and encourage such individuals for entrance into Apprenticeship Programs and formal employment on the Project Work through the referral programs sponsored and/or supported by the Parties to this PLA.; and

WHEREAS, the Project Work will provide opportunities for Disadvantaged Business Enterprises to participate as Contractors, subcontractors, or suppliers, and the Parties therefore agree that they will cooperate with all efforts of the City, the Project Labor Coordinator, and other organizations retained by the City for this purpose, to encourage and assist the participation of Disadvantaged Business Enterprises in the Project Work. Specifically, all Parties understand that the City has established and quantified goals which place a strong emphasis on the utilization of Disadvantaged Business Enterprises on the Project. Each Party agrees that it shall participate in outreach programs and provide education, and assistance to businesses not familiar with working on projects of this scope. Further, the Parties shall ensure that the provisions of this PLA do not inadvertently establish impediments to participation of such Disadvantaged Business Enterprises, City Residents and Targeted Workers.

WHEREAS, it is further understood that the City is a real party in interest to this Agreement and shall actively administer and enforce the obligations of this PLA to ensure that the benefits of this Agreement flow to all signatory Parties, craft persons working under it, and the rate payers and residents of the City. The City will send a letter to the Council to signify that the City will be performing its obligation under this Agreement and will designate a "Project Labor Coordinator," either from its own staff and/or an independent contractor acting on behalf of the City, to monitor and enforce compliance with this PLA. In addition, this letter will state that the City will include and incorporate this Agreement into each Covered Project's construction documents. The Project Labor Coordinator, as the authorized representative of the City, will assist with the development and implementation of the programs referenced in this PLA, all of which are critical to fulfilling the intent and purposes of the Parties and this PLA.

NOW, THEREFORE, IT IS AGREED BETWEEN AND AMONG THE PARTIES AS FOLLOWS:

ARTICLE 2

DEFINITIONS

Capitalized terms utilized in this PLA which are not otherwise defined herein shall have the meanings ascribed to said terms below.

“Agreement” means this Project Labor Agreement (PLA).

“Applicable Prevailing Determination” means the prevailing wage determinations applicable to Project Work pursuant to the State of California Labor Code.

“Apprentice” means an apprentice properly registered in an Apprenticeship Program for the entire time they are employed on a Covered Project.

“Apprenticeship Program” as used in this PLA shall be defined as an apprenticeship program certified by the State of California.

“City” means the City of San Diego and its departments delivering the Covered Projects.

“City Resident” means a City of San Diego permanent resident at the time of initial employment on a Covered Project or a Veteran residing anywhere.

“Contractor” means any contractor to whom the City awards a Construction Contract for Project Work and all subcontractors utilized by such Contractors for Project Work. The term “Contractor” includes any individual, firm, partnership, corporation, owner operator, or combination thereof, including joint ventures, that has entered into a contract with the City for Project Work, or any subcontractor who has signed a contract with a Contractor or another subcontractor for Project Work.

“Core Employees” are defined in Article 4, Section 4.6 (e).

“Council” means the San Diego County Building & Construction Trades Council.

“Covered Contract” means a contract awarded to a Contractor by the City for a Pure Water Program Phase I Project identified in Appendix A.

“Covered Project” or “Project Work” means a Pure Water Program Phase I Project that is identified in Appendix A and is limited to the construction site of work.

“Disadvantaged Business Enterprise” means a firm that has been certified via the Department of Transportation, but also includes: Minority Business Enterprises or Woman Business Enterprises certified by the Department of Transportation or the California Public Utilities Commission; and Small Local Business Enterprises or Emerging Local Business Enterprises certified by the City.

“Prime Contractor” means the prime Contractor awarded a Covered Contract in privity directly with the City.

“Project Labor Coordinator” means the designee of the City, either from its own staff and/or an independent entity acting on behalf of the City, to monitor compliance with this Agreement and assist with developing, implementing and administering the requirements, policies and programs referenced herein.

“Schedule A’s” means the local master labor agreements of the Unions.

“Targeted Worker” means any individual qualifying for one (1) or more of the following Targeted Worker categories:

- (a) Is a Veteran, or is the eligible spouse of a “Veteran of the United States armed forces, under Section 2(a) of the Jobs for Veterans Act (38 United States Code [U.S.C.] 4215[a]);
- (b) At initial time of employment on a Covered Project, is an Apprentice with less than ten (10) percent of the work hours required for graduation to become a Journeyman;
- (c) Has no high school diploma or general education diploma (GED);
- (d) Is homeless or has been homeless within the last year;
- (e) Is a former foster youth;
- (f) Is a custodial single parent;
- (g) Is experiencing protracted unemployment (receiving unemployment benefits for at least three [3] months);
- (h) Is a current recipient of government cash or food assistance benefits;
- (i) Has a documented income at or below 100 percent of the Federal Poverty Level;

(j) Is formerly incarcerated with a history of involvement with the criminal justice system.

“Union” or “Unions” means any labor organization signatory to this Agreement acting in their own behalf and on behalf of their respective affiliates and member organizations whose names are subscribed hereto and who have, through their officers, executed this Agreement.

“Veteran” means a veteran or the eligible spouse of a veteran of the United States armed forces, under Section 2(a) of the Jobs for Veterans Act (38 U.S.C. 4215[a]);

ARTICLE 3

SCOPE OF THE AGREEMENT

Section 3.1 This PLA is limited to covering all onsite construction work within the scope of each Covered Contract.

Section 3.2 Exclusions. Items specifically excluded from the scope of this PLA include the following:

(a) Work of non-manual employees including but not limited to, superintendents, supervisors, staff engineers, quality control and quality assurance personnel, timekeepers, mail carriers, clerks, office workers, messengers, guards, safety personnel, emergency medical and first aid technicians, and other professional, engineering, administrative, supervisory, and management employees; and

(b) All offsite manufacturing, fabrication, deliveries, maintenance, and handling of materials, equipment, or machinery, and the offsite hauling of materials of any kind to or from the Covered Project site. However, any lay down or storage areas for equipment or material and manufacturing (i.e. prefabrication) sites dedicated solely for the project, and the movement of materials or goods between locations on a Covered Project site are within the scope of the PLA. On-site fabrication work includes work done for the Project in temporary yards or areas near the Project. On-site construction shall also include the site of any batch plant constructed solely to supply materials to the Project; and

(c) All employees of the City, Project Labor Coordinator, design teams (including, but not limited to, architects, engineers, and master planners), or any other consultants for the City (including, but not limited to, project managers and

construction managers and their employees where not engaged in Project Work) and their subconsultants, and other employees of professional service organizations, not performing manual labor within the scope of this PLA. Notwithstanding the foregoing, however, this exclusion shall not apply to the classifications for Surveyors and/or Building/Construction Inspectors and/or Field Soils and Material Testers (Inspectors) unless they are City employees. This inclusion applies to the scope of work defined in the State of California Wage Determination for Surveyors and/or Building/Construction Inspectors and/or Field Soils and Material Testers (Inspectors). This shall also specifically include such work where it is referred to by utilization of such terms as “quality control” or “quality assurance.” Every Inspector performing under these classifications on Covered Projects pursuant to a professional services agreement, a contract entered into directly with the City, or a contract with a Contractor shall be bound to all applicable requirements of this Agreement; and

(d) Any work performed on or near or leading to or into a site of work covered by this PLA and undertaken by state, county, city, or other governmental bodies, or their contractors (other than work within the scope of this PLA undertaken by contractors to the City); or by private utilities, or their contractors; and

(e) Work performed by employees of a manufacturer or vendor on the manufacturer’s or vendor’s equipment, if required by the warranty agreement in order to maintain the warranty or guarantee, and provided that the warranty agreement is the manufacturer’s or vendor’s usual and customary warranty agreement for such equipment and is consistent with industry practice; and

(f) Specialized or technical work requiring specialized training, unique skills, or a level of specific technical experience which employees represented by the Union do not possess. At least ten (10) working days notice shall be given to the Council before any work is performed pursuant to this exemption.; and

(g) Laboratory work for testing; and

(h) Non-construction support services contracted by the City, Project Labor Coordinator, or Contractor in connection with this Project.

Section 3.3 Awarding of Contracts.

(a) The City has the absolute right to bid or award Covered Contracts regardless of delivery method to any Contractor notwithstanding the existence or non-existence of any agreements between such Contractor and any Union Parties,

provided only that such Contractor is willing, ready, and able to execute and comply with this PLA should such Contractor be awarded work covered by this PLA.

(b) It is agreed that all Contractors who have been awarded a contract for Project Work shall be required to accept and be bound by the terms and conditions of this PLA. Contractors shall evidence their acceptance of this Agreement by executing a Letter of Assent as set forth in Attachment A hereto. The Prime Contractor must sign and submit the Letter of Assent as a condition of award prior to the execution of a Covered Contract. No Contractor shall commence Project Work without first providing a copy of the signed Letter of Assent to the Project Labor Coordinator.

(c) The City and Prime Contractors agree that to the extent permitted by law and consistent with the economy and efficiency of construction and operation, it will use its best efforts to purchase materials, equipment, and supplies that will not create labor strife. Under all circumstances, however, the City and Prime Contractors shall retain the absolute right to select the lowest responsive and responsible bidder for the award of contracts on all Covered Projects.

Section 3.4 Coverage Exception. The Parties agree and understand that this PLA shall not apply to any work that would otherwise be covered Project Work if a governmental agency or granting authority partially or fully funding such work determines that it will not fund the Project Work if it is covered by this PLA. The City agrees that it will make every effort to establish the inclusion of this PLA with any governmental agency or granting authority funding a Covered Project.

Section 3.5 Schedule A's.

(a) The provisions of this PLA, including the Schedule A's (which are the local Master Labor Agreements of the signatory Unions having jurisdiction over the work on the Project, as such may be changed from time to time consistent with Section 21.3, and which are incorporated herein by reference), shall apply to the work covered by this PLA, notwithstanding the provisions of any other local, area and/or national agreement that may conflict with or differ from the terms of this PLA. Where a subject covered by the provisions of this PLA is also covered by a Schedule A, the provisions of this PLA shall prevail. Where a subject is covered by a provision of a Schedule A and not covered by this PLA, the provisions of the Schedule A shall prevail. Any dispute as to the applicable source between this PLA and any Schedule A shall be resolved under the procedures established in Article 10.

(b) It is understood that this PLA, together with the referenced Schedule A's, constitutes a self-contained, stand-alone agreement and, by virtue of having become bound to this PLA, the Contractor will not be obligated to sign any other local, area, or national collective bargaining agreement as a condition of performing work within the scope of this PLA (provided, however, that the Contractor may be required to sign a uniformly applied non-discriminatory Participation or Subscription Agreement at the request of the trustees or administrator of a trust fund established pursuant to Section 302 of the Labor Management Relations Act, and to which such Contractor may be bound to make contributions under this PLA, provided that such Participation or Subscription Agreement does not purport to bind the Contractor beyond the terms and conditions of this PLA and/or expand its obligation to make contributions pursuant thereto). It shall be the responsibility of the Prime Contractor to have each of its Contractors of any tier sign the documents with the appropriate Union prior to the Contractor beginning Project Work.

Section 3.6 The Parties agree that this PLA will be made available to, and will fully apply to, any successful bidder for Project Work, without regard to whether that successful bidder performs work at other sites on either a Union or non-Union basis. This PLA shall not apply to any work of any Contractor other than that on Project Work specifically covered by this PLA.

Section 3.7 Binding Signatories Only. This PLA and Letter of Assent shall only be binding on the signatory Parties hereto, and shall not apply to the parents, affiliates, subsidiaries, or other ventures of any such Party.

Section 3.8 Other City Work. Nothing contained herein shall be interpreted to prohibit, restrict, or interfere with the performance of any other operation, work, or function not covered by this PLA, which may be performed by City employees or contracted for by the City for its own account, on its property, or in and around a project site.

Section 3.9 Separate Liability. It is understood that the liability of the Contractor(s) and the liability of the separate Unions under this PLA shall be several and not joint. The Unions agree that this PLA does not have the effect of creating any joint employment status between or among the City or Project Labor Coordinator and/or any Contractor.

Section 3.10 Completed Project Work. As areas of Project Work are accepted by the City, this PLA shall have no further force or effect on such items or areas except where the Contractor is directed by the City or its representatives to engage in repairs, modification and/or check-out functions required by its contract(s) with the City.

Section 3.11 Except for all work performed under the NTL Articles of Agreement, the National Stack/Chimney Agreement, and the National Cooling Tower Agreement, all instrument calibrations work and loop checking shall be performed under the terms of the UA/IBEW Joint National Agreement for Instrument and Control Systems Technicians, and the National Agreement of the International Union of Elevator Constructors, with the exception of Article 7 (Work Stoppages and Lockouts), Article 8 (Work Assignments and Jurisdictional Disputes) and Article 10 (Settlement of Grievances and Disputes) of this PLA, which shall apply to such work.

ARTICLE 4

UNION RECOGNITION AND EMPLOYMENT

Section 4.1 **Recognition.** The Contractor recognizes the Unions as the exclusive bargaining representative for the employees engaged in Project Work. Such recognition does not extend beyond the period when the employee is engaged in Project Work.

Section 4.2 **Contractor Selection of Employees.** The Contractor shall have the right to determine the competency of all employees, the number of employees required, the duties of such employees within their craft jurisdiction, and shall have the sole responsibility for selecting employees to be laid off, consistent with this Article. The Contractor shall also have the right to reject any applicant referred by a Union for any reason, subject to any reporting time requirements of the applicable Schedule A; provided, however, that such right is exercised in good faith and not for the purpose of avoiding the Contractor's commitment to employ qualified workers through the procedures endorsed in this PLA.

Section 4.3 **Referral Procedures.**

(a) For signatory Unions to this Agreement having a job referral system contained in a Schedule A, the Contractor agrees to comply with such system and it shall be used exclusively by such Contractor, except as modified by this PLA. Such job referral system will be operated in a nondiscriminatory manner and in full compliance with federal, state, and local laws and regulations that require equal employment opportunities and non-discrimination. All of the foregoing hiring procedures, including related practices affecting apprenticeship, shall be operated so as to consider the goals of the City to encourage employment of City Residents, Targeted Workers, and utilization of Disadvantaged Business Enterprises on the Project Work, and to facilitate the ability of all Contractors to meet their employment needs.

(b) The local Unions will exert their best efforts to recruit and refer sufficient numbers of skilled craft workers to fulfill the labor requirements of the Contractor, including specific employment obligations to which the Contractor may be legally and/or contractually obligated; and to refer Apprentices as requested to develop a larger, skilled workforce. The Unions will work with the Project Labor Coordinator and others designated by the City, to identify and refer competent craft persons as needed for Project Work, and to identify individuals, particularly City Residents and Targeted Workers, for entrance into Apprenticeship Programs, or participation in other identified programs and procedures to assist individuals in qualifying and becoming eligible for such Apprenticeship Programs, all maintained to increase the available supply of skilled craft personnel for Project Work and future construction work to be undertaken by the City.

(c) The Union shall not knowingly refer an employee currently employed by a Contractor on Project Work to any other Contractor.

Section 4.4 Non-Discrimination in Referral, Employment, and Contracting. The Unions and Contractors agree that they will not discriminate against any employee or applicant for employment on the basis of race, color, religion, gender, national origin, age, Union status, sex, sexual orientation, marital status, political affiliation, or disability. Further, it is recognized that the City has certain policies, programs, and goals for the utilization of Disadvantaged Business Enterprises. The Parties shall jointly endeavor to assure that these commitments are fully met, and that any provisions of this PLA that may appear to interfere with Disadvantaged Business Enterprises successfully bidding for work on Covered Projects shall be carefully reviewed, and adjustments made as may be appropriate and agreed upon among the Parties, to ensure full compliance with the spirit and letter of the City's policies and commitment to its goals for the significant utilization of Disadvantaged Business Enterprises as Contractors, vendors or suppliers on Project Work.

Section 4.5 Employment of City Residents and Targeted Workers.

(a) In recognition of the City's mission to serve the City and its residents, the Unions and Contractors agree that, to the extent allowed by law, and as long as they possess the requisite skills and qualifications, residents of the City of San Diego, hereafter "City Residents", shall be first referred for Project Work. A "City Resident" is defined as a City of San Diego permanent resident at the time of initial employment on a Covered Project or a Veteran residing anywhere. The

list of qualifying zip codes for City Residents is included within Attachment B-1, Workforce Dispatch Request Form.

(b) The Contractors and Unions agree to work together to achieve a goal of at least thirty-five (35) percent of the total construction craft hours worked on each Covered Project be performed by City Residents.

(c) The Contractors and Unions agree to work together to achieve a goal of at least ten (10) percent of the total construction craft hours worked on each Covered Project be performed by Targeted Workers. Hours worked by Targeted Workers who are also City Residents may be applied to the City Resident participation goal.

(d) Professional services agreements entered into by the City for covered surveying or inspection services, which are separate and apart from the Construction Contract for a Covered Project, are exempt from the foregoing City Resident and Targeted Worker hiring goals.

(e) To facilitate the dispatch of City Residents, as well as all Contractor requests for referral and dispatch of workers from the applicable Union referral system, all Contractors are required to utilize the Workforce Dispatch Request Form for Covered Projects, a sample of which is attached as Attachment B-1.

(f) The Project Labor Coordinator shall work with the Unions and Contractors in the administration, monitoring, and the reporting of the foregoing City Resident and Targeted Worker hiring goals.

(g) The Parties recognize that the Pure Water Program Phase I Projects have multiple funding sources. If a particular funding source applied by the City to a Covered Project does not allow geographic preference for hiring local craft workers, the foregoing City Resident participation requirement will not be applicable to that Covered Project. The City reserves the right to apply Pure Water Program Phase I funding as it chooses and will make every effort to fund the Covered Projects to encourage inclusivity of City Residents.

Section 4.6 Core Employees. This Section only applies to Contractors who are not directly signatory to an applicable Schedule A.

(a) Disadvantaged Business Enterprise. The Parties recognize the City's interest in promoting competition and inclusion of Disadvantaged Business Enterprises, which may not be signatory to a current Schedule A. In order to promote participation and attract Disadvantaged Business Enterprises to work

under this Agreement, and subject to the limitations set forth below, each Contractor that is a Disadvantaged Business Enterprise may first employ three (3) of its core employees per craft on each Covered Project prior to employing an employee through the appropriate Union hiring hall. The next (fourth) employee shall be hired from the appropriate Union hiring hall and thereafter, such Contractor may employ, as needed, two (2) additional Core Employees in an alternating manner with Union referrals, up to a total of five (5) Core Employees. Thereafter, all additional employees in the affected trade or craft shall be requested and referred from the appropriate Union hiring hall.

The foregoing Core Employee hiring procedure for Disadvantaged Business Enterprises is subject to the following limitations:

(1) Disadvantaged Business Enterprises with an individual subcontract value of \$500,000 or less and;

(2) Disadvantaged Business Enterprises are limited to utilizing the foregoing Core Employee hiring procedure to one (1) subcontract per Covered Project and;

(3) The total value of all subcontracts utilizing the foregoing Core Employee hiring procedure shall not exceed ten (10) percent of the total value of each Covered Project; and

(4) In order to assist the Project Labor Coordinator monitor compliance with this Section, each Prime Contractor will be responsible for tracking, reporting and providing notice to the Project Labor Coordinator describing each Disadvantaged Business Enterprise subcontract that qualifies for the foregoing hiring procedure prior to work commencing.

(b) Employers who do not qualify for the hiring procedure set forth in Section 4.6(a), and who are not otherwise signatory to a current Schedule A, may employ, as needed, first, a Core Employee, then an employee through a referral from the appropriate Union hiring hall, then a second Core Employee, then a second employee through the referral system, and so on until a maximum of three (3) Core Employees are employed per craft on each Covered Project. Thereafter, all additional employees in the affected trade or craft shall be requested and referred from the appropriate Union hiring hall in accordance with this Article. Contractors employing more than fifty (50) craft workers at the same time in a specific trade on a Covered Project may hire an additional two (2) Core Employees.

(c) Section 4.6 only applies to Contractors who are not directly signatory to a current Schedule A for the craft worker in its employ and is not intended to limit the transfer provisions of the Schedule A of any trade. As part of this process, and in order to facilitate the contract administration procedures, as well as appropriate fringe benefit fund coverage, all Contractors shall require their Core Employees and any other persons employed other than through the referral process, to register with the appropriate Union hiring hall, if any, prior to their first day of employment working under the Construction Contract at the project site.

(d) Prior to each Contractor performing any work on a Covered Project, each Contractor shall provide a list of Core Employees to the Project Labor Coordinator and the Council. After submitting the Core Employee list prior to commencing work, Contractors shall not make any changes or substitutions to the Core Employee list for the duration of the Covered Project. Failure to submit the Core Employee list prior to work commencing will prohibit the Contractor from using any Core Employees for 30 calendar days after the list is provided to the Project Labor Coordinator and Council.

(e) Upon request by any Party to this Agreement, the Contractor hiring any Core Employee shall provide satisfactory proof (i.e., payroll records, quarterly tax records, and such other documentation) evidencing the Core Employee's qualification as a Core Employee to the Project Labor Coordinator and the Council.

(f) Core Employees must meet the following eligibility requirements to qualify for employment on Covered Projects:

(1) A Core Employee must be either a journeyman or Apprentice and appear on the Contractor's active payroll for at least ninety (90) of the last one-hundred-eighty (180) working days prior to being designated as a Core Employee. The date a Core Employee is designated is the date the Core Employee list is submitted to the Project Labor Coordinator and Council prior to the Contractor commencing work; and

(2) A Core Employee must possess any license required by state or federal law for the Project Work to be performed; and

(3) A Core Employee must have the ability to safely perform the basic functions of the applicable trade.

(g) In addition to the core employee provisions set forth herein, all Contractors may avail themselves of any opportunity provided for in the applicable Schedule A's to call for specific employees by name.

(h) During any layoffs or reductions in workforce, Contractors shall layoff employees in an order and manner consistent with the Core Employee hiring procedures and maintain the required Core Employee-to-Union referral ratios required by this Section for the duration of each Covered Project.

Section 4.7 Time for Referral. If any Union's registration and referral system does not fulfill the requirements for specific classifications of covered employees (including City Residents) requested by any Contractor within forty-eight (48) hours (excluding Saturdays, Sundays, and holidays), that Contractor may employ Core Employees without reference to the ratio requirements in Section 4.6 or use employment sources other than the Union registration and referral services, and may employ applicants from any other available source. The Contractor should promptly inform the Union of any applicants hired from other sources, and such applicants shall register with the appropriate hiring hall, if any.

Section 4.8 Lack of Referral Procedure. If a signatory local Union does not have a job referral system as set forth in Section 4.3 above, the Contractors shall give the Union equal opportunity to refer applicants. The Contractors shall notify the Union of employees so hired, as set forth in Section 4.7.

Section 4.9 Union Membership. Employees are not required to become or remain union members as a condition of performing Covered Work under this Agreement. Employers shall make and transmit all deductions for union dues, fees, and assessments that have been authorized by employees in writing in accordance with the applicable Schedule A. Nothing in this Section 4.9 is intended to supersede the requirements of the applicable Schedule A's as to those Employers otherwise signatory to such Schedule A and as to the employees of those Employers who are performing Covered Work.

Section 4.10 Foremen. The selection and number of craft foremen and/or general foremen shall be the responsibility of the Contractor, consistent with the Schedule A's. All foremen shall take orders exclusively from the designated Contractor representatives. Craft foremen shall be designated as working foreman at the request of the Contractors.

Section 4.11 Skilled and Trained Workforce. All Contractors performing Project Work are required to provide the City with an enforceable commitment that a skilled and

trained workforce will be used to complete the construction contract or project, in accordance with City Council Resolution Number R-312062.

ARTICLE 5

UNION ACCESS AND STEWARDS

Section 5.1 Access to Project Sites. Authorized representatives of the Union shall have access to Project Work, provided that they do not interfere with the work of employees and further provided that such representatives fully comply with posted visitor, security, and safety rules.

Section 5.2 Stewards.

(a) Each signatory local Union shall have the right to dispatch a working journeyman as a steward for each shift, and shall notify the Contractor in writing of the identity of the designated steward or stewards prior to the assumption of such person's duties as steward. Such designated steward or stewards shall not exercise any supervisory functions. There will be no non-working stewards. Stewards will receive the regular rate of pay for their respective crafts.

(b) In addition to his/her work as an employee, the steward should have the right to receive, but not to solicit, complaints or grievances and to discuss and assist in the adjustment of the same with the employee's appropriate supervisor. Each steward should be concerned only with the employees of the steward's Contractor and not with the employees of any other Contractor. The Contractor will not discriminate against the steward in the proper performance of his/her Union duties.

(c) When a Contractor has multiple, non-contiguous work locations at one site, the Contractor may request and the Union shall appoint such additional working stewards as the Contractor requests to provide independent coverage of one or more such locations. In such cases, a steward may not service more than one work location without the approval of the Contractor.

(d) The stewards shall not have the right to determine when overtime shall be worked or who shall work overtime.

Section 5.3 Steward Layoff/Discharge. The Contractor agrees to notify the appropriate Union twenty-four (24) hours before the layoff of a steward, except in the case of

disciplinary discharge for just cause. If the steward is protected against such layoff by the provisions of the applicable Schedule A, such provisions shall be recognized when the steward possesses the necessary qualifications to perform the remaining work. In any case in which the steward is discharged or disciplined for just cause, the appropriate Union will be notified immediately by the Contractor, and such discharge or discipline shall not become final (subject to any later filed grievance) until twenty-four (24) hours after such notice has been given.

Section 5.4 Employees on Non-Project Work. On work where the personnel of the City may be working in close proximity to the construction activities covered by this PLA, the Union agrees that the Union representatives, stewards, and individual workers will not interfere with the City personnel, or with personnel employed by any other employer not a Party to this PLA.

ARTICLE 6

WAGES AND BENEFITS

Section 6.1 Wages. At a minimum, all employees covered by this PLA shall be classified in accordance with work performed and paid the hourly wage rates for those classifications in compliance with the Applicable Prevailing Wage Determination established pursuant to the California Labor Code by the California Department of Industrial Relations.

Section 6.2 Benefits.

(a) Subject to the exception set forth below for Disadvantaged Business Enterprises, otherwise, for all employees performing Project Work, Contractors shall pay all fringe benefits and other required employer contributions to the established Union employee benefit funds in the amounts required by the applicable Schedule A. In addition, the Contractors and Unions agree that only such bona fide employee benefits that accrue to the direct benefit of the employees (such as pension and annuity, health and welfare, vacation, apprenticeship, and training funds) shall be included in this requirement and required to be paid by the Contractor on Covered Projects. These Contractor contributions shall not exceed the contribution amounts set forth in the Applicable Prevailing Wage Determination.

Union Benefit Fund Contributions for Disadvantaged Business Enterprises. Disadvantaged Business Enterprises are exempt from paying fringe benefits and

other required employer contributions on behalf of their Core Employees to the Union employee benefit funds, subject to the following exemption limitations:

(1) The exemption is only applicable to Disadvantaged Business Enterprises with an individual subcontract value of \$500,000 or less and;

(2) Disadvantaged Business Enterprises are limited to utilizing this exemption for one subcontract per Covered Project and;

(3) The total value of all subcontracts utilizing this exemption shall not exceed ten (10) percent of the total value of each Covered Project; and

(4) Disadvantaged Business Enterprises utilizing this exemption are still required to pay all fringe benefits and other required employer contributions to the established Union employee benefit funds for all employees other than their Core Employees, and must comply with the applicable prevailing wage requirements, including the payment of fringe benefits, for all employees performing Project Work; and

(5) In order to assist the Project Labor Coordinator monitor utilization of this exemption, each Prime Contractor will be responsible for tracking, reporting and providing notice to the Project Labor Coordinator about each Disadvantaged Business Enterprise subcontract that qualifies and intends to utilize this exemption prior to work commencing.

(b) Where applicable, the Contractor adopts and agrees to be bound by the written terms of the applicable, legally established, Union trust agreement(s) specifying the detailed basis how payments will be made into, and benefits paid out of, such trust funds for its employees. The Contractor authorizes the Parties to such trust funds to appoint trustees and successors' trustees to administer the trust funds and hereby ratifies and accepts the trustees so appointed as if made by the Contractor. The Contractor obligations to the applicable Union benefit fund(s) and trust agreement(s) are limited to work performed on a Covered Project. The applicable Union benefit funds and trust agreement(s) to each Contractor are determined by the pre-job conference and Union work assignment process described in Articles 8 and 16.

(c) Each Contractor is required to certify to the Project Labor Coordinator that it has paid all benefit contributions due and owing to the appropriate Union trust(s) and benefit funds prior to the receipt of its final payment and/or retention. Further, upon timely notification by a Union to the Project Labor Coordinator, the Project Labor Coordinator shall work with any Contractor who is delinquent in

payments to assure that proper benefit contributions are made, to the extent of requesting the City or the prime Contractor to withhold payments otherwise due such Contractor, until such contributions have been made or otherwise guaranteed.

(d) Notwithstanding any other provisions, this Agreement is an agreement under Section 8(f) of the National Labor Relations Act (NLRA), which covers work performed in the building and construction industry. In addition, the work performed under this Agreement qualifies for the Construction Industry Exemption under the Employee Retirement and Income Security Act of 1974 (“ERISA”), as amended as well. If any Union Pension Trust Fund (“Fund”) covered by the terms and conditions of this Agreement does not qualify for the Construction Industry Exemption authorized by Section 4203 (B)(1)(i), of the Employee Retirement Income Security Act of 1974 (“ERISA”) as amended, 29 U.S.C. 1383(b)(1)(i), or has not taken the necessary steps to amend the Fund documents to qualify for the Construction Industry Exemption as authorized by Section 4203(B)(1)(ii) of ERISA, as amended, 29 U.S.C. 1383(b)(1)(B)(ii); and to recognize the work performed under this Agreement to qualify for the Construction Industry Exemption, the Contractors signatory to this Agreement will not be obligated to make pension fund contributions to that Fund. In such an event, the Contractor shall pay all required amounts otherwise allocated for payment toward the non-exempt Fund to the employees’ wages or other bona fide retirement plan program pursuant to applicable prevailing wage requirements.

Section 6.3 Wage Premiums. Wage premiums, including, but not limited to, pay based on height of work, shift premiums, hazard pay, scaffold pay, and special skills shall not be applicable to work under this PLA, except to the extent provided for in any applicable prevailing wage determination.

Section 6.4 Compliance with Prevailing Wage Laws. All complaints regarding possible prevailing wage violations may be referred to the Project Labor Coordinator or Labor Compliance Program, if any, for processing, investigation and resolution, and if not resolved within thirty (30) calendar days, may be referred by any Party to the State Labor Commissioner. To facilitate compliance with applicable prevailing wage laws, the City and each Contractor agree to provide copies of certified payroll reports, redacted only to the extent required by law, to the Unions (or to any Labor Management Cooperation Committee in which a Union or its affiliate participates) within ten (10) days of their request.

ARTICLE 7

WORK STOPPAGES AND LOCKOUTS

Section 7.1 No Work Stoppages or Disruptive Activity. The Council and the Unions signatory hereto agree that they, nor their respective officers, or agents or representatives, shall incite or encourage, condone or participate in any strike, walk-out, slowdown, picketing, observation of picket lines, or other activity of any nature or kind whatsoever, for any cause or dispute whatsoever with respect to or any way related to Project Work, or which interferes with or otherwise disrupts Project Work, or with respect to or related to the City or Contractors or subcontractors, including, but not limited to, economic strikes, unfair labor practice strikes, safety strikes, sympathy strikes, and jurisdictional strikes whether or not the underlying dispute is arbitrable. Any such actions by the Council, or Unions, or their members, agents, representatives, or the employees they represent shall constitute a material violation of this PLA. The Council and the Union shall take all steps necessary to obtain compliance with this Article.

Section 7.2 Employee Violations. The Contractor may discharge any employee violating Section 7.1 above, and any such employee will not be eligible for rehire under this PLA.

Section 7.3 Standing to Enforce. The City, the Project Labor Coordinator, or any Contractor affected by an alleged violation of Section 7.1 shall have standing and the right to enforce the obligations established therein.

Section 7.4 Expiration of Schedule A's. If a collective bargaining agreement between a signatory Contractor and one or more of the Union(s) expires before the Contractor completes the performance of a Covered Contract for a Covered Project, and the Union or the Contractor gives notice of demand for a new or modified collective bargaining agreement, the Unions agree that they will not strike the Contractor on any Covered Project, and the Union and the Contractor agree that the expired collective bargaining agreement will continue in full force and effect for the Project Work until a new or modified collective bargaining agreement is reached between the Union and the Contractor. If the new or modified collective bargaining agreement reached between the Union and the Contractor provides that any terms of the collective bargaining agreement shall be retroactive, the Contractor agrees to comply, consistent with the terms of this PLA and the Prevailing Wage Statute, with any retroactive terms of the new or modified collective bargaining agreement which are applicable to employees of said Contractor that are employed on a Covered Project within seven (7) days at

no cost to the City. All employees shall continue to work and to perform all their obligations with respect to Project Work despite the expiration of a Schedule A agreement. Should a Contractor engaged in Project Work enter into an interim agreement with the Unions for work being performed elsewhere after the expiration, and before the renewal of a local collective bargaining agreement forming the basis for Schedule A, such interim agreement shall be utilized by that Contractor for Project Work, subject to the provisions of Section 21.3.

Section 7.5 No Lock Outs. Contractors shall not cause, incite, encourage, condone or participate in any lock-out of employees with respect to Project Work during the term of this PLA. The term “lock-out” refers only to a Contractor's exclusion of employees in order to secure collective bargaining advantage, and does not refer to the discharge, termination, or layoff of employees by the Contractor for any reason in the exercise of rights pursuant to any provision of this PLA, or any other agreement, nor does “lock-out” include the City's decision to stop, suspend, or discontinue any Project Work or any portion thereof for any reason.

Section 7.6 Best Efforts to End Violations.

(a) If a Contractor contends that there is any violation of this Article, it shall, at least twenty-four (24) hours prior to invoking the procedures of Section 7.7, provide written notification to the Council of the involved Union(s) and to the Project Labor Coordinator, setting forth the facts which the Contractor contends violates this Article. The Council and the leadership of the involved Union(s) will immediately instruct, order, and use their best efforts to cause the cessation of any violation of the Article.

(b) If the Union contends that any Contractor has violated this Article, it will notify the Contractor and the Project Labor Coordinator, setting forth the facts which the Union contends violate this Article, at least twenty-four (24) hours prior to invoking the procedures of Section 7.7. The Project Labor Coordinator shall promptly order the involved Contractor(s) to cease any violation of the Article.

Section 7.7 Expedited Enforcement Procedure. Any Party, including the City, which is an intended beneficiary of this Article, or the Project Labor Coordinator, may institute the following procedures, in lieu of or in addition to any other action at law or equity, when a breach of this Article is alleged.

(a) The Party invoking this procedure shall notify Thomas Pagan, who has been selected by the negotiating Parties, and whom the Parties agree shall be the permanent arbitrator under this procedure, or Barry Winograd, as the alternate

arbitrator under this procedure. If the permanent arbitrator is unavailable at any time, the alternate will be contacted. If neither is available, then a selection shall be made from the list of arbitrators as set forth in Article 10. Notice to the arbitrator shall be by the most expeditious means available, with notices to the Parties alleged to be in violation, and to the Project Labor Coordinator and Council. For purposes of this Article, written notice may be given by email, facsimile, hand delivery, or overnight mail and will be deemed effective upon receipt.

(b) Upon receipt of said notice, the arbitrator named above or his/her alternate shall sit and hold a hearing within twenty-four (24) hours if it is contended that the violation still exists, but not sooner than twenty-four (24) hours after notice has been dispatched to the Council of the involved Union(s) and/or Contractor as required by Section 7.6, above.

(c) The arbitrator shall notify the Parties of the place and time chosen for this hearing. Said hearing shall be completed in one session, which, with appropriate recesses at the arbitrator's discretion, shall not exceed twenty-four (24) hours unless otherwise agreed upon by all Parties. A failure of any Party or Parties to attend said hearings shall not delay the hearing of evidence or the issuance of any award by the arbitrator.

(d) The sole issue at the hearing shall be whether or not a violation of this Article has in fact occurred. The arbitrator shall have no authority to consider any matter in justification, explanation, or mitigation of such violation or to award damages, (except for damages as set forth in Section 7.8 below) which issue is reserved for court proceedings, if any. The award shall be issued in writing within three (3) hours after the close of the hearing and may be issued without an opinion. If any Party desires a written opinion, one shall be issued within fifteen (15) days, but its issuance shall not delay compliance with, or enforcement of, the award. The arbitrator may order cessation of the violation of the Article and other appropriate relief, and such award shall be served on all Parties by hand or registered mail upon issuance.

(e) Such award shall be final and binding on all Parties and may be enforced by any court of competent jurisdiction upon the filing of this PLA and all other relevant documents referred to herein above in the following manner. Written notice of the filing of such enforcement proceedings shall be given to the other Party. In any judicial proceeding to obtain a temporary order enforcing the arbitrator's award as issued under Section 7.7(d) of this Article, all Parties waive the right to a hearing and agree that such proceedings may be ex parte. Such

agreement does not waive any Party's right to participate in a hearing for a final order of enforcement. The court's order or orders enforcing the arbitrator's award shall be served on all Parties by hand or by delivery to their address as shown on this PLA (for a Union), as shown on their business contract for work under this PLA (for a Contractor) and to the representing Union (for an employee), by certified mail by the Party or Parties first alleging the violation.

(f) Any rights created by statute or law governing arbitration proceedings inconsistent with the above procedure or which interfere with compliance hereto are hereby waived by the Parties to whom they accrue.

(g) The fees and expenses of the arbitrator shall be equally divided between the Party or Parties initiating this procedure and the respondent Party or Parties.

Section 7.8 Liquidated Damages.

(a) If the arbitrator determines in accordance with Section 7.7 above that a work stoppage has occurred, the respondent Union(s) shall, within eight (8) hours of receipt of the Award, direct all the employees they represent on the project to immediately return to work. If the craft(s) involved do not return to work by the beginning of the next regularly scheduled shift following such eight (8) hour period after receipt of the arbitrator's Award, and the respondent Union(s) have not complied with their obligations to immediately instruct, order, and use their best efforts to cause a cessation of the violation and return the employees they represent to work, then the non-complying Union(s) shall each pay a sum as liquidated damages to the City, and each will pay an additional sum per shift, as set forth in (c), below, for each shift thereafter on which the craft(s) has not returned to work.

(b) If the arbitrator determines in accordance with Section 7.7 above that a lock out has occurred, the respondent Contractor(s) shall, within eight (8) hours after receipt of the award, return all the affected employees to work on the Project, or otherwise correct the violations found by the arbitrator. If the respondent Contractor(s) do not take such action by the beginning of the next regular scheduled shift following the eight (8) hour period, each non-complying respondent Contractor shall pay or give as liquidated damages, to the affected Union(s) (to be apportioned among the affected employees and the benefit funds to which contributions are made on their behalf, as designated by the arbitrator) and each shall pay an additional sum per shift, as set forth in (c), below, for each shift thereafter in which compliance by the respondent Contractor(s) has not been completed.

(c) The Parties agree that project delays caused by violations of this Article will cause the City to sustain damages. They agree that it would be impractical or extremely difficult to fix the amount of such damages. Therefore, the Parties agree that, in the event of a breach of either of these provisions, the Party in breach shall pay to the City the sum of not less than \$10,000.00 and no more than \$20,000.00 per shift from the time the arbitrator determines that a delay has occurred until the arbitrator determines that the project is again on construction schedule. The payment, when made, shall constitute a damages remedy of the City for the delay specified, but shall not prevent the City from seeking an injunctive or other monetary relief, including termination of this PLA. Payment of these sums as liquidated damages is not intended as a forfeiture or penalty within the meaning of California Civil Code sections 3275 or 3369, but instead, is intended to constitute liquidated damages to the City pursuant to section 1671 of the California Civil Code.

ARTICLE 8

WORK ASSIGNMENTS AND JURISDICTIONAL DISPUTES

Section 8.1 No Jobsite Disruption. There will be no strikes, work stoppages, picketing, sympathy strikes, slowdowns, or other interferences with the work because of jurisdictional disputes between Unions. The assignment of work will be solely the responsibility of the Contractor performing the work involved; and such work assignments will be in accordance with the Plan for Settlement of Jurisdictional Disputes in the Construction Industry (the “Plan”) or any successor Plan.

Section 8.2 All jurisdictional disputes on this project shall be settled and adjusted according to the present Plan established by the Building and Construction Trades Department or any other plan or method of procedure that may be adopted by the Building and Construction Trades Department. Decisions rendered shall be final and binding and conclusive on the Contractors and Unions parties to this PLA.

All jurisdictional disputes shall be resolved without the occurrence of any of the activities prohibited in Article 7 (Work Stoppages and Lockouts), and the Contractor’s assignment shall be adhered to until the dispute is resolved. Individuals violating this section shall be subject to immediate discharge.

Section 8.2.1 If a dispute arising under this Article involves the Southwest Regional Council of Carpenters or any of its subordinate bodies, an arbitrator shall be chosen by the procedures specified in Article V, Section 5, of the Plan from a list composed of Thomas Pagan, Thomas Angelo, Robert Hirsch, and John Kagel, and the

arbitrator's hearing on the dispute shall be held at the offices of the Council within fourteen (14) days of the selection of the arbitrator. All other procedures shall be as specified in the Plan.

Section 8.3 Failure to Comply. If any Union or Contractor fails to immediately and fully comply with the final decision rendered by the Plan, affected Union(s) or Contractor(s) may seek legal redress for such conduct, including, but not limited to, injunctive relief and/or damages.

Section 8.4 Pre-job Conference. It is required that a pre-job conference be held not later than fourteen (14) calendar days prior to the start of work by each Contractor for the Covered Project in accordance with the procedure described in Article 16.

ARTICLE 9

MANAGEMENT RIGHTS

Section 9.1 Contractor and City Rights. The Contractors and the City have the sole and exclusive right and authority to oversee and manage construction operations on Project Work without any limitations unless expressly limited by a specific provision of this PLA. In addition to the following and other rights of the Contractors enumerated in this PLA, the Contractors expressly reserve their management rights and all the rights conferred upon them by law. The Contractor's rights include, but are not limited to, the right to:

- (a) Plan, direct, and control operations of all work; and
- (b) Hire, promote, transfer, and layoff their own employees, respectively, as deemed appropriate to satisfy work and/or skill requirements; and
- (c) Promulgate and require all employees to observe reasonable job rules and security and safety regulations; and
- (d) Discharge, suspend, or discipline their own employees for just cause; and
- (e) Utilize, in accordance with City approval, any work methods, procedures, or techniques, and select, use, and install any types or kinds of materials, apparatus, or equipment, regardless of source of manufacture or construction; and
- (f) Assign and schedule work at their discretion; and

(g) Assign overtime, determine when it will be worked and the number and identity of employees engaged in such work, subject to such provisions in the applicable Schedule A(s) requiring such assignments be equalized or otherwise made in a nondiscriminatory manner.

Section 9.2 Specific City Rights. In addition to the following and other rights of the City enumerated in this PLA, the City expressly reserves its management rights and all the rights conferred on it by law and contract. The City's rights (and those of the Project Labor Coordinator on its behalf) include, but are not limited to the right to:

(a) Inspect any construction site or facility to ensure that the Contractor follows the applicable safety and other work requirements; and

(b) At its sole option, terminate, delay, and/or suspend any and all portions of the Project Work at any time; prohibit some or all work on certain days or during certain hours of the day to accommodate the ongoing operations of the City and/or to mitigate the effect of ongoing Project Work on businesses and residents in the neighborhood of the Project sites; and/or require any other operational or schedule changes it deems necessary, in its sole judgment, to meet Project deadlines and remain a good neighbor to those in the area of the Covered Projects. (In order to permit the Contractors and Unions to make appropriate scheduling plans, the City will provide the Project Labor Coordinator, and the affected Contractor[s] and Union[s] with reasonable notice of any changes it requires pursuant to this section); and

(c) Approve any work methods, procedures, and techniques used by Contractors whether or not these methods, procedures, or techniques are part of industry practices or customs; and

(d) Investigate and process complaints or disagreements, through its Project Labor Coordinator.

Section 9.3 Use of Materials. There should be no limitations or restrictions by the Union upon a Contractor's choice of materials or design, nor, regardless of source or location, upon the full use and utilization of equipment, machinery, packaging, precast, prefabricated, prefinished, or preassembled materials, tools, or other labor-saving devices, subject to the application of the California Public Contract and Labor Codes. Generally, the onsite installation or application of such items shall be performed by the craft having jurisdiction over such work.

Section 9.4 Special Equipment, Warranties, and Guaranties.

(a) It is recognized that certain equipment of a highly technical and specialized nature may be installed at Covered Project sites. The nature of the equipment, together with the requirements for manufacturer's warranties, may dictate that it be prefabricated, pre-piped, and/or pre-wired and that it be installed under the supervision and direction of the City's and/or manufacturer's personnel. The Unions agree that such equipment is to be installed without incident.

(b) The Parties recognize that the Contractor will initiate from time to time the use of new technology, equipment, machinery, tools, and other labor-savings devices and methods of performing Project Work. The Unions agree that they will not restrict the implementation of such devices or work methods. The Unions will accept and will not refuse to handle, install, or work with any standardized and/or catalogue parts, assemblies, accessories, prefabricated items, preassembled items, partially assembled items, or materials whatever their source of manufacture or construction.

(c) If any disagreement between the Contractor and the Unions concerning the methods of implementation or installation of any equipment, device, or item, or method of work arises, or whether a particular part or pre-assembled item is a standardized or catalog part or item, the work will proceed as directed by the Contractor, and the Parties shall immediately consult over the matter. If the disagreement is not resolved, the affected Union(s) shall have the right to proceed through the procedures set forth in Article 10.

ARTICLE 10

SETTLEMENT OF GRIEVANCES AND DISPUTES

Section 10.1 Cooperation and Harmony on Site.

(a) This PLA is intended to establish and foster continued close cooperation between management and labor. The Council shall assign a representative to this Project for the purpose of assisting the local Unions, and working with the Project Labor Coordinator, together with the Contractors, to complete construction of the Project Work economically, efficiently, continuously, and without any interruption, delays, or work stoppages.

(b) The Project Labor Coordinator, the Contractors, Unions, and employees collectively and individually, realize the importance to all Parties of maintaining continuous and uninterrupted performance of Project Work, and agree to resolve

disputes in accordance with the grievance provisions set forth in this Article or, as appropriate, those of Article 7 or 8.

(c) The Project Labor Coordinator shall observe the processing of grievances under this Article and Articles 7 and 8, including the scheduling and arrangements of facilities for meetings, selection of the arbitrator from the agreed-upon panel to hear the case, and any other administrative matters necessary to facilitate the timely resolution of any dispute; provided, however, it is the responsibility of the principal Parties to any pending grievance to ensure the time limits and deadlines are met.

Section 10.2 Processing Grievances. Any questions arising out of and during the term of this PLA involving its interpretation and application, which includes applicable provisions of the Schedule A's, but not alleged violations of Articles 7 or 8, shall be considered a grievance and subject to resolution under the following procedures.

Step 1. (a) Employee Grievances. When any employee subject to the provisions of this PLA feels aggrieved by an alleged violation of this PLA, the employee shall, through his local Union business representative or job steward, within ten (10) working days after the occurrence of the violation, give notice to the work site representative of the involved Contractor stating the provision(s) alleged to have been violated, the details of the alleged violation and the remedy sought to resolve the matter. A grievance shall be considered null and void if notice of the grievance is not given within the ten (10) day period. A business representative of the local Union or the job steward and the work site representative of the involved Contractor shall meet and endeavor to adjust the matter within ten (10) working days after timely notice has been given. If they fail to resolve the matter within the prescribed period, the grieving Party may, within ten (10) working days thereafter, pursue Step 2 of this grievance procedure provided the grievance is reduced to writing, setting forth the relevant information, including a short description thereof, the date on which the alleged violation occurred, and the provision(s) of the applicable agreement alleged to have been violated. Grievances and disputes settled at Step 1 shall be non-precedential except as to the Parties directly involved.

(b) Union or Contractor Grievances. Should the Union(s) or any Contractor have a dispute with the other Party(ies) and, if after conferring within ten (10) working days after the disputing Party knew or should have known of the facts or occurrence giving rise to the dispute, a settlement is not reached within five (5) working days, the dispute shall be reduced to writing and processed to Step 2 in

the same manner as outlined in Step 1(a) above for the adjustment of an employee complaint.

Step 2. The business manager of the involved local Union or his designee, together with the site representative of the involved Contractor, and the labor relations representative of the Project Labor Coordinator shall meet within seven (7) working days of the referral of the dispute to this second step to arrive at a satisfactory settlement thereof. If the Parties fail to reach an agreement, the dispute may be appealed in writing in accordance with the provisions of Step 3 within seven (7) calendar days after the initial meeting at Step 2.

Step 3. (a) If the grievance shall have been submitted but not resolved under Step 2, either the Union or Contractor Party may request in writing to the Project Labor Coordinator (with copy[ies] to the other Party[ies]) within seven (7) calendar days after the initial Step 2 meeting, that the grievance be submitted to an arbitrator selected from the agreed-upon list below, on a rotational basis in the order listed. Those arbitrators are: (1) Thomas Pagan; (2) David Hart; (3) Edna Francis; (4) Mike Rappaport; (5) Michael Prihar; (6) Fred Horowitz; and (7) Sara Adler. The decision of the arbitrator shall be final and binding on all Parties, and the fee and expenses of such arbitrations shall be borne equally by the involved Contractor(s) and the involved Union(s).

(b) Failure of the grieving Party to adhere to the time limits established herein shall render the grievance null and void. The time limits established herein may be extended only by written consent of the Parties involved at the particular step where the extension is agreed upon. The arbitrator shall have the authority to make decisions only on issues presented and shall not have the authority to change, amend, add to, or detract from any of the provisions of this PLA.

Section 10.3 Limit on Use of Procedures. Procedures contained in this Article shall not be applicable to any alleged violation of Article 7 or 8, with a single exception that any employee discharged for violation of Section 7.2 may resort to the procedures of this Article to determine only if he/she was, in fact, engaged in that violation.

Section 10.4 Notice. The Project Labor Coordinator (and the City, in the case of any grievance regarding the Scope of this PLA), shall be notified by the involved Contractor of all actions at Steps 2 and 3, and further, the Project Labor Coordinator shall, upon its own request, be permitted to participate fully in all proceedings at such steps.

ARTICLE 11

COMPLIANCE

Section 11.1 Compliance with All Laws. The Council and all Unions, Contractors, and their employees shall comply with all applicable federal and state laws, ordinances, and regulations including, but not limited to, those relating to safety and health, employment, and applications for employment. All employees shall comply with the safety regulations established by the City, the Project Labor Coordinator, and the Contractor. Employees must promptly report any injuries or accidents to a supervisor.

Section 11.2 Monitoring Compliance. The Parties agree that the City shall require, and that the Project Labor Coordinator and Council shall monitor, compliance by all Contractors with all federal and state laws and regulations that, from time to time may apply to Project Work. It shall be the responsibility of both the Council and the Project Labor Coordinator (on behalf of the City) to investigate or monitor compliance with these various laws and regulations. The Council may recommend to the Project Labor Coordinator and/or the City procedures to encourage compliance with these laws and regulations.

Section 11.3 Prevailing Wage Compliance. The Council or Union may refer all complaints regarding any potential prevailing wage violation to the Project Labor Coordinator, who may process, investigate, and resolve such complaints. The Council or Union, as appropriate, shall be advised in a timely manner with regard to the facts and resolution, if any, of any complaint. It is understood that this Section does not restrict any individual rights as established under the State Labor Code, including the rights of an individual to file a complaint with the State Labor Commissioner.

Section 11.4 Violations of Law. Based upon a finding of violation by the City of a federal and state law, and upon notice to the Contractor that it is in such violation, the City, in the absence of the Contractor remedying such violation, shall take such action as it is permitted by law or contract to encourage the Contractor to come into compliance, including, but not limited to, assessing fines and penalties and/or removing the offending Contractor from Project Work.

ARTICLE 12

SAFETY AND PROTECTION OF PERSON AND PROPERTY

Section 12.1 Safety.

(a) It shall be the responsibility of each Contractor to ensure safe working conditions and employee compliance with all applicable safety laws and regulations and any safety rules contained herein or established by the City, the Project Labor Coordinator, or the Contractor. It is understood that employees have an individual obligation to use diligent care to perform their work in a safe manner and to protect themselves and the property of the Contractor and the City.

(b) All Parties and Contractor employees shall be bound by the safety, security, and visitor rules established by the Contractor, the Project Labor Coordinator, and the City. These rules will be published and posted. An employee's failure to satisfy his/her obligations under this Section will subject him/her to discipline, up to and including discharge.

Section 12.2 Drug and Alcohol Testing Policy. The Parties agree to adopt the Drug and Alcohol Testing Policy attached hereto as Attachment C, which is the exclusive Drug and Alcohol Testing Policy for Covered Projects.

Section 12.3 Inspection. The inspection of shipments of equipment, machinery, and construction materials of every kind shall be performed at the discretion of the Contractor by individuals of its choice.

ARTICLE 13

TRAVEL AND SUBSISTENCE

Section 13.1 Travel expenses, travel time, subsistence allowances and/or zone rates, and parking reimbursements shall not be applicable to work under this PLA, except to the extent provided for in any applicable prevailing wage determination. Parking for employees covered by this PLA shall be provided by the Contractor(s) according to the provision of the Schedule A(s) existing on the Effective Date of this PLA and upon presentation of proof of any expense incurred.

ARTICLE 14

APPRENTICES

Section 14.1 Importance of Training. The Parties recognize the need to maintain continuing support of the programs designed to develop adequate numbers of competent workers in the construction industry, the obligation to capitalize on the availability of the local work force in the area served by the City, and the opportunities to provide continuing work on Covered Projects for City Residents and Targeted Workers. To these ends, and consistent with any laws or regulations, the Parties will facilitate, encourage, and assist City Residents and Targeted Workers commence and progress in Apprenticeship Programs and/or apprenticeship readiness programs in the construction industry leading to participation in such Apprenticeship Programs. The City, the Project Labor Coordinator, other City consultants, the Contractors, and the Council and Unions, will work cooperatively to identify, or establish and maintain, effective programs and procedures for persons interested in entering the construction industry and which will help prepare them for the entry into Apprenticeship Programs. Apprentices, if utilized, must be enrolled in a California Apprenticeship Council-approved Apprenticeship Program.

Section 14.2 Use of Apprentices.

(a) The Unions and Contractors agree to cooperate in referring and employing Apprentices up to the maximum percentage allowed by the State Labor Code and the standards of each State-Approved Apprenticeship Program. The minimum ratios for Apprentice to journey person hours worked shall be in compliance, at a minimum, with the applicable provisions of the State Labor Code relating to utilization of Apprentices. The City, unless otherwise required by law, shall encourage such utilization, and, both as to Apprentices and the overall supply of experienced workers, the Project Labor Coordinator will work with the Council, Apprenticeship Programs, and Contractors to assure appropriate and maximum utilization of Apprentices and the continuing availability of both Apprentices and journey persons.

(b) The Parties agree that all Contractors will comply with all applicable laws and regulations in the request for dispatch and employment of Apprentices.

(c) The Parties agree that Apprentices will not be dispatched to Contractors working under this PLA unless there is a journeymen or other Contractor employee working on the Project where the Apprentice is to be employed who is

qualified to assist and oversee the Apprentice's progress through the program in which he/she is participating.

ARTICLE 15

LEGAL ACTION

Section 15.1 Legal Action. The City, Council and Unions recognize the substantial legal costs (including all attorney's fees and associated disbursements) that might accrue with regard to any legal challenge over the adoption by the City of this PLA, and related to claims directly challenging the legality of this PLA, or a particular section or language that has been adopted herein. In the event of a legal challenge, the Council, on behalf of itself and affiliated Unions, agrees to seek to intervene in the legal action and actively participate in the litigation or other action to defend the legality of this PLA, or a particular section or language herein. The failure of the Council to seek to intervene in the legal action and actively participate to defend the legality of this PLA will constitute a material breach of this PLA. In the event the Council is denied leave to intervene in the legal action, the Council shall have its counsel coordinate with the City's counsel, at the Council's own expense, regarding how the Council can best support the City's legal position.

ARTICLE 16

PRE-JOB CONFERENCE

Section 16.1 Each Contractor is required to conduct a pre-job conference with the Unions not later than fourteen (14) calendar days prior to commencing work. The purpose of the conference will be to, among other things, convey craft manpower needs, the schedule of work for the Covered Project, project work rules, and propose preliminary Union work assignments. The Project Labor Coordinator may work with the Prime Contractor and Council to facilitate the scheduling of all pre-job conferences, but ensuring each Contractor conducts a pre-job conference in accordance with this Agreement is the responsibility of the Prime Contractor. All preliminary Union work assignments shall be disclosed by each Contractor at a pre-job conference. Should there be work within the scope of a Construction Contract for a Covered Project that was not previously assigned at a pre-job conference, or additional work be added to the scope of the Covered Project, the Contractor(s) performing such work will conduct a separate pre-job conference.

Any Union in disagreement with a proposed assignment shall notify the affected Contractor of its position in writing, with a copy sent to the Project Labor Coordinator, within seven (7) calendar days after the pre-job conference occurred. Within seven (7) calendar days after the period allowed for Union notices of disagreement with the Employer's proposed assignments, but prior to the commencement of any work, the Employer shall make final assignments in writing with copies sent to the Project Labor Coordinator and Council.

ARTICLE 17

LABOR/MANAGEMENT AND COOPERATION

Section 17.1 Joint Committee. The Parties to this PLA will form a joint committee consisting of three (3) representatives selected by the Council and three (3) representatives selected by the Project Labor Coordinator, to be chaired jointly by a representative of the Project Labor Coordinator and the Council. The purpose of the Committee shall be to promote harmonious and stable labor management relations on this Project, to ensure effective and constructive communication between labor and management Parties, to advance the proficiency of work in the industry, and to evaluate and ensure an adequate supply of skilled labor for all Project Work. Representatives of the City may participate upon its request, and all Parties will be invited to attend.

Section 17.2 Functions of Joint Committee. The Committee shall meet on a schedule to be determined by the Committee or at the call of the joint chairs, to discuss the administration of the PLA, the progress of the project, general labor management problems that may arise, and any other matters consistent with this PLA. Substantive grievances or disputes arising under Articles 7, 8, or 10 shall not be reviewed or discussed by this Committee, but shall be processed pursuant to the provisions of the appropriate Article.

The Project Labor Coordinator shall be responsible for scheduling of the meetings and the preparation of the agenda topics for the meetings, with input from the Unions, the Contractors, and the City. Notice of the date, time and place of meetings, shall be given to the Committee members at least three (3) days prior to the meeting. The City shall be notified of the meetings and invited to send a representative(s) to participate.

The Project Labor Coordinator shall prepare quarterly reports on Apprentice utilization and the training and employment of City Residents, and a schedule of Project work and estimated number of craft workers needed. The Committee, or

an appropriate subcommittee, may review such reports and make any recommendations for improvement, if necessary, including increasing the availability of skilled trades, and the employment of local residents or other individuals who should be assisted with appropriate training to qualify for Apprenticeship Programs.

Section 17.3 Subcommittees. The Committee may form subcommittees to consider and advise the full Committee with regard to safety and health issues affecting the Project and other similar issues affecting the overall Project, including any workers' compensation program initiated under this PLA.

ARTICLE 18

SAVINGS AND SEPARABILITY

Section 18.1 Savings Clause. It is not the intention of the City, the Project Labor Coordinator, Contractor, or the Union Parties to violate any laws governing the subject matter of this PLA. The Parties hereto agree that in the event any provision of this PLA is finally held or determined to be illegal or void as being in contravention of any applicable law or regulation, the remainder of the PLA shall remain in full force and effect unless the part or parts so found to be void are wholly inseparable from the remaining portions of this PLA. Further, the Parties agree that if and when any provision(s) of this PLA is finally held or determined to be illegal or void by a court of competent jurisdiction, the Parties will promptly enter into negotiations concerning the substantive effect of such decision for the purposes of achieving conformity with the requirements of any applicable laws and the intent of the Parties hereto. If the legality of this PLA is challenged and any form of injunctive relief is granted by any court, suspending temporarily or permanently the implementation of this PLA, then the Parties agree that all Project Work that would otherwise be covered by this PLA should be continued to be bid and constructed without application of this PLA so that there is no delay or interference with the ongoing planning, bidding, and construction of any Project Work.

Section 18.2 Effect of Injunctions or Other Court Orders. The Parties recognize the right of the City to withdraw, at its absolute discretion, the utilization of the PLA as part of any bid specification should a court of competent jurisdiction issue any order, or any applicable statute that could result, temporarily or permanently, in delay of the bidding, awarding, and/or construction on the Project.

ARTICLE 19

WAIVER

Section 19.1 Waiver. A waiver of or a failure to assert any provisions of this PLA by any or all of the Parties hereto shall not constitute a waiver of such provision for the future. Any such waiver shall not constitute a modification of the PLA or change in the terms and conditions of the PLA and shall not relieve, excuse or release any of the Parties from any of their rights, duties, or obligations hereunder.

ARTICLE 20

AMENDMENTS

Section 20.1 Amendments. The provisions of this PLA can be renegotiated, supplemented, rescinded, or otherwise altered only by mutual agreement in writing, hereafter signed by the Parties.

ARTICLE 21

DURATION OF THE PLA

Section 21.1 Duration. This Agreement shall be effective on June 16, 2020, provided that the Council has signed the Agreement. The Agreement shall continue in full force and effect until all of the work within the scope of a Covered Contract is completed and accepted by the City.

Section 21.2 Turnover and Final Acceptance of Completed Work.

(a) Construction of any phase, portion, section, or segment of Project Work shall be deemed complete when such phase, portion, section or segment has been turned over to the City by the Contractor and the City has accepted such phase, portion, section, or segment. As areas and systems of the Project are inspected and construction-tested and/or approved and accepted by the City or third parties with approval of the City, the PLA shall have no further force or effect on such items or areas, except when the Contractor is directed by the City to engage in repairs or modifications required by its Contract(s) with the City.

(b) Notice of each final acceptance received by the Contractor will be provided to the Council with the description of what portion, segment, etc. has

been accepted. Final acceptance may be subject to a “punch” list, and in such case, the PLA will continue to apply to each such item on the list until it is completed to the satisfaction of the City and Notice of Acceptance is given by the City or its representative to the Contractor.

Section 21.3 Continuation of Schedule A’s. Schedule A's incorporated as part of this PLA shall continue in full force and effect, as previously stated, until the Contractor and Union Parties to the collective bargaining agreement(s), which are the basis for such Schedule A's, notify the Project Labor Coordinator of the mutually agreed upon changes in such agreements and their effective date(s).

The Parties agree to recognize and implement all applicable changes on their effective dates, except as otherwise provided by this PLA; provided, however, that any such provisions negotiated in said collective bargaining agreements will not apply to work covered by this PLA if such provisions are less favorable to the Contractor under the PLA than those uniformly required of Contractors for construction work normally covered by those agreements; nor shall any provision be recognized or applied if it may be construed to apply exclusively or predominantly to work covered by this PLA. Any disagreement between the Parties over the incorporation into a Schedule A of any such provision agreed upon in a negotiation of the local collective bargaining agreement that is the basis for a Schedule A shall be resolved under the procedures established in Article 10.

Section 21.4 Final Termination. Final termination of all obligations, rights, and liabilities, and disagreements shall occur upon receipt by the Council of a Notice from the City saying that no work remains within the scope of the PLA.

Section 21.5 Pure Water Program Phase II Projects. The City and the Unions intend to have this Agreement or a succeeding Agreement include all construction projects in Pure Water Program Phase II. The Pure Water Program Phase II Projects are in the early development stage and cannot be specifically identified at this time to be included in the scope of this Agreement. Therefore, to reopen negotiations to include Pure Water Program Phase II Projects into this Agreement, the Council shall send written notice to the City’s Project Labor Coordinator after the City has approved Pure Water Program Phase II Projects' Environmental Impact Report and no later than ninety (90) days after the City’s final approval of the Environmental Impact Report.

ARTICLE 22

WORK AND ECONOMIC OPPORTUNITY

Section 22.1 The magnitude, duration, and complexity of the Pure Water Program Phase I Projects will require large numbers of skilled craft personnel and create significant economic opportunities for City Residents, Targeted Workers, Disadvantaged Business Enterprises and other businesses. It is therefore the understanding and intention of the Parties to use the opportunities provided by the extensive amount of work to collaborate and implement programs and procedures, which may include, for example, North America's Building Trades Unions Multi-Craft Core Curriculum (MC3) apprenticeship readiness programs, to prepare persons, especially City Residents and Targeted Workers, for entrance into Apprenticeship Programs to begin or continue their construction careers on Covered Projects. Further, the Parties agree to maximize the inclusion of Disadvantage Business Enterprises through outreach, training, and subcontracting for Covered Projects. With assistance from the Project Labor Coordinator, the City, the Contractors, the Unions and their affiliated regional and national organizations will work jointly to promptly develop and implement procedures for the identification of craft needs, the scheduling of work to facilitate the utilization of available craft workers, and the securing of services of craft workers in sufficient numbers to meet the high demands of the Project Work to be undertaken.

Section 22.2 The City, together with the Parties, supports the development of increased numbers of skilled construction workers who are City Residents and Targeted Workers to meet the labor needs of Covered Projects. Towards that end, the Parties, together with the City and its Project Labor Coordinator, agree to develop and implement a work opportunities program for City Residents and Targeted Workers to maximize construction career opportunities and create a construction career pipeline to becoming employed on Covered Projects. Further, the City together with the Parties, will create opportunities for Disadvantaged Business Enterprises consistent with the City's goals and inclusion programs for such businesses. In furtherance of the foregoing, the Council and Unions specifically agree to work with the City and the Project Labor Coordinator to:

- (a) Collaborate with existing or newly created MC3 apprenticeship readiness programs in San Diego to offer opportunities for City Residents and Targeted Workers, including students, to enroll in free short-term construction apprenticeship readiness training to prepare them to enter into Apprenticeship Programs and become employed by a Contractor on a Covered Project. The

Project Labor Coordinator, with the assistance of the Parties, will assist with the recruitment, career placement, and tracking of such City Residents and Targeted Workers who graduate from these apprenticeship readiness programs; and

(b) The Parties will cooperate and collaborate with the City and Project Labor Coordinator to conduct outreach to and include City Residents and Targeted Workers from traditionally underrepresented segments of the City's population in the construction craft workforce for each Covered Project; and

(c) The Council will provide accurate data on a quarterly basis to the City and Project Labor Coordinator pertaining to their level of economic support provided to meet these objectives. Further, the Project Labor Coordinator shall produce detailed quarterly reports for the City and Council to measure and report the outcomes of the policies, requirements, and programs established in this Agreement; and

(d) The Unions will partner with the City and Project Labor Coordinator to conduct outreach and recruitment activities by establishing or continuing to maintain existing centers, programs, and events to facilitate the entry of City Residents and Targeted Workers into the building and construction trades. These programs shall serve as a resource for preliminary orientation, assessment of construction aptitude, referral to MC3 apprenticeship readiness programs or Apprenticeship Programs, referral to hiring halls, and provide tailored orientation and mentoring for women and Targeted Workers; and

(e) The Unions shall assist City Residents and Targeted Workers with contacting the Apprenticeship Programs for the crafts and trades they are interested in. The Unions shall assist City Residents and Targeted Workers who are seeking employment on Covered Projects and provide opportunities for Union membership by assessing their work experience and giving them credit for provable past experience in their relevant craft or trade, including experience gained working for non-Union Contractors. The Unions shall put on their rolls qualified bona fide City Residents and Targeted Workers for employment on Covered Projects.

Section 22.3 Joint Subcommittee on Work and Economic Opportunity. To carry out the intent and purpose of this Article, a subcommittee of the Labor Management Committee established pursuant to Article 17 shall be established, jointly chaired by a designee of the City and a designee of the Council, to oversee the effective development and implementation of the programs and policies described herein, and to work with representatives of each apprenticeship committee and representatives of the MC3 apprenticeship readiness programs to maximize

employment opportunities for City Residents and Targeted workers who reflect the diversity of the communities surrounding each Covered Project and who may not be previously qualified for the construction career opportunities created by the Covered Projects. The subcommittee will meet as necessary at the call of the joint chairs to promptly facilitate its purposes in an expeditious manner as soon as this PLA becomes effective. In addition to the joint chairs, the membership of the committee will consist of at least three (3) representatives of the signatory local Unions and three (3) representatives of Contractors (or organization to which the Contractors belong) signatory to this PLA and experienced in overseeing and participating in Apprenticeship Programs.

ARTICLE 23

HELMETS TO HARDHATS


Section 23.1 Veterans Entry into Building and Construction Trades. The Parties recognize a desire to facilitate the entry into the building and construction trades of Veterans who are interested in careers in the building and construction industry. The Contractors and Unions agree to utilize the services of the Center for Military Recruitment, Assessment and Veterans Employment (hereinafter “Center”) and the Center’s “Helmets to Hardhats” program to serve as a resource for preliminary orientation, assessment, and construction aptitude, referral to Apprenticeship Programs or hiring halls, counseling and mentoring, support network, employment opportunities, and other needs as identified by the Parties.

Section 23.2 Integrated Database. The Unions and Contractors agree to coordinate with the Center to create and maintain an integrated database of Veterans interested in working on this Covered Project and of apprenticeship and employment opportunities for this Covered Project.

In witness whereof, the Parties have caused this Project Labor Agreement for City of San Diego Pure Water Program Phase I Projects to be executed as of the date and year above stated.

Dated: July 9, 2020

SAN DIEGO BUILDING AND CONSTRUCTION
TRADES COUNCIL

DocuSigned by:

ADB86106CE1E414...

By:

Tom Lemmon, Business Manager

SIGNATORY UNIONS AND
(See Attached)

SIGNATORY UNIONS

DocuSigned by:
Michael Patterson
38B4C81867E341A...
By: Allied Workers Local 5

By: Chad Boggio Chad Boggio
Bricklayer & Allied Crafts Local 4

DocuSigned by:
[Signature]
4111C0A1543D4C8...
By: Electrical Workers Local 569

DocuSigned by:
[Signature]
3380E1140A31459...
By: Glaziers, Floor Coverings & Painters Local 1399

DocuSigned by:
Valentine R. Macedo
AC5993278764412...
By: Laborers Local 89

DocuSigned by:
James Preciado
312FA489A994E10CA...
By: Plasterer Tenders Local 1414

By: [Signature]
Operating Engineers Local 12

DocuSigned by:
Mike Hartley
363A0846720A48F...
By: Plumbers & Pipefitters Local 230

DocuSigned by:
Paul Colmenero
97581004B0E0439...
By: Roofers & Waterproofers Local 45

DocuSigned by:
[Signature]
B569A3D2C62940C...
By: Laborers Local 1184

DocuSigned by:
Ed Uarn
AEBFEA548C4F413...
By: Laborers Local 345

DocuSigned by:
Ricardo Perez
8C144FFD6F5F464...
By: UA Local 345

DocuSigned by:
Stephen Ariza
B66C6F62284F439...
By: Southwest Regional Council of Carpenters

DocuSigned by:
Luis Miramontes
997D1F49D5364AD...
By: Boilermakers Local 92

DocuSigned by:
Jack Alvarado
5C661A00E44B47F...
By: Cement Masons Local 500 / Area 744

By: Frank Belio, Jr. For BM Gazzaniga
Elevator Constructors Local 18

DocuSigned by:
David Osborne
0679DF11AEC94C3...
By: Iron Workers Local 229

DocuSigned by:
Tom Castleman
D99E7C175E1E4A7...
By: Plasterers Local 200

By: Ronald A. [Signature]
Operating Engineers Local 12

By: [Signature]
Operating Engineers Local 12

DocuSigned by:
Todd Barry
B9584FD2117949F...
By: Road Sprinkler Fitters Local 669

DocuSigned by:
Dave Gauthier
D3C0E4114ADC482...
By: Sheet Metal Workers Local 206

DocuSigned by:
Douglas R Tracy
E809E170950C47E...
By: Sheet Metal Workers Local 206

DocuSigned by:
Jose Estrada
530AF0ECACB1492...
By: Teamsters Local 166

DocuSigned by:
[Signature]
3380E1140A31459...
By: Tradeshow & Sign Craft Local 831

DocuSigned by:
[Signature]
B66C6F62284F439...
By: Laborers Local 300

ATTACHMENT A – LETTER OF ASSENT

To be signed by all Contractors awarded work covered by the Project Labor Agreement prior to commencing work.

[CONTRACTOR’S LETTERHEAD]

DATE

Project Labor Coordinator

Address

Address

Address

Attention: _____

**Re: City of San Diego Project Labor Agreement for
Pure Water Program Phase I Project**

Dear Sir:

This is to confirm [Name of Company] agrees to be party to and bound by the City of San Diego Project Labor Agreement for Construction of Pure Water Program Phase I Projects, effective May 1, 2020, as such Agreement may from time to time be amended by the negotiating Parties or interpreted pursuant to its terms. Such obligation to be a Party and bound by this Agreement shall extend to all work covered by the Agreement undertaken by this Company on the Project pursuant to [City Contract No. _____ and Name of Covered Project], and this Company shall require all of its subcontractors of whatever tier to be similarly bound for all work within the scope of the Agreement by signing and furnishing to you an identical Letter of Assent prior to their commencement of work.

Sincerely,

[Name of Construction Company]

By:

[Name and Title of Authorized Executive]

[Copies of this Letter must be submitted to the Project Labor Coordinator and to the Council consistent with Article 3, Section 3.3(b)]

ATTACHMENT B-1 – WORKFORCE DISPATCH REQUEST FORM

The City of San Diego’s Project Labor Agreement for Pure Water Program Phase I Projects establishes a goal of at least thirty-five percent (35%) of the total craft hours on each Covered Project be performed by City Residents. The Unions and Contractors agree that, to the extent allowed by law, and as long as they possess the requisite skills and qualifications, City Residents shall be first referred for Project Work. A “City Resident” is defined as a City of San Diego permanent resident at the time of initial employment on a Covered Project or a Veteran residing anywhere.

*The list of qualifying zip codes for City Residents includes: 92014, 92037, 92038, 92067, 92093, 92101, 92102, 92103, 92104, 92105, 92106, 92107, 92108, 92109, 92110, 92111, 92113, 92114, 92115, 92116, 92117, 92119, 92120, 92121, 92122, 92123, 92124, 92126, 92127, 92128, 92129, 92130, 92131, 92132, 92134, 92137, 92138, 92139, 92145, 92154, 92166, 92167, 92169, 92171, 92173, 92177.

C O N T R A C T O R U S E O N L Y

Please complete and fax or email this form to the applicable union to request craft workers that fulfill the hiring requirements for this project. After faxing your request, please call the Local to verify receipt and substantiate their capacity to furnish workers as specified below. Please print your Fax or Email Transmission Verification Reports and keep copies for your records.

TO:	Local Union and #	
	Email	
	Fax	

CC:	City of San Diego Project Labor Coordinator	
	Email	
	Fax	

FROM:	Contractor	
	Issued by	
	Email	
	Phone	
	Fax	

UNION CRAFT WORKER REQUEST:

Craft Classification	Journeyman or Apprentice	City Resident and/or Veteran	# of Workers
	<input type="checkbox"/> JM <input type="checkbox"/> APP	YES*	
	<input type="checkbox"/> JM <input type="checkbox"/> APP	YES*	
	<input type="checkbox"/> JM <input type="checkbox"/> APP	YES*	
	<input type="checkbox"/> JM <input type="checkbox"/> APP	YES*	

WORKER REPORTING INSTRUCTIONS:

Reporting Date:	
Reporting Time:	
Project Name:	
Project Location:	
Reporting To:	
On Site Phone:	
Special Instructions:	

U N I O N U S E O N L Y

Please complete the “Union Use Only” section and fax or email both pages to the requesting Contractor and Project Labor Coordinator.

Date Dispatch Received:	
Dispatch Received by:	

Date Worker(s) Dispatched:			
Name	Veteran (Y/N)	Zip Code	JM or App
			<input checked="" type="checkbox"/> JM <input type="checkbox"/> APP
			<input type="checkbox"/> JM <input type="checkbox"/> APP
			<input type="checkbox"/> JM <input checked="" type="checkbox"/> APP
			<input type="checkbox"/> JM <input type="checkbox"/> APP

ATTACHMENT B-2 – CONTRACTOR CORE WORKFORCE FORM

C O N T R A C T O R I N F O R M A T I O N			
Project Name:			
Contractor/Firm Name:			
Prime Tier:			
Submitted by:			
Email:		Phone:	

In accordance with the Project Labor Agreement, Article 4, Section 4.6 (f), a Core Employee must be either a journeyman or Apprentice and appear on the Contractor’s active payroll for at least ninety (90) of the last one-hundred-eighty (180) working days prior to being designated as a Core Employee; and must possess any license required by state or federal law for the Project Work to be performed; and must have the ability to safely perform the basic functions of the applicable.

Prior to each Contractor performing any work on a Covered Project, each Contractor shall provide a list of Core Employees to the Project Labor Coordinator and the Council. After submitting the Core Employee list prior to commencing work, Contractors shall not make any changes or substitutions to the Core Employee list for the duration of the Covered Project. Failure to submit the Core Employee list prior to work commencing will prohibit the Contractor from using any Core Employees for 30 calendar days after the list is provided to the Project Labor Coordinator and Council.

Please check all that apply:

Our firm will not be self-performing any work on this project.
We will be subcontracting our work to: _____

PLA Section 4.6 regarding Core Employees is not applicable to Contractors that are signatory to one or more Schedule As, which are the Master Labor Agreements of the Unions. If your company is signatory, please list the union and local number below. For crafts that you are not signatory, please complete the core employee list below.

Indicate Signatory Union Trade: _____ Local # _____
 Indicate Signatory Union Trade: _____ Local # _____
 Indicate Signatory Union Trade: _____ Local # _____

We are not a union signatory contractor and will be using core employees on this project as indicated below:

Craft/Trade	Employee Name	MC3 Apprentice Y/N?	Last 4 SSN	Hire Date	Date Last Employed

ATTACHMENT C – DRUG AND ALCOHOL TESTING POLICY

The Parties recognize the problems that drug and alcohol abuse have created in the construction industry and the need to develop drug and alcohol abuse prevention programs. Accordingly, the Parties agree that in order to enhance the safety of the workplace and to maintain a drug and alcohol-free work environment, individual Contractors shall require applicants or employees to undergo drug and alcohol testing in accordance with this PLA and this policy, Attachment C – Drug and Alcohol Testing Policy, hereafter “Policy.”

1. It is understood that the use, possession, transfer, or sale of illegal drugs, narcotics, or other unlawful substances, as well as being under the influence of alcohol and the possession of or consuming alcohol is absolutely prohibited while employees are on the Contractor’s job premises or while working on any jobsite in connection with work performed under the PLA.
2. No Contractor may implement a drug and alcohol testing program that does not conform in all respects to the provisions of this Policy.
3. No Contractor may implement drug and alcohol testing at any jobsite unless written notice is given to the Union setting forth the location of the jobsite, a description of the project under construction, and the name and telephone number of the Prime Contractor's project manager. Said notice shall be provided at the pre-job conferences for each Covered Project. Failure to give such notice shall make any drug and alcohol testing engaged in by the Contractor a violation of the Agreement and subject to the Article 10 grievance procedure.
4. A Contractor who elects to implement drug and alcohol testing pursuant to this Policy shall require all craft employees on the Covered Project to be tested. With respect to individuals who become employed on the Covered Project subsequent to the proper implementation of a valid drug and alcohol testing program, such test shall be administered upon the commencement of employment on the project, whether by referral from a Union Dispatch Office, transfer from another project, or another method. Individuals who were employed on the project prior to proper implementation of a valid drug and alcohol testing program may only be subjected to testing for the reasons set forth in paragraphs 5(g)(1) through 5(g)(3) and paragraphs 6(a) through 6(e) of this Policy. Refusal to undergo such testing shall be considered sufficient grounds to deny employment on the project.
5. The following procedure shall apply to all drug and alcohol testing:
 - a. The Contractor may request urine samples only. The applicant or employee shall not be observed when the urine specimen is given. An applicant or employee, at his or her sole option, shall, upon request, receive a blood test in lieu of a urine test. No employee of the Contractor shall draw blood from a bargaining unit employee, touch

- or handle urine specimens, or in any way become involved in the chain of custody of urine or blood specimens. A Union Business Representative, subject to the approval of the individual applicant or employee, shall be permitted to accompany the applicant or employee to the collection facility to observe the collection, bottling, and sealing of the specimen.
- b. A Contractor may request an applicant or employee promptly, within four (4) hours of the Contractor's request, perform an alcohol breathalyzer test at a certified laboratory only, and cutoff levels shall be those mandated by applicable state or federal law.
 - c. The testing shall be done by a laboratory approved by the Substance Abuse & Mental Health Services Administration (SAMHSA), which is chosen by the Contractor and the Union.
 - d. An initial test shall be performed using the Enzyme Multiplied Immunoassay Technique (EMIT). In the event a question or positive result arises from the initial test, a confirmation test must be utilized before action can be taken against the applicant or employee. The confirmation test will be by Gas Chromatography/Mass Spectrometry (GC/MS). Cutoff levels for both the initial test and confirmation test will be those established by SAMHSA and this Policy. Should these SAMHSA levels be changed during the course of the PLA or new testing procedures are approved, then these new regulations will be deemed as part of this existing PLA. Confirmed positive samples will be retained by the testing laboratory in secured long-term frozen storage for a minimum of one (1) year. Handling and transportation of each sample must be documented through strict chain-of-custody procedures.
 - e. In the event of a confirmed positive test result, the applicant or employee may request, within forty-eight (48) hours, a sample of his/her specimen from the testing laboratory for purposes of a second test to be performed at a second laboratory, designated by the Union and approved by SAMHSA. The retest must be performed within ten (10) days of the request. Chain of custody for this sample shall be maintained by the Contractor between the original testing laboratory and the Union's designated laboratory. Retesting shall be performed at the applicant's or employee's expense. In the event of conflicting test results, the Contractor may require a third test, at the Contractor's expense.
 - f. If, as a result of the above testing procedure, it is determined that an applicant or employee has tested positive, this shall be considered sufficient grounds to deny the applicant or employee his/her employment on the project.
 - g. No individual who tests negative for drugs and alcohol pursuant to the above procedure and becomes employed on the project shall again be subjected to drug and alcohol testing with the following exceptions:
 - 1) Employees who are involved in industrial accidents resulting in damage to plant, property, or equipment or injury to him/her or others may be tested for drugs or alcohol pursuant to the procedures stated hereinabove.

- 2) The Contractor may test employees following thirty (30) days' advance written notice to the employee(s) to be tested and to the applicable Union. Notice to the applicable Union shall be sent by certified mail to the affected Union with a copy to the Project Labor Coordinator. Such testing shall be pursuant to the procedures stated hereinabove.
 - 3) The Contractor may test an employee where the Contractor has reasonable cause to believe that the employee is impaired from performing his/her job. Reasonable cause shall be defined as being aberrant or unusual behavior, the type of which is a recognized and accepted symptom of impairment (e.g., slurred speech, unusual lack of muscular coordination). Such behavior must be actually observed by at least two (2) persons, one (1) of whom shall be a supervisor who has been trained to recognize the symptoms of drug and alcohol abuse or impairment and the other of whom shall be the Job Steward. If the Job Steward is unavailable or there is no Job Steward on the Covered Project, the other person shall be a member of the applicable Union's bargaining unit. Testing shall be pursuant to the procedures stated hereinabove. Employees who are tested pursuant to the exceptions set forth in this paragraph and who test positive will be removed from the Contractor's payroll.
 - h. Applicants or employees who do not test positive shall be paid for all time lost while undergoing drug and alcohol testing. Payment shall be at the applicable wage and benefit rates set forth in the applicable Union's Master Labor Agreement. Applicants who have been dispatched from the Union and who are not put to work pending the results of a test will be paid waiting time until such time as they are put to work. It is understood that an applicant must pass the test as a condition of employment. Applicants who are put to work pending the results of a test will be considered probationary employees.
6. The Contractors will be allowed to conduct periodic jobsite drug and alcohol testing on the Project under the following conditions:
- a. The entire jobsite must be tested, including any employee or subcontractor's employee who worked on that project three (3) working days before or after the date of the test;
 - b. Jobsite testing cannot commence sooner than fifteen (15) days after start of the work on the project;
 - c. Prior to start of periodic testing, a Business Representative will be allowed to conduct an educational period on company time to explain periodic jobsite testing program to affected employees;
 - d. Testing shall be conducted by an SAMHSA-certified laboratory, pursuant to the provisions set forth in paragraph 5 hereinabove.
 - e. Only two (2) periodic tests may be performed in a twelve (12)-month period.

7. It is understood that the unsafe use of prescribed medication, or where the use of prescribed medication impairs the employee's ability to perform work, is a basis for the Contractor to remove the employee from the jobsite.
8. Any grievance or dispute that may arise out of the application of this Policy shall be subject to the grievance and arbitration procedures set forth in the PLA.
9. The establishment or operation of this Policy shall not curtail any right of any employee found in any law, rule, or regulation. Should any part of this Policy be found unlawful by a court of competent jurisdiction or a public agency having jurisdiction over the Parties, the remaining portions of the Agreement shall be unaffected, and the Parties shall enter negotiations to replace the affected provision.
10. Present employees, if tested positive, shall have the prerogative for rehabilitation program at the employee's expense. When such program has been successfully completed, the Contractor shall not discriminate in any way against the employee. If work for which the employee is qualified exists, he/she may be reinstated.
11. The Contractor agrees that results of urine and blood tests performed hereunder will be considered medical records held confidential to the extent permitted or required by law. Such records shall not be released to any persons or entities other than designated Contractor representatives and the applicable Union. Such release to the applicable Union shall only be allowed upon the signing of a written release by the employee, and the information contained therein shall not be used to discourage the employment of the individual applicant or employee on any subsequent occasion.
12. Employees who seek voluntary assistance for substance abuse may not be disciplined for seeking such assistance. Requests from employees for such assistance shall remain confidential and shall not be revealed to other employees or management personnel without the employee's consent. Employees enrolled in substance abuse programs will be subject to all Contractor rules, regulations, and job performance standards with the understanding that an employee enrolled in such a program is receiving treatment for an illness.
13. The Contractor shall indemnify and hold the Union harmless against any and all claims, demands, suits, or liabilities that may arise out of the application of this Policy.
14. This Policy shall constitute the only Policy in effect between the Parties concerning drug and alcohol abuse, prevention, and testing. Any modifications thereto must be accomplished pursuant to collective bargaining negotiations between the Parties.

SPECIMEN REPORTING CRITERIA

Initial Test Analyte	Initial Test Cutoff ¹	Confirmatory Test Analyte	Confirmatory Test Cutoff Concentration
Marijuana metabolites (THCA) ²	50 ng/ml ³	THCA	15 ng/ml
Cocaine metabolite (Benzoylecgonine)	150 ng/ml ³	Benzoylecgonine	100 ng/ml
Codeine/ Morphine	2000 ng/ml	Codeine Morphine	2000 ng/ml 2000 ng/ml
Hydrocodone/ Hydromorphone	300 ng/ml	Hydrocodone Hydromorphone	100 ng/ml 100 ng/ml
Alcohol	0.02%	Ethanol	0.02%
Oxycodone/ Oxymorphone	100 ng/ml	Oxycodone Oxymorphone	100 ng/ml 100 ng/ml
6-Acetylmorphine	10 ng/ml	6-Acetylmorphine	10 ng/ml
Phencyclidine	25 ng/ml	Phencyclidine	25 ng/ml
Amphetamine/ Methamphetamine	500 ng/ml	Amphetamine Methamphetamine	250 ng/ml 250 ng/ml
MDMA ⁴ /MDA ⁵	500 ng/ml	MDMA MDA	250 ng/ml 250 ng/ml
Initial Test Analyte	Initial Test Cutoff	Confirmatory Test Analyte	Confirmatory Test Cutoff Concentration
Barbiturates	300 ng/ml	Barbiturates	200 ng/ml
Benzodiazepines	300 ng/ml	Benzodiazepines	300 ng/ml
Methadone ⁶	300 ng/ml	Methadone	100 ng/ml
Methaqualone	300 ng/ml	Methaqualone	300 ng/ml
Propoxyphene	300 ng/ml	Propoxyphene	100 ng/ml

¹ For grouped analytes (i.e., two or more analytes that are in the same drug class and have the same initial test cutoff):

Immunoassay: The test must be calibrated with one analyte from the group identified as the target analyte. The cross-reactivity of the immunoassay to the other analyte(s) within the group must be 80 percent or greater; if not, separate immunoassays must be used for the analytes within the group.

Alternate technology: Either one analyte or all analytes from the group must be used for calibration, depending on the technology. At least one analyte within the group must have a concentration equal to or greater than the initial test cutoff or, alternatively, the sum of the analytes present (i.e., equal to or greater than the laboratory's validated limit of quantification) must be equal to or greater than the initial test cutoff.

² An immunoassay must be calibrated with the target analyte, 9-tetrahydrocannabinol-9- carboxylic acid (THCA).

³ **Alternate technology (THCA and benzoylecgonine):** The confirmatory test cutoff must be used for an alternate technology initial test that is specific for the target analyte (i.e., 15 ng/ml for THCA, 100 ng/ml for benzoylecgonine).

⁴ Methylenedioxyamphetamine (MDMA)

⁵ Methylenedioxymphetamine (MDA)

⁶ Employees with a prescription for methadone who are using the medication as prescribed, and are not impaired and can safely perform their work, will not be considered to have violated this Policy.

**MEMORANDUM OF UNDERSTANDING REGARDING
“QUICK” DRUG SCREENING TESTS PURSUANT TO
ATTACHMENT C – DRUG AND ALCOHOL TESTING POLICY**

It is hereby agreed between the Parties hereto that a Contractor who has otherwise properly implemented drug and alcohol testing, as set forth in the Policy, shall have the right to offer an applicant or employee a "quick" drug screening test. This “quick” screen test shall consist either of the “ICUP” urine screen or similar test or an oral screen test. The applicant or employee shall have the absolute right to select either of the two “quick” screen tests, or to reject both and request a full drug test.

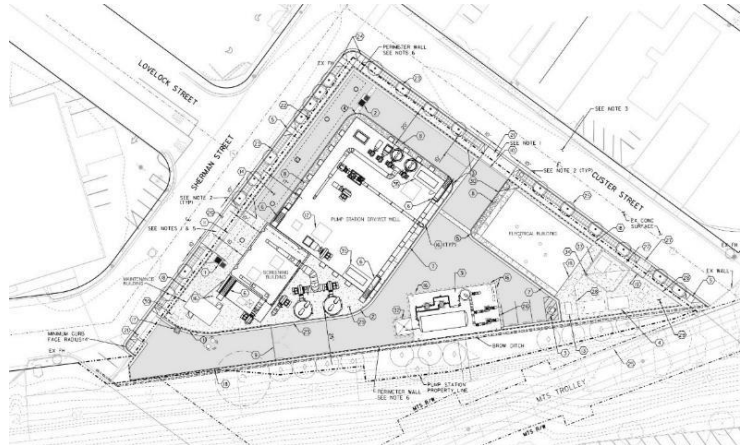
An applicant or employee who selects one of the "quick" screen tests, and who passes the test, shall be put to work immediately. An applicant or employee who fails the "quick" screen test, or who rejects the "quick" screen tests, shall be tested pursuant to the procedures set forth in the Policy. The sample used for the "quick" screen test shall be discarded immediately upon conclusion of the test. An applicant or employee shall not be deprived of any rights granted to them by the Policy as a result of any occurrence related to the “quick” screen test.

APPENDIX A – SAN DIEGO PURE WATER PROGRAM PHASE I COVERED PROJECTS

1. Morena PS/PL Construction Package 1: Morena Pump Station

- **Associated Pure Water Project:** Morena PS/PL Project
- **Summary:** The package is the construction of a new pump station that will transport approximately 32 mgd of wastewater to the NCWRP, where it will be treated before being sent to the NCPWF for further purification. Construction of the pump station will be on Sherman Street.
- **Summary of Major Construction Package Components**
 - 4+1 Dual Stage Sewer Pump Station
 - Screening Facility
 - High Purity Oxygen System
 - 48-inch to 60-inch diameter influent diversion sewers in Friars Road
 - 66-inch Overflow Sewer
 - Electrical and Instrumentation

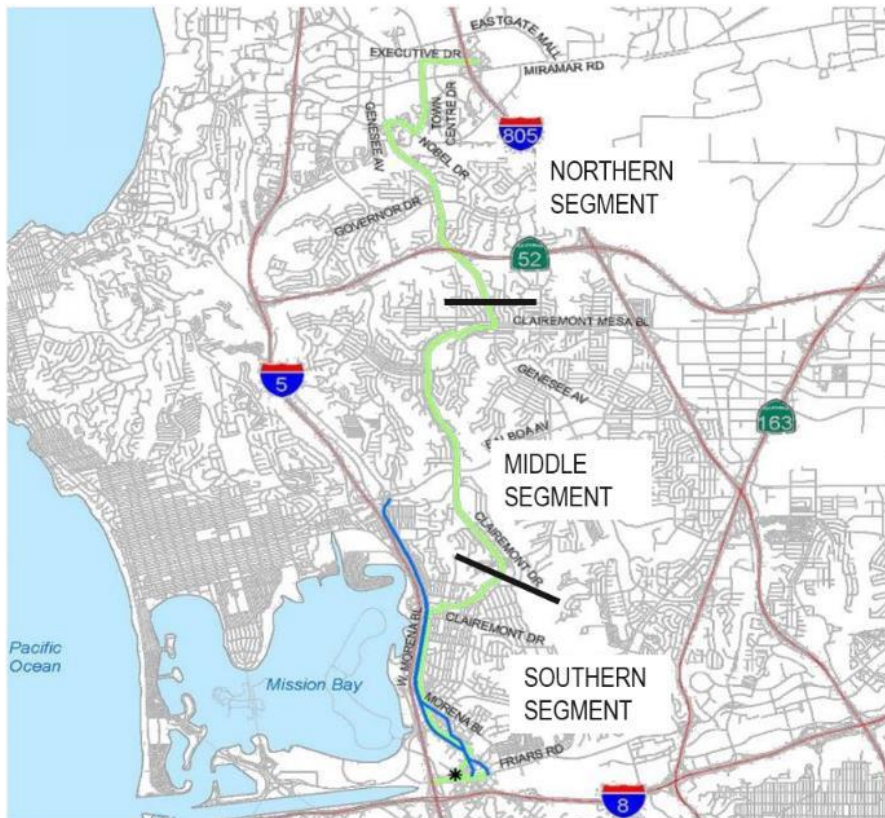
Morena Pump Station Rendering and Site Plan



2. Morena PS/PL Construction Package 2: Morena Northern Alignment and Tunnels

- **Associated Pure Water Project:** Morena PS/PL Project
- **Summary:** Two pipelines that will start at approximately Genesee Avenue/Highway 52, and will continue through University City to the NCWRP. Three short length tunnels are included in this section, each approximately 1000 feet; one at Highway 52, one at Rose Creek in University City and one at Interstate 805. One pipeline will transport wastewater to the NCWRP, while the other will transport salt and contaminants removed from the water at the NCPWF to the Point Loma Wastewater Treatment Plant.
- **Summary of Major Construction Package Components**
 - 4 miles of 48-inch force main
 - 4 miles of 36-inch brine/centrate pipeline
 - Tunnel crossing of I-805
 - Tunnel crossing of MTS/NCTD railroad at Rose Creek Canyon
 - Tunnel crossing at San Clemente Creek

Morena Conveyance Northern, Middle and Southern Segments Site Plan



3. Morena PS/PL Construction Package 3: Morena Middle Alignment

- **Associated Pure Water Project:** Morena PS/PL Project
- **Summary:** Two pipelines will start at Iroquois Avenue and will terminate at Genesee Avenue/Highway 52. One pipeline will transport wastewater to the NCWRP, while the other will transport salt and contaminants removed from the water at the NCPWF to the Point Loma Wastewater Treatment Plant.
- **Summary of Major Construction Package Components**
 - 3.6 miles of 48-inch welded steel force main
 - 3.6 miles of 36-inch brine/centrate high density polyethylene pipeline

4. Morena PS/PL Construction Package 4: Morena Southern Alignment

- **Associated Pure Water Project:** Morena PS/PL Project
- **Summary:** Two pipelines will start at Sherman Street, follow West Morena Boulevard and terminate at Iroquois Avenue. One pipeline will transport wastewater to the NCWRP, while the other will transport salt and contaminants removed from the water at the NCPWF to the Point Loma Wastewater Treatment Plant. A 36-inch diameter welded steel water transmission main will be constructed and a 16 inch steel water distribution main will be replaced by 16 inch PVC in this package.
- **Summary of Major Construction Package Components**
 - 3.2 miles of 48-inch force main
 - 3.2 miles of 30-inch brine/centrate pipeline
 - Brine/centrate pressure reducing station
 - 3.2 Miles of existing 16-inch steel water distribution main replacement with PVC
 - 3.3 miles of new 36-inch water transmission main

5. NCWRP Expansion Construction Package 1: NCWRP Flow Equalization Basin

- **Associated Pure Water Project:** NCWRP Expansion
- **Summary:** This package includes the construction of one concrete equalization tank that will balance high/low wastewater flows from primary effluent and will provide for consistent flow to the biological treatment basins.
- **Summary of Major Construction Package Components**
 - 2.35-million-gallon flow equalization basin
 - Grading, yard piping and stormwater basin
 - Electrical and instrumentation

NCWRP Equalization Basin Package 1 Rendering



6. NCWRP Construction Packages 2 and 3: NCWRP Expansion and NCPWF Influent Conveyance

- **Associated Pure Water Project:** NCWRP Expansion
- **Summary:** This package will increase the amount of recycled water that the plant produces to meet the needs of both the non-potable reuse recycled water system and the new NCPWF. Plant expansion includes the construction of a 42.5 mgd pump station that will convey water to the NCPWF across Eastgate Mall Road.
- **Summary of Major Construction Package Components**
 - Plant expansion from 30 mgd to 52 mgd
 - 42-mgd Influent Pump Station and pipeline to the NCPWF
 - New primary clarifiers, new bioreactor basins and retrofit of existing basins, secondary clarifiers, new tertiary filter, chemical facilities, and yard piping
 - Equipment and electrical substation replacements
 - Electrical and instrumentation

NCWRP Expansion Rendering



7. NCPWF Construction Package 1: NCPWF and NCPW Pump Station

- **Associated Pure Water Project:** NCWPF
- **Summary:** A new Pure Water Facility will be built on Eastgate Mall across the street from the existing NCWRP to clean the recycled water further and produce 30 mgd of a safe, high-quality drinking water source. A new pump station will be constructed adjacent to the NCPWF on Eastgate Mall Road to pump an annual average of 30 mgd to Miramar Reservoir. The package includes widening a portion of Eastgate Mall Road.
- **Summary of Major Construction Package Components**
 - New 34-mgd Pure Water Facility, including:
 - Ozone Generation and Contactor
 - Biologically Active Carbon (BAC) Filters
 - Membrane Filtration (MF) System
 - Reverse Osmosis (RO)
 - Ultraviolet Disinfection and Advanced Oxidation (UV/AOP)
 - Chemical Feed Systems
 - Operations Building
 - 30-mgd Pump Station (3 + 1 vertical turbine pumps)
 - Electrical and instrumentation

NCPWF and NCPW Pump Station Rendering



8. NCPW PS/PL Construction Package 1: NCPW Pipeline and Dechlorination Facility

- **Associated Pure Water Project:** NCPW PS/PL
- **Summary:** This package includes infrastructure to convey 30 mgd of purified water produced by the NCPWF to Miramar Reservoir. The pipeline will start on Eastgate Mall, follow Miramar Road, continue through Scripps Ranch and end at Miramar Reservoir. The package includes the replacement of 6.4 miles of asbestos cement watermains with PVC.
- **Summary of Major Construction Package Components**
 - 8 Miles of 48-inch welded steel pipe transmission main (purified water pipeline)
 - Dechlorination Facility
 - Standpipe
 - 6.4 miles of watermain replacement of 6, 12 and 16-inch asbestos cement (AC) pipe with 16-inch polyvinylchloride (PVC) pipe.

Pure Water Pipeline Alignment



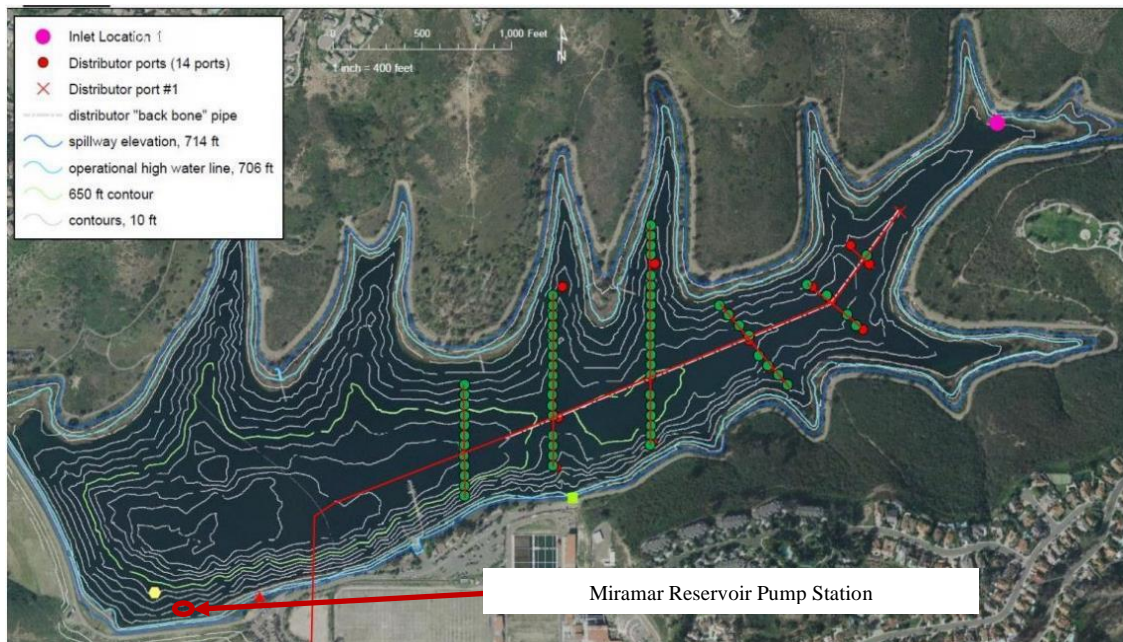
Dechlorination Facility Rendering



9. NCPW PS/PL Construction Package 2: Subaqueous Pipeline and Miramar Reservoir Pump Station Improvements

- **Associated Pure Water Project:** NCPW PS/PL
- **Summary:** This package includes 0.9 miles of pipeline with duckbill outlets placed at the bottom of Miramar Reservoir together with the rehabilitation of a 100 mgd pump station that delivers raw water from Miramar Reservoir to the Miramar Water Treatment Plant.
- **Summary of Major Construction Package Components**
 - 54-inch to 8-inch Subaqueous pipe
 - 94 Dual duckbill valve outlet ports
 - Miramar Reservoir Pump Station Improvements
 - Electrical and instrumentation

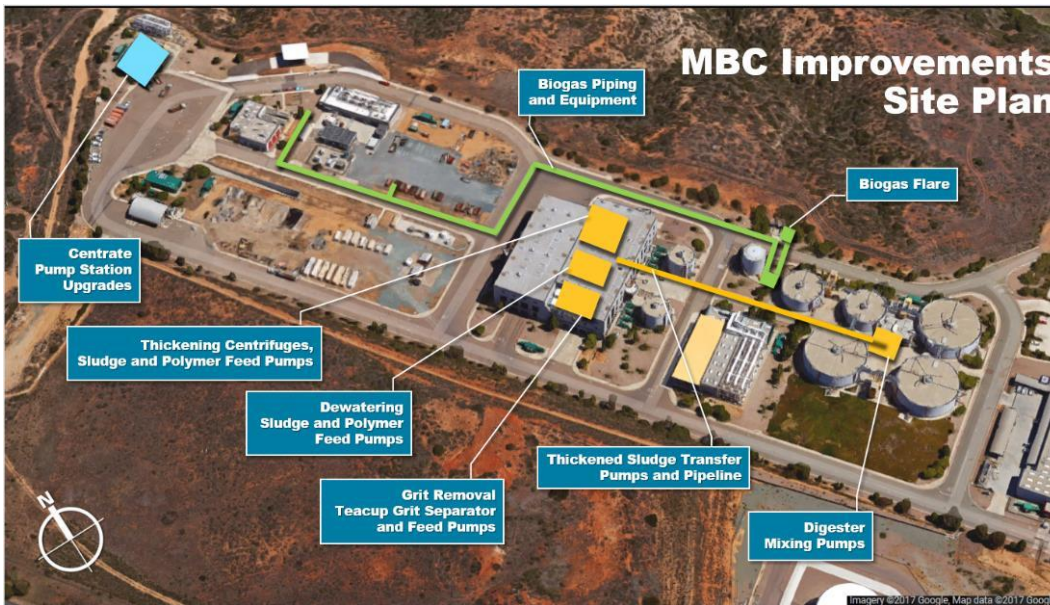
Subaqueous Pipeline Site Plan



10. MBC Construction Package 1: Metropolitan Biosolids Center Improvements

- **Associated Pure Water Project:** MBC Improvements
- **Summary:** This package will consist of improvements to the existing City biosolids center.
- **Summary of Major Construction Package Components**
 - Thickening centrifuges, sludge feed and polymer pumps, transfer pumps and supply pipeline
 - Digester mixing pump replacements, nozzles, overflow lines, biogas compressors, flare and biogas pipeline
 - Dewatering sludge feed pumps and polymer pumps
 - Centrate Pump Station pump and VFD replacements
 - Electrical and instrumentation

Metropolitan Biosolids Center Improvements Site Plan



APPENDIX B

MEMORANDUM OF UNDERSTANDING #1

PROJECT LABOR AGREEMENT SECTION 3.1

The City and the Parties agree that Project Work includes all onsite physical craft work that is part of startup and commissioning, including, but not limited to, system flushes and testing, loop checks, rework and modifications, and functional and operational testing up to and including the final running test. It is understood that the City's personnel and/or its representatives, together with the manufacturer's and/or vendor's representatives, and/or plant operating personnel may supervise and direct the startup, commissioning, rework, and modification activity, and that the onsite physical craft work is typically performed as part of a joint effort with these representatives and personnel. A manufacturer or its representatives may perform industry standard startup and commissioning work to satisfy its guarantee or warranty on a piece of equipment, and such work will be exempt from the Project Labor Agreement to the extent the work is excluded by Section 3.2(e) and/or Section 3.2(f).

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 7-13.3, "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

AMERICAN 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 American With Disabilities Act (ADA) outlined in the WHITEBOOK, Section 7-13.2, "American 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 7-13.4, ("Contractor Standards"), of the project specifications, and that Contractor has complied with those requirements.

I further certify that each of the Contractor's subcontractors 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.

Insert Company Letterhead

Skilled and Trained Workforce Certification Form

Month: _____ Year: _____

In accordance with Public Utilities Code section 132354.7 and Public Contract Code sections 2600-2602, _____ (the "Prime Contractor") certifies that all the workers performing work in an
(Prime Contractor Name)

apprenticeable occupation utilized on the project known as _____ (the "Project") during this monthly reporting period are either skilled journeypersons or apprentices registered in an apprenticeship
(Project Name)

program approved by the Chief of the Division of Apprenticeship Standards of the California Department of Industrial Relations (the "Chief").

"Skilled journeyperson" means a worker who either:

- (1) Graduated from an apprenticeship program for the applicable occupation that was approved by the Chief or apprenticeship program located outside California and approved for federal purposes, pursuant to the apprenticeship regulations adopted by the Federal Secretary of Labor.
- (2) Has at least as many hours of on-the-job experience in the applicable occupation as would be required to graduate from an apprenticeship program that is approved by the Chief.

In addition, the Prime Contractor certifies that it has met the requirements of Public Contract Code 2601(d), subject to certain exceptions set forth therein, that the required percentage of the skilled journeypersons or skilled journeyman hours employed to perform work on the Project by the Prime Contractor and all subcontractors are graduates of an apprenticeship program for the applicable apprenticeable occupation¹.

A graduate of an apprenticeship program means either of the following:

- (1) An individual that has been issued a certificate of completion under the authority of the California Apprenticeship Council for completing an apprenticeship program approved by the Chief pursuant to Section 3075 of the Labor Code, or
- (2) An individual that has completed an apprenticeship program located outside California and approved for federal purposes pursuant to the apprenticeship regulations adopted by the federal Secretary of Labor.

I declare, under penalty of perjury under the laws of the State of California, that the foregoing is true and correct. I certify that the attached Skilled and Trained Workforce Monthly Compliance Reports are complete and accurate.

Full Name: _____

Title: _____

Signature: _____ Date Signed: _____

Please upload the completed form to the Labor Compliance Monitoring System (LCMS) monthly.

Insert contractor name/letterhead here

Skilled and Trained Workforce Monthly Compliance Report

DIRECTIONS: This form is required to be submitted by the Prime for all contractors regardless of tier by the 15th of the following month for work performed corresponding to this reporting period. Items with a red asterisk (*) indicate a required field.

Project Title *		
Project Number *		
Prime Contractor *		
Subcontractor *		
Contact Name *		
Contact Number *		
Work Month & Year *	Month	Year

Exemptions *	The contractor or subcontractor need not meet the apprenticeship graduation requirements if either (1) is true, or (2)(A) and (2)(B) are both true:	Please select * (True/False)	Exempt or non-exempt?
	(1) The contractor or subcontractor employed skilled journeypersons to perform fewer than 10 hours of work on the project during this reporting period?		Exempt if (1) is "True".
	(2) (A) The subcontractor was not a listed subcontractor under Section 4104 or a substitute for a listed subcontractor.		Exempt if both (2)(A) and (2)(B) are "True".
	(2) (B) The subcontract does not exceed one-half of 1 percent of the price of the prime contract.		

Report * Please fill out the following report for all apprenticeable occupations utilized in this reporting period.

SKILLED JOURNEYPerson (SJ) REPORT							
Apprenticeable Occupation (use dropdown menu) *	Required minimum SJ: Apprentice Graduate percentage (see 2nd page attachment) *	Number of Skilled Journeypersons (SJ) employed by the contractor to perform work on the project		SJ ratio between the number of SJ: Apprentice Graduates to SJ: On-The-Job Experience workers	Number of hours worked by SJ employed by the contractor to perform work on the project		SJ ratio of hours worked by SJ: Apprentice Graduates compared with SJ: On-The-Job Experience workers
		SJ: Apprentice Graduate *	SJ: On-The-Job Experience *		SJ: Apprentice Graduate *	SJ: On-The-Job Experience *	
EXAMPLE Laborer	40%	7	3	70%	30	70	30%

Terms	Definitions
Apprentice	Defined in Labor Code 3077
Skilled Journeyperson: Apprentice Graduate	Defined in Public Contracts Code 2601 (e) (1)
Skilled Journeyperson: On-The-Job Experience	Defined in Public Contracts Code 2601 (e) (2)

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 (PRIME CONTRACTOR)**
- E. DEBARMENT AND SUSPENSION CERTIFICATION (SUBCONTRACTORS/SUPPLIERS/MANUFACTURERS)**
- F. DISCLOSURE OF LOBBYING ACTIVITIES**
- G. COMMITMENT TO COMPLY WITH SKILLED AND TRAINED WORKFORCE CERTIFICATION FORMS**
- H. SKILLED AND TRAINED WORKFORCE CERTIFICATION FORMS**
- I. FORM 4500-3: DBE SUBCONTRACTOR PERFORMANCE FORM**
- J. FORM 4500-4: DBE SUBCONTRACTOR UTILIZATION FORM**
- K. INDICATE PIPE MATERIAL FOR COMBINED WASTE (CW) PIPELINE (BIDDER SHALL INSERT “HDPE4” OR “FRP2”)**

LONG-TERM MAINTENANCE AND MONITORING AGREEMENT

This **25-Month Long-Term Maintenance and Monitoring Agreement (LTMMA)** is made and entered into by and between the City of San Diego (City), a municipal corporation, and **OHL USA, Inc.** (Contractor), who may be individually or collectively referred to herein as a "Party" or the "Parties."

RECITALS

- A.** Concurrent with execution of this LTMMA, the Parties entered into a general contract (Construction Contract) for the construction of **Morena Conveyance North (Project), WBS/IO number B-15141, Bid No. K-21-1848-DBB-3.**
- B.** In accordance with the Construction Contract, the Contractor shall enter into this LTMMA with the City for the purpose of implementing and fulfilling long-term maintenance requirements in accordance with the City of San Diego Municipal Code and the Contract Documents for the specified elopement(s) of **Morena Conveyance North** (Maintenance Requirements).
- C.** The Contractor is ready and willing to fulfill its maintenance requirements in accordance with the terms of this LTMMA.

NOW, THEREFORE, in consideration of the above recitals and the mutual covenants and conditions set forth herein, and for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby set forth their mutual covenants and understandings as follows:

INTRODUCTORY PROVISIONS

- A. Recitals Incorporated.** The above referenced Recitals are true and correct and are incorporated into this LTMMA by this reference.
- B. Exhibits Incorporated.** All Exhibits and Attachments referenced in this LTMMA are incorporated into this LTMMA by this reference.
- C. Contract Term.** This LTMMA shall be effective upon completion of the Plant Establishment Period (PEP) as described in **Section 6-1.1 of ATTACHMENT E – Supplementary Special Provisions** and **Section 802** of the 2015 GREENBOOK AND WHITEBOOK and it shall be effective until the completion of the Work as described below.
- D. Terms and Conditions.** This LTMMA is subject to the terms and conditions of the Construction Contract included in the 2015 GREENBOOK, WHITEBOOK, and Special Provisions (**Part 1, Part 8, and Part 10**) except as otherwise stated in this LTMMA.
- E. Partial Release of Payment Bond and Performance Bond.**

1. **Performance of Contract in Two Phases.** There are two separate phases of Work to be performed by the Contractor under this Contract. The first phase covers the Work involved in the original agreement as described in this agreement ("Phase 1 Work"). The second phase covers the work involved in the long-term maintenance of the Re-vegetation/Restoration Area after Phase 1 Work has been completed ("Phase 2 Work").
2. **Bond Handling for Contract Phases.** The Payment Bond and the Performance Bond covering Phase 1 Work on this Contract shall remain in full force and effort until completion of that phase is certified. The original Payment Bond and the original Performance Bond covering Phase 1 Work on this Contract shall continue in full force and effort for Phase 2 Work, however the value of each bond may be reduced as follows:
 - i. Completion by the Contractor of all Phase 1 Work shall be evidenced solely by the City Engineer affirming in writing that to the best of their knowledge that all Phase 1 Work has been completed by the Contractor in strict conformity with all City-approved plans and revisions, and that the Phase 1 Work completed by the Contractor meets all applicable standards ("Notice of Completion").
 - ii. Upon issuance by the City Engineer of the Notice of Completion for Phase 1 Work, the Payment Bond for this Project, and the Performance Bond for this Project, may be partially released, and thereby reduced for the Work performed under Phase 1. The remaining payment and performance bond will cover the full cost of Phase 2 Work on this Project, which will be the amount specified in "Section 4: COMPENSATION" in Section 4.1 of this LTMMMA.
3. **No Partial Release Upon Default.** No Partial Performance Bond Release and Reduction shall be given to the Contractor if the Performance Bond and/or this Agreement is in default on Phase 1 Work.

SECTION 1 - MAINTENANCE CONTRACT SUMMARY

- 1.1. General.** The Contractor shall fulfill the Project's Maintenance Requirements (Work) as identified in the scope of work attached as **Exhibit A** in a manner satisfactory to the City.

The Contractor shall provide all equipment, labor, and materials necessary to perform the **Work** as described in **Exhibit A**, at the direction of the City.

- 1.2. Schedule of Work.** The Contractor shall follow the Schedule of Work (Schedule) for the maintenance and monitoring period provided in the Plans.

After receiving notification from the City, the Contractor shall create a comprehensive Schedule of Work (Schedule) for performance of this LTMMA for the City's approval. The Schedule shall include routine work, inspection, and infrequent operations such as repairs, fertilization, aerification, watering, and pruning.

The City will approve the Schedule prior to the commencement of the Work. The City may require the Contractor to revise the Schedule. The Contractor shall not revise the Schedule unless the revisions have received the prior written approval of the City.

- 1.3. Commencement of Work & Maintenance Period.** This LTMMA shall commence when the City approves of the Work of the Plant Establishment Period and sends notice of the approval to the Contractor in accordance with **Part 8, Section 802** of the Construction Contract and shall continue for **25** months. A copy of the approval form is attached as **Exhibit B**.

- 1.4. License.** The Contractor shall hold the following licenses in good standing:

1.4.1. **C-27** State Contractor's License.

1.4.1.1. Alternatively, the Contractor shall retain the services of a Subcontractor with a **C-27** State Contractor's License.

1.4.2. Pest Control Advisor's License.

1.4.2.1. Alternatively, the Contractor shall retain the services of a licensed Pest Control Advisor.

1.4.3. Registration with the County Agriculture Commission.

1.4.4. Qualified Applicator's Certificate for Category B. This shall apply to any person supervising the use of pesticides, herbicides, or rodenticides.

1.4.5. City of San Diego Business License.

Prior to performing the Work, the Contractor shall complete and submit to the City the License Data Sheet. **See Exhibit C.**

- 1.5. Hours of Performance.** The Contractor shall perform the Work between the hours of 8:00 a.m. and 6:00 p.m., Monday through Friday (Working Hours). The City may, in its sole discretion, grant permission to the Contractor to perform Work during non-Working Hours. Maintenance functions that generate excess noise (operations of power

equipment which would cause annoyance to area residents for example) shall not begin before 7:00 a.m.

SECTION 2 - ADMINISTRATION

- 2.1. **Contract Administrator. PUBLIC WORKS CONTRACTING (PWC)** is the Contract Administrator for the LTMMA. The Contractor shall perform the Work under the direction of a designated representative of the Public Works Department. The City will communicate with the Contractor on all matters related to the administration of this LTMMA and the Contractor's performance of the Work rendered hereunder. When this LTMMA refers to communications to or with the City, those communications shall be with the City, unless the City or this LTMMA specifies otherwise. Further, when this LTMMA requires an act or approval by City, that act or approval will be performed by the City.
- 2.2. **Local Office.** The Contractor shall maintain a local office with a company representative who is authorized to discuss matters pertaining to this LTMMA with the City and shall promptly respond and be available during Normal Working Hours. A local office is one located in San Diego County that can be reached by telephone and facsimile. An answering service in conjunction with a company email address for the designated company representative may fulfill this requirement. A mobile telephone shall not fulfill the requirement for a local office. All calls to the Contractor from the City shall be returned within a 1-hour period.
- 2.3. **Emergency Calls.** The Contractor shall have the capability to receive and to respond immediately to calls of an emergency nature. The City shall refer emergency calls to the Contractor for immediate disposition. The Contractor shall provide the City with a 24 hour emergency telephone number for this purpose.
- 2.4. **Staffing.** The Contractor shall furnish supervisory and working personnel capable of promptly accomplishing all Work required under this LTMMA on schedule and to the satisfaction of the City.
- 2.5. **Contractor Inspections.** The Contractor shall perform inspections of the Work site and shall prepare and submit to the City a Punchlist and dates of correction. The Punchlist shall include a comprehensive report of Work performed at the Work site to ensure 100% cover.

SETION 3: WORK SITE MAINTENANCE

- 3.1. **Use of Chemicals.** The Contractor shall submit to the City for approval sample labels and MSDS for all chemical herbicides, rodenticides, and pesticides proposed for use under this LTRMC. Materials included shall be limited to chemicals approved by the State of California Department of Agriculture.

The use of any chemical shall be based on the recommendations of a licensed pest control advisor. Annual PCA Pesticide Recommendations are required for each pesticide

proposed to be used for the Work site covered by this LTRMC. The use of chemicals shall conform to the current San Diego County Department of Agriculture regulations.

No chemical herbicide, rodenticide, or pesticide shall be applied until its use is approved, in writing, by City as appropriate for the purpose and area proposed.

The Contractor shall submit a monthly pesticide use report to the City along with the Contractor's invoices for payment. This report shall include a statement of all applications of herbicides, rodenticides, and pesticides, detailing the chemical used, undiluted quantity, rate of application, applicator's name, and the date and purpose of the application. For months in which no pesticides are applied, state "No Pesticide Used" on the report.

- 3.2. Irrigation Water.** The Contractor shall diligently practice water conservation, including minimizing run-off or other waste. The Contractor shall turn off irrigation systems, if any, during periods of rainfall and at such other times when suspension of irrigation is desirable to conserve water and to remain within the guidelines of good horticultural landscape maintenance practices in accordance with the instructions from the Project Biologist. The Contractor's failure to properly manage and conserve water may result in deductions from the monthly payment to be made to the Contractor or other penalties under this LTMMA.

If the Contractor causes excessive use or waste of irrigation water, the estimated cost of that water shall be deducted from the monthly payment. Further, any monetary fines or other damages assessed to City for the Contractor's failure to follow water conservation regulations imposed by the City, the Public Utilities Department of the City of San Diego, and, where appropriate, the State of California, the County Water Authority, or other legal entities shall be solely the responsibility of the Contractor and may be deducted from the monthly payment to be made to the Contractor under this LTMMA.

- 3.3. Payment for Water.** The Contractor shall pay for the water used in the maintenance of the Work site and this cost is included in the price of this LTMMA.
- 3.4. Satisfactory Progression.** If the Revegetation/Restoration Area is not progressing towards the required performance criteria, as defined in the Scope of Work, in accordance with the Work Schedule, and as determined by City, the City may accordingly adjust monthly payments to the Contractor.

SECTION 4: COMPENSATION

- 4.1. Maximum Compensation.** The compensation for this LTMMA shall not exceed **\$100,000.00** (Contract Price).
- 4.2. Method of Payment and Reports.** The payments will be made monthly in direct proportion that each month bears to the total value of the Contract Price. As conditions precedent to payment, the Contractor shall submit a detailed invoice and report of maintenance Work performed every month. The Contractor's failure to submit the

required reports or certified payrolls as described in the Construction Contract shall constitute a basis for withholding payment by the City.

4.3. Final Payment. The Contractor shall not receive final payment until the following conditions have been completed to the City's satisfaction:

1.3.1. The item(s) of the Work subject to this maintenance coverage as specified in **Exhibit A** (Maintenance Items) have been determined to be in compliance with the Construction Contract and this LTMMA.

1.3.2. The Contractor has provided to the City a signed and notarized Affidavit of Disposal, a copy of which is attached to the Construction Contract, stating that all brush, trash, debris, and surplus materials resulting from the Work have been disposed of in a legal manner.

1.3.3. The Contractor has provided a final work summary report to the City.

1.3.4. The Contractor has performed comprehensive and successful testing and checks of the Maintenance Items.

SECTION 5: BONDS AND INSURANCE

5.1. Contract Bonds. Prior to the commencement of Work, the Contractor, at its sole cost and expense, shall provide the following bonds issued by a surety authorized to issue bonds in California satisfactory to the City:

1.1.1. A Payment Bond (Material and Labor Bond) in an amount not less than the Contract Price for this Bid item, to satisfy claims of material suppliers and mechanics and laborers employed by it on the Work. The Payment Bond shall be maintained by the Contractor in full force and effect until the Work is accepted by City and until all claims for materials and labor are paid, and shall otherwise comply with the California Civil Code.

1.1.2. A Performance Bond in an amount not less than the Contract Price for this bid item to guarantee the faithful performance of all Work within the time prescribed in a manner satisfactory to the City and to guarantee all materials and workmanship will be free from original or developed defects. The Performance Bond shall remain in full force and effect until performance of the Work is completed as set forth in this LTMMA.

5.2. Insurance. The Contractor shall maintain insurance coverage as specified in **Section 7-3, "INSURANCE"** of the Construction Contract at all times during the term of this LTMMA.

The Contractor shall not begin the Work under this LTMMA until they have complied with the following:

1.2.1. Obtain insurance certificates reflecting evidence of insurance:

1. Commercial General Liability

2. Commercial Automobile Liability
 3. Worker's Compensation
- 1.2.2. Confirm that all policies contain the specific provisions required in **Section 7-3, "INSURANCE"**.

The Contractor shall submit copies of any policy upon request by the City.

The Contractor shall not modify any policy or endorsement thereto which increases the City's exposure to loss for the duration of this LTMMA.

SECTION 6: MISCELLANEOUS

- 6.1. Illness and Injury Prevention Program.** The Contractor shall comply with all the mandates of Senate Bill 198 and shall specifically have a written Injury Prevention Program on file with the City in accordance with all applicable standards, orders, or requirements of California Labor Code, Section 6401.7. This Program shall be on file prior to the performance of any Work.
- 6.2. City Standard Provisions.** This LTMMA is subject to the same standard provisions and Contractor Certification requirements as the Construction Contract.
- 6.3. Taxpayer Identification Number.** I.R.S. regulations require the City to have the correct name, address, and Taxpayer Identification Number (TIN) or Social Security Number (SSN) on file for businesses or persons who provide services or products to the City. This information is necessary to complete Form 1099 at the end of each tax year. As such, the Contractor shall provide the City with a Form W-9 upon execution of this LTMMA.
- 6.4. Assignment.** The Contractor shall not assign the obligations under this LTMMA, whether by express assignment or by sale of the company, nor any monies due or to become due, without the City's prior written approval. Any assignment in violation of this section shall constitute a Default and is grounds for immediate termination of this LTMMA, at the sole discretion of City. In no event shall any putative assignment create a contractual relationship between the City and any putative assignee.
- 6.5. Independent Contractors.** The Contractor and any Subcontractors employed by Contractor shall be independent contractors and not agents of the City. Any provisions of this LTMMA that may appear to give the City any right to direct the Contractor concerning the details of performing the Work, or to exercise any control over such performance, shall mean only that the Contractor shall follow the direction of the City concerning the end results of the performance.
- 6.6. Covenants and Conditions.** All provisions of this LTMMA expressed as either covenants or conditions on the part of the City or the Contractor shall be deemed to be both covenants and conditions.

- 6.7. Jurisdiction and Venue.** The jurisdiction and venue for any suit or proceeding arising out of or concerning this LTMMA, the interpretation or application of any of its terms, or any related disputes shall be the County of San Diego, State of California.
- 6.8. Successors in Interest.** This LTMMA and all rights and obligations created by it shall be in force and effect whether or not any Parties to this LTMMA have been succeeded by another entity and all rights and obligations created by this LTMMA shall be vested and binding on any Party's successor in interest.
- 6.9. Integration.** This LTMMA and the exhibits, attachments, and references incorporated into this LTMMA fully express all understandings of the Parties concerning the matters covered in this LTMMA. No change, alteration, or modification of the terms or conditions of this LTMMA, and no verbal understanding of the Parties, their officers, agents, or employees shall be valid unless made in the form of a written change agreed to in writing by both Parties or by an amendment to this LTMMA agreed to by both Parties. All prior negotiations and agreements shall be merged into this LTMMA.
- 6.10. Counterparts.** This LTMMA may be executed in counterparts, which when taken together shall constitute a single signed original as though all Parties had executed the same page.
- 6.11. No Waiver.** Any failure of either the City or the Contractor to insist upon the strict performance by the other of any covenant, term, or condition of this LTMMA, nor any failure to exercise any right or remedy consequent upon a breach of any covenant, term, or condition of this LTMMA, shall constitute a waiver of any such breach or of such covenant, term, or condition. No waiver of any breach shall affect or alter this LTMMA, and each and every covenant, condition, and term hereof shall continue in full force and effect to any existing or subsequent breach.
- 6.12. Severability.** The unenforceability, invalidity, or illegality of any provision of this LTMMA shall not render any other provision of this LTMMA unenforceable, invalid, or illegal.
- 6.13. Signing Authority.** The representative for each Party signing on behalf of a corporation, partnership, joint venture or governmental entity hereby declares that authority has been obtained to sign on behalf of the corporation, partnership, joint venture, or entity and agrees to hold the other Party or Parties hereto harmless if it is later determined that such authority does not exist.

IN WITNESS WHEREOF, this Contract is executed by the City of San Diego, acting by and through its Engineering & Capital Projects Director in accordance with Resolution No. R-312062, and by Contractor.

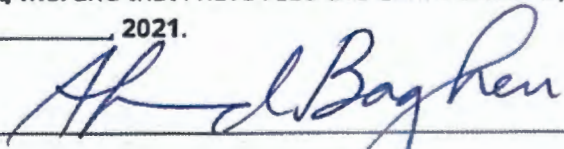
Dated this 29th day of April, 2021.

THE CITY OF SAN DIEGO

By: 

Matthew Vespi
Chief Financial Officer

I HEREBY CERTIFY I can legally bind **OHL USA, Inc.** and that I have read this entire contract, this 30th day of March, 2021.

By: 

Printed Name: Ahmad Bagheri

Title: Executive Vice President



I HEREBY APPROVE the form of the foregoing Contract this

30th day April of 2021.

Mara W. Elliott, City Attorney

By: 

Printed Name: Christine Leone
Deputy City Attorney

EXHIBIT A

SCOPE OF WORK

- I. **Location of Work.** The location of the Work to be performed (Revegetation Area) is shown on Specifications and Drawings numbered **40067-209-D** through **40067-210-D** (Specifications), which are incorporated into this Contract by this reference as though fully set forth herein.
- II. **Description of Work.** The Contractor shall maintain and monitor the Revegetation/Restoration Area during the Monitoring Program in accordance with this Contract. The Revegetation/Restoration Area shall meet the success criteria specified in the Plan at each of the milestones listed in the Schedule for the maintenance and monitoring period. The Work includes complete landscape maintenance consisting of irrigation, pruning, shaping and training of trees, shrubs, and ground cover plants; fertilization; weed control; control of all plant diseases and pests; and trash removal, and all other maintenance listed in this Contract and as required to maintain the Revegetation Area in a useable condition and to maintain the plant material in a healthy and viable state.

The Work also includes biological monitoring of the Revegetation/Restoration Area according to the schedule and methods specified in the Revegetation/Restoration Plan. The monitoring work shall include all reporting tasks specified in the Plan.

- III. **Method of Performing Work.**

- A. **Irrigation.** Irrigation shall be applied to container and salvaged plants in accordance with instructions from the Project Biologist. Irrigation delivery techniques and schedules will vary depending on the availability of a sprinkler irrigation system and weather patterns. Failure of an existing irrigation system to provide full and proper irrigation shall not relieve Contractor of the responsibility to provide adequate irrigation with full and proper coverage of all areas subject to this LTMMA.

1. In areas where an automatic sprinkler system is installed, Contractor shall periodically inspect the operation of the system for any malfunction. The maximum interval between inspections shall not exceed 7 Calendar Days. The Contractor shall maintain all sprinkler systems in such a way as to guarantee proper coverage and full working capability, and shall make whatever adjustments may be necessary to prevent excessive run-off into streets, rights-of-way, or other areas not meant to be irrigated. The cost of wasted water may be charged to Contractor.
2. All areas not adequately covered by a sprinkler system shall be irrigated by a portable irrigation method in accordance with instructions from the Project Biologist. The Contractor shall furnish all hoses, nozzles, sprinklers, etc. necessary to accomplish this supplementary irrigation. The Contractor shall exercise due diligence to prevent water waste, erosion, and

detrimental seepage into existing underground improvements and to existing structures.

3. Irrigation shall be accomplished as follows:
 - a) Turf (if any) shall be irrigated Monday through Friday, as required, to maintain acceptable growth, viability and health, and to encourage deep rooting, in accordance with instructions from the Project Biologist. Additional irrigation shall be performed in the event of unusually hot/dry weather conditions (as are present during Santa Ana conditions, or other times of low humidity or high winds, or during a prolonged high temperature period during summer months).
 - b) Landscaped improved banks and slopes (if any) shall be irrigated Monday through Friday as required to maintain acceptable growth, viability and health, and to encourage deep rooting, in accordance with instructions from the Project Biologist.
 - c) Shrub beds (if any) shall be irrigated as required to maintain acceptable growth, viability and health, and to encourage deep rooting, in accordance with instructions from the Project Biologist. Shrub areas shall be irrigated at a rate which keeps surface runoff to a minimum. The irrigation rate shall be adjusted to the needs of shrub types, seasons and weather conditions.
 - d) Planted and seeded areas shall be irrigated as required to maintain acceptable growth, viability and health, and to encourage deep rooting, in accordance with instructions from the Project Biologist. Planted and seeded areas shall be irrigated at a rate which keeps surface runoff to a minimum. The irrigation rate shall be adjusted to the needs of plant types, seasons and weather conditions.
4. **Maintenance of Irrigation System.** The Contractor shall keep controller and valve boxes (if any) clear of soil and debris and shall maintain the irrigation system at no additional cost to City, including replacement, repair, adjustment, raising or lowering, straightening and any other operation required for the continued proper operation of the system from the "cold" side of the water meter throughout the Revegetation/Restoration Area. The Contractor shall also be responsible for maintaining the painted surfaces of irrigation and lighting controller cabinets as well as the corresponding automatic irrigation battery numbers on the lids of the automatic control valve boxes (if any). The Contractor shall be responsible for light bulb replacements in controller cabinets as necessary.
 - a) Repair or replacement includes: sprinkler system laterals (piping), sprinkler mains (pressure lines), vacuum breakers, sprinkler control valves, sprinkler controllers, sprinkler heads, sprinkler caps, sprinkler head risers, valve covers, boxes and lids (including

electrical pull boxes and lids), valve sleeves and lids, quick coupler valves and hose bibs. Any replacement shall conform to the type and kind of existing system. Any deviation shall be approved in writing by City.

- b) The Contractor shall repair irrigation systems which are damaged or altered in any way, including by acts of God, vandalism, vehicular damage, or theft.

5. **Operation of Automatic Irrigation Controllers.** Where the operation of automatic irrigation controllers is required as part of this LTRMC, the Contractor shall:

- a) Not duplicate any coded City key furnished by City for access and operation of the controller;
- b) Surrender all keys furnished by City, promptly at the end of the term of this LTRMC, or at any time deemed necessary by City to prevent serious loss to City;
- c) protect the security of City's property by keeping controller cabinet and building doors locked at all times; and
- d) refrain from using premises behind locked doors for storage of materials, supplies, or tools except as approved by City.

B. Pruning Shrubs and Ground Cover Plants. The Contractor shall prune all shrubs and ground cover plants growing in the Revegetation Area as required to:

- 1. Maintain plant growth viability and health, and to encourage deep rooting, in accordance with instructions from the Project Biologist.
- 2. Prevent encroachment of passage ways, walks, streets, or view of signs; and
- 3. Prevent encroachment in any manner deemed objectionable by the City.

The Contractor shall remove dead or damaged limbs with sharp pruning tools, with no stubs remaining. The Contractor shall seal any pruning cut which exceeds 2 inches in diameter with an approved pruning paint when required by the City. The Contractor shall perform pruning to permit plants to grow naturally in accordance with their normal growth characteristics except where box hedging is required by the City. The Contractor shall not shear, hedge, or severely prune plants, unless authorized by the City. The Contractor shall not use growth regulators.

C. Tree Maintenance. The Contractor shall maintain all trees and container plants in the revegetation area in accordance with instructions from the Project Biologist. The Contractor shall perform pruning in accordance with instructions from the Project Biologist, when necessary. The Contractor shall not top trees.

- 1. **Potential Hazards.** The Contractor shall notify the City within 24 hours of any tree that shows signs of root heaving or leaning, or is in any manner a potential safety hazard. The Contractor shall immediately reestablish trees

and shrubs that are uprooted due to storms, if possible. If trees or shrubs cannot be reestablished, Contractor shall remove them immediately (including roots) and fill the holes until replacement planting is complete.

2. **Replacement.** The Contractor shall completely remove and replace trees lost due to Contractor's faulty maintenance or negligence, as determined by the City. The Contractor shall replace trees in kind and size as determined by the City. If there is a difference in value between the tree lost and the replacement tree, the City will deduct the difference from payment to be made under this LTMMA. The City shall determine the value of the tree lost using the latest International Society of Arboriculture (I.S.A.) guidelines for value determination.
3. **Staking.** The Contractor shall securely stake any newly planted trees and other trees needing support with two "lodge pole" type stakes placed on opposite sides of the tree outside the root ball and secured to the tree with at least two flexible rubber tree ties. The Contractor shall regularly inspect tree ties and stakes and reposition them as necessary to ensure against girdling and abrasion.

D. Fertilization. The Contractor shall fertilize the Revegetation Area as necessary in accordance with instructions from the Project Biologist. Contractor shall submit to City Material Safety Data Sheets and a schedule of application showing the site, date, and approximate time of fertilizer application (Fertilizer Schedule). The Fertilization Schedule, regardless of its intensity, timing, or the number of sites covered daily or weekly, shall not excuse Contractor from performing any other Work regularly required under this LTMMA. All fertilization shall first be approved by the Project Biologist.

1. The Contractor shall notify the City at least 48 hours before beginning any fertilization. Fertilizer shall be delivered to the site only in the original unopened containers bearing the manufacturer's guaranteed analysis. Damaged packages shall not be accepted. The Contractor shall furnish to the City with duplicate signed, legible copies of all certificates and invoices for all fertilizer to be used for this LTMMA. The invoices shall state the grade, amount and quantity received. Both the copy to be retained by the City and the Contractor's copy shall be signed by the City, on site, before any fertilizer may be used.
2. Fertilizers, if necessary, shall be applied at the direction of the Project Biologist and according to manufacturer's product specifications.
3. If deemed necessary by the City to achieve required results, the Contractor shall apply other materials as directed by the City, including:
 - a) iron chelate;
 - b) soil sulfur;
 - c) gypsum; or
 - d) surfactant enzymes such as Sarvon or Naiad.

4. The Contractor shall adequately irrigate the fertilized area(s) immediately following the application of fertilizers and/or amendments to force fertilizer material to rest directly on the soil surface. Drip irrigated areas shall be adequately hand watered using quick coupler valves and hoses to dissolve fertilizer.

E. Weed Removal. The Contractor shall completely remove weeds from the Revegetation Area, including all turf grass areas, shrub and ground cover areas, planters, tree wells, and cracks in paved areas, including sidewalks, parking lot, gutters and curbs, as shown on the Work Schedule. For the purposes of this Section, "Weed" means any undesirable or misplaced plant. The Contractor shall control Weeds by manual, mechanical, or chemical methods. The City or Project Biologist may restrict the use of chemical weed control in certain areas.

Weed removal in areas with native habitat shall be in accordance with **Section 802 of the Whitebook.**

F. Disease and Pest Control. The Contractor shall regularly inspect the Revegetation Area for the presence of disease and insect or rodent infestation. The Contractor shall notify the City within 4 Calendar Days if disease or insect or rodent infestation is discovered. In its notice to the City, the Contractor shall identify the disease, insect, or rodent and specify the control measures to be taken. Upon approval of the City, the Contractor shall implement the approved control measures, exercising extreme caution in the application of all sprays, dusts, or other materials utilized. The Contractor shall continue the approved control measures until the disease, insect, or rodent is controlled to the satisfaction of the City.

1. All individuals who supervise the mixing and application of herbicides, pesticides, and rodenticides on behalf of the Contractor shall possess valid Qualified Applicators Certificate for Category B issued to them by the State Department of Food and Agriculture.

2. The Contractor shall utilize all safeguards necessary during disease, insect or rodent control operations to ensure safety of the public and the employees of the Contractor, in accordance with current standard practices accepted by the State of California Department of Food and Agriculture. If the Contractor is unable to control the pest or disease, a pest control company will be hired and the cost shall be deducted from Contractor's monthly payment.

G. Plant Replacement. Except as provided in **Section H** below, the Contractor shall notify the City within 4 Calendar Days of the loss of plant material due to any cause.

1. The Contractor shall, at no cost to the City, replace any tree, shrub, ground cover, or other plant which is damaged or lost as a result of Contractor's faulty maintenance or negligence. The size and species of replacement plant materials shall be as directed by the City.

2. If so directed by the City, the Contractor shall replace any plant damaged or lost that is not a result of the Contractor's faulty maintenance or negligence. The size and species of replacement plant materials shall be as directed by City. The City will pay for materials and labor outside of warranty.
 3. The City may determine that certain plants should be replaced in order to ensure maximum ecological health and overall aesthetic appearance of planting in the Revegetation Area. When the City determines such replacement should occur, Contractor shall replace the plants as directed by the City. The City will pay for materials and labor outside of warranty.
- H. Damage Reports.** The Contractor shall notify the City within 24 hours of any damage to the Work Area caused by accident, vandalism, or theft.
- I. Litter.** The Contractor shall promptly dispose of all trash and debris at an appropriate City disposal site. The Contractor shall pay any and all fees associated with the disposal of debris or trash accumulated under the terms of this LTMMA. The Contractor understands that disposal of refuse at City landfills is subject to a fee and that the Refuse Disposal Division can be contacted at (619) 573-1418 for fee information.
1. **Contractor Generated Litter.** The Contractor shall promptly remove all debris generated by the Contractor's pruning, trimming, weeding, edging and other Work required by this LTMMA. Immediately after working in streets, park walks, gutters, driveways, and paved areas, the Contractor shall clean them in accordance with all applicable laws.
 2. **Third Party Generated Litter.** Upon discovery, the Contractor shall remove all litter, including bottles, glass, cans, paper, cardboard, fecal matter, leaves, branches, metallic items, and other debris, from the Work site.
- J. Monitoring.** The Project Biologist will oversee all maintenance operations and conduct qualitative and quantitative biological monitoring of the Revegetation Area according to the schedule and methods described in the Revegetation Plan. The Project Biologist will be responsible for preparing and submitting monitoring reports according to the schedule and instructions in the Revegetation Plan. The Project Biologist shall meet all requirements specified in **Section 802 of the Whitebook**.
- K. Final Site Cleanup.** Prior to completion of the LTMMA, all temporary irrigation materials, BMP's, and signs shall be removed from the site and properly disposed of.

EXHIBIT B

INSERT A COPY OF THE ENGINEER'S FIELD NOTIFICATION WHICH ACCEPTS THE PLANT ESTABLISHMENT PERIOD (PEP) AND ESTABLISHES THE COMMENCEMENT DATE OF THE MONITORING PROGRAM, SEE THE 2015 WHITEBOOK, SECTION 802

EXHIBIT C
LICENSE DATA SHEET

State Contractor License Classification and Number: _____

Name of License Holder: _____

Expiration Date: _____

City of San Diego Business License Number: _____

Expiration Date: _____

PERFORMANCE BOND, LABOR AND MATERIALMEN'S BOND

FAITHFUL PERFORMANCE BOND AND LABOR AND MATERIALMEN'S BOND:

OHL USA, INC. DBA Group OHL North America, a corporation, as principal, and Liberty Mutual Insurance Company, Berkshire Hathaway Specialty Insurance Company, United States Fire Insurance Company, and Everest Reinsurance Company, a corporation authorized to do business in the State of California, as Surety, hereby obligate themselves, their successors and assigns, jointly and severally, to The City of San Diego a municipal corporation in the sum of Ninety Five Million, Two Hundred Forty Three Thousand, Six Hundred Forty Five Dollars and Twelve Cents (\$95,243,645.12) for the faithful performance of the annexed contract, and in the sum of Ninety Five Million, Two Hundred Forty Three Thousand, Six Hundred Forty Five Dollars and Twelve Cents (\$95,243,645.12) 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.

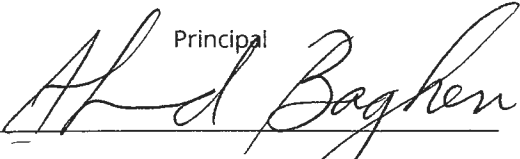
The Surety shall not utilize the Principal in completing the improvements and work specified in the Agreement in the event the City terminates the Principal for default.

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

Dated February 10, 2021

Approved as to Form

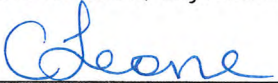
OHL USA, INC. DBA Group OHL North America

Principal
By 

Ahmad Bagheri, Executive V.P.

Printed Name of Person Signing for Principal

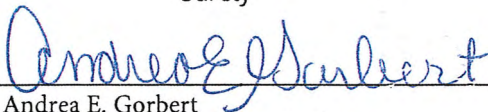
Mara W. Elliott, City Attorney

By 

Deputy City Attorney


Liberty Mutual Insurance Company
Berkshire Hathaway Specialty Insurance Company
United States Fire Insurance Company
Everest Reinsurance Company

Surety

By 
Andrea E. Gorbert

Attorney-in-fact

Approved:

By 

Mayor or Designee

Liberty Mutual Insurance (Lead Surety)
790 The City Drive S., Suite 200

Local Address of Surety

Orange, CA 92868

Local Address (City, State) of Surety

(714) 634-3311 / (800) 763-9268

Local Telephone No. of Surety

Premium \$ 888,980.00

015212451 (Liberty), 47-SUR-300018-01-0106 (BHST),
Bond No. 6131018772 (USF), ES00006728 (Everest)

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

CIVIL CODE § 1189

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

State of California)
County of ORANGE)

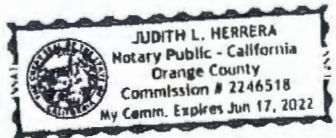
On FEBRUARY 12, 2021 before me, JUDITH L. HERRERA, NOTARY PUBLIC
Date Here Insert Name and Title of the Officer

personally appeared AHMAD BAGHERI
Name(s) of Signer(s)

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

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

WITNESS my hand and official seal.



Signature [Handwritten Signature]
Signature of Notary Public

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: PERFORMANCE BOND Document Date: FEBRUARY 10, 2021

Number of Pages: 2 Signer(s) Other Than Named Above:

Capacity(ies) Claimed by Signer(s)

Signer's Name: AHMAD BAGHERI

- Corporate Officer - Title(s):
Partner - Limited General
Individual Attorney in Fact
Trustee Guardian or Conservator
Other:

Signer Is Representing:

Signer's Name:

- Corporate Officer - Title(s):
Partner - Limited General
Individual Attorney in Fact
Trustee Guardian or Conservator
Other:

Signer Is Representing:

NEW YORK ALL-PURPOSE ACKNOWLEDGEMENT

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 New York)
County of Nassau)
On February 10, 2021 before me, Paraskevi Dalosis, Notary Public
Date Here Insert Name and Title of the Officer
personally appeared Andrea E. Gorbert
Name(s) of Signer(s)

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

Paraskevi Dalosis
Notary Public - State of New York
NO. 01DA6411206
Qualified in Suffolk County
My Commission Expires November 9, 2024

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

WITNESS my hand and official seal.

Signature [Handwritten Signature]
Signature of Notary Public

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document:
Document Date: Number of Pages:
Signer(s) Other Than Named Above:

Capacity(ies) Claimed by Signer(s)

Signer's Name:
[] Corporate Officer - Title(s):
[] Partner - [] Limited [] General
[] Individual [] Attorney in Fact
[] Trustee [] Guardian or Conservator
[] Other:
Signer Is Representing:
Signer's Name:
[] Corporate Officer - Title(s):
[] Partner - [] Limited [] General
[] Individual [] Attorney in Fact
[] Trustee [] Guardian or Conservator
[] Other:
Signer Is Representing:



This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: 8204466 - 985164

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Andrea E. Gorbert, Kevin T. Walsh, Jr., Michael Marino

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

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 9th day of November, 2020.



Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

By: David M. Carey

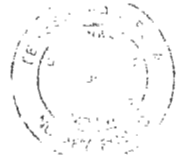
David M. Carey, Assistant Secretary

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

State of PENNSYLVANIA ss
County of MONTGOMERY

On this 9th day of November, 2020 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: Teresa Pastella

Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII - Execution of Contracts: Section 5. Surety Bonds and Undertakings.

Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 10th day of February, 2021.



By: Renee C. Llewellyn

Renee C. Llewellyn, Assistant Secretary

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



LIBERTY MUTUAL INSURANCE COMPANY
FINANCIAL STATEMENT — DECEMBER 31, 2019

Assets		Liabilities	
Cash and Bank Deposits	\$778,754,989	Unearned Premiums	\$8,007,146,482
*Bonds — U.S Government	2,780,808,610	Reserve for Claims and Claims Expense	21,532,853,787
*Other Bonds	12,645,608,792	Funds Held Under Reinsurance Treaties	507,868,920
*Stocks	16,385,435,431	Reserve for Dividends to Policyholders	1,143,826
Real Estate	235,608,378	Additional Statutory Reserve	125,722,000
Agents' Balances or Uncollected Premiums	6,217,983,641	Reserve for Commissions, Taxes and	
Accrued Interest and Rents	102,273,390	Other Liabilities	4,117,460,075
Other Admitted Assets	11,957,106,292	Total	\$34,292,195,090
Total Admitted Assets	<u>\$51,103,579,523</u>	Special Surplus Funds	\$32,768,443
		Capital Stock	10,000,075
		Paid in Surplus	10,044,978,933
		Unassigned Surplus	6,723,636,983
		Surplus to Policyholders	16,811,384,434
		Total Liabilities and Surplus	<u>\$51,103,579,524</u>



* Bonds are stated at amortized or investment value; Stocks at Association Market Values.
The foregoing financial information is taken from Liberty Mutual Insurance Company's financial statement filed with the state of Massachusetts Department of Insurance.

I, TIM MIKOLAJEWSKI, Assistant Secretary of Liberty Mutual Insurance Company, do hereby certify that the foregoing is a true, and correct statement of the Assets and Liabilities of said Corporation, as of December 31, 2019, to the best of my knowledge and belief.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Corporation at Seattle, Washington, this 27th day of March, 2020.

TAMIKOLAJEWSKI

Assistant Secretary



Power Of Attorney

BERKSHIRE HATHAWAY SPECIALTY INSURANCE COMPANY
NATIONAL INDEMNITY COMPANY / NATIONAL LIABILITY & FIRE INSURANCE COMPANY

Know all men by these presents, that BERKSHIRE HATHAWAY SPECIALTY INSURANCE COMPANY, a corporation existing under and by virtue of the laws of the State of Nebraska and having an office at One Lincoln Street, 23rd Floor, Boston, Massachusetts 02111, NATIONAL INDEMNITY COMPANY, a corporation existing under and by virtue of the laws of the State of Nebraska and having an office at 3024 Harney Street, Omaha, Nebraska 68131 and NATIONAL LIABILITY & FIRE INSURANCE COMPANY, a corporation existing under and by virtue of the laws of the State of Connecticut and having an office at 100 First Stamford Place, Stamford, Connecticut 06902 (hereinafter collectively the "Companies"), pursuant to and by the authority granted as set forth herein, do hereby name, constitute and appoint: Andrea E. Gorbert, 390 North Broadway, of the city of Jericho, State of New York, their true and lawful attorney(s)-in-fact to make, execute, seal, acknowledge, and deliver, for and on their behalf as surety and as their act and deed, any and all undertakings, bonds, or other such writings obligatory in the nature thereof, in pursuance of these presents, the execution of which shall be as binding upon the Companies as if it has been duly signed and executed by their regularly elected officers in their own proper persons. This authority for the Attorney-in-Fact shall be limited to the execution of the attached bond(s) or other such writings obligatory in the nature thereof.

In witness whereof, this Power of Attorney has been subscribed by an authorized officer of the Companies, and the corporate seals of the Companies have been affixed hereto this date of December 20, 2018. This Power of Attorney is made and executed pursuant to and by authority of the Bylaws, Resolutions of the Board of Directors, and other Authorizations of BERKSHIRE HATHAWAY SPECIALTY INSURANCE COMPANY, NATIONAL INDEMNITY COMPANY and NATIONAL LIABILITY & FIRE INSURANCE COMPANY, which are in full force and effect, each reading as appears on the back page of this Power of Attorney, respectively. The following signature by an authorized officer of the Company may be a facsimile, which shall be deemed the equivalent of and constitute the written signature of such officer of the Company for all purposes regarding this Power of Attorney, including satisfaction of any signature requirements on any and all undertakings, bonds, or other such writings obligatory in the nature thereof, to which this Power of Attorney applies.

BERKSHIRE HATHAWAY SPECIALTY INSURANCE COMPANY,

NATIONAL INDEMNITY COMPANY, NATIONAL LIABILITY & FIRE INSURANCE COMPANY,

[Handwritten signature of David Fields]

[Handwritten signature of David Fields]

By: David Fields, Executive Vice President

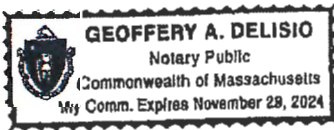
By: David Fields, Vice President



NOTARY

State of Massachusetts, County of Suffolk, ss: On this 20th day of December, 2018, before me appeared David Fields, Executive Vice President of BERKSHIRE HATHAWAY SPECIALTY INSURANCE COMPANY and Vice President of NATIONAL INDEMNITY COMPANY and NATIONAL LIABILITY & FIRE INSURANCE COMPANY, who being duly sworn, says that his capacity is as designated above for such Companies; that he knows the corporate seals of the Companies; that the seals affixed to the foregoing instrument are such corporate seals; that they were affixed by order of the board of directors or other governing body of said Companies pursuant to its Bylaws, Resolutions and other Authorizations, and that he signed said instrument in that capacity of said Companies.

[Notary Seal]



[Handwritten signature of Geoffrey A. Delisio]
Notary Public

I, Ralph Tortorella, the undersigned, Officer of BERKSHIRE HATHAWAY SPECIALTY INSURANCE COMPANY, NATIONAL INDEMNITY COMPANY and NATIONAL LIABILITY & FIRE INSURANCE COMPANY, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies which is in full force and effect and has not been revoked. IN TESTIMONY WHEREOF, see hereunto affixed the seals of said Companies this February 10, 2021.



[Handwritten signature of Ralph Tortorella]
Officer

To verify the authenticity of this Power of Attorney, please contact us at 855-453-9675, via email at claims@bhspci.com, via fax to (617) 507-8259, or via mail. Boston, MA 02111 | (770) 625-2516 or by email at Jennifer.Porter@bhspci.com. THIS POWER OF ATTORNEY IS VOID IF ALTERED. To notify us of a claim please contact us on our 24-hour toll free number at (855) 453-9675, via email at claims@bhspci.com, via fax to (617) 507-8259, or via mail.

BERKSHIRE HATHAWAY SPECIALTY INSURANCE COMPANY (BYLAWS)

ARTICLE V.

CORPORATE ACTIONS

....

EXECUTION OF DOCUMENTS:

....

Section 6.(b) The President, any Vice President or the Secretary, shall have the power and authority:

- (1) To appoint Attorneys-in-fact, and to authorize them to execute on behalf of the Company bonds and other undertakings, and
- (2) To remove at any time any such Attorney-in-fact and revoke the authority given him.

NATIONAL INDEMNITY COMPANY (BY-LAWS)

Section 4. Officers, Agents, and Employees:

A. The officers shall be a President, one or more Vice Presidents, a Secretary, one or more Assistant Secretaries, a Treasurer, and one or more Assistant Treasurers none of whom shall be required to be shareholders or Directors and each of whom shall be elected annually by the Board of Directors at each annual meeting to serve a term of office of one year or until a successor has been elected and qualified, may serve successive terms of office, may be removed from office at any time for or without cause by a vote of a majority of the Board of Directors, and shall have such powers and rights and be charged with such duties and obligations as usually are vested in and pertain to such office or as may be directed from time to time by the Board of Directors; and the Board of Directors or the officers may from time to time appoint, discharge, engage, or remove such agents and employees as may be appropriate, convenient, or necessary to the affairs and business of the corporation.

NATIONAL INDEMNITY COMPANY (BOARD RESOLUTION ADOPTED AUGUST 6, 2014)

RESOLVED, That the President, any Vice President or the Secretary, shall have the power and authority to (1) appoint Attorneys-in-fact, and to authorize them to execute on behalf of this Company bonds and other undertakings and (2) remove at any time any such Attorney-in-fact and revoke the authority given.

NATIONAL LIABILITY & FIRE INSURANCE COMPANY (BY-LAWS)

ARTICLE IV

Officers

Section 1. Officers, Agents and Employees:

A. The officers shall be a president, one or more vice presidents, one or more assistant vice presidents, a secretary, one or more assistant secretaries, a treasurer, and one or more assistant treasurers, none of whom shall be required to be shareholders or directors, and each of whom shall be elected annually by the board of directors at each annual meeting to serve a term of office of one year or until a successor has been elected and qualified, may serve successive terms of office, may be removed from office at any time for or without cause by a vote of a majority of the board of directors. The president and secretary shall be different individuals. Election or appointment of an officer or agent shall not create contract rights. The officers of the Corporation shall have such powers and rights and be charged with such duties and obligations as usually are vested in and pertain to such office or as may be directed from time to time by the board of directors; and the board of directors or the officers may from time to time appoint, discharge, engage, or remove such agents and employees as may be appropriate, convenient, or necessary to the affairs and business of the Corporation.

NATIONAL LIABILITY & FIRE INSURANCE COMPANY (BOARD RESOLUTION ADOPTED AUGUST 6, 2014)

RESOLVED, That the President, any Vice President or the Secretary, shall have the power and authority to (1) appoint Attorneys-in-fact, and to authorize them to execute on behalf of this Company bonds and other undertakings and (2) remove at any time any such Attorney-in-fact and revoke the authority given.

BERKSHIRE HATHAWAY SPECIALTY INSURANCE COMPANY

1314 Douglas Street, Suite 1400, Omaha, Nebraska 68102-1944

ADMITTED ASSETS*

	<u>12/31/2019</u>	<u>12/31/2018</u>	<u>12/31/2017</u>
Total invested assets	\$ 5,172,183,338	\$ 4,313,185,189	\$ 4,516,104,907
Premium & agent balances (n	368,086,012	301,849,144	297,141,264
All other assets	127,524,677	140,930,400	137,220,394
Admitted Assets	<u>\$ 5,667,794,027</u>	<u>\$ 4,755,964,739</u>	<u>\$ 4,950,466,565</u>

LIABILITIES & SURPLUS*

	<u>12/31/2019</u>	<u>12/31/2018</u>	<u>12/31/2017</u>
Loss & loss exp. unpaid	\$ 634,745,558	\$ 463,103,223	\$ 327,823,391
Unearned premiums	314,117,549	241,835,588	209,113,536
All other liabilities	744,738,458	570,028,148	660,892,150
Total Liabilities	<u>1,693,601,565</u>	<u>1,275,566,959</u>	<u>1,200,829,077</u>
Total Policyholders' Surplus	<u>3,974,192,463</u>	<u>3,480,397,780</u>	<u>3,749,637,488</u>
Total Liabilities & Surplus	<u>\$ 5,667,794,028</u>	<u>\$ 4,755,964,739</u>	<u>\$ 4,950,466,565</u>

* Assets, liabilities and surplus are presented on a Statutory Accounting Basis as promulgated by the NAIC and/or the laws of the company's domiciliary state.

**POWER OF ATTORNEY
UNITED STATES FIRE INSURANCE COMPANY
PRINCIPAL OFFICE - MORRISTOWN, NEW JERSEY**

05617

KNOW ALL MEN BY THESE PRESENTS: That United States Fire Insurance Company, a corporation duly organized and existing under the laws of the state of Delaware, has made, constituted and appointed, and does hereby make, constitute and appoint:

Michael Marino, Andrea F. Gorbert, James A. Merrill

each, its true and lawful Attorney(s)-In-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver: Any and all bonds and undertakings of surety and other documents that the ordinary course of surety business may require, and to bind United States Fire Insurance Company thereby as fully and to the same extent as if such bonds or undertakings had been duly executed and acknowledged by the regularly elected officers of United States Fire Insurance Company at its principal office, in amounts or penalties not exceeding: **Fifty Million Dollars (\$50,000,000).**

This Power of Attorney limits the act of those named therein to the bonds and undertakings specifically named therein, and they have no authority to bind United States Fire Insurance Company except in the manner and to the extent therein stated.

This Power of Attorney revokes all previous Powers of Attorney issued on behalf of the Attorneys-In-Fact named above and expires on January 31, 2021.

This Power of Attorney is granted pursuant to Article IV of the By-Laws of United States Fire Insurance Company as now in full force and effect, and consistent with Article III thereof, which Articles provide, in pertinent part:

Article IV, Execution of Instruments - Except as the Board of Directors may authorize by resolution, the Chairman of the Board, President, any Vice-President, any Assistant Vice President, the Secretary, or any Assistant Secretary shall have power on behalf of the Corporation:

- (a) to execute, affix the corporate seal manually or by facsimile to, acknowledge, verify and deliver any contracts, obligations, instruments and documents whatsoever in connection with its business including, without limiting the foregoing, any bonds, guarantees, undertakings, recognizances, powers of attorney or revocations of any powers of attorney, stipulations, policies of insurance, deeds, leases, mortgages, releases, satisfactions and agency agreements;
- (b) to appoint, in writing, one or more persons for any or all of the purposes mentioned in the preceding paragraph (a), including affixing the seal of the Corporation.

Article III, Officers, Section 3.11, Facsimile Signatures. The signature of any officer authorized by the Corporation to sign any bonds, guarantees, undertakings, recognizances, stipulations, powers of attorney or revocations of any powers of attorney and policies of insurance issued by the Corporation may be printed, facsimile, lithographed or otherwise produced. In addition, if and as authorized by the Board of Directors, dividend warrants or checks, or other numerous instruments similar to one another in form, may be signed by the facsimile signature or signatures, lithographed or otherwise produced, of such officer or officers of the Corporation as from time to time may be authorized to sign such instruments on behalf of the Corporation. The Corporation may continue to use for the purposes herein stated the facsimile signature of any person or persons who shall have been such officer or officers of the Corporation, notwithstanding the fact that he may have ceased to be such at the time when such instruments shall be issued.

IN WITNESS WHEREOF, United States Fire Insurance Company has caused these presents to be signed and attested by its appropriate officer and its corporate seal hereunto affixed this 10th day of March, 2016.

UNITED STATES FIRE INSURANCE COMPANY



Anthony R. Slimowicz

Anthony R. Slimowicz, Executive Vice President

State of New Jersey }
County of Morris }

On this 10th day of March 2016, before me, a Notary public of the State of New Jersey, came the above named officer of United States Fire Insurance Company, to me personally known to be the individual and officer described herein, and acknowledged that he executed the foregoing instrument and affixed the seal of United States Fire Insurance Company thereto by the authority of his office.

SONIA SCALA
NOTARY PUBLIC OF NEW JERSEY
MY COMMISSION EXPIRES 3/25/2024
No. 2163686

Sonia Scala

Sonia Scala (Notary Public)

I, the undersigned officer of United States Fire Insurance Company, a Delaware corporation, do hereby certify that the original Power of Attorney of which the foregoing is a full, true and correct copy is still in force and effect and has not been revoked.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal of United States Fire Insurance Company on the 10th day of February , 2021

UNITED STATES FIRE INSURANCE COMPANY



Patricia J.

UNITED STATES FIRE INSURANCE COMPANY
1209 ORANGE STREET, WILMINGTON, DELAWARE 19801

STATEMENT OF ASSETS, LIABILITIES, SURPLUS AND OTHER FUNDS

AT DECEMBER 31, 2019

ASSETS	
Bonds (Amortized Value).....	1,378,263,278
Preferred Stocks (Market Value).....	2,500,000
Common Stocks (Market Value).....	1,285,247,627
Mortgage Loans (Market Value).....	4,575,000
Cash, Cash Equivalents, and Short Term Investments.....	669,919,204
Derivatives.....	7,268,292
Other Invested Assets.....	263,067,722
Investment Income Due and Accrued.....	12,069,093
Premiums and Considerations.....	307,501,153
Amounts Recoverable from Reinsurers.....	41,921,190
Funds Held by or Deposited with Reinsured Companies.....	18,044,399
Current Income Taxes Recoverable.....	3,123,199
Net Deferred Tax Asset.....	170,616,521
Electronic Data Processing Equipment.....	2,530,714
Receivables from Parent, Subsidiaries and Affiliates.....	189,801,729
Other Assets.....	88,380,069
TOTAL ASSETS.....	\$ 4,444,829,190

LIABILITIES, SURPLUS & OTHER FUNDS

Losses (Reported Losses Net of Reinsurance Ceded and Incurred But Not Reported Losses).....	1,608,110,571
Reinsurance Payable on Paid Losses and Loss Adjustment Expenses.....	99,388,149
Loss Adjustment Expenses.....	382,336,986
Commissions Payable, Contingent Commissions and Other Similar Charges.....	6,450,761
Other Expenses (Excluding Taxes, Licenses and Fees).....	58,812,009
Taxes, Licenses and Fees (Excluding Federal Income Taxes).....	24,123,914
Unearned Premiums.....	622,338,241
Advance Premium.....	10,107,620
Ceded Reinsurance Premiums Payable.....	40,131,540
Funds Held by Company under Reinsurance Treaties.....	30,307,801
Amounts Withheld by Company for Account of Others.....	87,984,822
Provision for Reinsurance.....	1,244,113
Payable to Parent, Subsidiaries and Affiliates.....	4,801,800
Other Liabilities.....	62,614,441
TOTAL LIABILITIES.....	\$ 3,038,752,768
Common Capital Stock.....	14,943,000
Gross Paid In and Contributed Surplus.....	1,374,911,940
Unassigned Funds (Surplus).....	16,221,482
Surplus as Regards Policyholders.....	1,406,076,422
TOTAL LIABILITIES, SURPLUS & OTHER FUNDS.....	\$ 4,444,829,190

I, Carmine Scaglione, Senior Vice President and Controller of UNITED STATES FIRE INSURANCE COMPANY, certify that the foregoing is a fair statement of Assets, Liabilities, Surplus and Other Funds of this Company, at the close of business, December 31, 2019, as reflected by its books and records and as reported in its statement on file with the Insurance Department of the State of Delaware.



IN TESTIMONY WHEREOF, I have set my hand and affixed the seal of the Company, this 3rd day of March, 2020.
UNITED STATES FIRE INSURANCE COMPANY

EVEREST

POWER OF ATTORNEY
EVEREST REINSURANCE COMPANY
DELAWARE

KNOW ALL PERSONS BY THESE PRESENTS: That Everest Reinsurance Company, a corporation of the State of Delaware ("Company") having its principal office located at 477 Martinsville Road, Liberty Corner, New Jersey 07938, do hereby nominate, constitute, and appoint:

Michael Marino, James A. Merrill, Andrea Elizabeth Gorbett

its true and lawful Attorney(s)-in-fact to make, execute, attest, seal and deliver for and on its behalf, as surty, and as its act and deed, where required, any and all bonds and undertakings in the nature thereof, for the penal sum of no one of which is in any event to exceed UNLIMITED, reserving for itself the full power of substitution and revocation.

Such bonds and undertakings, when duly executed by the aforesaid Attorney(s)-in-fact shall be binding upon the Company as fully and to the same extent as if such bonds and undertakings were signed by the President and Secretary of the Company and sealed with its corporate seal.

This Power of Attorney is granted and is signed by facsimile under and by the authority of the following Resolutions adopted by the Board of Directors of Company ("Board") on the 28th day of July 2016:

RESOLVED, that the President, any Executive Vice President, and any Senior Vice President and Anthony Romano are hereby appointed by the Board as authorized to make, execute, seal and deliver for and on behalf of the Company, any and all bonds, undertakings, contracts or obligations in surety or co-surety with others and that the Secretary or any Assistant Secretary of the Company be and that each of them hereby is authorized to attest to the execution of any such bonds, undertakings, contracts or obligations in surety or co-surety and attach thereto the corporate seal of the Company.

RESOLVED, FURTHER, that the President, any Executive Vice President, and any Senior Vice President and Anthony Romano are hereby authorized to execute powers of attorney qualifying the attorney named in the given power of attorney to execute, on behalf of the Company, bonds and undertakings in surety or co-surety with others, and that the Secretary or any Assistant Secretary of the Company be, and that each of them is hereby authorized to attest the execution of any such power of attorney, and to attach thereto the corporate seal of the Company.

RESOLVED, FURTHER, that the signature of such officers named in the preceding resolutions and the corporate seal of the Company may be affixed to such powers 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 thereafter valid and binding upon the Company with respect to any bond, undertaking, contract or obligation in surety or co-surety with others to which it is attached.

IN WITNESS WHEREOF, Everest Reinsurance Company has caused their corporate seals to be affixed hereto, and these presents to be signed by their duly authorized officers this 28th day of July 2016.



Everest Reinsurance Company

Nicole Chase

Attest: Nicole Chase, Assistant Secretary

Anthony Romano

By: Anthony Romano, Vice President

On this 28th day of July 2016, before me personally came Anthony Romano, known to me, who, being duly sworn, did execute the above instrument; that he knows the seal of said Company; that the seal affixed to the aforesaid instrument is such corporate seal and was affixed thereto; and that he executed said instrument by like order.

LINDA ROBINS
Notary Public, State of New York
No 01R06239736
Qualified in Queens County
Term Expires April 25, 2023

Linda Robins

Linda Robins, Notary Public

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Company, at the Liberty Corner, this 10th day of February 2021.

EVEREST REINSURANCE COMPANY
STATEMENTS OF FINANCIAL CONDITION

	December 31,	
	2019	2018
	Unaudited	Audited
ASSETS		
Bonds	\$ 6,733,064,269	\$ 5,803,284,602
Stocks	579,431,010	524,520,092
Short-term investments	9,977,402	997,767
Other invested assets	2,024,154,026	2,138,471,309
Cash and cash equivalents	278,923,034	333,472,347
Accounts receivable-premium balances	1,762,474,335	1,817,305,389
Reinsurance recoverable	553,401,455	380,867,637
Other assets	577,418,297	820,251,843
Total Assets	\$ 12,518,843,828	\$ 11,819,170,986
LIABILITIES		
Loss and loss adjustment expense reserve	\$ 6,025,226,576	\$ 5,504,827,165
Unearned premium reserve	1,788,807,161	1,507,245,585
Ceded reinsurance premium payable (net of ceding commission)	322,866,050	318,111,587
Reserve for commissions, taxes and other liabilities	642,804,051	838,392,552
Total Liabilities	\$ 8,779,703,838	\$ 8,168,576,889
SURPLUS AND OTHER FUNDS		
Common capital stock	\$ 10,000,000	\$ 10,000,000
Contributed Surplus	2,464,960,596	2,462,668,168
Unassigned surplus	1,264,179,394	1,177,925,929
Total capital and surplus	\$ 3,739,139,990	\$ 3,650,594,097
Total Liabilities and Surplus	\$ 12,518,843,828	\$ 11,819,170,986

Bonds and stocks are valued on a basis promulgated by the National Association of Insurance Commissioners



Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form

This form is intended to capture the DBE¹ subcontractor's² description of work to be performed and the price of the work submitted to the prime contractor. A Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractor's bid or proposal package.

Form with fields: Subcontractor Name (Ayala Boring Inc.), Project Name (Morena Conveyance North), Bid / Proposal No. (K-21-1848-DBB-3), Assistance Agreement ID No., Point of Contact (Dean B. Ayala), Address (10150 Poplar Ave. Fontana, CA 92335), Telephone No. (909-350-8940), Email Address (dean@ayalaboring.com), Prime Contractor Name (OHL USA, INC. DBA GROUP OHL NORTH AMERICA), Issuing/Funding Entity (EPA/CWSRF).


Table with 3 columns: Contract Item Number, Description of Work Submitted from the Prime Contractor Involving Construction, Services, Equipment or Supplies, Price of Work Submitted to the Prime Contractor. Row 1: 43,44,45; Pipe Jacking - FI Tunneling; 10,880,840. Includes certification checkboxes at the bottom.

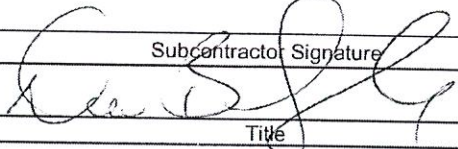
1 A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

2 Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

FORM 4500-3 (DBE Subcontractor Performance Form)

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

	Prime Contractor Signature	Print Name
		AHMAD BAGHERI
	Title	Date
	EXECUTIVE VICE-PRESIDENT	10/15/2020

	Subcontractor Signature	Print Name
		Dean B. Ayala
	Title	Date
	Corp. Secretary	10/15/2020

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

FORM 4500-3 (DBE Subcontractor Performance Form)

To verify most current certification status go to: <https://www.caleprocure.ca.gov>



Office of Small Business & DVBE Services

Certification ID: 1447

Legal Business Name:
AYALA BORING INC.

Doing Business As (DBA) Name 1:
AYALA BORING INC

Doing Business As (DBA) Name 2:

Address:
10150 POPLAR AVE
FONTANA
CA 92335-6395

Email Address:
kbrauer@ayalaboring.com

Business Web Page:
<http://www.ayalaboring.com>

Business Phone Number:
909/350-8940

Business Fax Number:
909/350-0936

Business Types:
Construction , Service

Certification Type	Status	From	To
SB	Approved	11/21/2018	11/30/2021

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Questions?

Email: OSDSHELP@DGS.CA.GOV

Call OSDS Main Number: 916-375-4940

707 3rd Street, 1-400, West Sacramento, CA 95605



Payco

**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form**

This form is intended to capture the DBE¹ subcontractor's² description of work to be performed and the price of the work submitted to the prime contractor. A Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractor's bid or proposal package.


Subcontractor Name Payco Specialties Inc		Project Name Morena Conveyance North	
Bid / Proposal No. K-21-1848-DBB-3	Assistance Agreement ID No. (if known)	Point of Contact Jeremy Griffin	
Address 120 N. Second Avenue Chula Vista CA 91910			
Telephone No. 619-422-9204		Email Address JEREMY@PAYCO.BIZ	
Prime Contractor Name OHC USA Inc dba Group North America		Issuing/Funding Entity EPA / CWSRF	

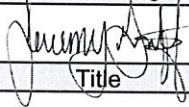
Contract Item Number	Description of Work Submitted from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor
52	Painted Traffic Striping and Markings and Painted Curb Markings	\$45,505.00
53	Thermoplastic Traffic Striping	\$84,007.20
70	Pedestrian Barricade	\$11,500.00
DBE Certified By: ___ DOT <input checked="" type="checkbox"/> SBA ___ Other: _____		Meets/exceeds EPA certification standards? ___ YES ___ NO <input checked="" type="checkbox"/> Unknown

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Prime Contractor Signature	Print Name
	Ahmad Bagheri
Title	Date
Executive Vice President	10-15-2020

Subcontractor Signature	Print Name
	Jeremy Griffin
Title	Date
Estimator	10/15/2020

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

FORM 4500-3 (DBE Subcontractor Performance Form)

To verify most current certification status go to: <https://www.caleprocure.ca.gov>



Office of Small Business & DVBE Services

Certification ID: 18502

Legal Business Name:
PAYNECO SPECIALTIES, INC.

Doing Business As (DBA) Name 1:
PAYCO SPECIALTIES

Doing Business As (DBA) Name 2:

Address:
120 N 2ND AVENUE
CHULA VISTA
CA 91910

Email Address:
rebecca@payco.biz

Business Web Page:
www.payco.biz

Business Phone Number:
619/422-9204

Business Fax Number:
619/427-1620

Business Types:
Construction , Service

Certification Type	Status	From	To
SB(Micro)	Approved	04/01/2019	03/31/2021

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Questions?

Email: OSDSHELP@DGS.CA.GOV
Call OSDS Main Number: 916-375-4940
707 3rd Street, 1-400, West Sacramento, CA 95605



**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form**

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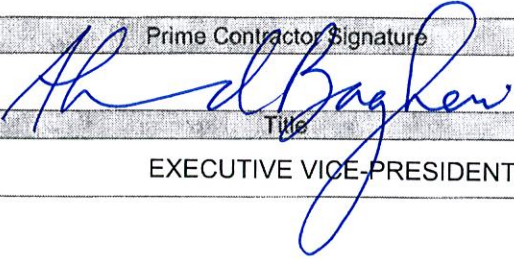
Subcontractor Name Frank and Son Paving Inc		Project Name Morena Conveyance North	
Bid / Proposal No. K211848 DBB3	Assistance Agreement ID No. (if known)	Point of Contact	
Address 1019 3rd Avenue, Chula Vista CA 91911			
Telephone No. 619 420-9020		Email Address franksonpaving@yahoo.com	
Prime Contractor Name OHL USA, INC. DBA GROUP OHL NORTH AMERICA		Issuing/Funding Entity EPACWSRF	

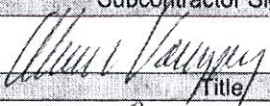
Contract Item Number	Description of Work Submitted from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor
22 26 28	Asphalt Paving	846,200
DBE Certified By: <input type="checkbox"/> DOT <input checked="" type="checkbox"/> SBA <input type="checkbox"/> Other: SLBE		Meets/exceeds EPA certification standards? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unknown

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Prime Contractor Signature	Print Name
	AHMAD BAGHERI
Title	Date
EXECUTIVE VICE-PRESIDENT	10-15-2020

Subcontractor Signature	Print Name
	Alicia Vasquez
Title	Date
President	OCTOBER 15, 2020

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

FORM 4500-3 (DBE Subcontractor Performance Form)

To verify most current certification status go to: <https://www.caleprocure.ca.gov>



Office of Small Business & DVBE Services

Certification ID: 17690

Legal Business Name:

FRANK AND SON PAVING INC

Doing Business As (DBA) Name 1:

FRANK & SON PAVING INC

Doing Business As (DBA) Name 2:

Address:

P O BOX 698

BONITA

CA 91908

Email Address:

franknsonpaving@sbcglobal.net

Business Web Page:

Business Phone Number:

619/422-8322

Business Fax Number:

619/420-9020

Business Types:

Construction

Certification Type	Status	From	To
SB(Micro)	Approved	07/03/2019	07/31/2021

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Call OSDS Main Number: 916-375-4940

707 3rd Street, 1-400, West Sacramento, CA 95605



**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form**

FM
General
Engr

This form is intended to capture the DBE¹ subcontractor's² description of work to be performed and the price of the work submitted to the prime contractor. A Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractor's bid or proposal package.

Subcontractor Name FM General Engineering, Inc		Project Name Morena Conveyance North	
Bid / Proposal No. 24496	Assistance Agreement ID No. (if known)	Point of Contact Elsa Rey	
Address 24496 ST. Thomas Ave. Morena Valley, CA 92551			
Telephone No. 714-414-9636		Email Address erey@fmgeinc.com	
Prime Contractor Name OHL USA, Inc dba Group OHL North America		Issuing/Funding Entity EPA/CWSRF	

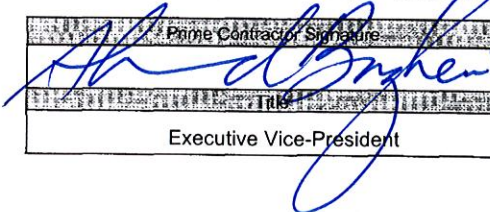
Contract Item Number	Description of Work Submitted from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor
39 40	<u>Welding</u> (steel pipe)	\$500,000
DBE Certified By: <input type="checkbox"/> DOT <input type="checkbox"/> SBA		Meets/exceeds EPA certification standards?
<input checked="" type="checkbox"/> Other: <u>Minority Certification (NMSDC)</u>		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unknown


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² Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

FORM 4500-3 (DBE Subcontractor Performance Form)

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	Print Name:
	Ahmad Bagheri
Title:	Date:
Executive Vice-President	10-15-2020

	Print Name:
	Elisa Rey Perez
Title:	Date:
President	10/12/20

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

FORM 4500-3 (DBE Subcontractor Performance Form)



THIS CERTIFIES THAT

FM General Engineering, Inc.

* Nationally certified by the: **SOUTHERN CALIFORNIA MINORITY SUPPLIER DEVELOPMENT COUNCIL**

*NAICS Code(s): 237110; 238190; 238120; 221310

* Description of their product/services as defined by the North American Industry Classification System (NAICS)

09/01/2020

Issued Date

SC05541

Certificate Number

Adrienne C. Trimble
Adrienne Trimble

Virginia Gomez

Expiration Date

Virginia Gomez, President

By using your password (NMSDC issued only), authorized users may log into NMSDC Central to view the entire profile: <http://nmsdc.org>

Certify, Develop, Connect, Advocate.

* MBEs certified by an Affiliate of the National Minority Supplier Development Council, Inc.®



**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form**

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Subcontractor Name <i>Dick Miller INC</i>		Project Name <i>MORENA CONVEYANCE NORTH</i>	
Bid / Proposal No. <i>K-21-1848-DBB-3</i>	Assistance Agreement ID No. (if known)	Point of Contact	
Address <i>930 BROADWALK SAN MARCOS, CA 92078</i>			
Telephone No. <i>760-471-6842</i>		Email Address <i>J.MARTINEZ@DMIIUSA.NET</i>	
Prime Contractor Name <i>OHL USA, INC. DBA GROUP OHL NORTH AMERICA</i>		Issuing/Funding Entity <i>EPA/CWSRF</i>	

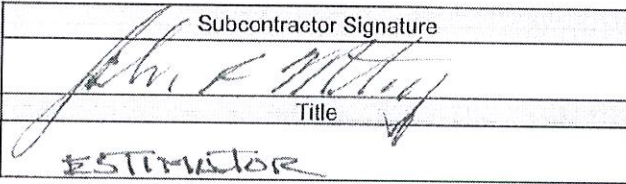
Contract Item Number	Description of Work Submitted from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor
<i>29-38</i>	<i>MINOR CONCRETE ↳ curb, gutter, sidewalk, curb ramp</i>	<i>258,734⁰⁰</i>
DBE Certified By: <input checked="" type="checkbox"/> DOT <input checked="" type="checkbox"/> SBA ___ Other: _____		Meets/exceeds EPA certification standards? ___ YES ___ NO ___ Unknown

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Prime Contractor Signature	Print Name
	AHMAD BAGHERI
Title	Date
EXECUTIVE VICE-PRESIDENT	10-15-2020

Subcontractor Signature	Print Name
	JOHN MARTINEZ
Title	Date
ESTIMATOR	10/15/20

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

FORM 4500-3 (DBE Subcontractor Performance Form)

Printed on: 10/15/2020 12:20:11 PM

To verify most current certification status go to: <https://www.caleprocure.ca.gov>



Office of Small Business & DVBE Services

Certification ID: 53651

Legal Business Name:
DICK MILLER INC

Doing Business As (DBA) Name 1:
DICK MILLER INC

Doing Business As (DBA) Name 2:

Address:
930 BOARDWALK STE H
SAN MARCOS
CA 92078

Email Address:
gbullock@DMIUSA.net

Business Web Page:

Business Phone Number:
760/471-6842

Business Fax Number:
760/471-6178

Business Types:
Construction , Service

Certification Type	Status	From	To
DVBE	Approved	07/25/2019	07/31/2021
SB-PW	Approved	07/25/2019	07/31/2021

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Questions?
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Call OSDS Main Number: 916-375-4940
707 3rd Street, 1-400, West Sacramento, CA 95605



Disadvantaged Business Enterprise (DBE) Program DBE Subcontractor Performance Form

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Subcontractor Name Atlas Integrated Systems, Inc.		Project Name Morena Conveyance North	
Bid / Proposal No. K-21-1848-DBB-3	Assistance Agreement ID No. (if known)	Point of Contact Nick Mocerì	
Address 6789 Quail Hill Pkwy Irvine , Ca. 92603			
Telephone No. 949-509-9605		Email Address nick@atlasintegratedsystems.com	
Prime Contractor Name OHL USA, Inc dba Group NORTH AMERICA		Issuing/Funding Entity EPA / CWSRF	


Contract Item Number	Description of Work Submitted from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor
59	Install Fiber optic cable	446,85
DBE Certified By: <input type="checkbox"/> DOT <input checked="" type="checkbox"/> SBA <input checked="" type="checkbox"/> Other: <u>nextconnect</u>		Meets/exceeds EPA certification standards? <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Unknown


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FORM 4500-3 (DBE Subcontractor Performance Form)

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	Prime Contractor Signature	Print Name
		Ahmad Bagheri
	Title	Date
	Executive Vice-President	10-15-2020

	Subcontractor Signature	Print Name
Digitally signed by Nick Mocerì III Date: 2020.10.14 18:21:15 -07'00'		Nick Mocerì III
	Title	Date
President		10/12/20

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

FORM 4500-3 (DBE Subcontractor Performance Form)



Certified Small Business Enterprise

Vendor Account Number: 176082

Mr. Nickolas Mocerri III
 Atlas Integrated Systems, Inc.
 85 Highland View
 Irvine, CA 92603

Thank you for submitting your Vendor Application seeking Small Business Enterprise recognition with the Coalition of Southern California Public Agencies. Per our evaluation of the information you provided in your application and the North American Industry Classification System codes you identified, your status as a Small Business Enterprise (SBE) has been approved. This certification is recognized by the following organizations:

- Metropolitan Water District of Southern California*
- Port of Long Beach*
- San Diego County Water Authority*
- Los Angeles Unified School District*
- Los Angeles Community College District*

Metropolitan is pleased to issue this SBE Certificate subject to the terms and conditions identified below:

<p>NAICS code(s) for which SBE status is recognized:</p> <p>237130 - Power and Communication Line and Related Structures Construction 238990 - All Other Specialty Trade Contractors 515111 - Radio Networks 541330 - Engineering Services 541420 - Industrial Design Services 541490 - Other Specialized Design Services 541511 - Custom Computer Programming Services</p> <p>SBE Certificate Effective Date: 07/01/19 SBE Certificate Expiration Date: 07/01/22</p>
--

You have passed your company's recent random audit.

Work Performed by your firm that falls within the above-mentioned NAICS code(s) will be counted as SBE participation for work performed on contracts procured by the above agencies.

The agencies reserve the right to withdraw this certification if at any time it is determined that certification was knowingly obtained by false, misleading or incorrect information and reserve the right to audit all statements. If any firm attempts to falsify or misrepresent information to obtain certification, the firm may be disqualified from participation in any contracts for a period of up to five years.

SBE Certification is valid for a period of three (3) years. To maintain SBE status, firms must update their existing SBE Vendor Application on or before the expiration date mentioned above. All information is subject to verification.

If there are any changes in your status that may impact your certification, you are required to update your account information online. A copy of your information can be viewed by logging into your Vendor Profile, and visiting the Small Business Certification tab.

Sincerely,
 John J. Arena
 Metropolitan Water District of Southern California
 Business Outreach Program Manager

700 N. Alameda Street, Los Angeles, California 90012 Mailing Address: Box 54153, Los Angeles, CA 90054-0153
 Telephone (213) 217-7444

WESTERN



Disadvantaged Business Enterprise (DBE) Program DBE Subcontractor Performance Form

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Subcontractor Name Western Gardens Landscaping, Inc.		Project Name Morena Conveyance North	
Bid / Proposal No. K-21-1848-DBB-3	Assistance Agreement ID No. (if known)	Point of Contact Greg Vasilieff	
Address 4616 Pannonia Rd., Carlsbad, CA 92008			
Telephone No. 760-720-1459		Email Address greg@westerngardens.net	
Prime Contractor Name OHL USA, Inc. dba Group OHL North America		Issuing/Funding Entity EPA/CWSRF	

Contract Item Number	Description of Work Submitted from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor
44	25-Month Revetation Maintenance and Monitoring Program	\$105,640 F7
45	Hydro seed +	\$ 119,390
61	Revegetation	


DBE Certified By: DOT SBA
 Other: SBE - Department of Gneeral Services

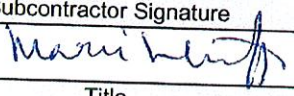
Meets/exceeds EPA certification standards?
 YES NO Unknown

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FORM 4500-3 (DBE Subcontractor Performance Form)

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Prime Contractor Signature 	Print Name
Title	Ahmad Bagheri
Executive Vice-President	Date
	10-15-2020

Subcontractor Signature 	Print Name
Title	Marie Vasilieff
CFO	Date
	10/14/20

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

FORM 4500-3 (DBE Subcontractor Performance Form)

To verify most current certification status go to: <https://www.caleprocure.ca.gov>



Office of Small Business & DVBE Services

Certification ID: 1660380

Legal Business Name:

WESTERN GARDENS LANDSCAPING, INC.

Doing Business As (DBA) Name 1:

WESTERN GARDENS LANDSCAPING, INC.

Doing Business As (DBA) Name 2:

Address:

4616 PANNONIA RD.

CARLSBAD

CA 92008

Email Address:

greg@westerngardens.net

Business Web Page:

Business Phone Number:

760/720-1459

Business Fax Number:

760/720-7211

Business Types:

Construction , Service

Certification Type	Status	From	To
SB(Micro)	Approved	04/24/2019	04/30/2021

Stay informed! KEEP YOUR CERTIFICATION PROFILE UPDATED!

-LOG IN at [CaleProcure.CA.GOV](https://www.caleprocure.ca.gov)

Questions?

Email: OSDSHELP@DGS.CA.GOV

Call OSDS Main Number: 916-375-4940

707 3rd Street, 1-400, West Sacramento, CA 95605



**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form**

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE¹ subcontractor's² and the estimated dollar amount of each subcontract. A Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name OHL USA, Inc. dba Group OHL North America		Project Name Morena Conveyance North	
Bid / Proposal No. K-21-1848-DBB-3	Assistance Agreement ID No. (if known) unknown	Point of Contact Ahmad Bagheri / Craig Huss	
Address 1920 Main Street, Suite 310 Irvine California 92614			
Telephone No. 949/242-4432		Email Address Tony.Bagheri@ohlna.com Craig.Huss@ohlna.com	
Issuing/Funding Entity CASRF / EPA			

I have identified potential DBE certified subcontractors. YES NO
If yes, please complete the table below. If no, please explain:

Subcontractor Name/ Company Name	Company Address / Phone / Email	Estimated Dollar Amount	Currently DBE Certified?
Western Gardens Landscaping	4666 Pannonia Rd Carlsbad CA 92008 760-720-1459 greg@westerngardens.net	\$119,390	✓
Atlas Integrated Systems	6789 Quail Hill Pkwy CA 92603 949-509-9605 nick@atlasintegratedsystems.com	\$446,815	✓

--Continue on back if needed--

¹ A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

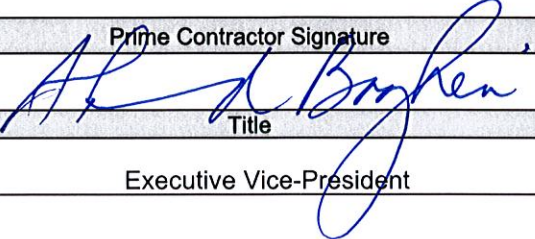
² Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

FORM 4500-4 (DBE Subcontractor Utilization Form)

**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form
Form 4500-4**

Subcontractor Name/ Company Name	Company Address / Phone / Email	Estimated Dollar Amount	Currently DBE Certified?
Dick Miller, Inc.	930 Boardwalk San Marcos CA 92078 jmartinez@dmusa.net 760-471-6842	\$ 258,734	✓
JD Barlow Const, LLC	31919 Haleblian Rd Menifee CA 92584 951-7463133 jdbarlow51@gmail.com		✓ FT
FM General Eng'g. Inc.	24426 St. Thomas Ave. Moreno Valley CA 92551 ereuf@fmga-inc.com 714-441-9636	\$ 500,000	✓
Frank & Son Paving	1019 3rd Avenue Chula Vista CA 91911 619-420-9020 FranksonPaving@vchco.com	\$ 846,260	✓
Ayala Boring Inc.	1050 Poplar Ave. Fontana CA 92335 909-352-8940	10,880,840	✓

I certify under penalty of perjury that the foregoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
	Ahmad Bagheri
Title	Date
Executive Vice-President	10-15-2020

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

FORM 4500-4 (DBE Subcontractor Utilization Form)

BID BOND

**See Instructions to Bidders, Bidder Guarantee of Good Faith
(Bid Security)**

KNOW ALL MEN BY THESE PRESENTS,

That OHL USA, Inc. DBA Group OHL North America as Principal, and Liberty Mutual Insurance Company as Surety, are held and firmly bound unto The City of San Diego hereinafter called "OWNER," in the sum of **10% OF THE TOTAL BID AMOUNT** for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

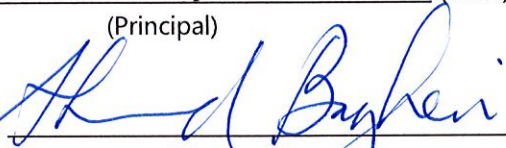
WHEREAS, said Principal has submitted a Bid to said OWNER to perform the WORK required under the bidding schedule(s) of the OWNER's Contract Documents entitled

Morena Conveyance North; Bid No. K-21-1848-DBB-3

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.

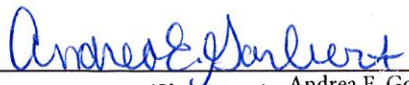
SIGNED AND SEALED, this 25th day of September, 2020

OHL USA, Inc. DBA Group OHL North America (SEAL)
(Principal)

By: 
(Signature)
Ahmad Bagheri, Executive Vice-President

(SEAL AND NOTARIAL ACKNOWLEDGEMENT OF SURETY)

Liberty Mutual Insurance Company (SEAL)
(Surety)

By: 
(Signature) Andrea E. Gorbert,
Attorney-In-Fact

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

CIVIL CODE § 1189

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

State of California)
County of Orange)

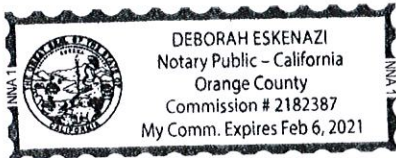
On Oct 14, 2020 before me, Deborah Eskenazi, Notary Public
Date Here Insert Name and Title of the Officer

personally appeared Ahmad Bagheri
Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/hers/their authorized capacity(ies), and that by his/hers/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 [Handwritten Signature]
Signature of Notary Public

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: City of SD - Moreno Conveyance North Bid Bond Document Date: 9/25/2020
Number of Pages: 1 Signer(s) Other Than Named Above:

Capacity(ies) Claimed by Signer(s)

Signer's Name: Ahmad Bagheri
Corporate Officer -- Title(s): Exec V.P.
Partner -- Limited General
Individual Attorney in Fact
Trustee Guardian or Conservator
Other:
Signer Is Representing:

Signer's Name:
Corporate Officer -- Title(s):
Partner -- Limited General
Individual Attorney in Fact
Trustee Guardian or Conservator
Other:
Signer Is Representing:

NEW YORK ALL-PURPOSE ACKNOWLEDGEMENT

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 New York)
County of Nassau)
On September 25, 2020 before me, Sharline R. Rogers, Notary Public
Date Here Insert Name and Title of the Officer
personally appeared Andrea E. Gorbert
Name(s) of Signer(s)

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

SHARLINE R. ROGERS
NOTARY PUBLIC, State of New York
No. 01RO6204400
Qualified in Queens County
Commission Expires April 20, 2021

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

WITNESS my hand and official seal.

Signature: *Sharline R. Rogers*
Signature of Notary Public

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: _____
Document Date: _____ Number of Pages: _____
Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____ Signer's Name: _____
 Corporate Officer — Title(s): _____ Corporate Officer — Title(s): _____
 Partner — Limited General Partner — Limited General
 Individual Attorney in Fact Individual Attorney in Fact
 Trustee Guardian or Conservator Trustee Guardian or Conservator
 Other: _____ Other: _____
Signer Is Representing: _____ Signer Is Representing: _____



This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: 8201166-985164

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Theresa J. Foley; Andrea E. Gorbart; Michael Marino; Kevin T. Walsh, Jr.

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

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 29th day of April, 2019.



Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

By: David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 29th day of April, 2019 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII - Execution of Contracts: Section 5. Surety Bonds and Undertakings.

Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 25th day of September, 2020.



By: Renee C. Llewellyn, Assistant Secretary

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

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



LIBERTY MUTUAL INSURANCE COMPANY
 FINANCIAL STATEMENT — DECEMBER 31, 2019

Assets		Liabilities	
Cash and Bank Deposits	\$778,754,989	Unearned Premiums	\$8,007,146,482
*Bonds — U.S Government	2,780,808,610	Reserve for Claims and Claims Expense.....	21,532,853,787
*Other Bonds.....	12,645,608,792	Funds Held Under Reinsurance Treaties.....	507,868,920
*Stocks	16,385,435,431	Reserve for Dividends to Policyholders.....	1,143,826
Real Estate	235,608,378	Additional Statutory Reserve	125,722,000
Agents' Balances or Uncollected Premiums.....	6,217,983,641	Reserve for Commissions, Taxes and	
Accrued Interest and Rents	102,273,390	Other Liabilities	4,117,460,075
Other Admitted Assets.....	11,957,106,292	Total	\$34,292,195,090
		Special Surplus Funds	\$32,768,443
		Capital Stock	10,000,075
		Paid in Surplus	10,044,978,933
		Unassigned Surplus	6,723,636,983
Total Admitted Assets.....	<u>\$51,103,579,523</u>	Surplus to Policyholders	16,811,384,434
		Total Liabilities and Surplus	<u>\$51,103,579,524</u>



* Bonds are stated at amortized or investment value; Stocks at Association Market Values.
 The foregoing financial information is taken from Liberty Mutual Insurance Company's financial statement filed with the state of Massachusetts Department of Insurance.

I, TIM MIKOLAJEWSKI, Assistant Secretary of Liberty Mutual Insurance Company, do hereby certify that the foregoing is a true, and correct statement of the Assets and Liabilities of said Corporation, as of December 31, 2019, to the best of my knowledge and belief.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Corporation at Seattle, Washington, this 27th day of March, 2020.

T. Mikolajewski

Assistant Secretary



OHL USA

1920 Main Street, Suite 310 – Irvine, CA 92614 | Phone: (949) 242-4432 | www.ohlusa.com

POWER OF ATTORNEY

OHL USA, Inc.

SECRETARY CERTIFICATE

The undersigned, Cesar F. Pereira, duly appointed Secretary of the Board of Directors of OHL USA, Inc. ("OHL") hereby certifies for and on behalf of OHL that:

- 1. I am the duly appointed Secretary of the Board of Directors of OHL and as such I have knowledge of the contents of the corporate books of OHL.
- 2. On May 29, 2013, the OHL Board of Directors granted Ahmad Bagheri certain Power of Attorney which have not been amended or revoked and are in full force and effect as of the date hereof. The below is a true and complete excerpt of one of the resolutions adopted by OHL's Board granting Mr. Bagheri, amongst others, the following power:

"BE IT RESOLVED, that the Corporation hereby appoints Ahmad Bagheri as the Corporation's true and lawful attorney-in-fact, with full power and authority as hereinafter described on behalf of and in the name, place and stead of the undersigned to:

Draft, negotiate, execute, deliver and file such documents, certificates or other instruments with public or private entities as he may determine to be necessary or desirable in order for the Corporation to submit bids and participate in procurement processes for any construction contract performed within the State of California."

IN WITNESS WHEREOF, the undersigned has duly executed this Certificate as of December 20, 2017.



Cesar F. Pereira
OHL USA, Inc.'s Secretary

On this day, personally appeared before me Cesar Pereira, to me known to be the person(s) described in and who performed the within and preceding document, and accepted that he signed the same as his voluntary act and action, for the uses and purposes mentioned within.

Witness my hand and official seal hereto affixed

This 20th day of December, 2017.

ABIGAIL REICH
Notary Public - State of New York
No. 02RE6367428
Qualified in New York County
My Commission Expires 11/20/2021

Notary Public in and for the State of New York.

My commission expires 11/20/21.

UNANIMOUS WRITTEN CONSENT

OF

THE BOARD OF DIRECTORS

OF

OHL USA, INC.

(a Delaware corporation)

The undersigned, being all of the directors (the "Board of Directors") of OHL USA, Inc., a Delaware corporation (the "Corporation"), pursuant to the provisions of the laws of the State of Delaware, do hereby waive any formal notice of a meeting and unanimously consent that when the undersigned have executed this consent or a counterpart hereof, the resolutions set forth below shall be deemed to have been adopted to the same extent, and to have the same force and effect, as if adopted at a formal meeting of the Board of Directors, duly called and held for the purpose of acting upon proposals to adopt such resolutions.

WHEREAS, Ahmad Bagheri has been hired by the Corporation and shall be based in the State of California; and

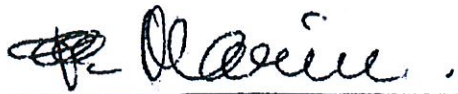
WHEREAS, the Board of Directors believes it is advisable and in the best interest of the Corporation to grant certain limited powers of attorney to Mr. Bagheri;

NOW, THEREFORE, BE IT RESOLVED, that the Corporation hereby appoints Ahmad Bagheri as the Corporation's true and lawful attorney-in-fact, with full power and authority as hereinafter described on behalf of and in the name, place and stead of the undersigned to:

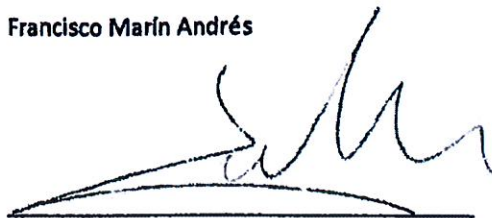
1. Draft, negotiate, execute, deliver and file such documents, certificates or other instruments with public or private entities as he may determine to be necessary or desirable in order for the Corporation to submit bids and participate in procurement processes for any construction contract performed within the State of California.
2. Draft, negotiate and execute any purchase orders, subcontracts or contracts related to the performance of construction activities within the State of California with private entities.

[Signature page follows]

IN WITNESS WHEREOF, the undersigned Board of Directors have executed this Unanimous
Written consent this 29th day of May, 2013.



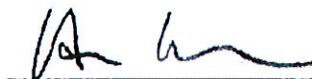
Francisco Marín Andrés



José M° del Cuyillo-Pemán



Enrique Weickert



Lauro Bravar

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
Reference Attachment for Information					

Contractor Name: OHL USA, Inc. dba Group OHL North America

Certified By Ahmad Bagheri Title Executive Vice-President

Name

 Signature

Date 10-15-2020

USE ADDITIONAL FORMS AS NECESSARY



OHL USA

1920 Main Street, Suite 310 – Irvine, CA 92614 | Phone: (949) 242-4432 | www.ohlusa.com

Contractor's Certification of Pending Action's ATTACHMENT INFORMATION

1. The Texas division of OHL USA, Inc. (the Bidder) received a notice of violations, dated September 15, 2014, from the Office of Federal Contract Compliance Programs (OFCCP) with respect to the following:

- OHL failed to establish and maintain a current list of black and female recruitment sources, provide written notification to these recruitment sources and to community organizations when it had opportunities available and maintain a record of the organizations' responses as required by 41 CFR 60-4.4(a)7.b.
- OHL failed to direct its recruitment efforts, both oral and written, to black and female recruitment sources, to schools with black and female students and community organizations serving its recruitment area and employment needs, as required by 41 CFR 60-4.3(a)7.i.
- OHL failed to disseminate its EEO policy externally to minority (specifically black) and female news media, as required by 41 CFR 60.4.3(a)7.h.

OHL then implemented the remedies suggested by the OFCCP to resolve the above violations and entered into a Conciliation Agreement. Pursuant to said agreement, OHL sent two different progress reports to the OFCCP and they were both deemed acceptable. Since OHL complied with the terms of the Conciliation Agreement, no sanction was ever imposed (please see OFCCP's letter on December 14, 2015.).

For further clarification, please see enclosed the Final Progress Report Letter sent by the Office of Federal Contract Compliance Programs on December 14, 2015.

2. Claimant: Samantha Bellows

Entity involved: Equal Employment Opportunity Commission (EEOC)

Nature: wrongful termination.

Outcome: EEOC was unable to conclude that the information obtained establishes that OHL USA violated any of the statutes. The EEOC issued Samantha Bellows a Notice of Right to Sue on October 26, 2016. She had 90 days to file suit in Texas. Time lapsed and the case was closed.

3. Claimant: Jose Rodriguez

Entity involved: Equal Employment Opportunity Commission (EEOC)

Nature: charge of discrimination.

Outcome: Mr. Rodriguez never completed it properly and the EEOC simply put us on notice that it was received however stated the charge was incomplete and there was no action required by OHL USA at the time. On 06/2016, EEOC issued a determination stating they were unable to conclude that the information obtained establishes any violations of the statutes. Mr. Rodriguez had 60 days to file suit in state court and 90 days in federal. He failed to do either, so the case was closed.



OHL USA

1920 Main Street, Suite 310 – Irvine, CA 92614 | Phone: (949) 242-4432 | www.ohlusa.com

4. Claimant: Daniel Willis

Entity involved: Texas Workforce Commission Civil Rights Division (TWCCRD)

Nature: charge of discrimination.

Outcome: In February 16, 2018 TWCCRD was unable to conclude that the information obtained during its investigations established any violation of the statutes. Mr. Willis had 60 days to file a civil action since said notice. This case is closed.

5. Entity Involved: California Department of Transportation (Caltrans), Office of business and economic opportunity (Compliance Branch)

Nature: In 01/2015 Caltrans selected OHL USA Inc's Contract Number 07-295504 within Los Angeles County, to complete a Contractor Compliance Equal Employment Opportunity (EEO) Review.

Outcome: After reviewing all the documents and information obtained during the review process, Caltrans confirmed that OHL USA was in compliance with the Federal Equal Employment Opportunity provisions of the contract in a letter sent on 09/2015.

6. Claimant: Justin Franks

Entity Involved: TEXAS WORKFORCE COMMISSION CIVIL RIGHTS DIVISION and EEOC

Nature: Charge of Discrimination

Outcome: Outcome pending

COMMITMENT TO COMPLY WITH SKILLED AND TRAINED WORKFORCE REQUIREMENTS

Bidder, on behalf of itself and its subcontractor(s) at every tier, hereby commits that a skilled and trained workforce will be used to perform all work on the Project that falls within an apprenticeship occupation in the building or construction trades in accordance with Chapter 2.9 (commencing with Section 2600) of Part 1 of Division 2 of the Public Contract Code. Pursuant to Public Contract Code section 2601, as of January 1, 2018:

“Skilled and trained workforce” means a workforce that meets all of the following conditions: All the workers performing work in an apprenticeable occupation in the building and construction trades are either skilled journeypersons or apprentices registered in an apprenticeship program approved by the chief.

For work performed on or after January 1, 2018, at least 40 percent of the skilled journeypersons employed to perform work on the contract or project by every contractor and each of its subcontractors at every tier are graduates of an apprenticeship program for the applicable occupation. This requirement shall not apply to work performed in the following occupations: acoustical installer, bricklayer, carpenter, cement mason, drywall installer or lather, marble mason, finisher, or setter, modular furniture or systems installer, operating engineer, pile driver, plasterer, roofer or waterproofer, stone mason, surveyor, teamster, terrazzo worker or finisher, and tile layer, setter, or finisher.

For work performed on or after January 1, 2019, at least 50 percent of the skilled journeypersons employed to perform work on the contract or project by every contractor and each of its subcontractors at every tier are graduates of an apprenticeship program for the applicable occupation. This requirement shall not apply to work performed in the following occupations: acoustical installer, bricklayer, carpenter, cement mason, drywall installer or lather, marble mason, finisher, or setter, modular furniture or systems installer, operating engineer, pile driver, plasterer, roofer or waterproofer, stone mason, surveyor, teamster, terrazzo worker or finisher, and tile layer, setter, or finisher.

For work performed on or after January 1, 2020, at least 60 percent of the skilled journeypersons employed to perform work on the contract or project by every contractor and each of its subcontractors at every tier are graduates of an apprenticeship program for the applicable occupation. This requirement shall not apply to work performed in the following occupations: acoustical installer, bricklayer, carpenter, cement mason, drywall installer or lather, marble mason, finisher, or setter, modular furniture or systems installer, operating engineer, pile driver, plasterer, roofer or waterproofer, stone mason, surveyor, teamster, terrazzo worker or finisher, and tile layer, setter, or finisher.

NOTE: The above commitment is required by California Public Utilities Code section 132354.7 and must be submitted by Bidder in order for the Bid to be responsive to the IFB.

Name of Bidder: OHL USA, Inc. DBA Group OHL North America

Name and Title of Bidder’s Authorized Representative: Ahmad Bagheri, Executive Vice-President

Signature of Bidder’s Representative:


(SIGN HERE)

Date: 10-15-2020

**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

MC

NAME	TITLE
Western G. Greg Vasilievff	President
Robert Vasilievff	VP
Marie Vasilievff	CEO

Western Gardens

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Nick Mocerri, III	

AHHS Integrated Systems

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Shannon Cresson	President

Drill Tech

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
David A. Donnelly	Asst Secretary

ATP

Contractor Name: OHL USA, Inc. DBA Group OHL North America

Certified By Ahmad Bagheri Title Executive Vice-President

Ahmad Bagheri
Name
Signature

Date 10-15-2020

USE ADDITIONAL FORMS AS NECESSARY

DEBARMENT AND SUSPENSION CERTIFICATION
SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS
TO BE COMPLETED BY BIDDER
FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE

Names of the Principal individual owner(s)

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of Names of the Principal Individual owner(s) for their subcontractor/supplier/manufacturers.

Please indicate if principal owner is serving in the capacity of **subcontractor, supplier, and/or manufacturer**:

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Michael C. High	President

HMS

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Glen Bullock	President

DMI

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Dawn Verotta	Pres CEO

JID Barlow

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
FM General	
Elisa Rey Perez	President

FM General

Contractor Name: OHL USA, Inc. DBA Group OHL North America

Certified By Ahmad Bagheri Title Executive Vice-President

Name

Reference Previous Page Date 10/15/2020

Signature

USE ADDITIONAL FORMS AS NECESSARY

**DEBARMENT AND SUSPENSION CERTIFICATION
 SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS
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Please indicate if principal owner is serving in the capacity of **subcontractor**, **supplier**, and/or **manufacturer**:

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Doug Ford	President
Tom Mucenski	Secretary
Nathan Bayler	Treasurer

Pavement Coatings

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Alicia Vasquez	President

Frank + Son

SUBCONTRACTOR SUPPLIER MANUFACTURER

20

NAME	TITLE
Ayala Boeing Ralph Ayala, Jr	President
Ralph Ayala, III	VP
Dean Ayala	Secretary

Ayala Boeing

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Rebecca Lawellgn	President

Payco

Contractor Name: OHL USA, Inc. DBA Group OHL North America

Certified By Ahmad Bagheri Title Executive Vice-President

Name

Reference Previous Page Date 10/15/2020

Signature

USE ADDITIONAL FORMS AS NECESSARY

**DEBARMENT AND SUSPENSION CERTIFICATION
 SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS
 TO BE COMPLETED BY BIDDER
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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
Shawn Arianna	President

*Geo
Actv.*

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

Contractor Name: OHL USA, Inc. DBA Group OHL North America

Certified By Ahmad Bagheri Title Executive Vice-President

Name

Reference Previous Page Date 10/15/2020

Signature

USE ADDITIONAL FORMS AS NECESSARY

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Use the SF-LLLA Continuation Sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a follow up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing there port in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, State and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.
(b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name, and Middle Initial (MI).
11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item4) to the lobbying entity (item10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.
12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.
13. Check the appropriate box(es). Check all boxes that apply. If other, specify nature.
14. Provide a specific and detailed description of the services that the lobbyist has performed, or will be expected to perform, and the date(s) of any services rendered. Include all preparatory and related activity, not just time spent in actual contact with Federal officials. Identify the Federal official(s) or employee(s) contacted or the officer(s), employee(s), or Member(s) of Congress that were contacted.
15. Check whether or not a SF-LLLA Continuation Sheet(s) is attached.
16. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB Control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing datasources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503.

DISCLOSURE OF LOBBYING ACTIVITIES Approved by OMB
 Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
 (See reverse for public burden disclosure)

0348-0046

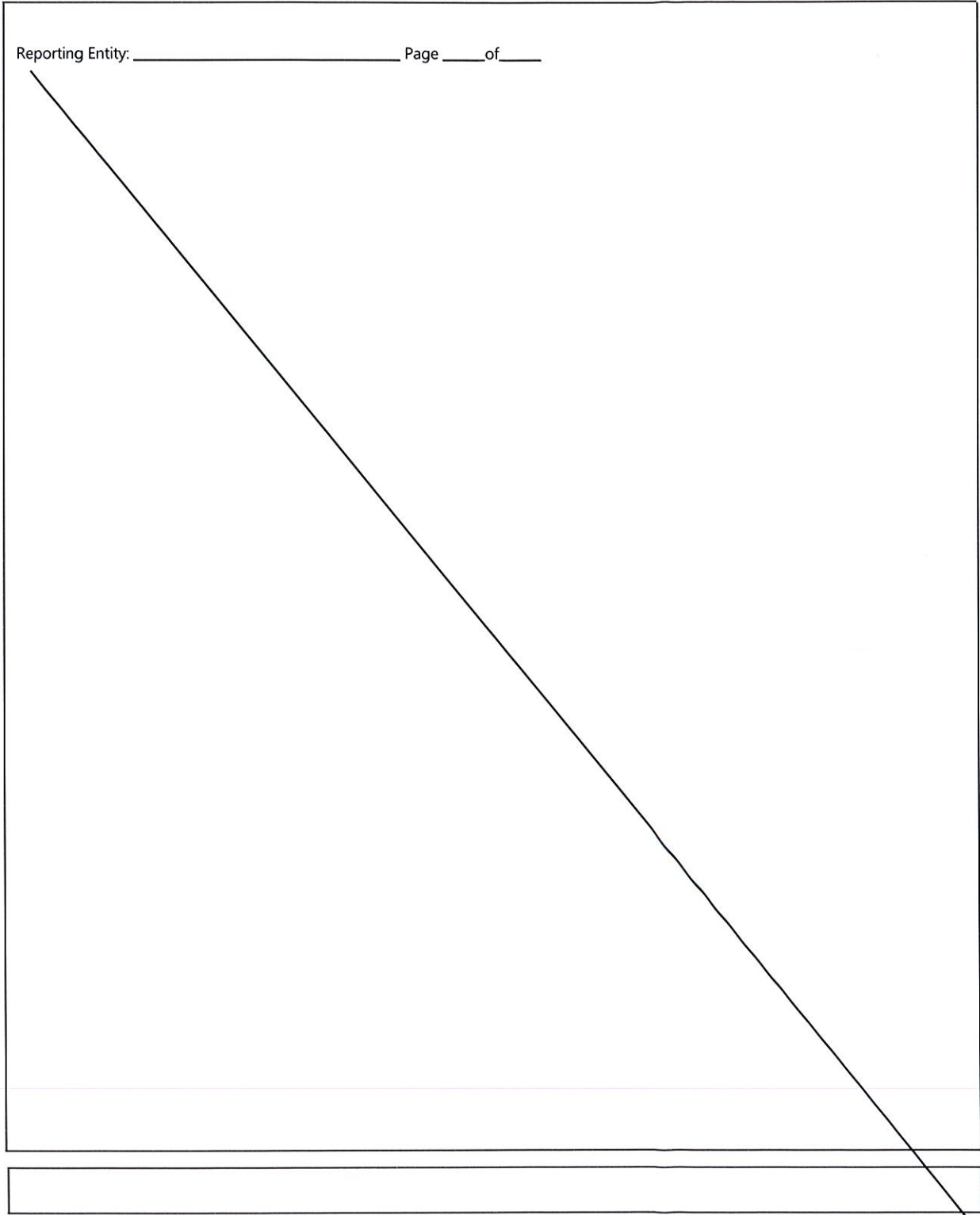
1. Type of Federal Action: <input type="checkbox"/> a. Contract a. Grant b. Cooperative agreement c. Loan d. Loan guarantee e. Loan insurance	2. Status of Federal Action: <input type="checkbox"/> a. bid/offer/application b. initial award c. post-award	3. Report Type: <input type="checkbox"/> a. initial finding b. material change For Material Change Only year____ quarter ____ date of last report____
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier _____, if known: Congressional District, if known:		5. If Reporting Entity in No. 4 is a Subawardee, Enter Name and Address of Prime: Congressional District, if known:
6. Federal Department/Agency:		7. Federal Program Name/Description: CFDA Number, if applicable: _____
8. Federal Action Number, if known:		9. Award Amount, if known: \$
10. a. Name and Address of Lobbying Entity (if individual, last name, first name, M) (attach Continuation Sheet(s) SF-LLL4, if necessary)		b. Individuals Performing Services (including address if different from No. 10a) (last name, first name, MI): (attach Continuation Sheet(s) SF-LLL4, if necessary)
11. Amount of Payment (check all that apply) \$ _____ <input type="checkbox"/> actual <input type="checkbox"/> planned		13. Type of Payment (check all that apply) <input type="checkbox"/> a. retainer <input type="checkbox"/> b. one-time fee <input type="checkbox"/> c. commission <input type="checkbox"/> d. contingent fee <input type="checkbox"/> e. deferral <input type="checkbox"/> f. other: specify: _____
12. Form of Payment (check all that apply) <input type="checkbox"/> a, cash <input type="checkbox"/> b. in-kind: specify: nature _____ Value _____		
14. Brief Description of Services Performed or to be Performed and Date(s) of Service, Including officer(s), employee(s), or Member(s), contacted, for Payment indicated in item 11: (attach Continuation Sheet(s) SF-LLLA, if necessary)		
15. Continuation Sheet(s) SF-LLLA attached: <input type="checkbox"/> Yes <input type="checkbox"/> No		
16.	Information requested through this for misauthorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: _____
Federal Use Only:		Authorized for Local Reproduction Standard Form LLL (Rev. 7-07)

DISCLOSURE OF LOBBYING ACTIVITIES Approved by

CONTINUATION SHEET

OMB0348-0046

Reporting Entity: _____ Page ____ of ____



Authorized for Local Reproduction
Standard Form - LLL-A

Mandatory Disclosure of Business Interests Form

BIDDER/PROPOSER INFORMATION

Legal Name		DBA	
OHL USA, Inc.		DBA Group OHL North America	
Street Address	City	State	Zip
1920 Main Street, Suite 310	Irvine	California	92614
Contact Person, Title		Phone	Fax
Ahmad Bagheri, Executive Vice-President		949/242-4432	949/231-1255

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.

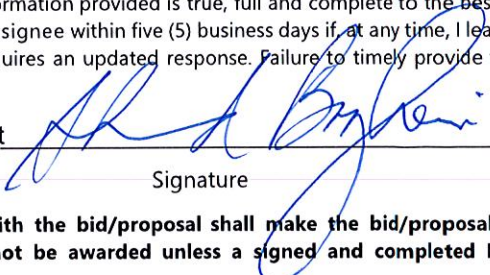
Name	Title/Position
Ahmad Bagheri	Executive Vice-President
City and State of Residence	Employer (if different than Bidder/Proposer)
Irvine, California	
Interest in the transaction	
Zero interest; Directly involved;	

Name	Title/Position
Craig Huss	Chief Estimator
City and State of Residence	Employer (if different than Bidder/Proposer)
Irvine, California	
Interest in the transaction	
Zero interest; Directly involved;	

*** 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.

Ahmad Bagheri, Executive Vice-President



10-15-2020

Print Name, Title

Signature

Date

Failure to sign and submit this form with the bid/proposal shall make the bid/proposal non-responsive. In the case of an informal solicitation, the contract will not be awarded unless a signed and completed Mandatory Disclosure of Business Interests Form is submitted.

DEBARMENT AND SUSPENSION CERTIFICATION

PRIME CONTRACTOR

FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE

EFFECT OF DEBARMENT OR SUSPENSION
To promote integrity in the City's contracting processes and to protect the public interest, the City shall only enter into contracts with responsible- bidders and contractors. In accordance with San Diego Municipal Code §22.0814 (a): <i>Bidders and contractors</i> who have been <i>debarred</i> or <i>suspended</i> are excluded from submitting bids, submitting responses to requests for proposal or qualifications, receiving <i>contract</i> awards, executing <i>contracts</i> , participating as a <i>subcontractor</i> , employee, agent or representative of another <i>person</i> contracting with the City.

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of Names of the Principal Individual owner(s).

The names of all persons interested in the foregoing proposal as Principals are as follows:

NAME	TITLE
Reference attachment for information	

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: OHL USA, Inc. DBA Group OHL North America

Certified By Ahmad Bagheri Title Executive Vice-President


 Name
 Signature

Date 10-15-2020

NOTE: Providing false information may result in criminal prosecution or administrative sanctions



OHL USA

1920 Main Street, Suite 310 – Irvine, CA 92614 | Phone: (949) 242-4432 | www.ohlusa.com

Debarment and Suspension Certification ATTACHMENT INFORMATION

Ashok R. Patel, CEO

Daniel Ruiz Andujar, COO

Martin Saitzyk, CFO

Manual Aguiar, Vice-President

Donald Hickey, Executive Vice-President

Ahmad Bagheri, Executive Vice-President

Cesar Pereira, Secretary

Megan Mahoney, Assistant Secretary

Bid Results

Bidder Details

Vendor Name OHL USA, Inc
Address 1920 Main Street, Suite 310
 Irvine, CA 92614
 United States
Respondee Ahmad Bagheri
Respondee Title Executive Vice President
Phone 949-242-4432 Ext.
Email tony.bagheri@ohlna.com
Vendor Type PQUAL,CADIR
License # 984140
CADIR 1000000612

Bid Detail

Bid Format Electronic
Submitted October 15, 2020 1:53:26 PM (Pacific)
Delivery Method
Bid Responsive
Bid Status Submitted
Confirmation # 230706
Ranking 0

Respondee Comment

Buyer Comment

Attachments

File Title	File Name	File Type
Mandatory Disclosure	Mandatory Disclosure.pdf	Mandatory Disclosure of Business Interests
certification of Pending Actions	Certification of Pending Actions.pdf	Contractors Certification of Pending Actions
Prime Debarment and Suspension Certification	Prime Debarment&Suspension Certification.pdf	Prime - Debarment and Suspension Certification
Subs - Debarment	DEBARMENT-SUBS.pdf	Subs - Debarment and Suspension Certification
Disclosure of Lobbying	Disclosure of Lobbying.pdf	Disclosure of Lobbying Activities
4500-3	4500-3.pdf	Form 4500-3: DBE Subcontractor Performance Form
4500-4	4500-4.pdf	Form 4500-4: DBE Subcontractor Utilization Form
Commitment to Comply	Commitment to Comply.pdf	Commitment to Comply With Skilled and Trained Workforce Certification
Bid Bond and POA	Bid Bond.pdf	Bid Bond

Line Items

Type	Item Code	UOM	Qty	Unit Price	Line Total	Comment
	Main Bid					

Bid Results

Type	Item Code	UOM	Qty	Unit Price	Line Total	Comment
1	Bonds (Payment and Performance)					
	524126	LS	1	\$900,000.00	\$900,000.00	
2	Potholing Existing Utilities Not Shown on Plans but Marked Out by USA (Depth < 5 FT)					
	237110	EA	150	\$1,550.00	\$232,500.00	
3	Potholing Existing Utilities Not Shown on Plans but Marked Out by USA (Depth > 5 FT)					
	237110	EA	50	\$2,650.00	\$132,500.00	
4	Permits (EOC - Type I)					
	236280	AL	1	\$165,000.00	\$165,000.00	
5	Suspension of Work - Resources					
	541690	DAY	5	\$15,000.00	\$75,000.00	
6	SWPPP Development					
	541330	LS	1	\$7,500.00	\$7,500.00	
7	SWPPP Implementation					
	237990	LS	1	\$370,000.00	\$370,000.00	
8	SWPPP Permit Fee (EOC -Type I)					
	541330	AL	1	\$2,000.00	\$2,000.00	
9	Dewatering Permit and Discharge Fees (EOC - Type I)					
	237110	AL	1	\$10,000.00	\$10,000.00	
10	Dewatering Non-Hazardous Contaminated Water					
	237110	LS	1	\$50,000.00	\$50,000.00	
11	Video Recording of Existing Conditions					
	238990	LS	1	\$17,500.00	\$17,500.00	
12	Monitoring of Contaminated Soil					
	541690	HR	250	\$200.00	\$50,000.00	
13	Testing, Sampling, Site Storage and Handling of Petroleum Contaminated Soil					
	238990	TON	550	\$94.00	\$51,700.00	
14	Loading, Transportation, and Disposal of Petroleum Contaminated Soil					
	541820	TON	550	\$115.00	\$63,250.00	
15	Field Office (Owner's Rep)					
	238910	LS	1	\$225,000.00	\$225,000.00	
16	Mobilization					
	238910	LS	1	\$2,800,000.00	\$2,800,000.00	

Bid Results

Type	Item Code	UOM	Qty	Unit Price	Line Total	Comment
17	Field Orders (EOC - Type II)					
		AL	1	\$3,000,000.00	\$3,000,000.00	
18	Additional Pavement Removal and Disposal					
	237310	CY	50	\$120.00	\$6,000.00	
19	Large Tree Root Removal					
	541690	EA	20	\$4,000.00	\$80,000.00	
20	Cold Mill AC Pavement (>1 1/2 Inch - 3 Inch)					
	237310	SF	522948	\$0.34	\$177,802.32	
21	Traffic Detector Loop and Appurtenance (Type E)					
	237310	EA	156	\$530.00	\$82,680.00	
22	Asphalt Pavement Repair					
	237310	TON	200	\$190.00	\$38,000.00	
23	Rubber Polymer Modified Slurry (RPMS) Type I (Bike Lane)					
	237310	SF	200000	\$0.32	\$64,000.00	
24	Rubber Polymer Modified Slurry (RPMS) Type II					
	237310	SF	808728	\$0.46	\$372,014.88	
25	Rubber Polymer Modified Slurry (RPMS) Type III					
	237310	SF	808728	\$0.64	\$517,585.92	
26	Asphalt Concrete (2 Inch to 3 Inch Inlay)					
	237310	TON	7900	\$130.00	\$1,027,000.00	
27	Pavement Restoration Adjacent to Trench					
	237310	SF	10000	\$14.50	\$145,000.00	
28	Crack Seal					
	237310	LB	20000	\$0.60	\$12,000.00	
29	Additional Median Curb and Gutter removal and Replacement as Directed by the Engineer					
	237310	LF	135	\$81.00	\$10,935.00	
30	Additional Curb and Gutter Removal and Replacement as Directed by the Engineer					
	237310	LF	610	\$74.00	\$45,140.00	
31	Additional Sidewalk					
	237310	SF	2000	\$14.20	\$28,400.00	
32	Cross Gutter					
	237310	SF	2050	\$23.50	\$48,175.00	

Bid Results

Type	Item Code	UOM	Qty	Unit Price	Line Total	Comment
33	Curb Ramp (Type A) with Detectable Warning Tiles per Current Standard 237310	EA	8	\$9,000.00	\$72,000.00	
34	Curb Ramp (Type B) with Detectable Warning Tiles per Current Standard 237310	EA	4	\$9,000.00	\$36,000.00	
35	Curb Ramp (Type C1) with Detectable Warning Tiles per Current Standard 237310	EA	4	\$9,000.00	\$36,000.00	
36	Curb Ramp (Type C2) with Detectable Warning Tiles per Current Standard 237310	EA	9	\$9,000.00	\$81,000.00	
37	Curb Ramp (Type D) with Detectable Warning Tiles per Current Standard 237310	EA	3	\$9,000.00	\$27,000.00	
38	Curb Ramp (General) with Detectable Warning Tiles per Current Standard 237310	EA	13	\$9,000.00	\$117,000.00	
39	Forcemain - 48 Inch WSP CML &TCMC 237110	LF	18120	\$1,000.00	\$18,120,000.00	
40	Brine/Centrate - 30 Inch WSP CML &TCMC 237110	LF	18268	\$755.00	\$13,792,340.00	
41	Trench Shoring 541690	LS	1	\$4,900,000.00	\$4,900,000.00	
42	SR 52 Crossing Open Cut with Casing 237110	LS	1	\$1,230,000.00	\$1,230,000.00	
43	Tunneling - San Clemente Canyon 237110	LS	1	\$5,200,000.00	\$5,200,000.00	
44	Tunneling - Rose Canyon (Dual Launch) 237110	LS	1	\$10,000,000.00	\$10,000,000.00	
45	Tunneling - I-805 237110	LS	1	\$12,100,000.00	\$12,100,000.00	
46	Sewer Plug Valve with Bypass (48 Inch, Class 250) 237110	EA	3	\$1,000,000.00	\$3,000,000.00	
47	Sewer Plug Valve with Bypass (42 Inch, Class 250) 237110	EA	2	\$510,000.00	\$1,020,000.00	
48	Sewer Plug Valve with Bypass (30 Inch, Class 250) 237110	EA	5	\$240,000.00	\$1,200,000.00	

Bid Results

Type	Item Code	UOM	Qty	Unit Price	Line Total	Comment
49	Access Manway (SDSD SDW - 103 MOD)					
	237110	LS	1	\$940,000.00	\$940,000.00	
50	Blow Off Vault Combined FM/Vent Assembly					
	237110	LS	1	\$1,320,000.00	\$1,320,000.00	
51	Air/Vac Valve Vault/Vent Assembly					
	237110	LS	1	\$790,000.00	\$790,000.00	
52	Painted Traffic Striping and Markings and Painted Curb Markings					
	237310	LS	1	\$325,000.00	\$325,000.00	
53	Thermoplastic Traffic Striping					
	237310	LF	36210	\$5.20	\$188,292.00	
54	Traffic Control					
	237310	LS	1	\$3,900,000.00	\$3,900,000.00	
55	Traffic Control Design (Engineered Traffic Control Plans)					
	541330	LS	1	\$80,000.00	\$80,000.00	
56	Portable Changeable Message Signs					
	237310	Month	420	\$1,100.00	\$462,000.00	
57	Traffic Signal Light System Restoration					
	238210	LS	1	\$1,440,000.00	\$1,440,000.00	
58	Relocate, Upgrade and Install Pedestrian Push Buttons					
	238210	EA	12	\$1,280.00	\$15,360.00	
59	Fiber Optic Cable, Conduit, Appurtenances, Innerduct & Fiber Pull Boxes and Patch Panels					
	238210	LS	1	\$1,100,000.00	\$1,100,000.00	
60	Cathodic Protection - Impressed Current					
	238110	LS	1	\$280,000.00	\$280,000.00	
61	25-Month Revegetation Maintenance and Monitoring Program					
	541330	LS	1	\$100,000.00	\$100,000.00	
62	Integration Period Support					
	237110	LS	1	\$17,300.00	\$17,300.00	
63	Permanent Resurfacing Phasing					
	237310	EA	5	\$2,990.00	\$14,950.00	
64	Pipeline Appurtenances					
	541690	LS	1	\$60,000.00	\$60,000.00	

Bid Results

Type	Item Code	UOM	Qty	Unit Price	Line Total	Comment
65	Dispute Resolution Board					
	237310	AL	1	\$50,000.00	\$50,000.00	
66	SDG&E Service Orders (EOC - Type I)					
	238210	AL	1	\$12,000.00	\$12,000.00	
67	Controlled Low Strength (CLSM)					
	237310	CY	750	\$150.00	\$112,500.00	
68	Relocate Traffic Signal Pull Box					
	237310	EA	25	\$1,280.00	\$32,000.00	
69	Temporary Detection System					
	237310	EA	18	\$103,000.00	\$1,854,000.00	
70	Pedestrian Barricade					
	237310	EA	23	\$1,120.00	\$25,760.00	
71	MM-HAZ-5 Munitions Survey and UXO Identification, Training and Reporting Plan					
	238210	LS	1	\$8,460.00	\$8,460.00	
72	Remove & Replace Electrical Crosswalk					
	238210	LS	1	\$128,000.00	\$128,000.00	
73	Modified Curb Ramps per New ADA Requirements					
	237310	AL	1	\$250,000.00	\$250,000.00	
Subtotal					\$95,243,645.12	
Total					\$95,243,645.12	

Subcontractors

Name & Address	Description	License Num	CADIR	Amount	Type
HMS Construction, Inc 2885 Scott Street Vista, CA 92081 United States	Constructor Electrical - Traffic Signals & Loops	765590	1000000923	\$2,350,000.00	
Atlas Integrated Systems, Inc. 6789 Quail Hill Pkwy, Suite 405 Irvine, CA 92603 United States	Constructor Install Fiber Optic Cable	777306	1000007772	\$446,815.00	CAU,MALE,CADIR,S DB
Western Gardens Landscaping, Inc. 4616 Pannonia Rd. Carlsbad, CA 92008 United States	Constructor Hydroseed & Revegetation	662550	1000004289	\$119,390.00	CADIR,ELBE
Drill Tech Drilling & Shoring, Inc. 335 N. Sheridan St., Ste. 117 Corona, CA 92880 United States	Constructor Tunnel Shafts	745354	1000004866	\$6,345,550.00	CADIR
Dick Miller Inc. 930 Boardwalk, Suite H San Marcos, CA 92078 United States	Constructor Minor Concrete - Curb, Gutter, Sidewalks & Curb Ramps	380204	1000004547	\$258,734.00	CAU,MALE,PQUAL, DVBE,CADIR,SDVSB
Pavement Coatings Co. 10240 San Sevaine Way Jurupa Valley, CA 91752 United States	Constructor Rubber Polymer Modified Slurry	303609	1000003382	\$744,895.12	

Morena Conveyance North (K-21-1848-DBB-3), bidding on October 15, 2020 2:00 PM (Pacific)

Printed 10/15/2020

Bid Results

Name & Address	Description	License Num	CADIR	Amount	Type
Geo-Advantec, Inc. 457 W. Allen Ave. Ste. 113 San Dimas, CA 91773 United States	Consultant Furnish & Install Geotech Instruments	N/A	1000017767	\$213,190.00	CAU,MALE,CADIR
Frank and Son Paving, Inc. 1019 3rd Avenue Chula Vista, CA 91911 United States	Constructor Asphalt Paving	612545	1000009502	\$846,200.00	ELBE
Ayala Boring, Inc. 10150 Poplar Ave Fontana, CA 92335 United States	Constructor Tunneling	388577	1000006481	\$10,880,840.00	
FM General Engineering, Inc. 24426 St. Thomas Ave. Moreno Valley, CA 92551 United States	Constructor Steel Pipe Welding	971981	1000023498	\$500,000.00	LAT,FEM,MBE,CADI R,SDB
payco specialties, inc 120 North Second Avenue Chula Vista, CA 91910 United States	Constructor Pavement Striping & Markings	298637	1000003515	\$141,012.20	DBE, MBE, WBE

CONTRACT AGREEMENT

CONSTRUCTION CONTRACT

This Phase-Funded contract is made and entered into between **THE CITY OF SAN DIEGO**, a municipal corporation, herein called "City", and **OHL USA, Inc.** herein called "Contractor" for construction of **Morena Conveyance North; Bid No. K-21-1848-DBB-3**; in the total amount of **Ninety Five Million Two Hundred Forty Three Thousand Six Hundred Forty-Five Dollars and Twelve Cents (\$95,243,645.12)**, which is comprised of the Base Bid consisting of an amount not to exceed **\$52,760,000.12** for Phase 1, not to exceed **\$32,760,000.00** for Phase 2, and not to exceed **\$9,723,645.00** for Phase 3.

IN CONSIDERATION of the payments to be made hereunder and the mutual undertakings of the parties hereto, City and Contractor agree as follows:

1. The following are incorporated into this contract as though fully set forth herein:
 - (a) The attached Faithful Performance and Payment Bonds.
 - (b) The attached Proposal included in the Bid documents by the Contractor.
 - (c) Reference Standards listed in the Instruction to Bidders and the Supplementary Special Provisions (SSP).
 - (d) Phased Funding Schedule Agreement, Long-Term Maintenance and Monitoring Agreement.
 - (e) That certain documents entitled **Morena Conveyance North**, on file in the office of the City Clerks Department as Document No. **B-15141** 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 **Morena Conveyance North**, Bid Number **K-21-1848-DBB-3**, San Diego, California.
3. For such performances, the City shall pay to Contractor the amounts set forth at the times and in the manner and with such additions or deductions as are provided for in this contract, and the Contractor shall accept such payment in full satisfaction of all claims incident to such performances
4. No claim or suit whatsoever shall be made or brought by Contractor against any officer, agent, or employee of the City for or on account of anything done or omitted to be done in connection with this contract, nor shall any such officer, agent, or employee be liable hereunder.
5. This contract is effective as of the date that the Mayor or designee signs the agreement.

CONTRACT AGREEMENT (continued)

IN WITNESS WHEREOF, this Agreement is signed by the City of San Diego, acting by and through its Mayor or designee, pursuant to Resolution No. R - 312062 authorizing such execution.

THE CITY OF SAN DIEGO

APPROVED AS TO FORM

Mara W. Elliott, City Attorney

By *Matthew Vespi*

By *Christine Leone*

Print Name: Matthew Vespi
Chief Financial Officer

Print Name: Christine Leone
Deputy City Attorney

Date: _____

Date: 4/30/2021

CONTRACTOR

By *Ahmad Bagheri*

Print Name: Ahmad Bagheri

Title: Executive Vice President

Date: March 9, 2021



City of San Diego License No.: B2020004055

State Contractor's License No.: 984140

DEPARTMENT OF INDUSTRIAL RELATIONS (DIR) REGISTRATION NUMBER: 1000000612