

# SPECIFICATIONS

SANTA ANA WATERSHED  
PROJECT AUTHORITY



INLAND EMPIRE BRINE LINE  
REACH V REHABILITATION  
AND IMPROVEMENT  
PROJECT – PHASE 1

AUGUST 2014

SPECIFICATIONS FOR THE  
CONSTRUCTION OF

INLAND EMPIRE BRINE LINE  
REACH V REHABILITATION AND IMPROVEMENT PROJECT – PHASE 1



PREPARED UNDER THE SUPERVISION OF:

D. MICHAEL METTS  
C 42586

A handwritten signature in blue ink, appearing to read "D. Michael Metts", written over a horizontal line.

(SIGNATURE)

August 19, 2014

(DATE)

Funding for this project has been provided in full or in part through an agreement with the State Water Resources Control Board. The contents of this document do not necessarily reflect the views and policies of the State Water Resources Control Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use. (Gov. Code § 7550, 40 CFR § 31.20.)

**TABLE OF CONTENTS  
FOR CONSTRUCTION OF:**

**INLAND EMPIRE BRINE LINE  
REACH V REHABILITATION AND IMPROVEMENT PROJECT – PHASE 1**

<u>Specification Name</u>	<u>Section Number</u>
---------------------------	-----------------------

**Division 00 – Contract**

Invitation to Bid .....	5
Instructions to Bidders .....	7
Bid.....	15
Bid Bond .....	28
Non-collusion Affidavit .....	30
Insurance Requirements Acknowledgement .....	31
Acknowledgement of Insurance Requirements and Certification of Ability to Provide Coverage Specified .....	33
American Iron and Steel (AIS) Clause.....	34
Contractor References and Qualifications .....	35
Agreement.....	38
Performance Bond .....	43
Payment Bond .....	44
Certificate of Insurance .....	45
General Conditions .....	00700-1
California State Requirements .....	00800CA-1
Special Conditions .....	00900-1

**Division 01 – General Requirements**

Summary of Work .....	01010
Measurement and Payment .....	01025
Submittals .....	01300
Schedule of Values.....	01301
Progress Schedule.....	01311
Quality Control.....	01400
Construction Facilities and Temporary Controls.....	01500
Mobilization .....	01505
Temporary Environmental Controls .....	01560
Traffic Regulation.....	01570
Protection of Materials and Equipment.....	01620
Project Closeout.....	01700
Final Cleanup.....	01710
Record Drawings.....	01720

Permits.....	01900
<b>Division 02 – Civil</b>	
Trenching, Backfill, and Compaction.....	02223
Utility Crossings .....	02225
Sheeting, Shoring, Bracing and Safety .....	02350
Asphaltic Concrete Pavement .....	02510
Pavement Striping and Marking .....	02600
Temporary Handling of Brine Flow .....	02999
<b>Division 03 - Concrete</b>	
Precast Concrete Maintenance Holes .....	03460
Precast Utility Vaults.....	03485
<b>Division 09 – Finishes</b>	
Painting and Coating Systems.....	09900
Petrolatum Wax Tape Coating .....	09902
<b>Division 13 – Special Construction</b>	
Auger Boring (Steel Casing) .....	13320
<b>Division 15 – Mechanical</b>	
Pipe Cleaning and Inspection .....	15045
General Piping Stipulations.....	15051
HDPE Pipe, Fittings and Appurtenances.....	15061
Ductile Iron Pipe and Fittings.....	15062
Valves and Appurtenances.....	15100
Cured-in-Place Pipe (CIPP) .....	15121
Mechanical Pipe Couplings.....	15165
<b>Appendices</b>	
Appendix A – Draft Permit Applications	
Appendix B – Project Sign Requirements	
Appendix C – EPA Forms 6100-2, 6100-3, and 6100-4	
Appendix D – CSWRCB DBE Requirements	

## INVITATION TO BID

Sealed Bids for construction of the Inland Empire Brine Line Reach V Rehabilitation and Improvement Project – Phase 1, addressed to Santa Ana Watershed Project Authority (Owner), will be received at the office of the General Manager, 11615 Sterling Avenue, Riverside, CA 92503, until 2:00 p.m. local time, on the 8th day of October 2014, and will be publicly opened and read aloud. Any Bids received after this specified time and date will not be opened or considered.

The Work includes the inspection of approximately 27,000 linear feet of existing 24-inch diameter PVC pipe, installation of approximately 23,000 linear feet of cured-in-place-pipe (CIPP) rehabilitation, construction of nineteen (19) maintenance access structures, replacement of fittings and appurtenances, and temporary bypassing of brine flows.

The Work is located within Temescal Canyon Road between La Gloria Street and Glen Ivy Road, with additional work in Temescal Canyon Road between Indian Truck Trail and approximately 600 feet south of Earthmover Circle. All facilities are located within County of Riverside and/or City of Corona rights-of-way.

The Work shall be fully completed in all respects within four hundred (400) successive working days from the effective date identified in the Notice to Award.

Bidding Documents may be examined, by appointment, in the Owner's office, Santa Ana Watershed Project Authority, 11615 Sterling Avenue, Riverside, CA 92503. For information concerning the proposed Work, contact David Ruhl at (951) 354-4223 ([druhl@sawpa.org](mailto:druhl@sawpa.org)).

Bidding Documents may be purchased from the Owner's office for \$75. Prospective bidder shall visit SAWPA office, and must call Zyanya Blancas at (951) 354-4220 or email her at [zblancas@sawpa.org](mailto:zblancas@sawpa.org).

A NON-MANDATORY (attendance is highly recommended) pre-bid conference will be held on September 18, 2014 at 10:00 a.m. at the SAWPA office, 11615 Sterling Avenue, Riverside, CA 92503.

A complete Bid submittal consists of completed and executed forms contained in the Bid Forms section of the Bidding Documents. Return of the entire Bidding Document for the Bid Opening is neither required nor encouraged. The Bid Bond, included in the Bid Forms, must be completed, attached to the Bid and payable to the Owner in an amount not less than 10 percent of the total amount of the Bid.

The Successful Bidder will be required to furnish the necessary additional Bonds and Certificates for the faithful performance of the Work, as prescribed in the Contract Documents.

Each Bidder must be licensed in the State of California and qualified to perform the Work described in the Approved Plans, Specifications, and Contract Documents. Pursuant to Public Contract Code Section 3300, the Contractor must possess a General Engineering Contractor's

license (Class "A") at the time that Bid Proposals are opened. Failure to possess such a License shall render any bid submitted as non-responsive. Before a contract will be awarded for the Work contemplated herein, the Owner will conduct such investigation as is necessary to determine the performance record and ability of the apparent low Bidder to perform the size and type of work specified under this contract. Upon request and as required in these Contract Documents, the Bidder shall submit such information as deemed necessary by the Owner to determine that the Bidder is responsive and responsible.

California prevailing wages or Federal Davis Bacon wage rates, whichever is higher, shall be paid to all construction workers on this project. The Director of the Department of Industrial Relations has established the prevailing rate of per diem wages for workers to be used on the job. This information is available on the internet at: <http://www.dir.ca.gov/DLSR/PWD/index.htm>, and various regulations can be found at <http://www.dir.ca.gov/t8/ch8sb3.html> . The Contractor shall comply with California Labor Code and shall post a copy of the prevailing wages at the jobsite.

In accordance with California Public Code Section 3400, the Contractor shall have thirty four (34) days after Notice of Award is issued for submission of data substantiating a request for substitution of an "or equal" product.

The Contractor shall comply (and have a history of compliance) with the Executive Order 11246 entitled "Equal Employment Opportunity" as amended, and as supplemented in Department of Labor regulations (41 CFR Part 60).

Payment for the Work accomplished will be made upon completion and acceptance of the Work by the Owner.

Owner reserves the right to reject all Bids or any Bid not conforming to the intent and purpose of the Bidding Documents. Owner reserves the right to postpone award of the contract(s) for a period of time without affecting the price bid; however, the Notice of Award shall not be delayed beyond 90 days from the Bid opening date.

**PROJECT FUNDING.** This project is funded through the Clean Water State Revolving Fund (CWSRF) Program. The Contractor shall be responsible for meeting all requirements of that funding source. Contractor shall refer to Appendix D, CSWRCB DBE Requirements.

The Contractor is also directed to Article 4 of the Special Conditions (Section 00900) for additional requirements related to the CWSRF program, which the Contractor shall comply with fully throughout the project.

## **INSTRUCTIONS TO BIDDERS**

### **1. DEFINED TERMS.**

Terms used in these Instructions to Bidders have the meanings assigned to them in the General Conditions.

Certain additional terms used in the Bidding Documents have the meanings indicated below which are applicable to both the singular and plural thereof.

1.1. *Bidder* - one who submits a Bid to Owner as distinct from a sub-bidder, who submits a Bid to a Bidder.

1.2. *Apparent Low Bidder* - that Bidder whose Base Bid, as read at the Bid opening, appears to be the lowest total cost for the work bid.

1.3. *Base Bid* - total of the Lump Sum Work plus extended total for Unit Price Work as identified in the Bid Form.

1.4. *Successful Bidder* - lowest, responsible and responsive Bidder to whom Owner issues a Notice of Award.

### **2. BIDDING DOCUMENTS.**

2.1. The Bidding Documents include all Contract Documents as defined in the General Conditions as they exist prior to the Bid Opening. Complete sets of Bidding Documents must be used in preparing Bids. Owner does not assume any responsibility for errors or misinterpretations resulting from use of incomplete sets of Bidding Documents.

### **3. RETAINAGE.**

3.1. Retainage is set forth in the agreement.

### **4. QUALIFICATIONS OF BIDDERS.**

4.1. To demonstrate qualifications to perform the Work, each Bidder must be prepared to submit, within 5 days after Bid opening, and upon Owner's request, evidence, such as financial data, previous experience, present commitments, and other such data as may be relevant or required by the Contract Documents.

4.2. Nothing indicated herein will prejudice Owner's right to seek additional pertinent information as is provided in the INVITATION TO BID.

5. PRE-BID CONFERENCE.

5.1 A NON-MANDATORY pre-bid conference will be held on September 18, 2014, at 10:00 a.m. at the SAWPA office, 11615 Sterling Avenue, Riverside CA 92503.

6. LICENSE REQUIREMENTS.

6.1. The classification of Contractor's License a Bidder must hold to be eligible for consideration of a contract for the Work is Class A.

7. EXAMINATION OF CONTRACT DOCUMENTS AND SITE.

7.1. It is each Bidder's responsibility, before submitting a Bid, to:

7.1.1. Examine thoroughly the Contract Documents and all other related data identified in the Bidding Documents.

7.1.2. Inspect the site to become familiar with and satisfy Bidder as to the general, local, and site conditions that may affect cost, progress, performance, or furnishing of the Work.

7.1.3. Consider federal, state, and local Laws and Regulations that may affect cost, progress, performance, or furnishing of the Work.

7.1.4. Study and carefully correlate Bidder's knowledge and observations with the Contract Documents and such other related data.

7.1.5. Promptly notify Owner of all conflicts, errors, ambiguities, or discrepancies which Bidder has discovered in or between the Contract Documents and such other related documents.

7.2. Investigations of subsurface conditions have been made by the Owner and information related to same is available for Contractor reference. Said information represents only the statement by the Owner as to the character of material which has been actually encountered by it in its investigation, and is only included for the convenience of bidders. The Owner assumes no responsibility whatsoever in respect to the sufficiency or accuracy of any subsurface investigations, or of the interpretation thereof, and there is no guaranty either expressed or implied, that the conditions indicated are representative of those existing throughout the work, or any part of it, or that unexpected developments may not occur. Making such information available to bidders (not a part of the bid documents) is not be construed in any way as a waiver of the requirement for bidders to satisfy themselves through their own investigations as to conditions to be encountered.

7.3. The Owner has made the original record drawings for the Inland Empire Brine Line, Reach V, available to the Bidders for reference only. The Owner assumes no responsibility whatsoever in respect to the sufficiency or accuracy of any record drawing information, or of the



interpretation thereof, and there is no guaranty either expressed or implied, that the conditions indicated are representative of those existing throughout the work, or any part of it, or that unexpected conditions may exist. Making such information available to bidders (not a part of the bid documents) is not be construed in any way as a waiver of the requirement for bidders to satisfy themselves through their own investigations as to conditions to be encountered.

7.4. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders on subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Contract Documents due to differing or unanticipated conditions appear in Article 23.16 of the General Conditions.

7.5. Before submitting a Bid, each Bidder will be responsible to make or obtain such additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the site or otherwise and which may affect cost, progress, performance, or furnishings of the Work and which Bidder deems necessary to determine its Bid.

7.6. By appointment, Owner will provide each Bidder access to the site(s) to conduct such examinations, investigations, explorations, tests, and studies as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the site(s) to its (their) former condition upon completion of such explorations, investigations, tests, and studies. Such examinations, etc., conducted along or within public rights-of-way must be coordinated and approved by the controlling agency. Bidder shall obtain all permits required by controlling agency for field examinations.

7.7. The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of these Instructions to Bidders; that, without exception, the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying the specific means, methods, techniques, sequences, or procedures of construction (if any) that may be shown or indicated or expressly required by the Bidding Documents; that Bidder has given Owner written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Owner is acceptable to Bidder; and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work and for preparing the Bid.

## 8. INTERPRETATIONS AND ADDENDA.

8.1. All questions about the meaning or intent of the Bidding Documents are to be directed in writing to Owner. Interpretations or clarifications considered necessary by Owner in response to such questions will be issued by Addenda, mailed or delivered to all parties recorded by the office issuing documents as having received the Bidding Documents. Questions received less than three (3) days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda are binding. Oral and other interpretations or clarifications will be without legal effect.

8.2. Addenda may also be issued to modify the Bidding Documents.

9. BID SECURITY.

9.1. Each Bid must be accompanied by Bid security made payable to Owner in an amount of ten percent (10%) of Bidder's maximum Bid price and in the form of a certified or cashier check or a Bid Bond on form attached, issued by a surety meeting the requirements of Article 6 of the General Conditions.

9.2. The Bid security of the apparent Successful Bidder will be retained until such Bidder has executed the Agreement, furnished the required Performance and Payment Bond(s), certificates of insurance, and met the other conditions of the Bidding Documents. If the apparent Successful Bidder fails to sign and deliver the Agreement and furnish the required Bond(s) and certificates of insurance within the time period specified in Item 22 EXECUTION OF AGREEMENT below, Owner may annul the award and the Bid security of that Bidder will be forfeited. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earliest of the 10th day after the execution of the Agreement by the Successful Bidder or the rejection of all Bids by the Owner. Bid security submitted with Bids which are not competitive will be returned within 15 days after the Bid opening.

10. CONTRACT TIMES.

10.1. Contract Times are set forth in the Agreement.

11. LIQUIDATED DAMAGES.

11.1. Provisions for liquidated damages are set forth in the Agreement.

12. SUBSTITUTE AND "OR-EQUAL" ITEMS.

12.1. The contract, if awarded, will be on the basis of materials and equipment shown on the Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items. Whenever it is shown on the Drawings or specified in the Specifications that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor, if acceptable to Owner, application for such acceptance will not be considered by Owner until after the Bid Opening. The procedure for submission of any such application by Contractor and consideration by Owner is set forth in the Bid Forms.

13. SUBCONTRACTORS, SUPPLIERS, AND OTHERS.

13.1. Bidder shall submit with its Bid the names and business addresses of each proposed Subcontractor who will perform Work under these Bidding Documents in excess of 1/2 of 1 percent of the amount of the total Bid, and shall provide such other information for such Subcontractor as required in the Bid Forms. If the Bidder fails to specify a Subcontractor for any portion of the Work to be performed under the Bidding Documents, the Bidder agrees to perform

that portion of the Work itself, and further agrees that it is qualified to perform that portion of the Work.

14. (NOT USED)

15. WAGE RATES.

15.1. Refer to the Invitation to Bid for specifics. California prevailing wages or federal Davis Bacon wage rates, whichever is higher, shall be paid on this project.

16. BID FORM.

16.1. The Bid Forms and other attachments are included with the Bidding Documents. No substitution of forms will be allowed.

16.2. All blanks on the Bid Form must be completed by typing or printing with ink. All price information shall be shown in both words and figures where required. No changes shall be made in the phraseology of the forms.

16.3. Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown above the signature.

16.4. Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear on the line below the signature.

16.5. All names must be typed or printed on the line with the signature.

16.6. The Bid shall contain an acknowledgement of receipt of all Addenda (the numbers of which must be filled in on the Bid Form).

16.7. The address and telephone number for communications regarding the Bid must be shown.

17. SUBMISSION OF BIDS.

17.1. Bid Form and attachments may be photocopied for submission of Bids subject to all signatures being original.

17.2. Submit Bids, not later than the time prescribed, at the place and in the manner set forth in the Invitation to Bid. Enclose Bids, along with the Bid Security/Bond and other required attachments, in an opaque, sealed envelope, labeled with the Project Title and the name and address of Bidder. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the

face of it. Bids must be made on the prescribed Bid Form provided and submitted with the attachments listed below.

17.3. Bidders shall complete and submit all documents defined in the Contract Documents for submission with the Bid. It is the Bidders responsibility to identify all documents required for submittal and to fully comply with the requirements of the Contract Documents. Failure to meet all requirements or to submit required information at the time of Bid may result in the Bid being deemed unresponsive.

17.4. Only one Bid from any individual, firm, partnership, or corporation, under the same or different names, will be considered. Should it appear to the Owner that any Bidder is interested in more than one Bid for Work contemplated, all Bids in which such Bidder is interested will be rejected.

## 18. MODIFICATION AND WITHDRAWAL OF BIDS.

18.1. Bids may be modified or withdrawn by an appropriate document duly executed (in the same manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

18.2. If, within 24 hours after Bids are opened, any Bidder files a duly signed, written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid and the Bid security will be returned. Thereafter, that Bidder will be disqualified from further consideration on the Work to be provided under the Contract Documents.

## 19. OPENING OF BIDS.

19.1. Bids will be opened and read aloud publicly at the time and place identified. A summary of the amounts of the Base Bids and major alternates (if any) will be made available to Bidders within seven (7) days after the date of Bid opening.

## 20. BIDS TO REMAIN SUBJECT TO ACCEPTANCE.

20.1. All Bids will remain subject to acceptance for 90 days after the date of the Bid opening, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to that date.

## 21. BASIS OF AWARD; AWARD OF CONTRACT.

21.1. If the contract is to be awarded, Owner will give Successful Bidder a Notice of Award within 90 days after the day of the Bid opening.

21.2. Owner reserves its right to reject any, or all, Bids, including without limitation the rights to reject any, or all, nonconforming, nonresponsive, unbalanced or conditional Bids, and to

reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the Bid is not responsive, or the Bidder is unqualified, or of doubtful financial ability, or fails to meet any other pertinent standard or criteria established by Owner. Owner also reserves the right to waive any irregularity not involving price, time, or changes in the Work. Discrepancies in the quantity multiplied by unit price and the extended total amount will be resolved in favor of the quantity multiplied by unit price. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

21.3. In evaluating Bids, Owner will consider the qualifications of Bidders, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award. Owner shall have the right to accept alternates in any order or combination unless otherwise provided in the Bidding Documents.

21.4. Owner may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work for which the identity was required. Owner also may consider the operating costs, maintenance requirements, performance data, and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data are required to be submitted prior to the Notice of Award.

21.5. Owner may conduct such investigations as Owner deems necessary to assist in Bid evaluation and to establish responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, and other persons and organizations to execute Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.

21.6. If, at the time this contract is to be awarded, the total of the lowest acceptable Bid exceeds the funds then estimated by the Owner as available, the Owner may reject all Bids or take such other action as best serves the Owner's interests.

21.7. If the contract is to be awarded, it will be awarded to lowest Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Owner.

21.8. In the event of failure of the Successful Bidder to sign the Agreement and provide an acceptable Performance and Payment Bond(s), insurance certificate(s), and other required documents, the Owner may award the contract to the next lowest responsive, responsible Bidder.

21.9. In awarding the project, the Owner will consider the total of the base bid and alternatives, and award to the lowest responsive, responsible Bidder based on the total Bid including alternative bid items.

## 22. EXECUTION OF AGREEMENT.

22.1. When Owner gives a Notice of Award to Successful Bidder, it will be accompanied by unsigned copies of the Agreement and other appropriate documents. Within seven (7) calendar days thereafter, Contractor shall sign and deliver the copies of the Agreement and, attached documents, along with acceptable Performance and Payment Bond(s) and insurance certificate(s), to Owner. Within seven (7) days thereafter, Owner shall deliver two fully executed copies of the Agreement to Contractor.

END OF SECTION

## BID FORM AND ATTACHMENTS CHECKLIST

The following checklist is provided as a courtesy to the Contractor and is in no way intended to be a comprehensive list of required Bid Documents. It is not represented as being comprehensive and compliance therewith does not relieve the bidder of responsibility for compliance with all bid requirements, whether mentioned specifically or not in the table below. The Bidder shall be responsible for determining all of the requirements of the Bid Documents, and providing the required information as required.

An Inland Empire Brine Line Reach V Rehabilitation and Improvement Project – Phase 1 Bid Package shall include, but not necessarily be limited to, the following:

<b>Document</b>	<b>Completed by</b>	<b>Signed by</b>
Bid Form	Contractor	Contractor
Bid Bond	Contractor and Surety	Contractor and Surety
Non-Collusion Affidavit	Contractor	Notarized Signature of Contractor
Acknowledgement of Insurance Requirements and Certification of Ability to Provide Coverage Specified	Insurance Provider and/or Insurance Provider's Agent	Insurance Provider and/or Insurance Provider's Agent
American Iron and Steel (AIS) Clause	Contractor	Contractor
Contractor References and Qualifications	Contractor	Contractor
EPA Form 6100-3	DBE Subcontractor	DBE Subcontractor and Contractor
EPA Form 6100-4	Contractor	Contractor
Statement of Qualifications	Contractor	Contractor
Resumes, as required	Contractor	Contractor

NOTE TO BIDDER: Use **BLACK** ink for completing this Bid Form.

**BID FORM**

To: Santa Ana Watershed Project Authority

Address: 11615 Sterling Avenue  
Riverside, California 92503

Project Identification: Brine Line Reach V Rehabilitation and Improvement  
Project – Phase 1

1. **BIDDER'S DECLARATION AND UNDERSTANDING.**

1.1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm, or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

1.2. Bidder acknowledges that no special interpretation or inference of intent is to be given to different formats of different Specification sections.

1.3. In submitting this Bid, Bidder acknowledges and accepts Contractor's Representations as more fully set forth in the Agreement.

2. **CONTRACT EXECUTION AND BONDS.**

2.1. The undersigned Bidder agrees, if this Bid is accepted, to enter into an Agreement with Owner on the form included in the Bidding Documents to perform and furnish Work as specified or indicated in the Bidding Documents for the Contract Price derived from the Bid and within the Contract Times indicated in the Agreement and in accordance with the other terms and conditions of the Bidding Documents.

2.2. Bidder accepts the terms and conditions of the Bidding Documents.

3. **INSURANCE.**

3.1. Bidder further agrees that the Bid amount(s) stated herein includes specific consideration for the specified insurance coverage(s).

4. **CONTRACT TIMES.**

4.1. Bidder accepts the contract completion times are specified in the Agreement.

5. **LIQUIDATED DAMAGES.**

5.1. Bidder accepts the provisions in the Agreement as to liquidated damages.



6. ADDENDA.

6.1. Bidder hereby acknowledges that it has received the following Addenda:

Addenda No's. \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_,

Bidder shall insert No. of each Addendum received and hereby agrees that Addenda issued are hereby made part of the Contract Documents, and Bidder further agrees that this Bid includes impacts resulting from said Addenda.

7. SUBCONTRACTORS.

7.1. Bidder further proposes that the following firms or businesses will be awarded subcontracts for the following portions of the Work in the event that Bidder is awarded the contract. The name and locations of place of business of each Subcontractor who will perform work or labor or render service to the general Contractor in or about the construction of the Work or improvements in an amount in excess of one-half of one percent of the general Contractor's total Bid, and the portion of the Work which will be done by each Subcontractor is set forth as follows:

\_\_\_\_\_  
Name

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
Street City State Zip

\_\_\_\_\_  
Contractor's License No. Portion (Type of Work)

\_\_\_\_\_  
Name

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
Street City State Zip

\_\_\_\_\_  
Contractor's License No. Portion (Type of Work)

\_\_\_\_\_  
Name

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
Street City State Zip

\_\_\_\_\_  
Contractor's License No. Portion (Type of Work)

\_\_\_\_\_  
Name

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
Street City State Zip

\_\_\_\_\_  
Contractor's License No. Portion (Type of Work)

Name			
_____	_____	_____	_____
Street	City	State	Zip
Contractor's License No.		Portion (Type of Work)	

Name			
_____	_____	_____	_____
Street	City	State	Zip
Contractor's License No.		Portion (Type of Work)	

Name			
_____	_____	_____	_____
Street	City	State	Zip
Contractor's License No.		Portion (Type of Work)	

Name			
_____	_____	_____	_____
Street	City	State	Zip
Contractor's License No.		Portion (Type of Work)	

Name			
_____	_____	_____	_____
Street	City	State	Zip
Contractor's License No.		Portion (Type of Work)	

8. SALES AND USE TAXES.

8.1. The Bidder agrees that all federal, state, and local sales and use taxes are included in the stated Bid prices for the Work.

9. BASE BID

9.1. Unit Price Work:

Bidder further proposes to accept as full payment for the Unit Price Work proposed herein the amounts computed under the provisions of the Contract Documents and based on the following unit price amounts, it being expressly understood that the unit prices are independent of the exact quantities involved. Bidder agrees that the unit prices represent a true measure of the labor, materials, and services required to furnish and install the item, including all allowances for overhead and profit for each type and unit of Work called for in these Contract Documents.

Item	Description <sup>1</sup>	Quantity	Unit	Unit Price	Extended Total Amount
1.	Mobilization and Demobilization (not to exceed 5 % of total bid price.)	1	LS	\$	\$
2.	State Required Line Item for Labor Code Section 6705 and 6707 – Trench Excavation Plan and Sheeting, Shoring, and Bracing Including all Labor, Equipment, and Materials	1	LS	\$	\$
3.	Water Pollution Control Plan	1	LS	\$	\$
4.	Flow Bypass 1-3 (Outside of Caltrans Right-of-Way)	1	LS	\$	\$
5.	Flow Bypass in Caltrans Right-of- Way	1	LS	\$	\$
6.	Drain Brine as Required for Cleaning and Inspection	1	LS	\$	\$
7.	Cleaning of 24" PVC Pipe	26,100	LF	\$	\$
8.	Traffic Control	1	LS	\$	\$
9. (S)	High Definition CCTV Inspection with Laser Profiling of 24" PVC Pipe Along Entire Project Alignment	26,100	LF	\$	\$

Item	Description <sup>1</sup>	Quantity	Unit	Unit Price	Extended Total Amount
10.	Maintenance Access Structure A Assembly, Including Potholing	9	EA	\$	\$
11.	Maintenance Access Structure B Assembly, Including Potholing	5	EA	\$	\$
12.	Offset Maintenance Access Structure A Assembly Perpendicular to Brine Line Pipe, Including Potholing	2	EA	\$	\$
13.	Offset Maintenance Access Structure B Assembly Perpendicular to Brine Line Pipe, Including Potholing	3	EA	\$	\$
14. (S)	Fiberglass CIPP Liner for 24" PVC Pipe, Including Post-Installation CCTV, and Pressure Testing	5,750	LF	\$	\$
15. (S)	Non-Reinforced CIPP Liner for 24" PVC Pipe, Including Post-Installation CCTV, and Pressure Testing	5,750	LF	\$	\$
16. (S)	CIPP Liner Installation Pit with End Seals and Pipe, Including Potholing	17	EA	\$	\$
17.	Disconnect and Reinstatement of 4" Air/Vacuum Valve Assembly, Including New Valve (along pipe segments that are CIPP lined)	14	EA	\$	\$
18.	New 4" Air/Vacuum Valve Assembly, Including New Valve (along pipe segments that are <u>not</u> CIPP lined)	3	EA	\$	\$
19.	Disconnect and Reinstatement of 8" Blow-off Assembly (along pipe segments that are CIPP lined)	15	EA	\$	\$
20.	Disconnect and Reinstatement of Existing 8" Blow-off Assembly (along pipe segments that are <u>not</u> CIPP lined)	3	EA	\$	\$
21.	Abandonment of Existing Inline Valve Prior to CIPP Lining	1	EA	\$	\$

Item	Description <sup>1</sup>	Quantity	Unit	Unit Price	Extended Total Amount
22.	Record Drawings	1	LS	\$	\$
23.	Materials Testing	1	LS	\$	\$
24.	Owner-Directed Demobilization and Remobilization	1	EA	\$	\$
25.	Permit Fee Allowance	1	LS	\$ 50,000	\$ 50,000
26.	Field Order Allowance	1	LS	\$ 75,000	\$ 75,000
27.	Test Pits from STA 221+40 to STA 108+50	3	EA	\$	\$
<b>ADDITIVE BID ITEMS<sup>2</sup></b>					
28. (S)	Fiberglass CIPP Liner for 24" PVC Pipe, Including Post-Installation CCTV, and Pressure Testing	5,750	LF	\$	\$
29. (S)	Non-Reinforced CIPP Liner for 24" PVC Pipe, Including Post-Installation CCTV, and Pressure Testing	5,750	LF	\$	\$
<b>TOTAL EXTENDED AMOUNT FOR UNIT PRICE WORK LISTED ABOVE</b>					\$

<sup>1</sup> Detailed bid descriptions included in Section 01025

<sup>2</sup> Additive Items will be paid on a per linear foot basis as added to the contract and approved by the Owner.

(S) indicates Work items considered to be Specialty Contractor Work

9.2. Base + Additive Bid Summary (*Bidder Schedule shall be complete in its entirety or will be rejected*)

Sum of Bid Items 1 thru 27: \$ \_\_\_\_\_

Sum of Bid Items 28 & 29: \$ \_\_\_\_\_

Last Minute Deduction, Items 1-27 (if any): (\$ \_\_\_\_\_)

Last Minute Deduction, Items 28-29 (if any): (\$ \_\_\_\_\_)

**Total Bid in Figures:** \$ \_\_\_\_\_

**Total Bid in Words:** \_\_\_\_\_

### 9.3. EQUIPMENT / MATERIAL SOURCE INFORMATION

The bidder shall indicate opposite each item of equipment or material listed below, the name of the manufacturer or supplier of the equipment or material proposed to be furnished with the Bid. Failure to comply with this requirement will render the proposal informal and may cause its rejection. Awarding of a contract under this bid will not imply approval by the Owner of the manufacturers or suppliers listed by the bidder. After the opening of proposals, no changes or substitutions will be allowed without written approval of the Owner.

<b><u>Equipment/Material</u></b>	<b><u>Manufacturer/Supplier</u></b>
<u>HDPE Pipe</u>	<u></u>
<u>HDPE Fittings</u>	<u></u>
<u>CIPP Fiberglass-Reinforced Liner</u>	<u></u>
<u>CIPP Non-Reinforced Liner</u>	<u></u>
<u>Plug Valves</u>	<u></u>
<u>Gate Valves</u>	<u></u>
<u>Ductile Iron Pipe</u>	<u></u>
<u>Ductile Iron Fittings</u>	<u></u>
<u>Air Vacuum Valves</u>	<u></u>
<u>Pre-Cast Concrete Structures</u>	<u></u>
<u>Manhole Lids and Rings</u>	<u></u>
<u>CIPP End Seals</u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>
<u></u>	<u></u>

10. SURETY.

10.1. If Bidder is awarded a construction contract from this Bid, the surety who provides the Performance and Payment Bond(s) is

Surety's Name

Street Address

City State Zip

11. LICENSE.

11.1. Class \_\_\_\_\_, California Contractor License No.: \_\_\_\_\_

12. BIDDER. As appropriate, complete signature block below for 'An Individual', 'A Partnership', 'A Corporation', OR 'A Joint Venture.'

An Individual

By \_\_\_\_\_  
(Individual's printed Name and Signature)

Name, Phone Number, and Address for receipt of official communications and for additional information on this Bid:

\_\_\_\_\_  
(Printed Name, Phone Number)

\_\_\_\_\_  
(Address)

SUBMITTED ON \_\_\_\_\_, 20\_\_.



A Partnership

By \_\_\_\_\_  
(Partnership name)

\_\_\_\_\_  
(Printed Name and Signature of general partner)

\_\_\_\_\_  
(Title)

Name, Phone Number, and Address for receipt of official communications and for additional information on this Bid:

\_\_\_\_\_  
(Printed Name, Phone Number

\_\_\_\_\_  
(Address)

SUBMITTED ON \_\_\_\_\_, 20\_\_\_\_.

A Corporation

By \_\_\_\_\_  
(Corporation name)

\_\_\_\_\_  
(Corporate Address)

\_\_\_\_\_  
(State of incorporation)

By \_\_\_\_\_  
(Printed Name and Signature of person authorized to sign)

\_\_\_\_\_  
(Title)

(Corporate Seal)

Attested by:  
(Printed Name and Signature of Corporations Secretary, or Assistant Secretary)

Name, Phone Number, and Address for receipt of official communications and for additional information on this Bid:

\_\_\_\_\_  
(Printed Name, Phone Number)

\_\_\_\_\_  
(Address)

SUBMITTED ON \_\_\_\_\_, 20\_\_.

A Joint Venture

By \_\_\_\_\_  
(Business name)

\_\_\_\_\_  
(Printed Name and Signature of person authorized to sign)

By \_\_\_\_\_  
(Business name)

\_\_\_\_\_  
(Printed Name and Signature of person authorized to sign)

(Each joint venturer must sign. The manner of signing each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Name, Phone Number, and Address for receipt of official communications and for additional information on this Bid:

\_\_\_\_\_  
(Printed Name, Phone Number)

\_\_\_\_\_  
(Address)

SUBMITTED ON \_\_\_\_\_, 20\_\_.

END OF SECTION

**BID BOND**

BOND NO. \_\_\_\_\_

AMOUNT: \$ \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that \_\_\_\_\_

\_\_\_\_\_

hereinafter called the PRINCIPAL, and \_\_\_\_\_

\_\_\_\_\_

a corporation duly organized under the laws of the State of \_\_\_\_\_

having its principal place of business at \_\_\_\_\_

\_\_\_\_\_ in the State of \_\_\_\_\_

and authorized to do business in the State of California, as SURETY, are held and firmly bound unto Santa Ana Watershed Project Authority (SAWPA),

as Owner, hereinafter called the OBLIGEE, in the sum of \_\_\_\_\_

\_\_\_\_\_ DOLLARS (\$ \_\_\_\_\_)

for the payment for which we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS BOND IS SUCH THAT:

WHEREAS, the PRINCIPAL is herewith submitting his or its Bid for \_\_\_\_\_

\_\_\_\_\_

said Bid, by reference thereto, being hereby made a part hereof.

NOW, THEREFORE, if said Proposal shall be rejected, or in the alternate, if said Proposal shall be accepted and the PRINCIPAL shall sign and deliver a Contract to OBLIGEE, in the form of Contract attached hereto and shall execute and deliver Performance and Payment Bonds in the forms attached hereto (all completed in accordance with said Proposal) to OBLIGEE, and shall in all other respects perform the agreement created by the acceptance of said Proposal;

Then, this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the SURETY for any and all default of the PRINCIPAL hereunder shall be the amount of this obligation as herein stated.

The SURETY, for value received, hereby stipulates and agrees that the obligations of said SURETY and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Proposal, and said SURETY does hereby waive notice of any such extension.

In case suit is brought upon this Bond, SURETY shall pay Owner all court costs and actual attorneys' fee incurred by Owner.

IN WITNESS THEREOF, the above-bounded parties have executed this instrument under their several seals, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_

\_\_\_\_\_  
PRINCIPAL

By\_\_\_\_\_  
(Printed Name/Title)

\_\_\_\_\_  
SURETY

By\_\_\_\_\_  
Attorney-In-Fact

The rate of premium on this bond is \_\_\_\_\_ per thousand.

Total amount of premium charged \$\_\_\_\_\_.

**NON-COLLUSION AFFIDAVIT**  
(to be executed by Bidder and submitted with Bid)

STATE OF \_\_\_\_\_ }  
COUNTY OF \_\_\_\_\_ } ss.

\_\_\_\_\_, being first duly sworn, deposes and

says that he or she is \_\_\_\_\_ of \_\_\_\_\_ 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 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.

\_\_\_\_\_  
Name of Contractor

\_\_\_\_\_  
Bidder (Affiant)

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

My commission expires: \_\_\_\_\_

\_\_\_\_\_  
Notary Public

## **INSURANCE REQUIREMENTS ACKNOWLEDGEMENT**

### **Insurance Requirement Summary**

The Contractor shall purchase and maintain insurance provided by insurance companies admitted in and regulated by the State of California, as required in the Contract Documents, and in amounts equal to the requirements set forth in the Contract Documents, and shall not commence work under this contract until all insurance required by the Contract Documents is obtained in a form acceptable to the Owner, nor shall the Contractor allow any subcontractor to commence work on a subcontract until all insurance required for the Subcontractor has been obtained.

The Contractor shall provide the insurance Certifications and Endorsements on the forms provided in the Contract Documents. Such insurance shall include as additional insureds: Owner, its commissioners, Owner's employees, consultants, and all public agencies from whom permits will be obtained for this contract; coverage of each named entity shall include their directors, officers, employees and agents. The insurance required herein shall provide that the coverage is Primary, and that no other insurance carried by Owner will be called upon to contribute to a loss. Insurers must have a current Best's rating of "A" and a current Best's financial rating of at least Class VII.

The Contractor shall also expressly name the Owner, and its officers, directors, employees, agents and consultants as "additional insured" under the insurance policies.

Owner reserves the right to establish different coverage limits for Public Liability and Property Damage including Motor Vehicle by so providing in writing as an official notice, as a permit requirement, or as a requirement contained elsewhere in the Contract Documents. In such event, the coverage limits therein shall prevail, otherwise, the Contractor shall meet the following requirements:

A. Workers' Compensation and Employer's Liability Insurance: The Contractor shall provide Workers' Compensation Insurance as required by the Labor Code of the State of California. The Contractor shall require all Subcontractors similarly to provide such Workers' Compensation Insurance for all the latter's employees. Contractor shall provide Employer's Liability Insurance of at least \$1,000,000 per occurrence for bodily injury or death. The Contractor shall furnish Owner and the engineer and their additional insureds with an Endorsement of Waiver of Subrogation under the terms of the Workers' Compensation Insurance.

B. General Liability and Property Damage Insurance: The Contractor shall carry and maintain general liability insurance coverage for bodily injury, personal injury, including death, and property damage in the sums of not less than \$5,000,000 per occurrence, and property damage in the sum of not less than \$1,000,000 resulting from, any one accident or any one occurrence which may arise from the operation of the Contractor in the

performance of the project. The policy(ies) shall include a "Cross Liability" and/or "Severability of Interest" clause.

The Liability Insurance Coverage shall include each of the following types of insurance:

- 1) Owner's and, Contractor's Protective.
- 2) XCU (Explosion, Collapse, Underground Damage) Hazard.
- 3) Products/Completed Operations Hazard.
- 4) Contractual Insurance.
- 5) Broad Form Property Damage, including Completed Operations.
- 6) Personal Injury/Wrongful Death.
- 7) Premises Operation.

C. Motor Vehicle Public Liability And Property Damage Insurance: The Contractor shall carry and maintain motor vehicle liability insurance for bodily injury, personal injury and property damage insurance coverage on each automobile, truck and other vehicles which are used in the performance of the contract in an amount of not less than \$5,000,000 per occurrence. The vehicle liability insurance shall include each of the following types:

- 1) Comprehensive form, including loading and unloading.
- 2) Owned.
- 3) Hired.
- 4) Non-owned.

D. Builder's Risk (Course Of Construction) Insurance: The Contractor shall maintain such all risk insurance with limits of at least the completed value of the project plus equipment with no coinsurance penalty. Owner shall be named as loss payee.

E. Pollution Liability Insurance. The Contractor shall maintain such all pollution liability insurance with limits of at least \$1,000,000 per occurrence resulting from any Contractor caused sanitary sewer overflow during the course of the work or as a result of Contractor poor workmanship.

Each of the policies of insurance provided for shall contain a clause substantially in the following words:

"It is hereby understood and agreed that this policy may not be canceled nor the amount of the coverage thereof be reduced until thirty (30) days after receipt by Owner and its additional insureds of a written notice of such cancellation or reduction in coverage, by certified mail."

If an insurance coverage is canceled, the Contractor shall have a replacement policy in force prior to the cancellation of the previous with the same conditions and requirements as stated herein.

The Contractor shall have presented, at the time of execution of the Contract, the Insurance Certifications and Endorsements required in the Contract Documents.



ACKNOWLEDGEMENT OF INSURANCE REQUIREMENTS AND  
CERTIFICATION OF ABILITY TO PROVIDE COVERAGE SPECIFIED

**(To be filled out by Insurance Agent, Carrier, Provider)**

I, \_\_\_\_\_, the \_\_\_\_\_ of  
(President, Manager, Owner)

\_\_\_\_\_certifies that these insurance  
(Name of Company, Corporation)

requirements have been read and understood and that \_\_\_\_\_  
(Insurance Providers Name)  
is able to provide the coverage, as specified.

\_\_\_\_\_  
Signature of President, Manager, Owner

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Insurance Agent, Carrier, Provider

\_\_\_\_\_  
Date

## AMERICAN IRON AND STEEL (AIS) CLAUSE

Comply with all federal requirements applicable to the Loan (including those imposed by the 2014 Appropriations Act and related SRF Policy Guidelines) which the Participant understands includes, among other, requirements that all of the iron and steel products used in the Project are to be produced in the United States (“American Iron and Steel Requirement”) unless (1) the Participant has requested and obtained a waiver from the Owner pertaining to the Project or (ii) the Finance Authority has otherwise advised the Participant in writing that the American Iron and Steel Requirement is not applicable to the Project. All iron and steel products for this project shall be produced in the United States.

Comply with all record keeping and reporting requirements under the Clean Water/ Safe Drinking Water Act, including any reports required by a Federal Agency or the Finance Authority such as performance indicators of program deliverables, information on costs and project progress. The participant understands that (i) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (ii) failure to comply with the Clean Water Act/ Safe Drinking Water Act and this Agreement may be a default hereunder that results in a repayment of the Loan in advance of the maturity of the Bonds and/or other remedial actions.

I, \_\_\_\_\_, the \_\_\_\_\_ of  
(President, Manager, Owner)

\_\_\_\_\_ certifies that these AIS  
(Contractor)

requirements have been read and understood and that \_\_\_\_\_  
(Contractor)

Meets the AIS requirements, as specified.

\_\_\_\_\_  
Signature of President, Manager, Owner

\_\_\_\_\_

## **CONTRACTOR REFERENCES AND QUALIFICATIONS**

The Bidder shall provide at least three (3) references in the spaces provided on the following pages for projects completed by the Bidder (either as prime or subcontractor), in which the Bidder installed fiberglass-reinforced CIPP liner similar to that proposed under this Project. Failure to submit references with the “BID” may result in the Bid being deemed to be nonresponsive.

The Bidder shall list as reference projects, work completed that:

- Included fiberglass-reinforced CIPP pressure lining for rehabilitation of water and sewer pipes;
- Used similar types of materials and techniques as will be used on this project;
- Were of similar size and complexity to this project;
- Were completed within the last five (5) years; and
- Were for a public agency in the United States of America.

If a qualifying project as described above was completed by a Bidder’s subcontractor, the Bidder shall list the prime Contractor (with contact person and phone number) on the referenced project.

The Bidder shall provide statements of qualifications for the Specialty Contractor that is proposed for installing fiberglass-reinforced CIPP liner under this Project. Failure to submit statements of qualifications with the Bid may result in the Bid being deemed to be nonresponsive.

The Specialty Contractor proposed for the Project for fiberglass-reinforced and non-reinforced CIPP liners shall have a minimum of five (5) years of experience in the installation of CIPP liners and a minimum of two (2) years of experience in the installation of fiberglass-reinforced CIPP liners in pressure pipes, and have successfully installed a minimum of 50,000 linear feet of CIPP of nominal pipe sizes greater than or equal to 15 inches in diameter, including at least 5,000 linear feet of fiberglass-reinforced CIPP liner installation in pressure pipelines 15-inch in diameter or larger. The Specialty Contractor shall also have demonstrated experience installing CIPP liners within flexible pipeline systems (i.e. PVC).

The Bidder (Prime Contractor), if different from the Specialty Contractor discussed above, shall have a minimum of ten (10) years of experience in large diameter pipeline construction (18-inches in diameter or larger) and a minimum of five (5) years of experience with projects involving the installation of CIPP liners. The Prime Contractor shall have successfully installed a minimum of 250,000 linear feet of pipeline with a nominal pipe diameter of 18-inches and greater, and managed the installation of a minimum of 25,000 linear feet of CIPP liner installations.

The Superintendent of the Prime Contractor (Bidder) proposed for this Project shall be named and a resume of his/her experience provided. This Superintendent’s experience must include a minimum of four (4) years of experience with installation of CIPP liner products within similar pipeline materials. In addition, the Superintendent must have supervised jobs in which at least 25,000 linear feet of pipe was rehabilitated using the same CIPP process as proposed for this Project. Bidder agrees that the Superintendent named in his Bid will remain on this Project until completion of all relevant Work, unless substituted by personnel of equivalent experience and qualifications approved in advance by the Owner.

The Owner shall have sole discretion and make the final determination as to whether the Bidder, Specialty Contractor and Superintendent meet the above qualifications based on information provided at the time of the Bid. Contractor shall not be allowed to submit additional information after the Bid Opening to augment or supplement the information provided with the Bid.

Duplicate pages, if needed, for listing additional completed projects.

PROJECT NAME AND NUMBER:	
PUBLIC AGENCY NAME:	
PUBLIC AGENCY CONTACT PERSON NAME/TITLE:	
PHONE:	
PRIME CONTRACTOR:	
LOCATION AND DESCRIPTION OF WORK:	
CONTRACT AMOUNT:	COMPLETION DATE:
PROJECT NAME AND NUMBER:	
PUBLIC AGENCY NAME:	
PUBLIC AGENCY CONTACT PERSON NAME/TITLE:	
PHONE:	
PRIME CONTRACTOR:	
LOCATION AND DESCRIPTION OF WORK:	
CONTRACT AMOUNT:	COMPLETION DATE:

PROJECT NAME AND NUMBER:	
PUBLIC AGENCY NAME:	
PUBLIC AGENCY CONTACT PERSON NAME/TITLE:	
PHONE:	
PRIME CONTRACTOR:	
LOCATION AND DESCRIPTION OF WORK:	
CONTRACT AMOUNT:	COMPLETION DATE:
PROJECT NAME AND NUMBER:	
PUBLIC AGENCY NAME:	
PUBLIC AGENCY CONTACT PERSON NAME/TITLE:	
PHONE:	
PRIME CONTRACTOR:	
LOCATION AND DESCRIPTION OF WORK:	
CONTRACT AMOUNT:	COMPLETION DATE:

## AGREEMENT

THIS AGREEMENT is between the Santa Ana Watershed Project Authority (hereinafter called Owner) and \_\_\_\_\_ (hereinafter called Contractor). Owner and Contractor may be individually referred to as “Party” or collectively as “the Parties”. Owner and Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:

1. Work.

1.1. Contractor shall complete the Work as specified or indicated in the Contract Documents entitled:

**Inland Empire Brine Line Reach V Rehabilitation and Improvement Project – Phase 1.**

The Work shall generally consist of trenchless rehabilitation of portions of the existing 24-inch Inland Empire Brine Line - Reach V, and the construction of access and isolation facilities along the pipeline, as detailed below Section 01010 of the Contract Documents.

2. ENGINEER.

2.1. Owner is acting in the capacity of its own Engineer, or has hired an Engineer to act on its behalf. The terms Owner and Engineer are used interchangeably in the Contract Documents, unless otherwise specified.

3. CONTRACT TIMES AND LIQUIDATED DAMAGES.

3.1. Contract Times: Contractor shall achieve Construction Completion within four hundred (400) working days from the commencement date stated in the Notice of Award. The Work shall be completed and ready for final payment within 35 calendar days from the date when the Notice of Completion is filed with the County Recorder.

3.2. Brine Line Shutdown Periods: Tributary flows to the Inland Empire Brine Line, Reach V, (Brine Line) may be shut down during installation of required bypass piping systems required for this project. The loss of potable water production from these facilities can only be accommodated for a short period of time. Therefore, the Brine Line shall not be shut down more than the timeline identified in the specifications. If, as a result of the Contractor’s actions, the Brine Line cannot resume normal discharges within the allowable time period, Owner and Contractor agree that liquidated damages shall apply (but not as a penalty). Contractor shall pay Owner twelve-thousand dollars (\$12,000) for each day, or part thereof, that the Brine Line cannot resume receiving discharge outside of the timeline identified in Section 01010 of the Contract Documents.

3.3. Liquidated Damages: Owner and Contractor recognize that time is of the essence for this Agreement, and that Owner will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof. The Parties recognize the delays, expense, and difficulties involved in proving in a legal or other dispute resolution process 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), Contractor shall pay Owner five thousand dollars (\$5,000.00) for each day that expires after any of the times or deadlines specified in paragraph 3.1 above, including Substantial Completion, Completion or other Milestone Dates.

4. CONTRACT PRICE.

4.1. Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents in current funds the amount set forth in the Bid Schedule (included as an Exhibit to this Agreement), for a total contract price of:

\_\_\_\_\_ (\$\_\_\_\_\_).

5. RETENTION.

5.1. Owner will retain five percent (5%) from all progress payments.

5.2. Contractor may elect to substitute securities of equivalent value in accordance with the requirements and procedures of Section 22300 of the Public Contract Code of the State of California.

6. INTEREST.

6.1. Monies not paid when due as provided in the Invitation to Bid and in Article 20 of the General Conditions shall accrue interest at the rate of one quarter (1/4%) percent per month.

7. CONTRACTOR'S REPRESENTATIONS.

7.1. To induce Owner to enter into this Agreement, Contractor makes the following representations:

7.1.1. Contractor has thoroughly investigated and reviewed the Contract Documents, site, locality, general nature of Work to be performed by Contractor or others at the site that relates to the Work required by the Contract Documents, the physical conditions of the Work site and area, and federal, state, and local Laws and Regulations that may affect, directly or indirectly, cost, progress, performance, or completion of the Work.

7.1.2. Contractor has obtained and thoroughly investigated and reviewed examinations, investigations, explorations, tests, and studies (in addition to or to supplement those referred to above) which pertain to the conditions (subsurface, surface or physical) at or contiguous to the site or otherwise and which may affect the cost, progress, performance, or completion of the Work as Contractor deems necessary for the performance and completion of the Work at the Contract Price, within the Contract Times, and in accordance with the terms of the Contract Documents: Contractor represents that no additional examinations, investigations, explorations, tests, reports, or similar information or data are or will be required by Contractor in order to perform and complete the Work.

7.1.3. Contractor has thoroughly investigated and reviewed the information and data shown or indicated in the Contract Documents on the existing Utilities at or contiguous to the site and has included in its bid sufficient funds to cover all associated costs, without expectation of additional compensation.

7.1.4. Contractor has given Owner written notice of conflicts, inconsistencies, errors, ambiguities, or discrepancies that it has discovered in the Contract Documents, and the written resolution thereof by Owner is acceptable to Contractor, and the Contract Documents are sufficient to indicate and convey the understanding of terms and conditions for performing and furnishing the Work. It shall be conclusively presumed that Contractor waives any claim that it may have, now or in the future, concerning any such conflicts, inconsistencies, errors, ambiguities or discrepancies.

7.1.5. Contractor assumes all risks for the following: All loss and damages which may arise out of the nature of the Work required by the Contract Documents, or from the action of the elements, or from any unforeseen difficulties which may arise or be encountered in the prosecution of the Work until acceptance by the Owner, together with all risks in connection with the Work and any and all expenses incurred by or in consequence of any suspension or discontinuance of the Work, except where the Contract Documents expressly provides that such costs are to be borne by the Owner.

7.1.6. Contractor understands, accepts and has included in its bid, as part of the Work, the responsibility to perform and pay for the following:

- 7.1.6.1. The design and implementation of any required shoring.
- 7.1.6.2. The design and implementation of any required traffic control plans.
- 7.1.6.3. Materials testing through an independent laboratory, including concrete mix design, sampling and testing, and; any other materials testing required in the Contract Documents, except CIPP testing in accordance with these Specifications.
- 7.1.6.4. The costs of having Owner perform any plant inspections identified in the Contract Documents.
- 7.1.6.5. The protection of and/or replacement cost of any survey staking performed by Owner as identified in the Contract Documents.
- 7.1.6.6. The additional costs to retest failed inspection tests incurred by the Owner.
- 7.1.6.7. The additional costs incurred by Owner providing overtime inspection services as identified in the Contract Documents.
- 7.1.6.8. The ability to reallocate CIPP liner material throughout the project based on Owner review of project related pipeline video and laser profiling information per Specification Section 15045.

## 8. CONTRACT DOCUMENTS.

8.1. The Contract Documents which comprise the entire Agreement between Owner and Contractor concerning Work are defined in Article 1 of the General Conditions.

## 9. WORKERS COMPENSATION INSURANCE.

9.1. By signing this Agreement, Contractor represents that it is aware of, and compliant with, the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that code, and it will comply with such provisions before commencing the performance of the Work of this Agreement.



10. ARBITRATION.

10.1. Any dispute which may arise under this Agreement by and between the Owner and the Contractor, including the Contractor's subcontractors, laborers, and suppliers, shall be submitted to binding arbitration, per Article 22 of the General Conditions. The arbitrator shall decide each and every dispute in accordance with the laws of the State of California, and all other applicable laws. Unless the Parties stipulate to the contrary in writing, prior to the appointment of the arbitrator, all disputes shall be first submitted to non-binding mediation.

11. MISCELLANEOUS.

11.1. This Agreement and the Contract Documents may not be assigned by the Contractor without the written consent in advance of the Owner. Monies that may become due and monies that are due may not be assigned without such written consent, and any such assignment will not release or discharge the Contractor from its obligations under the Contract Documents.

11.2. Owner and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other Party hereto, its partners, successors, assigns, and legal representatives in respect of all covenants, agreements, and obligations contained in the Contract Documents.

11.3. If any arbitration or court action is commenced to enforce or interpret the terms of the Contract Documents, each Party shall bear its own attorneys' fees, costs, and other disbursements in pursuing such action. However, if any third party action is filed against the Owner to enforce a Stop Notice or other claim related to the Contract Documents, the Owner shall be entitled to recover from Contractor its attorneys' fees, costs, and other disbursements incurred in resolving or defending against such third-party action.

11.4. This Agreement, and the Contract Documents incorporated herein, constitutes the entire agreement between the Parties. No oral or written communications or negotiations that occurred before or during the execution of this Agreement will be considered to be a part of the Contract Documents. The Contract Documents can be modified only by a written document signed by both Parties or as may be provided in the Contract Documents.

11.5. There are no intended third party beneficiaries of any right or obligation assumed by the Parties under the Contract Documents.

11.6. This Agreement may be signed in counterparts. Each person executing this Agreement represents that the execution of the Agreement has been duly authorized by the Party on whose behalf the person is executing the Agreement, and that such person is authorized to execute the Agreement on behalf of such Party.

11.7. If any provision of the Contract Documents is determined by an arbitrator or court of law to be illegal or unenforceable, the same shall be severed from the Contract Documents, and the remainder of the Contract Documents shall be given full force and effect.

11.8. Time is of the essence of the Contract Documents.

11.9. All insurance required in the Contract Documents shall be maintained at a minimum for the duration of the term of the Contract, unless otherwise specified in the Contract Documents.

IN WITNESS WHEREOF, Owner and Contractor have signed \_\_\_\_ copies of this Agreement. All portions of the Contract Documents have been signed or identified by Owner and Contractor.

Owner: Santa Ana Watershed Project  
Authority

Dated: \_\_\_\_\_ By \_\_\_\_\_  
CELESTE CANTÚ, General Manager

Address for giving notices: SAWPA, 11615 Sterling Avenue, Riverside, CA 92503

License No. \_\_\_\_\_ Contractor: \_\_\_\_\_

Date \_\_\_\_\_ By \_\_\_\_\_  
(President or Vice-President)  
(Name and Title)  
\_\_\_\_\_

Date \_\_\_\_\_ By \_\_\_\_\_  
(Secretary or Treasurer)  
(Name and Title)  
\_\_\_\_\_

[CORPORATE SEAL]  
(If Contractor is a corporation, attach evidence of authority to  
sign.)

Address for giving notices: \_\_\_\_\_

Agent for service of process: \_\_\_\_\_

## PERFORMANCE BOND

BOND NO.: \_\_\_\_\_

PREMIUM: \_\_\_\_\_

WHEREAS, the \_\_\_\_\_, (hereinafter designated as "Obligee") and \_\_\_\_\_ (hereinafter designated as "Principal") have entered into an agreement whereby principal agrees to install and complete certain designated public improvements, which said agreement, dated \_\_\_\_\_, and identified as project \_\_\_\_\_ is hereby referred to and made a part hereof; and

WHEREAS, said principal is required under the terms of said agreement to furnish a bond for the faithful performance of said agreement;

NOW, THEREFORE, we, the principal and \_\_\_\_\_ as surety, are held and firmly bound unto the Obligee in the penal sum of \_\_\_\_\_ dollars (\$\_\_\_\_\_) lawful money of the United States for the payment of which sum well and truly to be made, we bind ourselves, our heirs, successors, executors and administrators, jointly and severally firmly by these present.

The condition of this obligation is such that if the above bound Principal, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and provisions in the said agreement and any alteration thereof made as therein provided, on his or their part, to be kept and performed and at the time and in the manner therein specified in the Agreement, and in all respects according to their true intent and meaning, and shall indemnify and save harmless the Obligee, its officers, agents and employees, as therein stipulated, then this obligation shall be come null and void; otherwise it shall be and remain in full force and effect.

As part of the obligation secured hereby and in addition to the face amount specified therefore, shall be included costs and reasonable expenses and fees, including reasonable attorney's fees, incurred by the Obligee in successfully enforcing such obligation, all to be taxed as costs and included in any judgment rendered.

The surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Agreement or to the work to be performed thereunder or the specification accompanying the same shall in any wise affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the agreement or to the work or to the specifications.

IN WITNESS WHEREOF, this instrument has been duly executed by the principal and surety above named, on

By: \_\_\_\_\_  
PRINCIPAL

By: \_\_\_\_\_  
PRINCIPAL

By: \_\_\_\_\_  
(ATTORNEY-IN-FACT)

## PAYMENT BOND

BOND NO.: \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENT, that we, \_\_\_\_\_ as Principal, and \_\_\_\_\_, incorporated under the laws of the State of California and authorized to execute bonds and undertakings as sole surety, as Surety, are held and firmly bound unto any and all persons named in California Civil Code Section 1181 whose claim has not been paid by the contractor, company or corporation, in the aggregate total of \_\_\_\_\_ dollars (\$ ), for the payment whereof, well and truly to be made, said Principal and Surety bind themselves, themselves, their heirs, administrators, successors and assigns, jointly and severally, firmly by these present.

The condition of the foregoing obligation is such that; whereas the above bound Principal has entered into a contract, dated \_\_\_\_\_, with the \_\_\_\_\_ to do the following work, to-wit:

NOW, THEREFORE, if the above bound Principal contractor, person, company or corporation, or his or its subcontractor, fails to pay any claimant named in Section 3181 of the Civil Code of the State of California, or amounts due under the Unemployment Insurance Code, with respect to work or labor performed by any such claimant, that, the Surety on this bond will pay the same, in an amount not exceeding the aggregate sum specified in this bond, and also in case suit is brought upon this bond, a reasonable attorney's fee, which shall be awarded by the court to the prevailing party in said suit, said attorney's fee to be taxed as costs in said suit.

This bond shall inure to the benefit of any person named in Section 3181 of the Civil Code of the State of California so as to give a right of action to them or their assignees in any suit brought upon this bond.

This bond is executed and filed to comply with the provisions of the act of Legislature of the State of California as designated in Civil Code Sections 3247-3252 inclusive, and all amendments thereto.

Signed and sealed this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

By: \_\_\_\_\_

By: \_\_\_\_\_  
(ATTORNEY-IN-FACT)

CERTIFICATE OF INSURANCE  
TO  
SANTA ANA WATERSHED PROJECT AUTHORITY

This certifies to Santa Ana Watershed Project Authority, (SAWPA) that the following described policies have been issued to the insured named below and are in force at this time.

Insured: \_\_\_\_\_

Address: \_\_\_\_\_

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**POLICIES AND INSURERS**

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These policies provide insurance coverage for all elements of the work required for the Contact awarded to the Insured which is titled: \_\_\_\_\_

**WORKERS' COMPENSATION**

\_\_\_\_\_ Policy No. \_\_\_\_\_ Best's Rating \_\_\_\_\_

(Name of Insurer)

Employer's Liability \$ \_\_\_\_\_ Expiration Date: \_\_\_\_\_

---

[\_\_\_\_\_] **COMPREHENSIVE GENERAL LIABILITY**

\_\_\_\_\_ Policy No. \_\_\_\_\_ Best's Rating \_\_\_\_\_

(Name of Insurer)

Each Occurrence	\$ _____	Personal Injury	\$ _____
General Aggregate (If Applicable)	\$ _____	Fire Damage (per fire)	\$ _____
Products/Comp Opr Aggregate	\$ _____	Self-insured Retention	\$ _____
Medical Expense (per person)	\$ _____		

[\_\_\_\_\_] Premises - Operations

[\_\_\_\_\_] Owner's & Contractor's Protective

[\_\_\_\_\_] Contractual for Specific Contract

[\_\_\_\_\_] XCU Hazards

[\_\_\_\_\_] Broad Form P.D.

[\_\_\_\_\_] Severability of Interest Clause

[\_\_\_\_\_] Personal Injury with Employee

Exclusion Removed

or

[\_\_\_\_\_] Commercial General Liability

Expiration Date \_\_\_\_\_

CERTIFICATE OF INSURANCE  
PAGE TWO

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**POLICIES AND INSURERS**

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AUTOMOTIVE / VEHICLE LIABILITY

Commercial Form Liability Coverage

\_\_\_\_\_  
(Name of Insurer)  
BODILY INJURY  
Each Person \$ \_\_\_\_\_  
Each Accident \$ \_\_\_\_\_

Policy No. \_\_\_\_\_ Best's Rating \_\_\_\_\_

PROPERTY DAMAGE  
Each Accident \$ \_\_\_\_\_

or

Combined Single Limit \$ \_\_\_\_\_ Expiration Date \_\_\_\_\_

---

**EXCESS LIABILITY**

\_\_\_\_\_  
Name of Insurer) Policy No. \_\_\_\_\_ Best's Rating \_\_\_\_\_

[\_\_\_\_\_]Umbrella Form [\_\_\_\_\_]Other Than Umbrella Form

Each Occurrence \$ \_\_\_\_\_  
Aggregate \$ \_\_\_\_\_  
Self-Insured Retention \$ \_\_\_\_\_

Expiration Date \_\_\_\_\_

---

**BUILDER'S ALL RISK** Face Amount Equal to Contract Amount \$ \_\_\_\_\_

\_\_\_\_\_  
(Name of Insurer)

Policy No. \_\_\_\_\_ Best's Rating \_\_\_\_\_ Expiration Date \_\_\_\_\_  
(Not sooner than Contract completion date)

Self-Insured Retention \$ \_\_\_\_\_  
(Not more than 5% of the Contract amount)

CERTIFICATE OF INSURANCE  
PAGE THREE

[\_\_\_\_\_] POLLUTION LIABILITY INSURANCE

\_\_\_\_\_  
(Name of Insurer) Policy No. \_\_\_\_\_ Best's Rating \_\_\_\_\_

Each Occurrence \$ \_\_\_\_\_

The following provisions and types of coverage are included in said policies (indicated by "X") in the appropriate space:

1. [ ] SAWPA, its Commissioners, the Engineer, and Consultants, and each of their Directors, Officers, Employees and Agents, for this contract, and all public agencies from whom permits will be obtained and their Directors, Officers, Employees and Agents are Additional Insureds as to work being performed under this Agreement.
2. [ ] The coverage is Primary, and no other insurance carried by SAWPA will be called upon to contribute to a loss under the coverage.
3. [ ] The Policy(ies) limits are provided on an (occurrence/claims made) basis. (Strike out inapplicable)
4. [ ] Coverage for Broad Form property damage liability, including completed operations.
5. [ ] The policy(ies) cover personal injury liability, as well as bodily injury liability.
6. [ ] Coverage for products and completed operations.
7. [ ] The policy(ies) shall not be cancelled or materially altered without thirty (30) days' prior written notice to SAWPA at the address listed.
8. [ ] The policy(ies) cover the use of all autos when owned by the Insured.
9. [ ] The policy(ies) cover the use of all autos hired by the Insured.
10. [ ] The policy(ies) cover the use of all non-owned autos.
11. [ ] The insurance afforded by the policy for Contractual Liability Insurance (subject to the terms, conditions and exclusions applicable to such insurance) includes liability assumed by the named insured under the indemnification or hold harmless provision contained in the written contract between the named insured and SAWPA.

\_\_\_\_\_  
Agent's Initials

A copy of all Endorsements to the policy(ies) which in any way limit the above listed types of coverage are attached to this Certificate of Insurance.

CERTIFICATE OF INSURANCE  
PAGE FOUR

This Certificate or Verification of Insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement, term, or condition of any contract or any other document with respect to which this Certificate or Verification of Insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all terms, exclusions and conditions of such policies.

IT IS HEREBY CERTIFIED that the above policy(ies) provide liability insurance as required by the Agreement between the Santa Ana Watershed Project Authority and the Insured.

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NOTICE

No substitution or revision to the above certificate form will be accepted. If the insurance called for is provided by more than one insurance company, a separate Certificate in the exact above form shall be provided for each insurance company.

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CERTIFICATION OF INSURANCE (LIABILITY)  
PAGE FIVE (WORKERS' COMPENSATION)  
(AUTOMOTIVE)  
(EXCESS LIABILITY)  
(BUILDER'S ALL RISK)  
(POLLUTION LIABILITY)

Insurers must be admitted in and regulated by the State of California. The Insurers must also have an "A" policyholder's rating and a financial rating of at least Class VII in accordance with the most current Best's Guide Rating.

Insurer: \_\_\_\_\_ Agent: \_\_\_\_\_

Address: \_\_\_\_\_ Address: \_\_\_\_\_

\_\_\_\_\_

Telephone: \_\_\_\_\_ Telephone: \_\_\_\_\_

Fax: \_\_\_\_\_ Fax: \_\_\_\_\_

---

SIGNATURE OF INSURER OR AUTHORIZED REPRESENTATIVE OF THE INSURER

I, \_\_\_\_\_ (print/type name), warrant that I have authority to bind the issuing insurance company and by my signature hereon do so bind said company.

\_\_\_\_\_  
(Signature of Authorized Representative)

Organization: \_\_\_\_\_ Title: \_\_\_\_\_

Address: \_\_\_\_\_ Telephone: \_\_\_\_\_

\_\_\_\_\_

Original signature also required on all Endorsements furnished to SAWPA.

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**Note: This page five must be separately completed for each policy of insurance.**

COMPREHENSIVE GENERAL LIABILITY  
COMMERCIAL GENERAL LIABILITY

\*\*\*\*\*

ENDORSEMENT AGGREGATE LIMITS OF  
INSURANCE PER PROJECT

In consideration of the policy premium and notwithstanding any inconsistent statement in the policy to which this Endorsement is attached or any other Endorsement attached thereto, it is agreed as follows:

This Endorsement modifies the insurance provided under the General Liability Coverage part of the policy of insurance referenced below, as follows:

The general aggregate limit under LIMITS OF INSURANCE applies separately to the project described by Contract: \_\_\_\_\_

POLICY INFORMATION

1. Insurance Company: \_\_\_\_\_  
("the Company"); Policy No. \_\_\_\_\_
2. Effective Date of this Endorsement: \_\_\_\_\_
3. Named Insured: \_\_\_\_\_
4. Contract: \_\_\_\_\_

All notices herein provided to be given by the Company to the Owner in connection with this policy and this Aggregate Limits of Insurance Per Project Endorsement, shall be mailed or delivered to SAWPA at its main office, 11615 Sterling Avenue, Riverside, California 92503.

I, \_\_\_\_\_(print/type name), warrant that I have authority to bind the above listed insurance company and by my signature hereon do bind this company.

\_\_\_\_\_  
(Signature of Authorized Representative)  
(Original signature required on all Endorsements furnished to SAWPA)

Name of Agent/Agency: \_\_\_\_\_  
Title: \_\_\_\_\_ Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

Address: \_\_\_\_\_

WAIVER OF SUBROGATION ENDORSEMENT  
(LIABILITY)  
(AUTOMOTIVE)  
(EXCESS LIABILITY)  
(BUILDER'S ALL RISK)  
(POLLUTION LIABILITY)

In consideration of the policy premium and notwithstanding any inconsistent statement in the policy to which this Endorsement is attached or any other Endorsement attached thereto, it is agreed as follows:

The Insurance Company waives any right to subrogation it may acquire against SAWPA, its Commissioners, the engineer and consultants, and each of their Directors, Officers, Agents, and Employees for this contract, and all public agencies from whom permits will be obtained and their Directors, Officers, Employees and Agents by reason of any payment made on account of injury, including death of persons resulting therefrom, sustained by any employee of any insured, arising out of the performance of the contract referenced below .

POLICY INFORMATION

1. Insurance Company: \_\_\_\_\_  
("the Company"); Policy No. \_\_\_\_\_
2. Effective Date of this Endorsement: \_\_\_\_\_
3. Named Insured: \_\_\_\_\_
4. Contract: \_\_\_\_\_

All notices herein provided to be given by the Company to the Owner in connection with this policy and this Waiver of Subrogation Endorsement, shall be mailed or delivered to SAWPA at its main office, 11615 Sterling Avenue, Riverside, California 92503.

I, \_\_\_\_\_(print/type name), warrant that I have authority to bind the above listed insurance company and by my signature hereon do bind this company.

\_\_\_\_\_  
(Signature of Authorized Representative)  
(Original signature required on all Endorsements furnished to SAWPA)

Name of Agent/Agency: \_\_\_\_\_ Title: \_\_\_\_\_  
Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Address: \_\_\_\_\_

ADDITIONAL INSURED ENDORSEMENT  
(LIABILITY)  
(AUTOMOTIVE)  
(EXCESS LIABILITY)  
(BUILDER'S ALL RISK)  
(POLLUTION LIABILITY)

In consideration of the policy premium and notwithstanding any inconsistent statement in the policy to which this Endorsement is attached or any other Endorsement attached thereto, it is agreed as follows:

The Santa Ana Watershed Project Authority, California, its Commissioners, the Engineer, Consultants and each of their Directors, Officers, Employees and Agents, and all Public Agencies from whom permits will be obtained and their Directors, Officers, Employees and Agents are hereby declared to be additional insureds under the terms of this policy, but only with respect to the operations of the Contractor at or from any of the premises of SAWPA in connection with the contract with SAWPA designated below, or acts and omissions of the additional insureds in connection with its general supervision or inspection of said operations.

POLICY INFORMATION

1. Insurance Company: \_\_\_\_\_  
("the Company"); Policy No.: \_\_\_\_\_
2. Effective Date of this Endorsement: \_\_\_\_\_
3. Named Insured: \_\_\_\_\_
4. Contract : \_\_\_\_\_

All notices herein provided to be given by the Company to the Owner in connection with this policy and this Additional Insured Endorsement, shall be mailed or delivered to SAWPA at its main office, 11615 Sterling Avenue, Riverside, California 92503.

I, \_\_\_\_\_ (print/type name), warrant that I have authority to bind the above listed insurance company and by my signature hereon do so bind this company.

\_\_\_\_\_  
(Signature of Authorized Representative)  
(Original signature required on all Endorsements furnished to SAWPA)

Name of Agent/Agency: \_\_\_\_\_

Title: \_\_\_\_\_ Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

Address: \_\_\_\_\_

NOTICE OF POLICY TERMINATION  
OR CANCELLATION ENDORSEMENT  
(LIABILITY)  
(AUTOMOTIVE)  
(EXCESS LIABILITY)  
(BUILDER'S ALL RISK)  
(WORKERS' COMPENSATION)  
(POLLUTION LIABILITY)

In consideration of the policy premium and notwithstanding any inconsistent statement in the policy to which this Endorsement is attached or any other Endorsement attached thereto, it is agreed as follows:

Cancellation Notice. The insurance afforded by this policy shall not be suspended, voided, cancelled, reduced in coverage or in its limits except after thirty( 30) days' prior written notice by certified mail, return receipt requested, has been given to SAWPA, with copy to the Engineer. Such notice shall be addressed to SAWPA as indicated below.

1. Insurance Company: \_\_\_\_\_  
("the Company") Policy No.: \_\_\_\_\_
2. Effective Date of this Endorsement: \_\_\_\_\_
3. Named Insured: \_\_\_\_\_
4. Contract: \_\_\_\_\_

All notices herein provided to be given by the Company to the Owner in connection with this policy and this Notice of Policy Termination or Cancellation Endorsement, shall be mailed or delivered to SAWPA at its main office, 11615 Sterling Avenue, Riverside, California 92503.

I, \_\_\_\_\_(Print/type name), warrant that I have authority to bind the above listed insurance company and by my signature hereon do so bind this company.

\_\_\_\_\_  
(Signature of Authorized Representative)  
(Original signature required on all Endorsements furnished to SAWPA)

Name of Agent/Agency: \_\_\_\_\_

Title: \_\_\_\_\_ Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

Address: \_\_\_\_\_

**INTENTIONALLY LEFT BLANK**

**SECTION 00700**

**GENERAL CONDITIONS**

**TABLE OF CONTENTS**

ARTICLE 1 - DEFINITIONS .....	2
ARTICLE 2 - PRELIMINARY MATTERS .....	4
ARTICLE 3 - INTENT AND INTERPRETATION OF CONTRACT DOCUMENTS.....	7
ARTICLE 4 - TIME .....	10
ARTICLE 5 - LANDS, CONDITIONS, AND LAYOUT .....	11
ARTICLE 6 - BONDS, INSURANCE, AND INDEMNITY .....	12
ARTICLE 7 - SUPERVISION AND SUPERINTENDENCE.....	15
ARTICLE 8 - CONSTRUCTION PROCEDURES AND PROTECTION.....	16
ARTICLE 9 - LABOR, MATERIALS, AND EQUIPMENT .....	19
ARTICLE 10 - SUBCONTRACTORS.....	21
ARTICLE 11 - LAWS AND REGULATIONS .....	22
ARTICLE 12 - SUBMITTALS .....	22
ARTICLE 13 - SAFETY PRECAUTIONS AND EMERGENCIES .....	27
ARTICLE 14 - SEPARATE CONTRACTS .....	29
ARTICLE 15 - OWNER'S AND ENGINEER'S STATUS DURING CONSTRUCTION .....	30
ARTICLE 16 - CHANGES IN THE WORK.....	31
ARTICLE 17 - ACCESS, INSPECTIONS, AND TESTS .....	36
ARTICLE 18 - DEFECTIVE WORK.....	38
ARTICLE 19 - GUARANTEES AND WARRANTIES .....	39
ARTICLE 20 - PAYMENTS AND COMPLETION .....	40
ARTICLE 21 - SUSPENSION AND TERMINATION .....	45
ARTICLE 22 - ARBITRATION.....	47
ARTICLE 23 - MISCELLANEOUS PROVISIONS .....	48

## ARTICLE 1 - DEFINITIONS

- 1.1 Terms used in the Contract Documents are defined in the "Glossary, Water and Wastewater Control Engineering" prepared by the Joint Editorial Board representing the American Public Health Association, American Society of Civil Engineers, American Water Works Association and the Water Pollution Control Federation, 1969 Edition, and are further defined herein. The terms shall have the meanings described which shall be applicable to both the singular and plural thereof.
- 1.2 Approved Plans, Plans, Approved Drawings or Drawings. Shall mean the official plans, profiles, typical cross-sections, working drawings, detail drawings, or exact reproductions thereof, approved by the Owner and other appropriate government agencies, which show the locations, character, dimensions, and details of the work required to construct the specified public improvements.
- 1.3 Addenda. Written or graphic instruments issued prior to execution of the Contract Agreement which modify or interpret the Contract Documents.
- 1.4 Bid. The offer or proposal of the Bidder submitted in the prescribed form setting forth the prices for the Work to be performed.
- 1.5 Bidder. Any person, firm, corporation or organization submitting a Bid or Proposal for the Work.
- 1.6 Bonds. Bid, performance, and payment bonds and other instruments of security furnished by the Contractor and his surety in accordance with the Contract Documents.
- 1.7 Change Order. A written order to the Contractor signed by the Owner ordering and authorizing an addition, deletion, or revision in the Work, or an adjustment in the Contract Price or the Contract Time.
- 1.8 Commission. Shall mean the Commissioners of the Santa Ana Watershed Project Authority.
- 1.9 Construction Manager. The Construction Manager will act as extension of staff to the Owner and manage the project. Contractor shall coordinate his/her activities with the Construction Manager, as required, where directed to coordinate with the Owner or Construction Manager.
- 1.10 Contract Agreement. The Contract Documents form the Contract Agreement. The Contract Agreement represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations, or agreements, either written or oral. The Contract Agreement may be amended or modified after execution only by a Modification. References herein to the Contract or the Agreement shall be understood to mean and refer to the Contract Agreement.
- 1.11 Contract Documents. The Contract Documents consist of the Contract Agreement, the notices, instructions and forms issued to Bidders in the Bidding Requirements for the submittal of Bids, the Contractor's Bid, the Bid security, the Notice of Award, the Notice to Proceed, the Notice to Construct if any, the Conditions of the Contract (General, and Special Conditions), the Bonds, the Drawings, the Specifications, all Addenda, and all Modifications.
- 1.12 Contract Price. The total moneys payable to the Contractor under the Contract Documents.



- 1.13 Contract Time. The number of consecutive calendar days for completion of the Work, or the date upon which the Work shall be completed and ready for use by the Owner, as stated in the executed Contract Agreement.
- 1.14 Contractor. The Contractor is the independent person, firm, corporation, partnership or organization identified as such in the Contract Agreement and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term Contractor means the Contractor or his/her authorized representative. The Contractor is with whom the Owner contracts for the performance of the work or any part thereof covered by the Approved Plans and these Specifications. Instructions or information given by the Owner to the Contractor's superintendent or agent on the Project shall be considered as having been given to the Contractor.
- 1.15 Day and Days. The term day shall mean calendar day, the term days shall mean consecutive calendar days, and the term working days shall mean consecutive calendar days excluding Saturdays, Sundays, and legal holidays, unless otherwise stated or specified.
- 1.16 Drawings. The Drawings or exact reproductions thereof which show the scope and character of the Work to be performed and which have been approved by the Owner, and are referred to in the Contract Documents. The terms Drawing, plan, and plans have the same meaning as the term Drawings unless otherwise stated or specified.
- 1.17 Engineer. The term Engineer shall mean the person or firm appointed by the Owner to undertake the duties and powers assigned to the Engineer by these Specifications acting directly or through authorized representatives. The term Engineer is referred to throughout the Contract Documents as if singular in number and masculine in gender, and means the Engineer or his authorized representative, including the Engineer's employees, agents, and consultants. The Engineer is qualified to act as an agent of the Owner in preparing plans for facilities to be approved and accepted by the Owner and incorporated thereafter into the Owner's system.
- 1.18 Field Order. A Field Order is a written order issued by the Owner to the Contractor which clarifies or interprets the Contract Documents pursuant to paragraph 3.2, or orders minor changes or alterations in the Work pursuant to paragraph 16.6.
- 1.19 Inspector. The Inspector is the authorized agent of the Owner, limited in each case to the duties entrusted to him by the Owner. The term Inspector applies to all Inspectors appointed by the Owner.
- 1.20 Modification. A Modification is a written amendment to the Contract Agreement signed by both parties, a Change Order, or a Field Order.
- 1.21 Notice of Award. The written notice by the Owner to the Contractor that the Contractor is the successful Bidder and that, upon compliance with the conditions precedent to be fulfilled by the Contractor within the stated time, the Owner will execute the Contract Agreement.
- 1.22 Notice to Construct. The written notice by the Owner to the Contractor authorizing the Contractor to begin the physical installation of the particular material or equipment covered by such notice.
- 1.23 Notice to Proceed. The written notice by the Owner to the Contractor authorizing him to proceed with the Work and establishing the date of commencement of the Work.
- 1.24 Project. The Project is the total construction designed for or by the Owner of which the Work performed or constructed under the Contract Documents may be the whole or a part.

- 1.25 SAWPA or Owner. Shall mean the Santa Ana Watershed Project Authority (SAWPA). For the unique purpose of these Specifications, Owner shall also refer to the Owner's representative(s) acting within the scope of the particular duties entrusted to them. The Owner shall resolve any and all issues which may arise with regard to the quality or acceptability of approved materials furnished or work performed, to the manner of performance and rate of progress of the work and shall answer all questions relating to the interpretation of the Standard Drawings, the Approved Plans, and these Specifications as well as the acceptable fulfillment of the Contract on the part of the Contractor.
- 1.26 Shop Drawings. All drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data which are prepared by the Contractor or any Subcontractor, manufacturer, supplier, or distributor and which illustrate the equipment, material, or some portion of the Work.
- 1.27 Samples. Samples are physical examples furnished by the Contractor to illustrate materials, equipment, or workmanship, and to establish standards by which the Work will be judged.
- 1.28 Specifications. The Specifications include the Bidding Requirements, the Contract Forms, the Conditions of the Contract (General, and Special Conditions), and the Divisions and Sections of the Specifications.
- 1.29 Standard Drawings. Shall mean the standard details issued by the Owner for construction of the Owner's facilities.
- 1.30 Subcontractor and Sub-subcontractor. The terms Subcontractor and Sub-subcontractor are referred to throughout the Contract Documents as if each were singular in number and masculine in gender, and means a Subcontractor or Sub-subcontractor or an authorized representative thereof. A Subcontractor is a person, firm, corporation, or organization who has a direct contract with the Contractor to perform any of the Work at the site. A Sub-subcontractor is a person, firm, corporation, or organization who has a direct or indirect contract with a Subcontractor to perform any of the Work at the site.
- 1.31 Supplier. Any person, firm, corporation, or organization who supplies materials or equipment for the Work, including that fabricated to a special design, and may also be a Subcontractor or a Sub-subcontractor.
- 1.32 Surety. The term Surety is the person, firm, corporation, or organization that joins with the Contractor in assuming the liability for the faithful performance of the Work and for the payment of all obligations pertaining to the Work in accordance with the Contract Documents by issuing the Bonds required by the Contract Documents or by law.
- 1.33 Work. The term Work includes all labor, materials, equipment, and incidentals necessary to produce the construction required by the Contract Documents and any and all obligations, duties, and responsibilities necessary to the successful completion of the construction assigned to or undertaken by the Contractor under the Contract Documents.

## ARTICLE 2 - PRELIMINARY MATTERS

- 2.1 Award. The award of the Contract Agreement, if it is awarded, will be to the lowest responsible Bidder whose qualifications indicate the award will be in the best interest of the Owner and whose Bid complies with all the prescribed requirements. No Notice of Award will be given until the Owner has concluded such investigations as he deems necessary to establish the responsibility, qualifications, and financial ability of the Bidders to do the Work in accordance

- with the Contract Documents to the satisfaction of the Owner within the time prescribed. The Owner reserves the right to reject the Bid of any Bidder who does not pass such investigation to the Owner's satisfaction. In analyzing Bids, the Owner may take into consideration alternatives and unit prices, if requested by the Bid forms. If the Contract Agreement is awarded, the Owner will give the successful Bidder a Notice of Award within time period prescribed in Notice Inviting Bids after the opening of the Bids and no Bidder may withdraw his Bid for a period of time as prescribed in Notice Inviting Bids after the date set for the receipt of Bids unless other time periods are stated in the Bidding Requirements or elsewhere in the Contract Documents.
- 2.2 Execution of Contract Agreement. At least two counterparts of the Contract Agreement and such other Contract Documents as practicable shall be suitably identified as agreed by the parties and signed by the Owner and the Contractor. The Contract Agreement shall be executed within time period prescribed in Notice Inviting Bids of the Notice of Award unless otherwise provided in the Bidding Requirements or elsewhere in the Contract Documents. The Owner and the Contractor shall each receive an executed counterpart of the Contract Documents. The Contract Agreement shall be executed in the form adopted or directed by the Owner.
- 2.3 Delivery of Bonds. Simultaneously with the execution of the Contract Agreement, the Contractor shall deliver to the Owner the required Bonds.
- 2.4 Forfeiture of Bid Security. Failure of the successful Bidder to whom a Notice of Award is tendered to execute the Contract Agreement and deliver the Bonds and other documents required of him at the time of execution within the time limit provided in the Contract Documents shall be just cause for the Owner to annul the Notice of Award and declare the Bid and any security therefor forfeited.
- 2.5 Copies of Documents. The Owner will furnish to the Contractor up to eight (8) copies of the Specifications and Drawings as are reasonably necessary for the execution of the Work. Upon request, additional copies will be furnished at the cost of reproduction and handling as determined at the sole discretion of the owner.
- 2.6 Progress Schedule. Simultaneously with the execution of the Form of Agreement, the Contractor shall submit to the Owner for approval an estimated progress schedule in chart form indicating the date that each part or branch of the Work will be started and completed including, where applicable, the continuance of operations as provided in paragraph 12.10, and indicating a schedule of the required submittals including shop drawings, samples, lists of materials and equipment, equipment data, and instruction manuals. The schedule shall conform to the Work and the Contract Time, shall be subdivided and coordinated to the schedule of values, and shall be subject to such revisions the Owner may require for his approval. The Contractor shall revise the approved progress schedule at monthly intervals, the revised schedules in the same form as the original approved schedule and concurrent with the time periods covered by applications for progress payments. Each revised schedule shall indicate the Work actually accomplished during the time period and the schedule for the performance of the remaining Work. Each revised schedule shall be submitted to the Owner for approval simultaneously with the Contractor's application for progress payment for the same time period, and shall be subject to such revisions the Owner may require for his approval. The Owner's approval of revised progress schedules will be a condition precedent to the approval of the Contractor's applications for progress payments.
- 2.7 Schedule of Values. Simultaneously with the execution of the Contract Agreement, the Contractor shall submit a schedule of values as required by paragraph 20.1 for use in progress payments. When directed by the Owner, the Contractor shall submit to the Owner for approval a revised schedule of values coordinated to the revised progress schedules required under paragraph 2.6 and pertinent requirements of Special Conditions.

- 2.8 Insurance. Before execution of the Contract Agreement, the Contractor shall deliver to the Owner the certificates and Proof of Insurance as required by Article 6.
- 2.9 Pre-Construction Conference. The Owner shall schedule at least five (5) days prior to beginning any work in the field, a Pre-Construction Conference, to review the progress schedule and the schedule of values, to establish procedures for handling the required submittals and for processing applications for payment, and to establish a working understanding between the parties as to the Project and the Work. The Contractor shall be prepared to discuss, in detail, the project schedule, and shall provide the Owner with any schedules, submittals, lists, permits, or other information required by the Engineer or by these Specifications.
- 2.9.1 Present at the Pre-Construction Conference shall be the Owner or a designee who it to be the on-site representative of the Owner for the Project, the Engineer, the Contractor and his Superintendent, Key Personnel, Safety Officer, the Soils Technician who is to verify backfill compaction, and the Owner's Inspector.
- 2.9.2 Invited to the Pre-Construction Conference shall be the Representative(s) of the City of Corona, the Representative(s) of the County of Riverside, the Representative(s) of Caltrans, the Representative(s) of the Regional Water Quality Control Board (RWQCB), and the Representative(s) of appropriate utility companies.
- 2.10 Verification. Before undertaking the Work, the Contractor shall carefully study and compare the Contract Documents for any discrepancies, inconsistencies, ambiguities, conflicts, or other errors in them or between the Contract Documents and the site conditions, and check and verify all figures, dimensions, and quantities shown thereon and all field measurements and actual site conditions, and shall bear all costs for any error in the Work resulting from his failure to so compare and verify. He shall at once report in writing to the Owner any error which he may discover and shall not perform or construct any of the Work affected thereby until an interpretation or clarification has been issued pursuant to paragraph 3.2. The Contractor assumes full responsibility for having familiarized himself with the nature and extent of the Contract Documents, the Work, locality, and local conditions that may in any manner affect the Work to be done, and represents that he has visited the site and correlated his observations with the requirements of the Contract Documents.
- 2.11 Qualifications of Subcontractors and Suppliers.
- 2.11.1 Listing. Within the allotted time after the opening of Bids as stipulated in Bid Proposal, unless another time or method is required in the Contract Documents or by law, the apparent low Bidder shall submit to the Owner for acceptance a list of the names and addresses of Subcontractors without change from those which may be listed in the Bid Form and which are proposed to be employed in the performance of the Work, and including the persons and organizations who are to supply the principal items of materials and equipment, as may be contained in the Forms of Bid, and to the extent specified or required by the Owner. The list shall comply with the limitation on subcontracting provided in paragraph 10.2 unless the limitation is waived in whole or in part by the Owner. Prior to the Notice of Award, the Owner will notify the apparent low Bidder in writing if the Owner, after due investigation, has reasonable objection to any Subcontractor, person or organization on such list. The failure of the Owner to make objection to any Subcontractor, person or organization on the list prior to the Notice of Award shall constitute an acceptance of such Subcontractor, person or organization. Acceptance of any such Subcontractor, person or organization shall not constitute a waiver of any right of the Owner to reject defective Work (See Section 00800).

- 2.11.2 Revision of Listing. If, prior to the Notice of Award, the Owner determines that a listed Subcontractor is not a responsible contractor, the apparent low Bidder may, prior to the Notice of Award (a) submit an acceptable substitute Subcontractor, person or organization without an increase in his Bid price or (b) submit a revised list complying with paragraph 10.2 or such waiver thereof the Owner may elect to issue, subject to all the preceding requirements of this subparagraph, with no increase in his Bid price or (c) withdraw his Bid and forfeit his Bid security. If, after the Notice of Award, the Owner refuses to accept any Subcontractor, person or organization on such list, the Contractor shall submit an acceptable substitute and the Contract Price will be increased or decreased by the proven difference in cost occasioned by such substitution and an appropriate Addendum or Change Order will be issued. No change or revision shall be made to the list accepted by the Owner nor shall any other Subcontractor, person, or organization not named in the accepted list be employed on or for the Work without the issuance of an appropriate Modification and at no additional cost to the Owner.
- 2.12 Starting the Work. The Contractor shall start the Work not later than the date stated in the Notice to Proceed, which date will be the first day of the Contract Time. Unless otherwise provided in the Bidding Requirements, the date so stated for the Work to start will be the fifth day from the date of the Notice to Proceed. The Owner reserves the right to delay issuance of the Notice to Proceed for a period not to exceed sixty (60) days after the date the Contract Agreement is executed, unless otherwise provided in the Bidding Requirements, and no additional payment will be made to the Contractor on account of such delay.

### ARTICLE 3 - INTENT AND INTERPRETATION OF CONTRACT DOCUMENTS

- 3.1 Intent of the Contract Documents. The Contract Documents are complementary and what is called for by one is as binding as if called for by all. Any Work that may be reasonably inferred from the Drawings or Specifications as being required to produce the intended result shall be provided by the Contractor whether or not it is specifically called for. The Contractor shall furnish and pay for all labor, supervision, materials, equipment, transportation, construction equipment and machinery, tools, appliances, water, fuel, power, energy, light, heat, utilities, telephone and communications, temporary and sanitary facilities, storage, protection, safety provisions, and all other facilities, services, and incidentals of any nature whatsoever necessary for the satisfactory and acceptable execution, testing, initial operation, and completion of the Work in accordance with the Contract Documents, ready for use, occupancy or operation by the Owner.
- 3.2 Interpretations. Written clarifications or interpretations necessary for the proper execution or progress of the Work, in the form of drawings or otherwise, will be issued with reasonable promptness by the Owner and in accordance with any schedule agreed upon. Such clarifications or interpretations shall be consistent with or reasonably inferable from the intent of the Contract Documents and shall become a part thereof, and may be effected by Field Order. If the Contractor believes that a written clarification or interpretation entitles him to an increase in the Contract Price or an extension of the Contract Time, he may make a claim therefor as provided in paragraph 16.4

Should there appear to the Contractor to be a discrepancy in the Contract Documents, should questions arise as to the meaning or intent of the Contract Documents, or should the Owner's comments on submittals returned to Contractor appear to Contractor to change the requirements or scope of the Contract Documents, Contractor shall submit a Request for Information ("RFI") to the Owner. Contractor shall coordinate and schedule its Work to provide the Owner sufficient time to issue a written reply to the RFI before proceeding with

Work affected thereby. Pursuant to this section of the General Conditions, the Contractor shall use the Request for Information Form, included herewith (at the end of the General Conditions section), for submittal of inquiries and requests for information or clarification of the Contract Documents. Only those RFIs using the provided form are binding on the Owner and made a part of the Work. Use of any other form of transmitting requests for information or clarification shall not be allowed.

The Owner will issue a reply to an RFI within five (5) working days of receipt of same. The reply may include written Clarifications as deemed by the Owner to be necessary, or a Field Order requiring minor changes in the Work. If additional time is needed to issue the reply, the Owner will, within the 5-day reply period, notify the Contractor of the longer reply period requirement. The Contractor shall not be entitled to any additional compensation or time extension as a result of the need for additional time by the Owner to address such RFIs.

Clarifications of the Contract Documents and Field Orders issued by the Owner shall be binding on Contractor and shall be promptly executed by Contractor. The Owner's right to clarify any element of the Contract Documents shall not be construed to entitle Contractor to a modification of the Contract Sum or a change in the Contract Time.

- 3.3 Organization of Drawings and Specifications. Except where a particular item or type of equipment is specified or otherwise required to be assembled of various components under the coordination and responsibility of one manufacturer or supplier (sometimes referred to or specified as unit responsibility), the organization of the Specifications into Division, Sections, Articles, and paragraphs, the listing of Work included and not included in the various Sections of the Specifications, and the arrangement of the Drawings shall not control the Contractor in dividing the Work among Subcontractors nor establish the extent of Work to be performed by a trade.

3.3.1 Drawings. Scale dimensions on Drawings shall govern where figured dimensions are not indicated. Figured dimensions on Drawings shall govern over scale dimensions, and detailed Drawings shall govern over general Drawings.

3.3.2 Specification Titling and Arrangement. The Article and paragraph titles and other identifications of subject matter in the Specifications are intended as an aid in locating and recognizing various requirements. Except where titling forms a part of the text, such as the beginning words of a sentence or establishes the subject of an Article or paragraph, the titles are subordinate to and do not define, limit, or otherwise restrict the Specification text. Underlining or capitalizing of words in the text does not signify or mean that such words convey special or unique meanings having precedence over any other part of the Contract Documents. The Specification text shall govern over titling and shall be understood to be and interpreted as a whole. The order of Articles, paragraphs, and subparagraphs is established by the alpha-numeric or similar system employed in the text.

3.3.3 Specification Language. Words and phrases requiring an action or performance, such as perform, provide, install, furnish, erect, connect, test, operate, and adjust, shall be understood to include the meaning of the phrase "The Contractor shall" unless otherwise specified. The requirements of the Drawings and Specifications apply to all Work of the same type, kind, and class even though the word "all" may not be stated. The usage and meaning of various words and phrases employed in the Specifications and herein are as follows, and shall be understood to apply to the future, present, and past tenses according to the context.

3.3.3.1 References to Drawings. The words indicated, shown, detailed, noted, scheduled, illustrated, and words of like import shall mean that reference is made to the Drawings unless stated otherwise.

- 3.3.3.2 Directives. The words directed, direction, designated, selected, and words and phrases of like import shall mean that the direction, designation, selection, or like action of the Owner is intended unless stated otherwise.
- 3.3.3.3 Submittals. The words submit, submittal, submission, and words of like import shall be understood to include the meaning of the phrase "Submit to the Owner for approval" unless stated otherwise.
- 3.3.3.4 Equals and Approvals. The words equal, approved equal, equivalent, and words and phrases of like import shall be understood to be followed by the expression "in the opinion of the Owner" unless stated otherwise. The words approval, acceptable, acceptance, satisfaction, and words of like import shall mean that the approval, acceptance, or satisfaction of the Owner is intended unless stated otherwise.
- 3.3.3.5 Perform. The word perform shall mean that the Contractor shall perform all operations required to complete the mentioned action or Work in accordance with the intent of the Contract Documents.
- 3.3.3.6 Provide. The word provide shall mean that the Contractor shall furnish and install the mentioned Work, complete in place, connected, and ready for use by the Owner in accordance with the intent of the Contract Documents, except the words providing and provided may mean "contingent upon" and the phrase "as provided in" may mean "in accordance with" where such is the context.
- 3.3.3.7 Required. The word required and words of like import shall mean "as required to complete the Work" and "as required by the Owner" according to the context, unless stated otherwise.
- 3.3.3.8 Technical Words. Work, materials, or equipment described in words which so applied have a well-known trade or technical meaning shall be deemed to refer to such recognized meanings.

- 3.4 Reference or Standard Specifications. Specifying in the Contract Documents by reference to standard or reference type specification documents or to another part of the Contract Documents shall have the same force and effect as if the document or portion referred to were exactly repeated at the place where reference is made. In case of conflict between any applicable code, law, ordinance, rule, regulation, or order and the referenced standard or reference Specification Documents, the Contractor shall conform to the most restrictive requirement as determined by the Owner, provided such conformance is lawful. Standard or reference Specification Documents incorporated into the Contract Documents by reference shall be those in effect by the appropriate jurisdictional agency on the date shown at the end of the Notice Inviting Bids. The Contractor, Subcontractors, Sub-subcontractors, and suppliers of materials and equipment for the Work shall be fully familiar with the referenced documents. Abbreviations specified to indicate or identify standard or reference specification documents, such as ASTM, ANSI, AWWA, and ASME, shall be interpreted according to their well-known technical and trade meanings and usage.

Work conducted in conjunction with this Contract shall conform to the requirements of the Standard Specifications for Public Works Construction, "Greenbook", unless otherwise indicated or directed in the Contract Documents included herewith.

- 3.5 Precedence of Documents: It is the intent of the Contract Documents to provide the Owner with complete and fully operational facilities as indicated and specified. All information conveyed by the Contract Documents shall be construed to that effect, and shall be performed to that effect.

The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. Performance by the Contractor shall be required consistent with the Contract Documents and those items that are reasonably inferable from those documents as being necessary to produce the indicated results.

To the fullest extent reasonably possible, all provisions of the Contract Documents shall apply to performance of the Work; provided, however, that in resolving conflicts, errors, omissions, or discrepancies in any of the Contract Documents, the order of precedence shall be as follows:

- Permits;
- Applicable Codes;
- Change Orders;
- Addenda;
- Special Conditions;
- Invitation to Bid;
- Instructions to Bidders;
- Agreement;
- General Conditions;
- Technical Plans and Drawings;
- Technical Specifications;
- Owner Standards Specification and Drawings;
- Referenced Standard Specifications and Drawings.

#### ARTICLE 4 - TIME

- 4.1 Time Limits. All time limits stated in the Contract Documents are of the essence of the Contract Agreement.
- 4.2 Time of Performance. The Contractor shall construct and complete the Work, within the Contract Time per Article 3.1 of the Agreement. It is expressly understood and agreed, by and between the Owner and the Contractor, that the Contract Time for the completion of the Work is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the Work.
- 4.3 Extension of Contract Time. If the Work is not completed within the Contract Time and any previously authorized extensions thereof, the Owner may extend the Contract Time at his discretion and, if so extended, the Contractor shall pay to the Owner all or any part, as the Owner may deem just and proper, of the actual costs incurred by the Owner due to such extension and that are directly related to the Work including the cost of additional engineering, consultant or professional services, tests, inspections, painting inspections, supervision, administration, and other incidental and overhead expenses, and the Change Order authorizing such extension of the Contract Time will effect an appropriate reduction in the Contract Price.
- 4.4 Delays and Liquidated Damages. If the Work is not completed within the Contract Time, or within any period of authorized extension thereof, it shall be understood and agreed that the Owner will suffer damage solely by reason of delay and, it being impractical and infeasible to determine the amount of actual damage, it is agreed that the Contractor shall pay to the Owner, as fixed and liquidated damages and not as a penalty, the amount stated in Section 3.2 of the Agreement, unless otherwise provided or agreed by the parties, for each calendar day of delay until the Work is completed and accepted; and the Contractor and his surety shall be liable for the amount thereof, except the Contractor will not be charged liquidated damages because of any delays in the completion of the Work due to unforeseeable causes beyond the control and



without the fault or negligence of the Contractor including, but not restricted to, acts of God or of the Public enemy, acts of the Government, acts of the Owner including any preference, priority or allocation order duly issued by the Owner, acts of another contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather. The Contractor shall, within ten days from the beginning of any such delay, notify the Owner in writing of the cause of the delay, whereupon the Owner will ascertain the facts and the extent of the delay and extend the time for completing the Work when in the Owner's judgment the findings of fact justify such an extension, and the Owner's findings of fact thereby shall be final and conclusive on the parties hereto. It is understood and agreed that such liquidated damage provision does not limit the Owner with respect to any other damage capable of ascertainment. The Contractor hereby acknowledges and agrees that the Engineer and other professionals, consultants, and specialists appointed or employed by the Owner for the Work will suffer damages as a result of any unauthorized delay in completion of the Work and accepts the liability and responsibility for these damages as damage to the Owner that is capable of ascertainment.

## ARTICLE 5 - LANDS, CONDITIONS, AND LAYOUT

- 5.1 Land and Rights-of-Way. The Owner will furnish and pay for the land, easements, and rights-of-way for the Work. The Contractor shall obtain consents from the property owners, make all necessary arrangements, and pay all costs for additional land areas or access required by him outside the limits of the land, easements, and rights-of-way furnished by the Owner, without liability to the Owner.
- 5.2 Data Furnished By Owner. Upon written request, the Owner will furnish to the Contractor a copy of all available boundary surveys and subsurface investigations. Before delivery the Contractor shall sign a release of liability for anything different (See Section 00800).
- 5.3 Subsurface Conditions. The Contractor shall promptly notify the Owner in writing of any subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents or of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in construction of the character provided for in the Contract Documents. The Owner will investigate those conditions and obtain such additional tests and surveys as he may deem necessary. If the Owner finds that the conditions differ significantly from those indicated in the Contract Documents or from those inherent in the construction, a Change Order will be issued to incorporate the necessary revisions unless otherwise provided in the Contract Documents.
- 5.4 Laying Out The Work.
- 5.4.1 Surveys. Property and boundary surveys will be established by the Contractor. The Contractor shall carefully preserve all survey stakes, reference points, bench marks, and monuments. Should any stakes, points, or benches be removed or destroyed by any act of the Contractor or his employees, they shall be reset at the Contractor's expense. Any expense incurred in replacing permanent monuments which the Contractor may have failed to preserve shall be borne by the Contractor.
- 5.4.2 Lines and Grades, Setting Stakes. The Contractor shall lay out all portions of the Work. Elevations shown for the various parts of the Work refer to the Datum Bench Mark identified by the Contract Documents. The Contractor shall establish the necessary base lines and grades at the surface of the ground and at convenient locations for the construction of the Work. The base line for pipeline construction will be parallel to and offset from the position of the pipeline. From the established base lines and grades, the Contractor shall extend the necessary lines and grades for construction of the Work

and shall be responsible for the correctness of same. The Contractor shall preserve all stakes set for lines, grades, or measurements of the Work in their proper. Any expense incurred in replacing said stakes which the Contractor may have failed to preserve shall be borne by the Contractor.

- 5.4.3 Preparation. Prior to establishment of base line and grade stakes, the Contractor shall have all utility lines located and marked in the field and shall have all rights-of-way cleared, graded, and ready for construction activities.
- 5.4.4 Contractor's Verification. The Contractor shall verify the locations and elevations of the base lines and grades. Not less than three consecutive points set on the same line, slope, or grade shall be used together in order that any variation from a straight line or grade can be detected. If any such variation is found, the Contractor shall correct the staking immediately. The Contractor shall be responsible for any error in the Work resulting from such variations and shall bear the costs of corrective Work.

## ARTICLE 6 - BONDS, INSURANCE, AND INDEMNITY

- 6.1 Bonds. The Contractor shall furnish performance and payment Bonds for the faithful performance and payment of all his obligations under the Contract Documents. Each Bond shall be in penal sums at least equal to the Contract Price unless otherwise stated in the Bidding Requirements, and in such form and with such sureties as are acceptable to the Owner. Prior to execution of the Contract Agreement the Owner may require the Contractor to furnish other Bonds in such form and with such sureties as the Owner may require. Sureties, to be acceptable to the Owner, shall be legally authorized to do business in the State and jurisdiction where the Work is to be constructed, and shall have assets that exceed its liabilities in an amount equal to, or in excess of, the amount of the bond. The bidder shall also be required to submit along with the proposal and bond the following documents:
- (a) The original, or a certified copy, of the unrevoked appointment, power of attorney, bylaws, or other instrument entitling or authorizing the person who executed the bond to do so.
  - (b) A certified copy of the authority of the insurer by the Insurance Commissioner.
  - (c) Proof that the Surety is named in the current list of "Surety Companies Acceptable On Federal Bonds" as published by the United States Treasury Department.
  - (d) Proof that the Surety has an "A" policyholder's rating and a financial rating of at least Class VI in accordance with the most current rating by A.M. Best Company.

The performance bond shall remain in full force and effect for the entire guarantee period as provided in paragraphs 19.1 and 19.2. If such Bonds are required by written instructions given prior to the opening of Bids, the premiums shall be paid by the Contractor; if subsequent thereto, they will be paid by the Owner. If at any time a surety on any such Bond is declared a bankrupt or loses its right to do business in the State or jurisdiction in which the Work is to be performed or is removed from the list of Surety Companies Acceptable on Federal Bonds, the Contractor, within ten days after notice by the Owner to do so, shall substitute an acceptable Bond or Bonds in such form and sum and signed by such other surety or sureties as may be satisfactory to the Owner. The premium on such Bond or Bonds shall be paid by the Contractor. No further payments shall be deemed due nor shall be made to the Contractor until the new surety or sureties shall have furnished an acceptable Bond or Bonds to the Owner.

- 6.2 Insurance. No Work shall be done under these Contract Documents unless there is in full force and effect during and until final acceptance of the Work, and thereafter as provided in subparagraph 6.2.1, all the insurance required to be furnished by the Contractor under this

Article. Nothing herein contained shall be construed as limiting in any way the extent to which the Contractor may be held responsible for payment of damages to persons or property resulting from his operations or the operations of any Subcontractor or Sub-subcontractor under him.

- 6.2.1 Carriers and Evidence. All insurance policies shall be with such insurance carriers and in such form as is satisfactory to and approved by the Owner. The Contractor shall file with the Owner a Certificate of Insurance for each policy required of him, and shall submit the actual insurance policies to the Owner for inspection if requested or so required herein. Any insurance bearing on the adequacy of performance shall be maintained by the Contractor after final acceptance of the Work for the entire guarantee period as provided in paragraphs 19.1 and 19.2. If the Contractor fails to maintain the required insurance, in whole or in part, the Owner may secure and pay the premiums for such insurance and the Contractor shall pay to the Owner such premium costs the Owner may so incur in accordance with paragraph 20.12.
- 6.2.2 Co-Insureds and Waivers. The Owner, Construction Manager and Design Engineer shall be named as co-insured in all insurance policies to be maintained by the Contractor, and such other persons or organizations as the Owner may designate shall be named as Additional Named Insureds. Exclusions in said insurance policies are subject to the approval of the Owner.
- 6.2.3 Noncancellation Clause and Renewals. All insurance policies required of the Contractor shall contain a provision that the coverages afforded under the policies will not be canceled or changed until at least thirty days' prior written notice has been given to the Owner by registered or certified mail. Exact copies of renewal policies or endorsement extensions of previous policies shall be delivered to the Owner by the Contractor prior to the expiration date of any of the insurances.
- 6.2.4 Indemnification. The Contractor shall indemnify, defend, and save harmless the Owner, Construction Manager, and Design Engineer from and against all losses and all claims, demands, payments, suits, actions, recoveries, and judgments of every nature and description brought or recovered against him by reason of any act or omission of the Contractor, his agents or employees or of any Subcontractor or Sub-subcontractor in the execution of the work. The Contractor shall maintain and pay for such insurance as will protect the Owner and the Engineer from any and all contingent liability under the Contract Agreement and a copy of such insurance policy shall be filed with the Owner.
- 6.2.5 Workmen's Compensation and Employer's Liability Insurance. The Contractor shall maintain or cause to be maintained adequate workmen's compensation insurance, including occupational disease provisions, under the laws of the State where the Work is located and employer's general liability insurance for the benefit of his employees and the employees of any Subcontractor or Sub-subcontractor under him not protected by such compensation laws. The workmen's compensation insurance shall include an All States endorsement, a voluntary compensation endorsement, a marine workers and a longshoreman's and harbor workers endorsement where applicable to the Work, and an endorsement waiving subrogation against the Contractor, the Owner, and the Engineer.
- 6.2.6 Public Liability and Property Damage Insurance. The Contractor shall maintain or cause to be maintained public liability and property damage insurance in comprehensive general liability policy form to protect the Contractor against claims or loss from liability imposed by law from damages which may arise out of or result from the Contractor's operations under the Contract Agreement, whether such operations be by himself or by any Subcontractor or any Sub-subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be

liable, on account of bodily injury, sickness or disease, including death resulting therefrom, suffered or alleged to have been suffered by any person or persons resulting directly or indirectly from said operations, and against claims or loss from liability imposed by law for damage to any property caused directly or indirectly by said operations, which insurance shall also cover accidents arising out of the use and operation of automobiles, trucks, and other vehicles on or for the Work whether or not owned by those performing said operations and, further, shall include operations and premises coverage, contractual liability and indemnification agreement coverage, and products and completed operations coverage. The insurance required of the Contractor under this subparagraph shall remain in full force and effect for the entire time of the Contractor's guarantee. Unless otherwise stated in the Contract Documents, the coverage amount of said insurance shall be not less than the following:

Public Liability - \$1,000,000 for one person injured in one accident or occurrence; \$3,000,000 for more than one person injured in one accident or occurrence.

Property Damage - \$1,000,000 per occurrence, \$1,000,000 aggregate limit.

- 6.2.7 Property Insurance. The Contractor shall maintain or cause to be maintained, until the Work is accepted by the Owner, Builders' Risk "All-Risk" Completed Value Insurance coverage including earthquake and flood upon the entire Work and including completed Work, Work in progress, and materials and equipment in transit or storage for the Work, to the full value thereof. This insurance shall include the interests of the Owner, the Contractor, and the Subcontractors and Sub-subcontractors in the Work. Such insurance may have a deductible clause with a maximum Twenty-Five Thousand Dollar deductible unless otherwise stated in the Special Conditions. Any insured loss is to be adjusted with the Owner and made payable to the Owner as trustee for the insureds as their interests may appear. The Owner and the Contractor waive all rights against each other for damages caused by fire or other perils to the extent covered by insurance provided under this subparagraph, except such rights as they may have to the proceeds of such insurance held by the Owner as trustee. The Contractor shall require similar waivers by Subcontractors and Sub-subcontractors. If after such loss no other special agreement is made, replacement of damaged Work may be covered by an appropriate Change Order. Under the contract documents, the property insurance shall include coverage against the perils of flood and earthquake.

6.2.7.1 Responsibility for Work.

- (a) Contractor shall be responsible for and shall bear any and all risk of loss or damage to Work in progress, all materials delivered to the site and all materials and equipment until completion and acceptance of the Work, unless such loss or damage results from the sole active negligence of Owner, or its representatives, and as otherwise hereinafter provided for in Paragraphs 6.2.7.1.2 and 6.2.7.1.3.
- (b) As provided in Section 4150 and 4151 of the California Public Contract Code, the Contractor shall not be responsible for the cost of repairing or restoring damage to the Work, determined to have been approximately caused by an act of God, in excess of five percent (5%) of the contract price, provided, that the work damaged was built in accordance with accepted and applicable building standards and the plans and specifications as set forth in this Contract.

The Contractor shall obtain insurance to indemnify the Owner for any damage to the Work caused by an act of God if the premium of said insurance coverage is called for as a separate bid item in the Schedule of Quantities and Prices.

This Contractor's Installation All Risk Insurance shall be provided covering value of the Work and all materials and equipment to be incorporated therein while at the site and during inland transit insuring to the replacement value,

subject to a deductible not to exceed \$5,000 for any single loss. This insurance shall also contain an insurer's waiver of subrogation against the Owner. This insurance shall specifically cover losses due to earthquake and flooding.

- (c) As provided in Section 4151 of the California Public Contract Code, the term "Acts of God" shall include only the following occurrences or conditions and effects: earthquakes in excess of a magnitude of 3.5 on the Richter Scale and tidal waves.
- (d) Pursuant to provisions of Section 4151 of the Public Contract Code the Owner reserves the right to make changes in this Contract in the course of construction to bring the completed improvements into compliance within environmental requirements or standards established by State or Federal statutes and regulations enacted after this Contract has been awarded or entered into. In such cases, the Contractor shall be paid for the changes in accordance with the provisions of the Contract governing payments for changes in the Work, or if such relevant provisions are not set forth in this Contract, payment shall be as agreed to by the parties pursuant to procedures under this Contract. The Owner further reserves the right to terminate the contract pursuant to provisions provided herein for environmental considerations as may be allowed under Section 4151.

- 6.3 Loss of Use Insurance. The Owner may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards or perils, however caused.
- 6.4 Loss or Damage and Indemnity Agreement. The Contractor shall be responsible for any liability imposed by law for any damage to the Work or any part thereof or to any of the materials or other things used in performing the Work or for injury to any person or persons or for any property damage. The Contractor shall indemnify and hold the Owner and the Engineer harmless against any and all liability, claims, loss or injury, including costs, expenses, and attorney's fees incurred in the defense of same, arising from any allegation, whether groundless or not, of damage or injury to any person or property resulting from the performance of the Work or from any material used in the Work or from any condition of the Work or Work site, or from any cause whatsoever during the process of the Work. Said indemnity includes acts of negligence of either said Owner or Engineer. This indemnity agreement does not extend to one whose sole negligence or willful misconduct caused injury or damage.
- 6.5 Nonlimitation of Indemnity Agreements. The indemnification obligations of the Contractor under the Contract Documents shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor or Subcontractor of any tier under workmen's compensation acts, disability benefit acts, or other employee benefit acts.

## ARTICLE 7 - SUPERVISION AND SUPERINTENDENCE

- 7.1 Contractor's Supervision. The Contractor shall supervise and direct the Work efficiently and with his best skill and attention. He shall be solely responsible for means, methods, techniques, procedures, and sequences of construction. The Contractor shall coordinate all parts of the Work and shall be responsible to see that the finished Work complies accurately with the Contract Documents.
- 7.2 Superintendent. The Contractor shall keep on the Work at all times during its progress a competent resident English speaking Superintendent satisfactory to the Owner, who shall not be replaced without ten (10) days' written notice to the Owner except under extraordinary

circumstances. The Superintendent shall be the Contractor's representative at the site and shall have the authority to act on behalf of the Contractor. All communications, instructions, and directions given to the Superintendent shall be as binding as if given to the Contractor. Whenever the Contractor or the Superintendent is not present on a part of the Work where the Owner wishes to give orders or directions, the orders or directions shall be received and obeyed by the Foreman in charge of that part of the Work the same as if the order or direction had been given to the Contractor or the Superintendent. Any order or direction given by the Owner not otherwise required to be in writing will be given or confirmed in writing upon request of the Contractor.

## ARTICLE 8 - CONSTRUCTION PROCEDURES AND PROTECTION

- 8.1 Contractor's Plant and Equipment. The Contractor shall furnish modern plant and equipment as necessary to perform the Work in a manner satisfactory to the Owner and in accordance with the Contract Documents, types and designs that comply with the requirements of Article 13 and with the requirements prescribed by laws, ordinances, codes, rules, regulations, and orders pertaining to wind and seismic forces at the place of the Project. Construction equipment shall be in a good state of repair and shall be maintained in such state during the progress of the work. In no case shall the manufacturer's rating or capacity for any equipment be exceeded. Construction equipment or machinery that at any time produces unsatisfactory results shall be promptly repaired or replaced by the Contractor and as the Owner may require.
- 8.2 Use of Site. The Contractor shall confine his equipment, the storage of materials and equipment, and the operations of those directly and indirectly employed by him to areas permitted by law, ordinances, permits, and the Contract Documents, and shall not unreasonably encumber the site with materials and equipment. Nothing in the Contract Documents shall grant to the Contractor exclusive occupancy of the site of the Work and Project.
- 8.3 Overloading. No part of the Work or new and existing structures, scaffolding, shoring, sheeting, construction machinery and equipment, or other permanent and temporary facilities shall be loaded with weights or subjected to stresses or pressures that endanger any of them. The Contractor shall bear the cost of correcting damage caused by overloading or excessive stresses or pressures.
- 8.4 Use of Explosives. The Contractor shall comply with all laws, ordinances, regulations, codes, and orders governing the transportation, storage, and use of explosives, shall exercise extreme care not to endanger life or property, and shall be responsible for all injury or damage resulting from the use of explosives for or on the Work. No blasting shall be done in the vicinity of existing structures above or below the ground without the prior written consent of the owner thereof.
- 8.5 Cutting and Patching. The Contractor shall perform all cutting, fitting, or patching of the Work that may be required to make its several parts fit together properly and satisfactorily, and shall not endanger any Work, structures, adjacent property, workmen, or the public by cutting, excavating, or otherwise altering the Work or any part of it. The Contractor shall restore all such cut or patched Work and improvements as approved by the Owner.
- 8.6 Verification of Installed Work. The Contractor shall correct all defects in installed Work of the Contract before subsequent related or connected Work is applied or installed. Where the Contract Documents require a material or item of equipment to be applied or installed under the supervision, inspection, or direction of the supplier or manufacturer, or his representative, the supplier, manufacturer, or his representative shall inspect the applicable installed Work and

issue a letter to the Owner stating the corrections required to or approval of the installed Work before his material or equipment is installed or applied.

- 8.7 Manufacturers' Instructions. Unless otherwise provided in the Contract Documents, the Contractor shall apply, install, erect, connect, use, clean, condition, and operate manufactured articles, materials, and equipment in accordance with the various manufacturers' instructions including those in the instruction manuals required in paragraph 12.7 and other instructions required in paragraph 12.8. The Contractor shall compare the requirements of the various manufacturers' instructions with the requirements of the Contract Documents, shall promptly notify the Owner in writing of any difference between such requirements, and shall not proceed with any of the Work affected by such differences until an interpretation or clarification is issued pursuant to paragraph 3.2. The Contractor shall bear all costs for any error in the Work resulting from his failure to so compare the various requirements and notify the Owner of any such differences.
- 8.8 Public Convenience. The Contractor shall at all times so conduct his operations as to ensure the least possible obstruction and inconvenience to traffic and the general public and the residents in the vicinity of the Work, to protect persons and property, and to preserve access to driveways, house, and buildings. The Contractor shall have under construction no greater amount of Work than he can properly perform with due regard to the rights of the public, and shall not create any public nuisance. No road, street, or highway shall be closed to the public except with the permission of the proper authorities. Where existing streets are not available as detours, the Contractor shall permit traffic to safely pass through the Work with as little delay and inconvenience as possible, unless otherwise authorized by the Owner. When a section of new surfacing, paving, or a traffic structure intended for public use has been completed, it shall be opened for use at the request of the Owner. The Contractor shall furnish competent flagmen whose sole duty shall be the directing of traffic through or around the Work when ordered by the Owner, required by public authorities having jurisdiction, or required by law. At no time shall the Contractor prevent free access to fire hydrants, water and gas main valves, manholes or vaults, or other utility facilities. The Contractor shall make temporary provisions to ensure the use of walkways and sidewalks and the proper functioning of gutters, sewer and storm drain inlets, and ditches, which shall not be obstructed.
- 8.9 Protection. The Contractor shall take all precautions and furnish and maintain protection to prevent damage, injury, or loss to all employees and workmen on the Work and all other persons who may be affected thereby; all the Work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any of his Subcontractors or Sub-subcontractors; and other improvements and property at the site or where Work is to be performed including buildings, trees and plants, pole lines, fences, guard rails, guide posts, culvert and project markers, signs, structures, conduits, pipe lines, and improvements within or adjacent to streets, rights-of-way, or easements, except those items required to be removed by the Contractor in the Contract Documents. The Contractor's protection shall include all the safety precautions required under Article 13 and other necessary forms of protection, and the notification of the owners of utilities and adjacent property.
- 8.9.1 Utilities and Substructures. The indication of the type and approximate location of existing utilities and substructures in the Contract Documents represents a diligent search of known records, but the accuracy and completeness of such indications are not warranted by the Owner or the Engineer and utility structures and services not so indicated may exist. Before commencing any excavations, the Contractor shall investigate, determine the actual locations, and protect the indicated utilities and structures, shall determine the existence, position, and ownership of other utilities and substructures in the site or where the Work is to be performed by communication with such owners, search of records, or otherwise, and shall protect all such utilities and

substructures. The Owner has indicated on the Plans and Specifications with reasonable accuracy the location of main or trunkline utilities located on the site of project. The Contractor shall be compensated for reasonable costs of locating and repairing any such facilities if not located with reasonable accuracy unless Contractor has failed to exercise reasonable care. Contractor shall not be assessed liquidated damages for delay caused failure of Owner to provide for the removal, relocation or protection of such utilities not identified in the Plans and Specifications. The Contractor shall verify the actual location and depth by "potholing" of each utility.

8.9.2 Maintenance of Facilities. Unless otherwise provided in the Contract Documents or unless otherwise cared for by the owner thereof, all water, gas, oil, or irrigation lines, all lighting, power, communication, or telephone conduits, all sewer and drainage lines and house connection lines, sprinkling systems, and other subsurface structures of any nature along the Work shall be maintained by the Contractor at his expense, and shall not be disturbed, disconnected, or damaged by him during the progress of the Work. The Contractor shall install temporary pipes of adequate size to carry off sewage from any sewer facilities cut off by construction operations. Installation of temporary pipes shall be made immediately upon cutting of the existing facility, and no sewage shall be allowed to flow from any severed facility upon the ground surface or in the trench excavation. Pipe used in temporary sewers may be clay, metal, concrete, or composition. Before completion of Work, the Contractor shall replace all severed connections and restore to operating order the existing sanitary facilities with matching materials and construction. No liquid from any severed facility shall be allowed to flow upon the ground surface or in any excavation.

8.9.3 Restoration and Repair. Except for those improvements and facilities required to be permanently removed by the Contract Documents, the Contractor shall make satisfactory and acceptable arrangements with the appropriate owners and, at his expense, shall repair and restore all improvements, structures, property, utilities, and facilities disturbed, disconnected, or damaged as a result or consequent of his Work or the operations of those for whom he is responsible or liable, including that caused by trespass of any of them with or without his knowledge or consent, or by the transporting of workmen, materials, or equipment to or from the site.

#### 8.10 Utilities.

8.10.1 Water Supply. Water for construction purposes shall be obtained from local water purveyor sources using a construction meter. Local water purveyors may include City of Corona and Lee Lake Water District. The construction meter and service connection shall be obtained from the water utility. The Contractor shall make arrangements with the water utility for payment of the deposit and installation of the meter. The cost of water used to complete the work shall be included in the Contractor's bid price. No additional or separate compensation shall be provided for this work. Damage caused to the meter will be the responsibility of the Contractor, and shall not be charged to the Owner in any manner. The Contractor shall not draw water from any fire hydrant or service, nor operate any valve or control of any water system without the written permission of the owner thereof, and a copy of each written permission shall be filed with the Owner.

8.10.2 Temporary Utility Interruptions. If the temporary interruption of utility services is necessary for the prosecution of the Work, the Contractor shall make all arrangements with the utility owners and pay all fees and charges levied by them for the interruptions, and shall notify the affected users at least twenty four hours in advance of the probable duration of interruption unless such notice is given by the appropriate utility owner.



- 8.10.3 Temporary Removal or Maintenance. If it should be necessary to move or temporarily maintain the property of any public utility or other property, the cost of which because of the terms of any franchise or for any other reason must be borne by the owner thereof, such owner will, upon proper application by the Contractor, be notified by the Owner to move or temporarily maintain such property until after the expiration of the time required for the Work. The Owner, public authorities having jurisdiction, and the owners of public utilities and franchises shall have access to any street, alley, right-of-way, or easement for the purpose of maintaining or of making repairs or changes in property made necessary by the Work.

## ARTICLE 9 - LABOR, MATERIALS, AND EQUIPMENT

- 9.1 Workmen. The Contractor shall at all times enforce strict discipline and good order among his employees and those of any Subcontractor or Sub-subcontractor, and shall not employ on the Work any unfit person or anyone not skilled and experienced in the assigned task. All Superintendents and foremen shall be English-speaking. Any Superintendent, foreman, laborer, or other person employed on the Work who fails or refuses to perform the Work in the manner required by the Contract Documents shall be discharged immediately and such person shall not again be employed on the Work. When required in writing by the Owner, the Contractor, Subcontractor, or Sub-subcontractor shall discharge any person who is, in the opinion of the Owner, incompetent, unfaithful, disorderly, or otherwise unsatisfactory. Such discharge shall not be the basis of any claim for compensation or damages against the Owner or the Engineer.
- 9.2 Workmanship. The quality of workmanship produced by skilled, knowledgeable, and experienced journeymen mechanics and artisans is required for the Work. Particular attention shall be given to the appearance and finish of exposed Work. The decision of the Owner with regard to the quality and adequacy of workmanship shall be final and binding.
- 9.3 Materials and Equipment. All materials and equipment incorporated in the Work shall be new unless otherwise specified. Materials and equipment not covered by detailed requirements in the Contract Documents shall be of the best commercial quality, suitable for the purpose intended, and approved by the Owner prior to use in the Work. The Contractor shall provide proper storage facilities and exercise such measures as will ensure the preservation of the required quality and fitness of all materials and equipment. Materials or equipment not conforming to the requirements of the Contract Documents shall be rejected and immediately removed from the site of the Work. Materials, supplies, or equipment to be incorporated into the Work shall not be purchased by the Contractor or any Subcontractor or Sub-subcontractor subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.
- 9.3.1 Plurality of Terms. Where materials or equipment are referred to in the singular number, it is intended unless otherwise limited that such references shall be applied to as much material or equipment as is required to complete the Work.
- 9.3.2 Optional Materials. Where any material or equipment item is specified by two or more manufacturer's name or proprietary identifications, the Contractor may provide any one of the materials or equipment so specified. Only one brand, kind, or make of material or equipment shall be used for each specific purpose throughout the Work notwithstanding that similar material or equipment of two or more manufacturers may be specified for the same purpose.
- 9.3.3 Space Requirements and Arrangement. The Contractor shall ensure that the materials and equipment to be furnished fit the space available, and shall make the necessary field measurements to ascertain space requirements including those for connections. If

material or equipment requiring arrangement or connections different from those required by the Contract Documents is approved by the Owner, the Contractor shall bear all costs for installing the material or equipment and for changes to adjoining or related Work the Owner may require.

- 9.3.4 Materials Furnished By Owner. Material or equipment to be furnished by the Owner will be supplied in accordance with the Specifications.
- 9.4 Substitutions and Equals. References in the Contract Documents to any material, item of equipment, or type of construction by manufacturer's name, make, catalog number, or other proprietary identification shall be interpreted as establishing a standard of quality. If the Contractor wishes to furnish or use a proposed substitute or equal material, item of equipment, or type of construction, he shall make written application to the Owner for approval, certifying in writing that the proposed substitute or equal will perform adequately the duties imposed by the general design, be similar and of equal substance to that specified, and be suited to the same use and capable of performing the same function as that specified, and stating all variations in costs pertaining to the application. No proposed substitute or equal shall be ordered or installed without the written approval of the Owner, and it shall be understood and agreed that the decision of the Owner in this matter shall be final and binding.

Prior to the receipt of Bids, requests for consideration of proposed substitute or equal materials or equipment shall comply with the Bidding Requirements. After receipt of Bids, if the Contractor should wish to propose a substitute or equal item for any specified by brand or trade name, within five (5) days after issuance of the Notice of Award, he shall in writing notify the Owner of his intent to do so and at that time submit to the Owner an itemized list of the item or items he proposes setting forth the various manufacturers' names and such other information he has available. Unless this notification is given within the time stated, the Contractor shall provide only the items specified by brand or trade name. If notification is so given the Owner, within thirty-five (35) days after issuance of the Notice of Award the Contractor shall supply data to the Owner to substantiate the proposed substitution or equal. The Owner will then decide whether the proposed substitution or equal is in fact equal in quality and utility to the specified trade or brand name items. It is agreed that the decision of the Owner in this matter shall be final.

- 9.4.1 Use of Approved Substitutions or Equals. The Contractor's use of approved substitutions or equals shall in no way relieve the Contractor from compliance with the Contract Documents. The Contractor shall bear all extra expense resulting from providing or using approved substitutions or equals where they affect the adjoining or related Work, including the expense of required engineering, redesigning, drafting, and permits where necessary, whether the Owner's approval is given before or after receipt of Bids.

The Contractor shall approve engineering costs for review and evaluation of substitutions or equals prior to the performance of the engineering work using the form titled, "Authorization of Engineering Costs for Evaluation of Substitutions and Equals", bound herein (at the end of the General Conditions section of these Specifications). The Owner's Representative will not perform the submittal review until the authorization form is signed and returned by the Contractor. If the Contractor does not provide this authorization, the submittal will be rejected.

The Contractor shall approve engineering costs associated with redesign of adjoining or related Work caused by substitutions or equals prior to the performance of the engineering work using the form titled "Authorization of Engineering Costs for Redesign Due to Substitutions or Equals", bound herein (at the end of the General Conditions section of these Specifications). The Owner's Representative will not perform the redesign until the authorization form is signed and returned by the

Contractor. If the Contractor does not provide the required authorization, the submittal which created the need for redesign will be requested.

The Owner, at its own discretion, will deduct the authorized costs from the Contractor's monthly progress payment or will require direct payment of the authorized amounts by the Contractor to the Owner's Representative providing the evaluation and/or redesign services.

- 9.4.2 Unauthorized Substitutions. If substitute materials or equipment are installed without the Owner's approval, the Contractor shall remove the unauthorized materials or equipment and install those required by the Contract Documents at his expense.

## ARTICLE 10 - SUBCONTRACTORS

- 10.1 Responsibility for Subcontractors. The Contractor shall be fully responsible for all acts and omissions of his Subcontractors, Sub-subcontractors, and of persons directly or indirectly employed by them and of persons for whose acts any of them may be liable to the same extent that he is responsible for the acts and omissions of persons directly employed by him. Under these Contract Documents, no Subcontractor or Sub-subcontractor will be recognized as such, and all persons and organizations engaged by the Contractor for the furnishing or installing of any part of the Work, either at the site or elsewhere, are considered as and agreed to be employees of the Contractor except with regard to insurance as provided in Article 6 and except with regard to payment as provided in Article 20. Nothing in the Contract Documents shall create any contractual relationship between any Subcontractor, Sub-subcontractor, or any person directly or indirectly employed by them, and the Owner and the Engineer.
- 10.2 Extent of Subcontracting. It is the Owner's intent that the Work shall be performed and constructed by a Contractor who is staffed and equipped to construct the major portion of the Work with his own directly employed personnel and with the minimum feasible subcontracting. The Prime Contractor shall conduct a minimum of 50 percent of the Work, excluding Work identified as Specialty Contractor Work on the Bid Form. Subcontracting may be permitted by the Owner to such extent as is shown to be necessary or advantageous to the Contractor without injury to the intent and interests of the Owner. Any Bid proposing subcontracting in excess of this limit may be subject to rejection at the discretion of the Owner.
- 10.3 Subcontractual Relations. All Work performed for the Contractor by a Subcontractor shall be pursuant to an appropriate agreement between the Contractor (and where appropriate between Subcontractor and Sub-subcontractor) which shall contain provisions that: (a) protect and preserve the rights of the Owner and the Engineer with respect to the Work to be performed under the subcontract so that the Subcontracting thereof will not prejudice such rights; (b) require that such Work be performed in accordance with the requirements of the Contract Documents; (c) require under each subcontract to which the Contractor is a party the submission to the Contractor of applications for payment and claims for additional costs, extension of time, damages for delay or otherwise with respect to the subcontracted portions of the Work (via any Subcontractor or Sub-subcontractor where appropriate) in sufficient time that the Contractor may apply for payment in accordance with Article 20 and comply in accordance with the Contract Documents for like claims by the Contractor upon the Owner; (d) waive all rights the contracting parties may have against one another for damages caused by fire or other perils covered by the property insurance except such rights as they may have to the proceeds of such insurance held by the Owner as trustee as provided in subparagraph 6.2.7; and (e) obligate each Subcontractor specifically to consent to the provisions of this paragraph 10.3.

## ARTICLE 11 - LAWS AND REGULATIONS

- 11.1 Governing Law. The Contract Documents shall be governed by the law of the place of the Project.
- 11.2 Compliance. The Contractor shall inform himself of all laws, ordinances, codes, rules and regulations in any manner affecting those employed on the Work, or the materials used in the Work, or in any way affecting the conduct of the Work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over the Work. He shall at all times himself give all notices and observe and comply with, and shall require all his agents, employees, Subcontractors and Sub-subcontractors to observe and comply with all such applicable laws, ordinances, rules, regulations, orders, and decrees in effect or which may become effective before completion and acceptance of the Work; and shall protect and indemnify the Owner and the Engineer against any claim of liability arising from or based upon the violation of any such law, ordinance, code, rule, regulation, order, or decree, whether by himself, his employees, or his Subcontractors or Sub-subcontractors, or any other person or organization employed for or upon the Work. If the Contractor observes that any requirement of the Contract Documents is at variance with such laws, ordinances, codes, rules, regulations, orders, or decrees, he shall promptly notify the Owner in writing and shall not proceed with any Work affected by such variance without the Owner's written instructions or the issuance of an appropriate Modification.
- 11.3 Permits, Fees, and Taxes. Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for all permits, governmental fees, and licenses necessary for the execution and completion of the Work. The Contractor shall pay all sales, consumer, use, and other taxes required by law including all taxes properly assessed against his equipment or property used in connection with the Work. All such costs shall be included in the bid prices.
- 11.4 Provisions of Law Deemed Inserted. Each and every provision of law required by law to be inserted in the Contract Documents shall be deemed to be inserted and the Contract Documents shall be read and enforced as though it were included. If through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon application of either party to the Contract Agreement the Contract Documents will be physically amended to make such insertion or correction and an appropriate Modification will be issued.
- 11.5 Validity of Agreement. The invalidity in whole or in part of any provision of this Agreement, by operation of law or judicial decree, shall not void or affect the validity of any other provision of this Agreement.

## ARTICLE 12 - SUBMITTALS

- 12.1 General. Unless otherwise specified or directed by the Owner, the Contractor shall submit to the Owner for his review and approval all shop drawings, samples, materials lists, equipment, instruction manuals, record documents, manufacturers' equipment manuals, and other submittals required by the Contract Documents, Specification Section 01300, and herein, or subsequently as covered by Modifications. Submittals and their contents shall be properly prepared, identified, and transmitted as provided herein or as the Owner may otherwise direct. Except for record documents and instructional manuals for operation and maintenance, submittal shall be approved before the material or equipment covered by the submittal is manufactured or delivered to the site. The progress schedule required under paragraph 2.6 shall be coordinated to this requirement.

Pursuant to this section of the General Conditions, the Contractor shall use the Transmittal Form, included herewith (located at the end of the General Conditions section), for submittal of shop drawings to the Owner. The procedures governing shop drawing submittal is contained in these General Conditions. Failure to comply with all requirements specified herein will constitute grounds for return of the shop drawings for proper re-submittal. The Contractor shall sequentially number each submittal. The Contractor may, within five (5) working days of the Notice of Award, submit to the Engineer an alternate Transmittal Form for review and approval for use under this Contract. The Engineer shall have the sole right for determination of the Transmittal Form to be used, and the Contractor shall use the form designated for use by the Engineer.

- 12.1.1 Deviations. At the time of the submission, the Contractor shall give notice in writing in the submittal of any deviation from the requirements of the Contract Documents. The deviations shall be clearly indicated or described including all other changes required to correlate the Work. The Contractor shall state in writing all variation in costs occasioned by the deviations and his assumption of the cost of all related changes if the deviation is approved.
- 12.1.2 Schedule of Submittals. The progress schedule required under paragraph 2.6 shall allow not less than fifteen (15) calendar days for the review of submittals, not including the time necessary for delivery or mailing, and shall cause no delay in the Work or the work of any other contractor. Extension of the Contract Time will not be granted because of the Contractor's failure to make timely and correctly prepared and presented submittals with allowance for the checking and review periods.
- 12.1.3 Method of Submittal. The Contractor shall deliver submittals by means of dated, signed, and sequence numbered transmittals on the Contractor's letterhead, identifying as to initial or resubmittal status, and fully describing the submittal contents. Submittals are not acceptable directly from Subcontractors, suppliers, or manufacturers. In each transmittal the Contractor shall state the Drawing numbers and Specification Sections, Articles, and paragraphs to which the submittal pertains; accompanying data sheets, catalogs, and brochures shall be identified in the same manner, and where several types or models are contained the Contractor shall delete non-applicable portions or specifically indicate which portions are intended and applicable.
- 12.1.4 Contractor's Review and Approval. Every submittal of shop drawings, samples, materials lists, equipment data, instruction manuals, and other submittals upon which the proper execution of the Work is dependent shall bear the Contractor's review and approval stamp certifying that the Contractor (a) has reviewed, checked, and approved the submittal and has coordinated the contents with the requirements of the Work and the Contract Documents including related Work, (b) has determined and verified all quantities, field measurements, field construction criteria, materials, equipment, catalog numbers, and similar data, or will do so, and (c) states the Work covered by the submittal is recommended by the Contractor and the Contractor's guarantee will fully apply thereto. The Contractor's stamp shall be dated and signed by the Contractor in every case. It is expected that the Contractor will prepare his submittals in such a manner that he is able to obtain a submittal approval by the second submission. The Owner reserves the right to deduct moneys from the amounts due to Contractor to cover the cost of the Engineer's review time beyond the second submission.
- 12.1.5 Corrections and Resubmittals. The Contractor shall make all required corrections and shall resubmit the required number of corrected submittals until approved. The Contractor shall direct specific attention in writing to revisions other than the corrections called for on previous submittals, and shall state in writing all variations in costs and his assumption of the cost of related changes the same as is required for

deviations in subparagraph 12.1.1. Identify each resubmittal with number of the original submittal followed by consecutive letters starting with "A" for first resubmittal, "B" for second resubmittal, etc.

- 12.1.6 Check of Returned Submittals. The Contractor shall check submittals returned to him for correction and ascertain if the corrections result in extra cost to him above that included under the Contract Documents, and shall give written notice to the Owner within five days if, in his opinion, such extra cost results from corrections. By failing to so notify the Owner or by starting any Work covered by a submittal, the Contractor waives all claims for extra costs resulting from required corrections.
- 12.1.7 Review and Approval. Submittals will be reviewed with reasonable promptness, but only for conformance with the design concept of the Project and with the information given in the Contract Documents. The approval of a separate item as such will not indicate approval of the assembly in which the item functions. The approval of submittals shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents or for any revision in resubmittals unless the Contractor has given notice in writing of the deviation or revision at the time of submission or resubmission and written approval has been given to the specific deviation or revision, nor shall any approval relieve the Contractor of responsibility for errors or omissions in the submittals or for the accuracy of dimensions and quantities, the adequacy of connections, and the proper and acceptable fitting, execution, and completion of the Work.
- 12.1.8 Incomplete Submittals, including those not correctly transmitted, not correctly titled and identified, or not bearing the Contractor's review and approval stamp, will be returned to the Contractor without review.
- 12.1.9 Conformance. No Work represented by required submittals shall be purchased or commenced until the applicable submittal has been approved. Work shall conform to the approved submittals and all other requirements of the Contract Documents unless subsequently revised by an appropriate Modification, in which case the Contractor shall prepare and submit revised submittals as may be required. The Contractor shall not proceed with any related Work which may be affected by the Work covered under submittals until the applicable submittals have been approved, particularly where piping, machinery, and equipment and the required arrangements and clearances are involved.
- 12.1.10 Interrelated Submittals. Except where the preparation of a submittal is dependent upon the approval of a prior submittal, all submittals pertaining to the same class or portion of the Work shall be submitted simultaneously.
- 12.2 Shop Drawings. Each submittal shall be complete with respect to dimensions, design criteria, materials, connections, bases, foundations, anchors, and the like, and shall be accompanied by technical and performance data as necessary to fully illustrate the information in the shop drawings in accordance with Specification Section 01300.
- 12.3 Samples. Unless otherwise specified, each submittal shall include two (2) sets of samples. One set of approved samples and all disapproved samples will be returned to the Contractor. Samples of value retained by the Owner will be returned to the Contractor after completion of the Work if the Contractor's first transmittal for the sample requests its return. Approved samples of manufactured items returned to the Contractor may be installed in the Work if the location is recorded and the samples bear temporary identification as such.
- 12.4 Materials Furnished Under Standard Specifications. For materials specified by reference to standard or reference specifications, the Contractor shall prepare and submit for approval a list

of such materials by manufacturer's names and identifications to the extent requested by the Owner.

- 12.5 Material Lists. Submittal copies shall be neatly bound with sturdy labeled covers complying with subparagraph 12.7.2, and shall have an index listing the contents. Loose submittals will be returned unreviewed. For each item listed, the Contractor shall include the manufacturer's name and address, trade or brand name, local supplier's name and address, catalog numbers and cuts, brochures, terms and conditions of manufacturer's guarantee and warranty, other information to fully describe the item, and supplementary information as may be required for approval. Cuts, brochures, and data shall be marked to indicate the items proposed and the intended use. Unless otherwise specified, each submittal shall include six (6) bound copies, three (3) of which will be returned to the Contractor marked to show the required corrections or approval.
- 12.6 Equipment Data. The Contractor shall submit complete technical and catalog data for every item of mechanical and electrical equipment and machinery to be incorporated in the Work, including components. Submittal copies shall be bound, indexed, and contain information as required in paragraph 12.5 for submittal of materials lists and shall further include specific information on performance and operating curves and data, ratings, capacities, characteristics, efficiencies, and other data to fully illustrate and describe the items as may be specified or required for approval. Data shall be submitted in sets covering complete systems or functioning units. Unless otherwise specified, each initial submittal shall include six (6) bound copies, three (3) of which will be returned to the Contractor marked to show the required corrections or approval.
- 12.7 Instruction Manuals. The Contractor shall obtain data from the various manufacturers and submit instruction manuals covering all mechanical equipment and machinery installed in the Work.
- 12.7.1 Contents. Each manual shall have an index listing the contents. Information in the manuals shall include not less than (a) general, introduction and overall equipment description, purpose, functions, and simplified theory of operation, (b) specifications, (c) installation instructions, procedures, sequences, and precautions, including tolerances for level, horizontal, and vertical alignment, (d) grouting requirements including grout spaces and materials, (e) list showing lubricants for each item of mechanical equipment, approximate quantities needed per year, and recommended lubrication intervals; where possible, types of lubricants shall be consolidated with equipment manufacturers' approval to minimize the number of different lubricants required for plant maintenance, (f) startup and beginning operation procedures, (g) operational procedures, (h) shut down procedures, (i) short and long term inactivation procedures, (j) maintenance, calibration, and repair instruction, (k) parts lists and spare parts recommendations, (l) lists of all special tools, instruments, accessories, and special lifting and handling devices required for periodic maintenance, repair, adjustment, and calibration, and (m) other information as may be specified or required for approval.
- 12.7.2 Format and Organization.
- (a) Use drawings and pictorials to illustrate the printed text as necessary to fully present the information.
  - (b) Where information covers a family of similar items of equipment, identify the applicable portions by heavy weighted arrows, boxes or circles, or strike-out the inapplicable information. Non-conforming data are not acceptable and will be returned for rework and resubmittal.
  - (c) Contractor shall incorporate into books all Manufacturers' Equipment Manuals including those specified in pertinent Sections of the Specifications.

These books shall be organized by Equipment Class in same manner and sequence as the Specifications, i.e. Mechanical, Electrical, Instrumentation, etc. Book size and quantity shall be sufficient for inclusion of all data, and be of type and quality hereinafter specified in Article 12.7.3.

- (d) Within each book of manuals, provide a Table of Contents for that book. If more than one book is necessary for a Class of Equipment, place a complete Table of Contents for that Class of Equipment within each book of that Class.
- (e) In addition, an overall Index of Contents shall be prepared in ten (10) sets and submitted separately to the Owner for his insertion in his Operation and Maintenance Manuals.
- (f) When a manufacturer's manual exceeds one (1) inch in thickness and is bound as specified in Article 12.7.3 it need not be rebound within another book, but the Overall Index shall refer to it by title and indicate that it is bound separately.

#### 12.7.3 Manual Binding.

- (a) Bind all books in sturdy hard covers fastened to provide full view of contents on each page, and ease of making content additions or replacements. No book shall be more than four (4) inches thick. Manuals less than one (1) inch thick shall be bound in substantial three-ring loose leaf binders; others shall have covers secured by operable locking-bars to permit full view opening with contents bound by hinged interfacing pairs of three-ring binding posts, Model S70468-12 by McBee, Springfield, MO., or Model 745483 by Inter-City, St. Louis, Mo., or equal.
- (b) Permanently label face of cover and bound edge of each book "MANUFACTURERS' INSTRUCTION MANUAL," and indicate Class of Equipment, i.e., Mechanical, Electrical, Instrumentation, etc. or name specific equipment if a single unit is contained. Where more than one book is needed for a Class of Equipment or a single specific equipment unit, number books consecutively BOOK I, BOOK II, etc.
- (c) If more than one Class of Equipment is contained in a book, separate each class with a tabbed stiff divider insert page.
- (d) Prior to purchase or delivery, submit samples of each intended type of binder and obtain approval from the Owner.

12.7.4 Manual Submittals. Submittals shall include two (2) copies of each manual, one of which will be returned to the Contractor marked to show the required corrections or approval. When approved, the Contractor shall deliver ten (10) copies to the Owner unless otherwise specified.

12.8 Manufacturers' Instructions. In addition to the instructions submitted under paragraph 12.7, the Contractor shall submit manufacturers' instructions to the extent specified or requested by the Owner for his determination of their adequacy and approval. When approved, the Contractor shall distribute copies to all those involved with the instructions.

12.9 Tools, Accessories, Spare Parts, and Maintenance Materials. The Contractor shall furnish and deliver all special tools, instruments, accessories, spare parts, and maintenance materials required by the Contract Documents, and shall furnish and deliver the special tools, instruments, accessories, and special lifting and handling devices shown in the instruction manuals approved under paragraph 12.7. Unless otherwise specified or directed by the Owner, the items shall be delivered to the Owner, with the Contractor's written transmittal accompanying each shipment, in the manufacturers' original containers labeled to describe the contents and the equipment for which it is furnished. The Contractor shall deliver a copy of each transmittal to the Engineer for record purposes.



- 12.10 Continuance of Operations. The Contractor shall arrange and schedule the Work in such manner as to ensure that all existing utility, treatment or disposal operations and facilities are maintained in operation and in no way disrupted or disabled as a result of the Work. The Contractor shall submit for approval a written plan and description of the proposed schedule, methods, and facilities to be employed in conforming to this requirement.
- 12.11 Record Drawings and Specifications. The Contractor shall maintain one record copy of all Drawings, Specifications, Addenda, Modifications, approved submittals, correspondence, and transmittals at the site in good order and readily available to the Owner, the Engineer, and the Inspector in accordance with Specification Section 01720.
- 12.11.1 Buried and Concealed Work. The Contractor shall record the precise location of all piping, conduits, ducts, cables, and like Work that is buried, embedded in concrete or masonry, or concealed in wood or metal framed walls and structures at the time such Work is installed and prior to concealment. Each feature of the concealed Work, such as the beginning and end of straight runs, radius center point of curved runs, angles, connections, plugged tees or other fittings for future connections, and like items shall be accurately located by not less than two dimensions to permanent structures. The depth below finish grade, slab, or paving shall be noted for buried pipe, conduit, or ducts at the beginning and end of straight grade runs and at all grade change points, excepting sewer or drain lines run between manholes. Should the Contractor fail to record such buried or concealed Work, he shall uncover the unrecorded Work to the extent required by the Owner and shall satisfactorily restore and reconstruct the removed Work with no change in the Contract Price or the Contract Time.
- 12.11.2 Delivery. Upon completion and prior to final inspection of the Work, the Contractor shall submit the Record Drawings and Specifications to the Owner for review, and shall make such revisions or corrections as may be necessary for them to be a true, complete, and accurate record of the Work in the opinion of the Owner in accordance with Specification Section 01720.
- 12.12 Revision of Submittals. Whenever a Modification causes a change to the information contained in previously approved submittals, the Contractor shall submit information and data corresponding to the changed requirements for approval. After completion of the operational test required in paragraph 17.4, the Contractor shall submit revised or additional information and data for the instruction manuals and equipment data as the Owner may require. Revision submittals shall be submitted following the procedures required for previously approved submittals.

## ARTICLE 13 - SAFETY PRECAUTIONS AND EMERGENCIES

- 13.1 Contractor's Responsibility for Safety. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. This requirement will apply continuously twenty-four hours a day every day until final acceptance of the Work and shall not be limited to normal working hours. The duties of the Owner, Engineer and Inspector do not include review of the adequacy of the Contractor's safety measures in, on, or about the site and vicinity.
- 13.2 Safety Officer. The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of hazards and accidents. This person shall be the Contractor's Superintendent unless otherwise designated in writing by the Contractor to the Owner.

- 13.3 Safety Measures. The Contractor shall comply with all laws, ordinances, codes, rules, regulations and lawful orders of any public authority having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. The Contractor shall comply with the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America, Inc., including the recommendations for safe construction methods and the requirements for the guarding of machinery and equipment therein, to the extent that the provisions of the manual are not in conflict with applicable laws, ordinances, rules, regulations, and orders. The Contractor shall maintain copies of all documents mentioned or referenced in this paragraph readily available at the site until the Work is completed.
- 13.4 Warnings and Barricades. The Contractor shall provide and maintain barricades, guards, temporary bridges and walkways, watchmen, night lights and danger signals illuminated from sunset to sunrise, and all other necessary appliances and safeguards to protect the Work, life, property, the public, excavations, equipment, and materials. Barricades shall be of substantial construction and shall be painted such as to increase their visibility at night. Suitable warning signs shall be so placed and illuminated at night as to show in advance where construction, barricades, or detours exist. Guard rails shall be provided for bridges and walkways over or adjoining excavations, shafts, and other openings and locations where injury may occur.
- 13.5 Fire Prevention. The Contractor's Safety Officer shall inspect the entire Work and site, including storage areas, at frequent intervals to verify that fire prevention measures are constantly enforced.
- 13.5.1 Fire Extinguishers and Hoses. The Contractor shall furnish and maintain fully charged fire extinguishers of the appropriate type, supplements with temporary fire hoses wherever an adequate water supply exists, at the places where burning, welding or other operations that may cause a fire are being performed.
- 13.5.2 Flammable or Toxic Materials. Only a working supply of flammable or toxic materials shall be permitted in or on any of the permanent structures and improvements, and shall be removed therefrom at the end of each day's operations. The Contractor shall store flammable or toxic materials and waste separate from the Work and stored materials for the Work in a manner that prevents spontaneous combustion or dispersion, and none shall be placed in any sewer or drain piping nor buried on the Owner's property.
- 13.6 Safety Helmets, Clothing, and Equipment. The Contractor shall not permit any person for whom he is responsible or liable to enter or remain on the site of the Work unless the person is equipped with and wearing a safety helmet and other protective clothing and safety equipment conforming to the requirements of paragraph 13.3, and shall discharge from the site all persons not so equipped. The Contractor shall post conspicuous signs at appropriate locations warning the public and persons engaged upon the Work of this requirement. The Contractor shall furnish for their temporary use such safety helmets, protective clothing, and safety equipment as the Owner, the Engineer, or their representatives may request of him.
- 13.7 Hazardous Areas. The Contractor shall not permit or allow any person or persons to enter any pipe or space containing hazardous or noxious substances or gases, or where there is an insufficient amount of oxygen to sustain life and consciousness, or any other hazardous area unless equipped with lawful and appropriate safety equipment and life-supporting apparatus, and unless those entering are continually monitored and guarded by and in communication with other persons outside the space or area who are equipped in the same way, can give an alarm to others for assistance, and initiate immediate rescue operations in the event of mishap.
- 13.8 Emergencies.

- 13.8.1 Work During an Emergency. The Contractor shall perform any and all operations and shall furnish any materials and equipment necessary during an emergency endangering life or property and, in all cases, shall notify the Owner of the emergency as soon as practicable, but shall not wait for instruction before proceeding to properly protect both life and property. Any additional compensation or extension of Contract Time claimed by the Contractor on account of an emergency shall be applied for as provided in paragraph 16.4.
- 13.8.2 Representatives for Emergencies. The Contractor shall file with the Owner a written list giving the names, addresses, and telephone numbers of at least two of his representatives who can be contacted at any time in case of emergency. The representatives shall be fully authorized and equipped to correct unsafe or inconvenient conditions on short notice. The Contractor shall promptly notify the Owner of all changes in the listing.

#### ARTICLE 14 - SEPARATE CONTRACTS

- 14.1 Award of Separate Contracts. The Owner reserves the right to award other contracts in connection with other portions of the Project. When separate contracts are awarded for different portions of the Project, "the Contractor" in the contract documents in each case shall be the contractor who signs each separate contract. The Contractor shall not cause any unnecessary hindrance or delay to any other contractor working on the Project. If the performance of any contract for the Project is likely to be interfered with by the simultaneous execution of some other separate contract or contracts, the Owner will decide which contractor may proceed. The Owner shall not be responsible for any damages suffered or extra costs incurred by the Contractor resulting directly or indirectly from the award or performance or attempted performance of any other separate contract or contracts on the Project, or caused by any decision or omission of the Owner respecting the order of precedence in the performance of the separate contracts awarded for completion of the Project. Any costs caused by defective or ill-timed work shall be borne by the contractor responsible therefor.
- 14.2 Mutual Responsibility of Contractors. The Contractor shall cooperate with other contractors with regard to storage of materials and execution of their work, and shall coordinate with them with respect to construction scheduling and sequence of operations, all subject to the approval of the Owner. The Contractor shall properly connect his Work to the work of separate contractors, and shall inspect the work of other contractors affecting his Work and promptly report to the Owner in writing any irregularities or defects in the separate contract work which renders it unsuitable for reception or connection of his Work. Failure of the Contractor to inspect and report shall constitute an acceptance of the other contractor's work as fit and proper to receive his Work, except as to defects which may develop in the other separate contractor's work after the execution of the Contractor's Work.
- Each Contractor shall monitor the schedule and progress of each other Contractor whose work affects his own work, and shall be responsible for giving timely notice to the Owner of potential problems of interface so that the Owner can mitigate the issue.
- 14.3 Cutting and Patching Under Separate Contracts. The Contractor shall be responsible for any cutting, fitting and patching that may be required to complete his Work except as otherwise specifically provided in the Contract Documents. The Contractor shall not endanger any work of any other contractor by cutting, excavating, or otherwise altering any work and shall not cut or alter the work of any other contractor except with the written consent of the Owner.
- 14.4 Claims Between Separate Contractors. Should the Contractor cause damage to the work or property of any separate contractor on the Project, the Contractor shall, upon due notice, settle

with such other contractor by agreement or arbitration, if he will so settle. If such separate contractor sues the Owner or initiates an arbitration proceeding on account of any damage alleged to have been so sustained, the Owner will notify the Contractor who shall defend such proceedings at the Contractor's expense, and if any judgment or award against the Owner arises therefrom the Contractor shall pay or satisfy it and shall, as provided in paragraph 20.12, pay the Owner for all attorneys' fees, court or arbitration costs, and additional administrative, professional, consultant, inspection, testing, and other service costs which the Owner has incurred.

## ARTICLE 15 - OWNER'S AND ENGINEER'S STATUS DURING CONSTRUCTION

- 15.1 Authority of the Owner. The Owner shall have the authority to enforce compliance with the Contract Documents. On all questions relating to quantities, the acceptability of materials, equipment, or Work, the adequacy of the performance of the Work, and the interpretation of the Drawings and Specifications, the decision of the Owner is final and binding and shall be precedent to any payment under the Contract Agreement unless otherwise provided in the Contract Documents. The Owner shall have the authority to stop the Work or any part thereof as may be necessary to ensure the proper execution of the Work, to disapprove or reject Work which is defective, to require the uncovering and inspection or testing of Work as provided in paragraph 17.5, to require re-examination of Work as provided in paragraph 18.4, to issue interpretations and clarifications as provided in paragraph 3.2, to order minor changes or alterations in the Work as provided in paragraph 16.6, and other authority as provided elsewhere in the Contract Documents. The Owner shall not be liable for the results of any ruling, interpretation or decision rendered or request, demand, instruction, or order issued by him in good faith. The Contractor shall promptly comply with request, demands, instructions, and orders from the Owner.
- 15.2 Engineer's Observation of the Work. The Engineer will make periodic observations of the progress and quality of the executed Work and will determine, in general, if the Work is proceeding in accordance with the Contract Documents. The Engineer will not be required to make exhaustive or continuous observations to check the quality or quantity of the Work. Neither observations by the Engineer nor inspections, tests, or approvals by persons other than the Contractor shall relieve the Contractor from his obligations to perform and construct the Work in accordance with the requirements of the Contract Documents. The Owner will inform the Contractor in writing of other duties of the Engineer under the Contract Documents, if any.
- 15.3 Limitations On Responsibility. The Owner and the Engineer will not be responsible for construction means, methods, techniques, procedures, sequences, or the safety precautions and programs incident thereto, or for the acts or omissions of the Contractor or any Subcontractor, Sub-subcontractor, or any of their agents or employees, or any other persons performing any of the Work, or for the Contractor's failure to perform and construct the Work in accordance with the Contract Documents. Neither the Engineer's authority to act under the Contract Documents nor any decision made by him in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of the Engineer to the Contractor, any Subcontractor or Sub-subcontractor, any of their agents or employees or any other person performing any of the Work, nor shall anything in the Contract Documents create any contractual relationship between any of them and the Engineer.
- 15.4 Protests. If the Contractor considers any Work requested or ordered of him to be outside the requirements of the Contract Documents, or considers any request, demand, instruction, order, ruling, or decision of the Owner to be unfair, he shall, within ten days after any such request, demand, instruction, orders, ruling, or decision is made or given, file a written protest with the Owner stating clearly and in detail his objections and the reasons therefor. Except for such

written protests as are made of record in the manner and within the time stated herein, the Contractor shall be deemed to have waived and does hereby waive all grounds for protests or objections to such request, demands, instruction, orders, ruling, or decisions. The Owner will issue a written decision regarding each protest so filed with reasonable promptness.

## ARTICLE 16 - CHANGES IN THE WORK

- 16.1 Change Orders. Without invalidating the Contract Agreement and without notice to sureties or insurers, the Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work; these will be authorized by Change Order. The Contractor shall comply promptly with the requirements of all executed Change Orders. The Work involved in Change Orders shall be executed under the applicable conditions and requirements of the Contract Documents. If any Change Order causes an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, an equitable adjustment will be made and included in the Change Order. Additional or extra Work performed by the Contractor without authorization of a Change Order will not entitle the Contractor to an increase in the Contract Price or an extension of the Contract Time, except as provided in subparagraph 13.8.1 for emergencies and in paragraph 18.4 for the re-examination of Work.
- 16.2 Valuation of Change Orders. When required by the Owner, the Contractor shall submit in the form prescribed by the Owner an itemized cost breakdown with supporting data of the quantities and prices used by him in computing the value of any change that may be ordered.

The term "cost of extra work" means the sum of all costs necessarily incurred and paid by the Contractor for labor, materials, and equipment in the proper performance of any extra work. Except as otherwise may be agreed to in writing by the Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in Section 16.2.I herein.

- A. Labor: The costs of labor will be the actual cost for wages prevailing for each craft or type of workers performing the extra work at the time the extra work is done, plus employer payments of payroll taxes, workers compensation insurance, liability insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs required by federal, state or local laws, as well as assessments or benefits required by lawful collective bargaining agreements for those workers. Labor costs for equipment operators and helpers will be paid only when such costs are not included in the invoice for equipment rental. The labor costs for foremen shall be proportioned to all of their assigned work and only that applicable to extra work shall be paid. Non-direct labor costs including superintendence shall be considered part of the markup set out in Section 16.2.G herein.
- B. Materials: The cost of materials reported shall be at invoice or lowest current price at which materials are listed in the Caltrans Equipment Rental Rate Book, including standby rates and overtime factors, subject to the following:
- (1) All trade discounts and rebates shall accrue to the Owner, and the Contractor shall make provisions so that they may be obtained;
  - (2) For materials secured by other than a direct purchase and direct billing to the purchaser, the cost shall be deemed to be the price paid to the actual supplier as determined by the Owner. Except for actual costs incurred in the handling of such materials, markup shall not be allowed;

- (3) Payment for materials from sources owned wholly or in part by the purchaser shall not exceed the price paid by the purchaser for similar materials from said sources on extra work items or the current wholesale price for such materials delivered to the Site, whichever price is lower; and
- (4) If in the opinion of the Owner the cost of material is excessive, or the Contractor does not furnish satisfactory evidence of the cost of such material, then the cost shall be deemed to be the lowest current wholesale price for the quantity concerned delivered to the Site less trade discount. The Owner reserves the right to furnish materials for the extra work and no claim will be allowed by the Contractor for costs and profit on such materials.

C. Equipment: The Contractor will be paid for the use of equipment for extra work at the rental rate listed for such equipment specified in the Caltrans Equipment Rental Rate Book including standby rates and overtime factors. Such rental rate will be used to compute payments for equipment whether the equipment is under the Contractor's control through direct ownership, leasing, renting, or another method of acquisition. The rental rate to be applied for use of each item of equipment will be the rate resulting in the least total cost to the Owner for the total period of use. If it is deemed necessary by the Contractor to use equipment not listed in the publication specified in the Contract Documents, an equitable rental rate for the equipment will be established by the Owner. The Contractor may furnish cost data which might assist the Owner in the establishment of the rental rate. Payment for equipment shall be subject to the following:

- (1) All equipment shall, in the opinion of the Owner, be in good working condition and suitable for the purpose for which the equipment is to be used;
- (2) Before construction equipment is used on the extra work, the Contractor shall plainly stencil or stamp an identifying number thereon at a conspicuous location, and shall furnish to the Owner, in duplicate, a description of the equipment and its identifying number;
- (3) Unless otherwise specified, manufacturers' ratings and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer; and
- (4) Individual pieces of equipment or tools having a replacement value of \$500 or less, whether or not consumed by use, will be considered to be small tools and no payment will be made therefore.

D. Equipment Rental Time: The rental time to be paid for equipment on the Site will be the time the equipment is in productive operation on the extra work being performed and, in addition, will include the time required to move the equipment to the location of the extra work and return it to the original location or to another location requiring no more time than that required to return it to its original location; except, that moving time will not be paid if the equipment is used on other than the extra work, even though located at the Site of the extra work. Loading and transporting costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power, except that no payment will be made for loading and transporting costs when the equipment is used at the Site of the extra work on other than the extra work. Rental time will not be allowed while equipment is inoperative due to breakdowns. The rental time of equipment on the work Site will be computed subject to the following:

- (1) When hourly rates are listed, any part of an hour less than 30 minutes of operation will be considered to be half-hour of operation, and any part of an hour in excess of 30 minutes will be considered one hour of operation;
- (2) When daily rates are listed, any part of a day less than 4 hours operation will be considered to be half-day of operation. When owner-operated equipment is used to perform extra work to be paid for on a time and materials basis, the Contractor will be paid for the equipment and operator, as set forth in Sections 3, 4, and 5, following;
- (3) Payment for the equipment will be made in accordance with the provisions in Section 16, herein;
- (4) Payment for the cost of labor and subsistence or travel allowance will be made at the rates paid by the Contractor to other workers operating similar equipment already on the Site, or in the absence of such labor, established by collective bargaining agreements for the type of workmen and location of the extra work, whether or not the operator is actually covered by such an agreement. A labor surcharge will be added to the cost of labor described herein in accordance with the provisions of Section 16.2.D, herein, which surcharge shall constitute full compensation for payments imposed by state and federal laws and all other payments made to or on behalf of workers other than actual wages; and
- (5) To the direct cost of equipment rental and labor, computed as provided herein, will be added the allowances for equipment rental and labor as provided in Section 16.2.G, herein.

E. Special Services: Special work or services for extra work are defined as that work characterized by extraordinary complexity, sophistication, innovation, or a combination of the foregoing attributes which are unique to the construction industry. The Owner will make estimates for payment for special services and may consider the following:

- (1) When the Owner and the Contractor determine that a special service or work is required which cannot be performed by the forces of the Contractor or those of any of its Subcontractors, the special service or work may be performed by an entity especially skilled in the work to be performed. After validation of invoices and determination of market values by the Owner, invoices for special services or work based upon the current fair market value thereof may be accepted without complete itemization of labor, material, and equipment rental costs;
- (2) When the Contractor is required to perform work necessitating special fabrication or machining process in a fabrication or a machine shop facility away from the Site, the charges for that portion of the work performed at the off-site facility may, by agreement, be accepted as a special service and accordingly, the invoices for the work may be accepted without detailed itemization; and
- (3) All invoices for special services will be adjusted by deducting all trade discounts. In lieu of the allowances for overhead and profit specified in Section 16.2.G, herein, an allowance of 15 percent will be added to invoices for special services.

F. Sureties: All work performed hereunder shall be subject to all of the provisions of the Contract Documents and the Contractor's sureties shall be bound with reference thereto as under the original Agreement. Copies of all amendments to Bonds or supplemental Bonds shall be submitted to the Owner for review prior to the performance of any work hereunder.

G. Extra work ordered on the basis of time and materials will be paid for at the actual necessary cost as determined by the Owner, plus allowances for overhead and profit. The allowance for overhead and profit will include compensation for superintendence, taxes, field office expense, extended overhead, and home office overhead. The allowance for overhead and profit will be made in accordance with the following schedule:

Overhead and Profit Allowance

Labor .....	10 percent
Materials .....	10 percent
Equipment.....	10 percent

H. It is understood that labor, materials, and equipment for extra work may be furnished by the Contractor or by the Subcontractor on behalf of the Contractor. When all or any part of the extra work is performed by a Subcontractor, the allowance specified herein shall be applied to the labor, materials, and equipment costs of the Subcontractor, to which the Contractor may add five (5) percent of the Subcontractors total cost for the extra work. Regardless of the number of hierarchical tiers of Subcontractors, the five (5) percent increase above the Subcontractor's total cost which includes the allowances for overhead and profit specified herein shall be applied one time only.

I. The term "cost of extra work" shall not include any of the following:

- (1) Payroll costs and other compensation of Contractor's officers, executives, proprietors, partners, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor whether at the Site or in Contractor's principal or a branch office for general administration of the Work;
- (2) Expenses of Contractor's principal and branch offices other than Contractor's office at the Site;
- (3) Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments;
- (4) Cost of premiums for all Bonds and for all insurance whether or not Contractor is required by the Contract Documents to purchase and maintain the same;
- (5) Costs due to the acts, omissions, willful misconduct or negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of Defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property; and
- (6) Other overhead or general expense costs of any kind and the cost of any item not specifically and expressly included in Section 16.2.G.



The cost or credit to the Owner resulting from a change in the Work will be determined by one or more of the following methods: (a) by an acceptable lump sum proposal from the Contractor, (b) by unit prices accepted by the Owner and stated in the Contract Documents or unit prices subsequently fixed by agreement between the parties, (c) by cost and a mutually acceptable fixed amount for overhead and profit, or (d) by force account when directed in writing and administered by the Owner. Under the methods described in (c) and (d), the Contractor shall maintain an accurate written daily direct cost record pertaining to such ordered Work in the form and detail acceptable to the Owner. The Contractor shall certify each daily record to be true and correct, and shall furnish copies to the Owner as the ordered Work progresses. The direct costs so recorded shall include only the labor cost for workmen and foremen (payroll taxes and assessments, fringe benefits, employer's contributions, workmen's' compensation coverage, withholdings required by law, and other verified direct labor costs included), the cost of materials and equipment delivered and installed in such Work as substantiated by appropriate documents, the cost of construction machinery and equipment based on fair rental values acceptable to the Owner, and the cost of incidentals directly related to such Work. The direct costs shall not include any labor or office costs pertaining to the Contractor, his superintendents, his office staff and office facilities, or anyone not directly employed on such Work, nor the premium costs for bonds or insurance other than workmen's' compensation insurance, nor the cost or rental of small tools as all such indirect costs form a part of the Contractor's overhead expense. Under the method described in (d), the maximum percentage which will be allowed for the Contractor's combined overhead and profit will be: (1) for all such Work done by his own organization, the Contractor may add up to ten (10) percent of his actual net increase in cost, and (2) for all such Work done by Subcontractors, each Subcontractor may add up to ten (10) percent of his actual net increase in costs for combined overhead and profit and the Contractor may add up to five (5) percent of the Subcontractor's total for his combined overhead and profit. The amount of credit to be allowed by the Contractor to the Owner for any such change which results in a net decrease in cost will be the amount of the actual net decrease as determined by the Owner. Taking into consideration adjustments for overhead and profit as determined herein, plus deductions for combined overhead and profit as computed in (1) and (2) above. When both additions and credits are involved in any one change, the combined overhead and profit shall be figured on the basis of the net difference.

- 16.3 Notice to Sureties. The Contractor shall notify his sureties and the carriers of the insurance furnished and maintained by him of any changes affecting the general scope of the Work or change in the Contract Price, and the amount of the applicable Bonds and the coverage of the insurance shall be adjusted accordingly. The Contractor shall furnish proof of such adjustments to the Owner.
- 16.4 Contractor's Claims. If the Contractor wishes to make a claim for a change in the Contract Price or the Contract Time, the Contractor shall give the Owner written notice thereof within ten (10) days after the occurrence of the event giving rise to such claim. This notice shall be given by the Contractor before proceeding to execute the Work covered by the claim except in an emergency endangering life or property. No such claim shall be valid unless so made. Any change in the Contract Price or the Contract Time resulting from a claim that is approved by the Owner will be authorized by Change Order.
- 16.5 Adjustment of Unit Prices. If unit prices are stated in the Contract Documents or subsequently agreed upon, and if the quantities originally contemplated are so changed (by 30% or greater quantity change) in a proposed Change Order that application of the agreed unit prices to the quantities of Work proposed will create a hardship on the Owner or the Contractor, the applicable unit prices will be equitably adjusted to prevent such hardship by negotiation or by force account.

- 16.6 Minor Changes. The Owner may issue written Field Orders or other written orders that authorize minor changes or alterations in the Work consistent with the overall intent of the Contract Documents that do not involve an adjustment in the Contract Price or an extension of the Contract Time. Such orders shall be binding on the Contractor and he shall carry out such orders promptly. If the Contractor believes any minor change or alteration ordered by the Owner entitles him to an increase in the Contract Price or an extension of the Contract Time, he may make a claim therefor as provided in paragraph 16.4.
- 16.7 Information Revisions Caused By Change Orders. As provided in paragraph 12.12, whenever a Change Order or other Modification causes a change in the information contained in previously approved submittals, the Contractor shall include in the itemized breakdown required of him under paragraph 16.2 all costs for preparing and submitting revised information and submittals corresponding to the changed requirements. If the Change Order or other Modification causes no change in such information or submittals, the Contractor shall so certify in writing in his itemized breakdown.
- 16.8 Change Order Procedure. The following procedure will be followed in issuing a change order.
- 16.8.1 The Inspector identifies the need for a change in plans.
  - 16.8.2 The Inspector discusses the required change with the Engineer and Contractor.
  - 16.8.3 The Engineer prepares a detailed description of the Work required, including any additional drawings, and prepares a change order in the required format.
  - 16.8.4 The change order is provided to the contractor for his review and negotiation of the price for the change.
  - 16.8.5 The Engineer and Contractor agree on the Work to be performed and price for doing the Work. Each sign the change order, indicating that both agree as to the terms of performing the required change.
  - 16.8.6 The Engineer submits the change order to the Owner through the designated Owner Representative.
  - 16.8.7 If the Owner Staff concurs with the change order, it is submitted to the Commission, for approval. If the Commission approves, the General Manager signs the change order, authorizing the change to be implemented.
- 16.9 Field Order Procedure. The following procedure will be followed in issuing a field order.
- 16.9.1 Inspector identifies the need for a field order change.
  - 16.9.2 The Inspector discusses the required change with the Engineer and Contractor.
  - 16.9.3 The Inspector prepares a detailed written description of the minor changes or alterations in the work.
  - 16.9.4 The Contractor reviews field order and submits price for negotiation if it is warranted.
  - 16.9.5 The Inspector and Contractor agree on field order work to be performed and price (if required). Each sign the field order, indicating that both agree as to the terms of performing the required changes.
  - 16.9.6 General Manager signs the field order authorizing the change to be implemented.

## ARTICLE 17 - ACCESS, INSPECTIONS, AND TESTS

- 17.1 Access to the Work and Records. The Owner, the Engineer, the Inspector, and the representatives of any Federal, State, or other public body or authority having jurisdiction of

the Project shall have, at all times and for any purpose, immediate access to the Work and the premises used by the Contractor for the Work and shall have access to the places where materials or equipment are being fabricated, manufactured, or produced for the Work. To the extent requested by the Owner, the Contractor shall furnish access to the purchase orders and records, invoices, bills of lading, payroll records, and other documents and records pertaining to the Work, or shall furnish certified true copies thereof at his expense.

- 17.2 Inspection. The Owner will furnish inspection of the Work at no cost to the Contractor except as provided in paragraphs 4.3, 14.4, 17.5, 17.6, 18.1, and 21.2, and except for inspections required to be furnished and paid for by the Contractor elsewhere in the Contract Documents. All Work shall be performed and constructed under the inspection of the Inspector unless waived in writing by the Owner in each case or exempted wholly or in part from inspection elsewhere in the Contract Documents. Any Work requiring such inspection that is performed or constructed in the absence of the Inspector shall be considered defective and is subject to rejection. The Contractor shall give written notice to the Owner at least five (5) working days in advance of the performance of any part of the Work requiring special inspection by someone other than the Inspector and shall state the probable duration of the required special inspection. Inspection of any material or equipment at the factory or shop will not constitute an acceptance. Instructions given by the Inspector shall be respected and executed by the Contractor. The Owner shall at all times have access to the work wherever it is in preparation or progress and the Contractor shall provide proper facilities for such access and for inspection. The Contractor shall provide adequate safe means by which to inspect the work. The Inspector is authorized to suspend any part or all of the Work, by notice to the Contractor confirmed in writing, when a question arises as to whether the materials or equipment being installed or the methods or workmanship being used comply with the Contract Documents until such question is decided by the Owner. The Inspector is not authorized to accept or reject any Work, to modify or change any requirement of the Contract Documents, to advise or instruct the Contractor or his employees as to the prosecution of the Work, to perform any duty or service for the Contractor, or relieve the Contractor of the obligation to fulfill any conditions and requirements of the Contract Documents. Failure or oversight of any Inspector to condemn defective materials at the time of use, or condemn improper work at the time it is performed, shall not diminish the Contractor's obligations to meet the requirements of the Contract Documents. With respect to special inspection, the Contractor shall give the Engineer five (5) days advance written notice.
- 17.3 Testing. All Work, materials, and equipment to be performed and constructed by the Contractor are subject to testing for compliance with the Contract Documents and shall be tested when required by the Contract Documents. The Contractor shall give the Owner timely written notice of the dates and times that testing is to be performed at the site or the place of manufacture or fabrication. All tests are subject to the observation of the Engineer and approval of the Owner and shall be performed as directed by the Owner unless otherwise provided in the Contract Documents. Materials or equipment required to be tested prior to installation shall not be installed until the Owner has approved the test results and the tested material or equipment in writing. Under these Contract Documents, the Contractor shall employ the services and pay the costs of tests performed by a testing laboratory or agency for field slump tests, concrete strength, optimum moisture, soil compaction tests and painting/cratering in the field and at the shop. The Contractor shall bear all other testing costs. The Contractor shall pay the Owner, in accordance with Paragraph 20.12, any cost the Owner incurs for test where the tested material or equipment fails the test and for retesting caused by failure disclosed in previous tests.
- 17.3.1 Contractor's Testing Agency. If materials or equipment are required to be tested by a testing laboratory or agency employed by the Contractor, the testing laboratory or agency shall be satisfactory to and approved by the Owner. The Contractor shall deliver five (5) certified copies of each test report to the Owner unless otherwise specified.

- 17.3.2 Test Samples. The Contractor, at his expense, shall furnish samples of materials to be tested in sufficient time before use to allow for testing and to cause no delay in the Work.
- 17.3.3 Test Costs. The Contractor shall bear all testing costs unless otherwise provided in the Contract Documents.
- 17.4 Operational Tests. After the Work is completed and as one of the precedents to final inspection, the Contractor shall perform operational tests as required by the Contract Documents and as required to demonstrate to the Owner the correct and proper operation of the various facilities forming a part of the Work including but not limited to the correct sequences of operation and the satisfactory performance of all components. The Contractor shall repair, replace, adjust, or otherwise correct the improper operation of any system or component and all faulty or defective Work as the Owner may require for his approval. Based upon the operational tests results, the Contractor shall prepare and submit revised or additional information and data for the previously approved submittals as required by the Owner and as provided in paragraph 12.12. Each operational test shall be performed continuously for not less than 168 hours.
- 17.5 Uncovering of Work. Any Work that is covered by the Contractor before required inspections or tests are performed or approvals are given shall be uncovered by the Contractor to the extent directed by the Owner, and the Contractor shall bear all the expense for uncovering, exposure, inspection, testing, and of satisfactory reconstruction.
- 17.6 Inspections, Tests, and Approvals Required By Others. If the laws, ordinances, rules, regulations, or orders of any public body or authority having jurisdiction require any Work to be specifically inspected, tested, or approved by someone other than the Contractor, the Owner, or the Inspector, the Contractor shall give all required notices and make all required arrangements therefor, and shall deliver to the Owner certificates of inspection, testing, or approval issued by the applicable public bodies or authorities having jurisdiction. The cost of all such inspections, tests, and approvals shall be borne by the Contractor unless otherwise provided in the Contract Documents.

## ARTICLE 18 - DEFECTIVE WORK

- 18.1 Correction of Defective Work. All Work, material, or equipment that is unsatisfactory, faulty, incomplete, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, test, or approval is defective. If the Work or any part thereof is found to be defective, whether or not manufactured, fabricated, installed, completed, or overlooked and accepted by the Owner, the Contractor shall, promptly and in accordance with the written instructions of the Owner and within the reasonable time limits stated therein, either correct such defective Work or, if it has been rejected by the Owner, remove it from the site and replace it with non-defective and conforming Work. The Contractor shall bear all costs for the correction or removal and replacement of defective Work and all additional direct and indirect costs the Owner may incur on account of defective Work including the costs of additional administrative, professional, consultant, inspection, testing, and other services. If such additional costs are incurred by the Owner prior to the making of final payment, a Change Order will be issued to effect a reduction in the Contract Price in the amount of the Owner's additional costs; otherwise, the Contractor shall pay the amount to the Owner in accordance with paragraph 20.12. The Contractor shall also bear all costs of making good all Work and the work and property of separate contractors, the Owner, and others that is destroyed or damaged by his correction or removal and replacement of his defective Work.
- 18.2 Owner's Right to Correct Defective Work. If the Contractor fails to correct or remove and replace defective Work in accordance with the requirements of paragraph 18.1, the Owner may

correct or remove and replace it without prejudice to any other remedy the Owner may have, and the Owner may store the removed materials or equipment at the expense of the Contractor. If the Contractor does not pay the cost of such removal and storage within ten (10) days thereafter, the Owner may upon ten (10) additional days' written notice sell such removed Work at auction or private sale and shall account for the net proceeds or deficit thereof, after deducting all expenses the Owner may incur from such removal, storage, or sale. If the Owner corrects or removes and replaces defective Work prior to the making of final payment, one or more Change Orders will be issued to effect appropriate reductions in the Contract Price for all costs and expenses incurred by the Owner in the correction or removal and replacement of defective Work, adjusted to account for the net proceeds or deficit of said auction or sale, if any, and all additional costs the Owner may incur on account of defective Work as provided in paragraph 18.1; otherwise, the Contractor shall pay to the Owner the amount of all such costs and expenses incurred by the Owner adjusted to account for the net proceeds or deficit of said auction or sale, if any, in accordance with paragraph 20.12.

- 18.3 Owner's Right to Accept Defective Work. The Owner may accept defective Work instead of requiring its correction or removal and replacement. In such case, if acceptance occurs prior to the making of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Price covering the value of such accepted defective Work and the additional costs the Owner may incur on account of such defective Work as provided in paragraph 18.1; or, if the acceptance occurs after the making of final payment, the amount that would have been the reduction in the Contract Price prior to the making of the final payment shall be paid by the Contractor to the Owner in accordance with paragraph 20.12.
- 18.4 Re-Examination of Work. If the Owner, at any time prior to the final acceptance of the Work, orders reexamination of Work completed, including the uncovering, removing, exposing, dismantling, inspecting, or testing of Work covered by such order, the Contractor shall promptly comply with the order. If the Work so re-examined is defective, the Contractor shall correct or remove and replace it with non-defective and conforming Work in accordance with all the provisions of paragraph 18.1 and also shall bear the cost of the satisfactory reconstruction of the Work. If the Work so re-examined is not defective or if any defective or deficient condition discovered was caused by a separate Contractor employed on the Project, the Contractor shall satisfactorily reconstruct the Work as ordered by the Owner and, if claim is made as provided in paragraph 16.4, a Change Order will be issued to compensate the Contractor for his Work under such order, valued as provided in paragraph 16.2, and to effect an appropriate adjustment of the Contract Time.

## ARTICLE 19 - GUARANTEES AND WARRANTIES

- 19.1 Contractor's Guarantee. The Contractor shall warrant and guarantee the entire Work and all parts thereof, including that performed and constructed by Subcontractors, Sub-subcontractors, and others employed directly or indirectly on and for the Work, against faulty or defective materials, equipment, or workmanship for a period of one (1) year from the date of the Owner's written final acceptance of the Work or such longer period of time as may be prescribed by law or by the terms of any special guarantee or warranty required by the Contract Documents.
- 19.2 Bonds and Insurance. The performance bond and the public liability and property damage insurance required of the Contractor in Article 6 shall remain in full force and effect for the entire time of the Contractor's guarantee.

- 19.3 Corrections During Guarantee Period. The Contractor's correction of defective Work during the guarantee period shall be in accordance with all the provisions of paragraph 18.1, or the Owner may correct or accept it as provided in paragraphs 18.2 and 18.3.
- 19.4 Guarantee of Work on Property of Others. The Contractor's guarantee shall cover and include any of the Work installed on property not owned by the Owner, whether public or private, and shall include the repair of damage to improvements and existing conditions on such other property caused by settlement or otherwise resulting from the Contractor's operations unless the owner of such other property shall in writing release the Owner from liability and responsibility for Work or damage therefrom on such other property.
- 19.5 Manufacturers' Warranties. As a precedent to final inspection, the Contractor shall deliver to the Owner all the manufacturers' warranties required by the Contract Documents, with the Owner named as beneficiary. In addition, for all equipment and machinery bearing a manufacturer's warranty that extends for a longer period of time than the Contractor's guarantee, the Contractor shall secure and deliver the warranties to the Owner in the same manner.

## ARTICLE 20 - PAYMENTS AND COMPLETION

- 20.1 Schedule of Values. Prior to applying for the first progress payment, the Contractor shall submit to the Owner for approval, in the form directed by or acceptable to the Owner, a complete schedule of the values of the various portions of the Work, including quantities and unit prices if required by the Owner, aggregating the Contract Price (except in cases and to the extent that accepted unit prices form the basis for payment). The schedule shall subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction, to coordinate with the progress schedule required under paragraph 2.6, to form the basis for possible change orders or field orders and shall be supported by such data to substantiate its correctness as the Owner may require. Each item in the Schedule of Values shall include its proper share of overhead and profit. An unbalanced breakdown providing for overpayment to the Contractor on items of Work which would be performed first will not be approved. The Schedule of Values, when approved by the Owner, shall be used only as a basis for the Contractor's applications for payment and not for additions to or deductions from the Contract Price.
- 20.2 Contractor's Certification. All applications for payment shall contain the Contractor's certification that all his labor for the period for which payment is claimed has been paid, including all amounts to the account of such labor lawfully required to be allocated, withheld, or set aside, and that he has assured himself and represents that all labor on the account of Subcontractors or Sub-subcontractors for which payment amounts are claimed has also been paid.
- 20.3 Contractor's Warranty of Title. The Contractor warrants and guarantees that title to all Work, materials and equipment covered by an application for payment, whether incorporated in the Work or not, will have passed to the Owner prior to the making of the application for payment, free and clear of all liens, claims, security interests or encumbrances (hereafter in these General Conditions referred to as "liens"); and that no Work, materials or equipment covered by an application for payment will have been acquired by the Contractor or by any other person performing the Work at the site or furnishing materials and equipment for the Work, subject to an agreement under which an interest therein or encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other person.

20.4 Progress Payments. Unless otherwise provided in the Contract Documents, at least four (4) days before each progress payment application falls due, but not more often than once a month, the Contractor shall submit to the Owner for review the itemized progress payment application in the form required by the Owner, filled out and signed by the Contractor and supported by such data substantiating the Contractor's right to payment as the Owner may require. Any progress payment application not accompanied by the revised progress schedule required of the Contractor in paragraph 2.6 will be returned to the Contractor.

20.4.1 Progress Payment for Materials and Equipment. If an application requests payment on account of imperishable materials or equipment not incorporated in the Work but delivered and suitably stored at the site, or at some other location approved by the Owner and agreed to in writing, the application shall be accompanied by such bills of sale, data, and other procedures satisfactory to the Owner as will establish the Owner's title to such materials or equipment or otherwise protect the Owner's interest including applicable liability and property insurance and transportation to the site. Payment on account of such materials or equipment will not include any amount for the Contractor's overhead or profit or relieve the Contractor of his obligation to protect and install such materials or equipment in accordance with the Contract Documents and for the restoration of damaged or defective Work.

20.4.2 Basis of Progress Payments. Unless otherwise provided in the Contract Agreement or subsequently agreed by the parties, progress payments will be in an amount equal to ninety (90) percent of the value of the Work performed and the value of materials and equipment delivered and stored as provided in paragraph 20.4.1 less the aggregate of previous progress payments.

20.4.3 Approval of Progress Payments. The Owner will either indicate in writing his approval of payment or return the application to the Contractor indicating in writing his reasons for refusing to approve payment. With respect to disapproved applications, the Contractor may make the necessary corrections and resubmit the application. Unless otherwise provided or agreed by the parties, the Owner will approve or return an application within ten (10) days after receipt, and the Owner will, within forty five (45) days after his approval of an application for payment, pay the Contractor the amount so approved.

20.4.4 Each application for progress payment shall be accompanied by the following:

20.4.4.1 Progress Report - A narrative summary indicating the status of the work performed and other pertinent activities including the actual percentage of work completed, an estimate of the percentage of work to be completed in the succeeding month, a revised CPM schedule, problem areas and manpower used by trade and hours. If the Work has fallen behind the schedule, the Contractor shall state how the time is to be made up to remain on schedule.

20.4.4.2 Progress Photographs.

(a) General. Provide photographs of the site and construction throughout the progress of Work, produced by a commercial photographer, acceptable to the Owner. The commercial photographer shall be available on one (1) day's notice to take photographs as directed. Photographs shall be taken on the cutoff date for each application for payment and at the beginning and completion of each of the following elements of Work:

- (1) Prior to Work
- (2) Final Completion

In addition, the Engineer may request up to five (5) photographs of various views (non-aerial) in any one (1) month of progress or problem areas.

(b) **Prints**

- (1) Color and Number. Provide three (3) full-color prints and corresponding CD with picture files of each view.
- (2) Paper. Provide single weight, neutral black image tone, white base paper.
- (3) Finish. A matt finish shall be provided on all prints.
- (4) Size. Print size shall be 8 X 10 inches.
- (5) Description. Identify each print on the back using appropriate materials which will not damage photos in any way, at the time or during subsequent storage. Descriptive information shall be permanently attached to back of photographs. List name of project, orientation of view, object photographed, date and time of view, name and address of photographer and photographer's numbered identification of exposure. Slide identification may be on a separate document with each slide appropriately numbered.

(c) Picture Files. Deliver picture files along with prints to Owner with application for payment. Catalog and index files in chronological sequence. Provide a typed Table of Contents.

(b) Technique. Provide factual presentation. In each photograph include an object of known size to determine size of object being photographed. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field and minimum distortion. Any photograph or slide which is not clear and distinct, double exposed, over exposed, etc. shall be retaken.

(c) Views. Provide photographs from two (2) views at each element of Work. The Engineer will select the various viewpoints for photography.

(d) Submittals. Contractor shall deliver the prints and files with each application for payment within three (3) days after exposure with transmittal letter. The prints and files will be signed and dated by the Engineer and one (1) of each retained by the Engineer and Contractor. The Owner will retain one (1) of each slide and print which will be the permanent record. The Contractor will include a bound photo album with pictures in place and a location within albums for files on CD. Photo album will be professionally labeled and marked with the project name on the cover and back binder. Submit samples of photographer's work and resume along with request for approval of firm or individual.

## 20.5 Withholding of Payments.

- 20.5.1 Right to Withhold. The Owner may refuse to approve any such payment, or, because of subsequently discovered evidence or the results of subsequent inspection or tests, nullify any such payment previously approved to such extent as may be necessary in the opinion of the Owner to protect the Owner from loss because: (a) the Work is defective, (b) third party claims have been filed or there is reasonable evidence indicating probable filing of such claims, (c) the Contract Price has been reduced because of Change Orders, (d) of the Contractor's failure to make payment properly to



Subcontractors or for labor, materials, or equipment, (e) of damage to another contractor or to the property of others caused by the Contractor, (f) of reasonable doubt that the Work can be completed for the unpaid balance of the Contract Price, (g) of reasonable indication that the Work will not be completed within the Contract Time, (h) of the Contractor's neglect or unsatisfactory prosecution of the Work including failure to clean up, (i) the Owner has been required to correct defective Work as provided in paragraph 18.2 or to finish the Work as provided in paragraph 21.2, (j) of insurance premium costs the Owner has incurred by the Contractor's failure to maintain the insurance required of him, (k) of reasonable doubt as to the Contractor's warranty of title required under paragraph 20.3, (l) of payments due the Owner from the Contractor, or (m) of provisions of law that enable or require the Owner to withhold such payments in whole or in part. When the grounds for withholding payments are removed, payment will be made for amounts withheld because of them to the extent the Contractor is entitled to payment.

- 20.5.2 Owner's Right To Apply Withheld Payments. The Owner may, but is not obligated to the Contractor, his surety or sureties, or any third party, to apply the amounts withheld pursuant to subparagraph 20.5.1 to the payment of any and all claims which are grounds for such withholding. In so doing, the Owner shall be deemed the agent of the Contractor and any payments so made by the Owner shall be considered as a payment made under the Contract Agreement by the Owner to the Contractor and the Owner shall not be liable to the Contractor for such payment made in good faith. Such payment by the Owner may be made without prior judicial determination of the claim or claims. The Owner will render to the Contractor a proper accounting of such funds disbursed on behalf of the Contractor.
- 20.6 Payments To Subcontractors. The Contractor shall pay each Subcontractor, upon receipt of payment from the Owner, an amount equal to the percentage of completion allowed to the Contractor on account of such Subcontractor's Work, less the percentage retained from payments to the Contractor. The Contractor shall also require each Subcontractor to make similar payments to his Sub-subcontractors. If the Owner refuses or fails to approve an application for payment for any cause which is the fault of the Contractor and not the fault of a particular Subcontractor, the Contractor shall pay that Subcontractor on demand, made at any time after the Owner's approval for payment should otherwise have been issued, for his Work to the extent completed less the retained percentage. The Contractor shall pay each Subcontractor a just share of any insurance moneys received by the Contractor under subparagraph 6.2.7, and he shall require each Subcontractor to make similar payment to his Sub-subcontractors. Neither the Owner nor the Engineer shall have any obligation to pay or to see to the payment of any moneys to any Subcontractor or Sub-subcontractor except as may otherwise be required by law.
- 20.7 Final Inspection and Acceptance. Upon written notice from the Contractor that the entire Work required by the Contract Documents is complete and that all submittals required of him are made, and after the Contractor has delivered the Bonds, certificates of inspection, proof of insurance, guarantees, warranties, releases, and other documents, all as required by the Contract Documents or by law, a post construction conference will be held to review the Work and resolve any unsettled matters. Present at the conference shall be the Owner, the Engineer, the Inspector, the Contractor, and the Superintendent. Following this conference, Engineer will make a final inspection with the Owner and the Contractor, and the Owner will notify the Contractor in writing of any particulars in which this inspection reveals that the Work is defective, and will also notify the Contractor in writing of any deficiencies in the submittals and other documents required of him. The Contractor promptly shall make such corrections as are necessary to remedy all defects or deficiencies. After the Contractor has completed any

such corrections to the satisfaction of the Owner, the Owner will issue a written final acceptance of the Work and file any notice of completion required by law or otherwise.

- 20.8 Application for Final Payment. After issuance of the Owner's final written acceptance, the Contractor may make application for final payment following the procedure for progress payments. Neither the final payment nor the remaining retained percentage shall become due unless the application for final payment is accompanied by such supporting data as the Owner may require, together with complete and legally effective releases or waivers, satisfactory to the Owner, of all liens arising out of the Contract Documents and the labor and services performed and the material and equipment furnished thereunder. In lieu thereof and as approved by the Owner, the Contractor may furnish receipts or releases in full; an affidavit of the Contractor that the releases and receipts include all labor, services, material and equipment for which a lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which the Owner or his property might in any way be responsible, have been paid or otherwise satisfied; and consent of Surety, if any, to final payment. If any Subcontractor, Sub-subcontractor, or supplier fails or refuses to furnish a release or receipt in full, the Contractor may furnish a Bond satisfactory to the Owner to indemnify him against any such lien. If any such lien remains unsatisfied after all payments are made, the Contractor or his surety shall pay to the Owner all moneys the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

A. The Contractor must obtain an unconditional waiver and release of claims upon final payment from all suppliers and subcontractors which have filed preliminary notices with the Owner.

The Contractor must obtain in writing releases from each owner of real property from which the Contractor has obtained permission to use land. Such release shall state that the land is returned to the property owner in an acceptable condition. Similar releases must be obtained from owners of property disturbed by the Contractor from which the Contractor has not obtained permission to use or enter; except that releases are limited to restoration of land to original lines and grades. restoration of vegetation and removal of waste material.

THE APPLICATION FOR FINAL PAYMENT SHALL INCLUDE FROM THE CONTRACTOR A SIGNED RELEASE AND CERTIFICATE OF FINAL PAYMENT FORM AS INCLUDED HEREIN.

- 20.9 Approval of Final Payment. The Owner will, within ten (10) days after the Contractor has fulfilled and satisfied all the requirements of paragraph 20.8, indicate in writing his approval of payment or will return the application to the Contractor, indicating in writing his reasons for refusing to approve final payment, in which case the Contractor shall make the necessary corrections and resubmit the application. The Owner, within thirty-five (35) days after his approval of the application for final payment, will pay the Contractor the amount so approved unless a longer period of time is prescribed by law or required for the lawful filing and publishing of Notices of Completion (See Section 00800).
- 20.10 Continuing Obligation of the Contractor. The Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is and shall be absolute. Neither the observation during construction and final inspection of the Work by the Owner and the Engineer, nor any payment by the Owner to the Contractor under the Contract Documents, nor any use or occupancy of the Work or any part thereof by the Owner, nor any act of acceptance by the Owner nor any failure to do so, nor any correction of defective Work by the Owner shall constitute acceptance of Work not in accordance with the Contract Documents.

- 20.11 Release of Claims. Contractor shall, before being entitled to final payment, also execute and file with the Owner a release upon the form provided by Owner, releasing the Owner from all claims or liability relating to undisputed contract amounts or work performed in relation to such amounts. However any payment, final or otherwise, shall not release the Contractor or his sureties from any obligations under the Contract Documents or the performance bond or payment bond. The making of final payment by the Owner shall not constitute a waiver of claims by the Owner for unsettled liens, from faulty or defective Work appearing after final acceptance of the Work by the Owner, from failure of the Work to comply with the requirement of the Contract Documents, or from the terms of any special guarantees or warranties required by the Contract Documents.
- 20.12 Contractor's Payment to Owner. The Contractor shall pay to the Owner all moneys so required of him under the provisions of the Contract Documents. If any such payments are required prior to final payment, an appropriate Change Order will be issued and, as provided in subparagraph 20.5.1, the amount of such payments may be withheld from payments due the Contractor. If the payments then or thereafter due the Contractor are insufficient to cover any payments due the Owner from the Contractor, or if the amount of such payment due the Owner is determined after the making of final payment, the difference in the amounts of the payments or the amount so determined shall be paid by the Contractor to the Owner. The obligation of the Contractor to pay the moneys due the Owner from him shall specifically bind the Contractor's sureties, assigns, executors, administrators, and heirs to his obligation to so pay the Owner.
- 20.13 Interest. Any moneys not paid when due to either party under this Contract Agreement shall bear interest at the maximum legal rate in force at the place of the Project.
- 20.14 Non-receipt of Payment. The Contractor shall notify the Owner in writing of any approved progress payment not received by him within five days after the date the payment should properly have been paid to him. In the absence of such written notice in each case, the Contractor hereby agrees and waives his right under paragraph 21.5 to terminate the Contract Agreement or stop the Work on account of nonpayment by the Owner and further waives his right under paragraph 20.13 to interest on the amount of any such payment not received by him.

## ARTICLE 21 - SUSPENSION AND TERMINATION

- 21.1 Suspension of Work. The Owner, at any time and without cause, may suspend the Work or any part thereof by notice in writing to the Contractor. Unless otherwise provided in the Contract Documents, the Contractor shall have no claim for damages or compensation on account of such suspension unless he makes a claim therefor as provided in paragraph 16.4, but the Contractor will be allowed an extension of the Contract Time to complete the Work and an appropriate Change Order will be issued. The Contractor shall resume the Work when so notified in writing by the Owner.
- 21.2 Suspension of Contract Agreement. If the Contractor abandons the Work, or if he is adjudged as bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the Contractor or for any of his property, or if he files a petition to take advantage of any debtor's act or to reorganize under bankruptcy or similar laws, or if he persistently fails to supply sufficient skilled superintendence and workmen or suitable materials or equipment, or if he persistently fails to make prompt payments to Subcontractors or for labor, materials or equipment, or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction, or if he disregards the authority of the Owner, or neglects to prosecute the Work in accordance with the Contract Documents including requirements of the progress schedule, or if he fails to promptly comply with the requirements of any Change Order, or if he assigns this Contract Agreement otherwise than herein provided,

or if the Owner at any time is of the opinion that the performance of the Work is unnecessarily or unreasonably delayed or that the Contractor is willfully violating any of the provisions of the Contract Documents or is executing the same in bad faith, or if the Work is not fully completed within the Contract Time and any authorized extensions thereof, or if the Owner is of the opinion that the Work cannot be completed for the unpaid balance of the Contract Price or will not be completed within the Contract Time, or if the Contractor otherwise violates any provisions of the Contract Documents, then the Owner may, without prejudice to any other right or remedy and by means of written notice to the Contractor and his surety, instruct the Contractor to discontinue all Work or any part thereof under the Contract Agreement or terminate the services of the Contractor. The Contractor, under a written instruction to discontinue, shall not resume any of the Work except by written notice from the Owner. In either such case, the Owner may take possession of the Work and Project and of all materials, equipment, plant, tools, supplies, construction machinery and equipment, and property of every kind thereon owned and furnished by the Contractor for the purpose of the Work, and finish the Work by whatever method the Owner may deem expedient. The Contractor shall not be entitled to receive any further payment after the date of said written notice from the Owner unless instructed in writing by the Owner to resume any part of the Work, or until the Work is finished by the Owner if the Owner so elects. If the unpaid balance of the Contract Price exceeds the direct and indirect costs to the Owner of finishing the Work, including compensation for additional administrative, consultant, professional, testing, and inspection services, such excess will be paid to the Contractor. If such costs to the Owner exceed such unpaid balance, the Contractor, in accordance with paragraph 20.12, shall pay the difference to the Owner.

- 21.3 Contractor's Continuing Liability. When the Contractor's services have been discontinued or terminated as provided in paragraph 21.2, said discontinuance or termination shall not affect any rights of the Owner against the Contractor then existing or which may thereafter accrue. Any retention or payment of moneys by the Owner due the Contractor will not release the Contractor from liability.
- 21.4 Termination of Contract Agreement. Upon seven (7) days written notice to the Contractor, the Owner may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Contract Agreement. In such case, the Contractor will be paid for all Work satisfactorily executed and any proven expense sustained plus a reasonable profit.
- 21.5 Stopping Work or Termination by Contractor. If, through no fault, act, or omission of the Contractor or a Subcontractor or Sub-subcontractor or their agents or employees or any other person performing any of the Work under a contract with the Contractor, the Work is suspended for a period of more than ninety (90) days by the Owner (except as provided in paragraph 23.7 for Federal hindrance) or under an order of any court or other public authority having jurisdiction, or the Owner fails to act on any application for progress payment within thirty (30) days after it is submitted or the Owner fails to pay the Contractor any progress payment sum approved by the Owner within forty-five (45) days of its approval, or the Owner fails to pay the Contractor any sum awarded by arbitrators within sixty (60) days of its approval and presentation, then the Contractor may, upon ten (10) days written notice to the Owner, terminate the Contract Agreement and recover from the Owner payment for all Work satisfactorily executed and for any proven loss sustained upon any materials, equipment, tools, and construction equipment and machinery, including reasonable profit and damages. In addition and in lieu of terminating the Contract Agreement, if the Owner has failed to act on an application for progress payment or has failed to make any progress payment as aforesaid, the Contractor may, upon ten (10) days written notice to the Owner, stop the Work until he has been paid all amounts then correctly due him, in which event and upon resumption of the Work, an appropriate Change Order will be issued for adjusting the Contract Price or extending

the Contract Time, or both, to compensate for the costs and delays attributable to such storage of the Work.

## ARTICLE 22 - ARBITRATION

22.1 Resolution of Certain Disputes. Any separate demand by the Contractor for the payment of money or damages arising from work done by or on behalf of the Contractor pursuant to this Contract, payment of which is not otherwise expressly provided for or entitled to, or any separate demand by the Contractor of any amount the payment of which is disputed by the Owner, such demands being in an amount of \$375,000 or less, shall be resolved pursuant to Sections 20104 et seq. of the California Public Contract Code, as may be amended. These sections are summarized as follows:

- (a) For claims, as defined in Section 20104 of the California Public Contract Code, by the Contractor of an amount less than \$50,000, the Owner will respond in writing to a claim within forty-five (45) days of the receipt of the claim, or any request in writing, within thirty (30) days of receipt of the claim. The Owner's written response to the claim, as further documented, shall be submitted to the Contractor within fifteen (15) days after receipt of the further documentation.
- (b) For claims, as defined in Section 20104 of the California Public Contract Code, by the Contractor for an amount above \$50,000 and up to \$375,000, the Owner shall respond in writing to all written claims within sixty (60) days of receipt of the claim, or may request in writing within thirty (30) days of receipt of the claim any additional documentation needed to support the claim or related to defenses which the Owner may have against such claim. The Owner's written response to the claim as further documented, shall be submitted to the Contractor within thirty (30) days after receipt of the further documentation.
- (c) The Owner shall submit a written response to such claims, as further documented, within fifteen (15) days of receipt of such documentation or within a period of time no greater than that taken by the Contractor in producing the requested documentation, whichever is greater.
- (d) If the Contractor disputes the Owner's written response, or the Owner fails to respond within the time prescribed, the Contractor may notify the Owner, in writing, either within fifteen (15) days of receipt of the Owner's response or within fifteen (15) days of the Owner's failure to respond within the statutorily prescribed time, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon demand, the Owner shall schedule a meet and confer conference within thirty (30) days for settlement of the dispute.
- (e) If the meet and confer process does not produce an agreement, the Contractor may file a claim pursuant to Government Code Sections 900, et seq. The period of time within which to file such a claim shall be as defined in Section 20104.2 (e).
- (f) The procedures for any civil action brought by the Parties to resolve such claims shall be those set forth in Section 20104.4 of the California Public Contract Code, a summary of which is set forth below:
  - (1) Within sixty (60) days, but no earlier than thirty (30) days, following the filing of responsive pleading, unless waived by mutual stipulation of both parties, the court shall submit the matter to a nonbinding mediation. The mediation process shall commence within thirty (30) days of the submittal, and shall be concluded within fifteen (15) days

from the commencement of the mediation process, except as may be otherwise required by Section 20104.4 of the Public Contract Code.

- (2) If the matter remains in dispute after mediation, the case shall be submitted to judicial arbitration. Such proceedings shall be conducted, and arbitrator appointed, pursuant to provisions of Section 20104.4 of the Public Contract Code.
- (3) Any party appealing an arbitration award who does not obtain a more favorable judgment shall, in addition to the payment of costs and fees, also pay the attorneys' fees on appeal of the other party.
- (g) In any suit filed pursuant to these provisions, interest shall be paid at the legal rate on any arbitration award or judgment. The interest shall begin to accrue on the date the suit is filed in a court of law.

22.2 Payment of Undisputed Amounts. Pursuant to Section 20104.6 of the California Public Contract Code, the Owner shall be entitled to withhold any unpaid contract amount, which would otherwise be due and payable after the filing of any claim by the Contractor pursuant to Article 22 of the General Conditions, pending final resolution of the claim.

22.3 Waiver of Rights. Except as set forth in this Article 22, or as otherwise provided under state law, it is understood and agreed by the parties that all rights any of them may have to arbitration for the settling of disputes, claims, and other matters arising out of or relating to this Contract Agreement or the breach thereof are hereby specifically waived by all of them.

## ARTICLE 23 - MISCELLANEOUS PROVISIONS

23.1 Successors and Assigns. The Owner and the Contractor each binds himself, his partners, successors, assigns and legal representatives to the other party hereto and to the partners, successors, assigns and legal representatives of such other party in respect to all covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract Agreement shall assign the Contract Agreement or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any moneys due or to become due to him hereunder without the previous written consent of the Owner.

23.2 Written Notice. Written notice shall be deemed to have been duly served if delivered in person to the individual or member of the firm or to an officer of the corporation for whom it was intended, or if delivered at or sent by registered or certified mail to the last business address known to him who gives the notice, or delivered to the Project Superintendent. The address given in the Contractor's Bid on which the Contract Agreement is founded is hereby designated as the place to which all notices, letters, and other communications to the Contractor shall be mailed or delivered, except that said address may be changed by the Contractor by notifying the Owner in writing. This shall not preclude the service of any notice, letter or other communication upon the Contractor personally.

23.3 Communications. The Owner will issue all communications to the Construction Manager and the Contractor shall deliver all communications to the Construction Manager unless otherwise provided in the Contract Documents or directed by the Owner.

23.4 Claims for Damages. Should the Owner or the Contractor suffer injury or damage to its person or property because of any error, omission or act of the other or of any of his employees or agents or others for whose acts he is legally liable, claim shall be made in writing to the other party within a reasonable time of the first observance of such injury or damage.

- 23.5 Rights and Remedies. The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder and, in particular but without limitation, the warranties, guarantees and obligations imposed upon the Contractor by subparagraph 6.2.4 and by paragraphs 6.4, 19.1, and 20.3 and the rights and remedies available to the Owner and the Engineer thereunder, shall be in addition to and not a limitation of any otherwise imposed or available by law, by special guarantee or warranty, or by other provisions of the Contract Documents.
- 23.6 Royalties and Patents. Unless otherwise specifically stipulated elsewhere in the Contract Documents, the Contractor shall pay all royalties and license fees and assume all costs and expenses incident to the use of any invention, composition, process device, article, appliance, or design which is the subject of patent rights, copyrights, or other legal rights of ownership held by others. The Contractor shall indemnify and hold harmless the Owner and the Engineer and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses, including attorneys' fees, arising out of any infringement of such rights during or after completion of the Work, and shall defend all such claims in connection with any alleged infringement of such rights.
- 23.7 Federal Hindrance. In entering into this Contract Agreement, it is clearly understood by all parties hereto that conditions may subsequently arise resulting from, connected with, or growing out of any war in which the United States may be engaged, or any national emergency or condition created directly or indirectly by or for the national defense or national interests, and which are entirely beyond the control of either party, that may hinder, delay or render impossible the performance of this Contract Agreement in accordance with its terms and conditions. It is therefore mutually understood and agreed, anything herein contained to the contrary notwithstanding, that in the event the Contractor shall be prevented from performing the Work or any part thereof by reasons of the conditions above stated, the Contractor shall notify the Owner in writing of his inability to perform, stating in full the reason therefor and the probable duration of such inability. If required, he shall also submit proof or evidence in support of his claim of inability to perform. If it shall appear to the satisfaction of the Owner that the cause of inability to perform arose after the Contract Agreement was entered into and is beyond the control of the Contractor, the Owner may, (a) if lawfully within its power, remove the cause which prevents performance; or (b) suspend this Contract Agreement until the cause of inability to perform is removed; or (c) with the consent of the contractor, renegotiate or amend this Contract Agreement by extending the time of performance or by making the changes in the character of the Work, or in the materials or equipment required in order to enable performance of the Work; or (d) waive performance of that part of the Work which is impossible, or supply substitute materials for those unavailable, and where this remedy is resorted to, the payment due the contractor will be reduced to the extent of the Work not required to be performed, based so far as is practicable upon unit prices bid, by an appropriate Change Order. If none of the foregoing procedures are adopted by the Owner within thirty days after the Owner is satisfied and so finds that the contractor is unable to perform for the reasons above stated, then either party hereto may, without incurring any liability, elect to declare this Contract Agreement terminated upon the ground of impossibility of performance. Upon such termination, The Contractor will be paid as provided in paragraph 21.4 for termination of the Contract Agreement.
- 23.8 Oral Agreements. No oral order, objection, claim or notice by any party to the others shall affect or modify any of the terms or obligations contained in any of the Contract Documents, and none of the provisions of the Contract Documents shall be held to be waived or modified by reason of any act whatsoever, other than by a definitely agreed waiver or modification thereof in writing, and no evidence shall be introduced in any proceeding of any other waiver or modification.

- 23.9 Work in Jurisdiction of Others. Where any of the Work is adjacent to or crosses highways, railroads, streets, utilities, property, rights-of-way, or easements under the jurisdiction of Federal, State, County, City or other public agency, public utility, or private entity from whom the Owner has not obtained permits, the Contractor shall secure written permission from the proper authority and furnish bonds and insurance and pay all fees and charges as the proper authority may require for permission before executing such Work. A copy of each written permission shall be filed with the Owner before such Work is begun. The Contractor shall repair or replace all existing construction damaged in the execution of the Work to the satisfaction of the proper authority, and shall furnish to the Owner a release from the proper authority prior to final inspection of the Work.
- 23.10 Cash Allowances. The Contractor shall include in his Bid and the Contract Price the cash allowances stated in the Contract Documents. These stated allowances represent the net cost estimate of the materials and equipment delivered and unloaded at the site, and all applicable taxes. The Contractor's handling costs on the site, labor, installation costs, overhead, profit and other expenses contemplated for the cash allowance material and equipment shall be included in the Contract Price since they are not included in the cash allowance estimates. The Contractor shall purchase the cash allowance materials and equipment as directed by the Owner on the basis of the lowest responsive bid of at least three competitive bids. If the actual cost of the materials and equipment approved by the Owner delivered and unloaded at the site and all applicable taxes is more or less than the cash allowance estimates, the Contract Price will be adjusted accordingly by Change Order.
- 23.11 Ownership of Documents and Models. All Drawings, Specifications and copies thereof furnished to or obtained by the Contractor, and all models pertaining to the Work are and shall remain the property of the Owner or the Engineer as they may agree. They shall not be used on any other project and, with the exception of one (1) contract set of Drawings and Specifications to be retained by the Contractor, shall be returned, on request and as directed, prior to final acceptance of the Work.
- 23.12 Use of Completed Portions. The Owner shall have the right, upon written notice to the Contractor, to take possession or occupancy of and use any completed or partially completed portions of the Work, notwithstanding that the time for completing the entire Work or such portions may not have expired; but such taking possession or occupy and use shall not be deemed a waiver of any requirement of the Contract Documents or a waiver or acceptance of any Work not completed in accordance with the Contract Documents. If such prior possession, occupy, or use increases the cost of or delays the completion of uncompleted Work or causes repair or refinishing of completed Work, the contractor shall be entitled to such extra compensation or extension of time, or both, as agreed by the Owner and an appropriate Change Order will be issued. The Contractor will not be required to perform housekeeping obligations in or bear utility costs for buildings or structures to the extent so occupied or used by Owner. If the Owner takes possession of and places any of the machinery or equipment of the Work into continuing operation consonant with its intended final service or purpose and for his beneficial use, the period of the Contractor's guarantee, solely with respect to such machinery or equipment, shall begin on the first day of such beneficial use by the Owner and the Owner will bear the utility and maintenance costs for such beneficial use. Prior to the Owner taking possession, occupancy, or use of any portion of the Work, but not as a condition or precedent to the Owner's right thereto, the Owner and the Contractor shall jointly inspect and determine the condition and completeness of the involved portions of the Work, shall agree upon appropriate procedures and other pertinent matters including the payment or apportioning of utility costs, and shall execute a memorandum recording the inspection determination and the procedures and matters agreed. Such possession, occupancy, or use by the Owner under this paragraph shall not entitle the Contractor to claim or receive payment of any amounts retained or withheld



by the Owner pursuant to subparagraphs 20.4.2 and 20.5.1 unless otherwise agreed by the parties.

- 23.13 Cleaning Up. The Contractor shall at all times during the Work keep the site and premises, adjoining property, and public property free from accumulations of waste materials, rubbish, and other debris resulting from the Work, and at the completion of the Work shall remove all waste materials, rubbish and debris from and about the site and premises as well as all tools, construction equipment and machinery, and surplus materials, and shall leave the site and premises clean and ready for occupancy by the Owner. The Contractor shall provide suitable drainage and shall erect such temporary structures as are necessary to protect the work or materials from damage. The Contractor shall conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws. The Contractor shall restore to their original condition those portions of the site not designated for alteration by the contract Documents. Paved walkways, parking areas, and roadways shall be swept and broomed clean. Cleaning up operations shall include the removal and disposal of earth that is contaminated and the filling of resulting excavations with sound compacted earth as directed and approved by the Owner. Contamination includes the earth in areas used for disposal of waste concrete, mortar, plaster, masonry, and like materials'; areas in which washing out concrete and plaster mixers or washing of tools and like cleaning operations have been performed; areas that have been oiled, paved, or chemically treated; and areas where waste oils, solvents, paints, solutions, or similar materials of a penetrating nature have been incorporated into the soil. The Owner will determine the contaminated earth areas. No waste material shall be buried or disposed of on the Owner's property unless so permitted in the Contract Documents or approved in writing by the Owner. Before the Contractor applies for final inspection and acceptance of the Work, all items of Work shall be complete, ready to operate, and in a clean condition as determined by the Owner.
- 23.14 Owner's Right To Clean Up. If the Contractor fails to satisfactorily clean up or if a dispute arises between the Contractor and any separate contractor as to their responsibility for cleaning up, the Owner may clean up and charge the cost thereof to the Contractor for his failure, or to the several Contractors as the Owner shall determine to be just.
- 23.15 Certificates. Each certificate required under the Contract Documents shall be signed by the individual, office, or agent lawfully authorized to execute the certificate, and such authority shall be cited in the certificate by title, description, or other acceptable evidence. All certificates shall be sworn and notarized as to the correctness and validity of the contents, and duplicate copies shall be notarized to be true copies.
- 23.16 Excavations; Discovery of Hazardous Conditions.
- A. Pursuant to Section 7104 of the California Public Contract Code, while performing excavation or digging of trenches pursuant to this Contract, the Contractor shall promptly (within 14 calendar days), and before the conditions are disturbed, notify the Owner, in writing of any:
- (1) Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the California Health & Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing law;
  - (2) subsurface or latent physical conditions at the site differing from those indicated; or
  - (3) unknown physical conditions at the site of any unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract.

- B. Upon such notification, the Owner will promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto.
- C. If the Owner finds that the reported conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for performance of any part of the work shall issue a Change Order or similar contract modification pursuant to the procedures described in this Contract.
- D. In the event a dispute arises between the Owner and Contractor as to whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the Work, the Contractor shall not be excused from any scheduled completion date provided for by this Contract, but shall proceed with all work to be performed under this Contract. The Contractor shall retain any and all rights provided either by Contract or by law which pertains to the resolution of disputes and protests between the contracting parties.
- E. The Contractor's failure to give notice of differing site conditions within 14 calendar days of their discovery and before they are disturbed shall constitute a waiver of all claims in connection therewith, whether direct or consequential in nature.

23.17 California State Codes.

23.17.1 Wage Rates. The Owner has obtained from the Director of the Department of Industrial Relations the general prevailing rate or per diem wages and the general prevailing rate for holiday and overtime work in the locality in which the Public Work is to be performed for each craft, classification or type of workman needed to execute this Contract. (Copies of the wage determination are on file and may be obtained by interested parties at the office of the Owner.) The Contractor and all Subcontractors shall comply with all requirements and provisions of Section 1775 and 1776 of the California Labor Code. The Contractor shall forfeit, as a penalty to the Owner, \$25.00, for each calendar day, or portion thereof, for each workman paid less than stipulated prevailing rates for Work done under the Contract Agreement by him, or any Subcontractor under him, in violation of the provisions of the California Labor Code. Copies of these wage determinations shall be posted and maintained at the job site by the successful bidding Contractor.

- (a) Subject to the provisions of Section 1810 to 1815, inclusive, of the California Labor Code, the time of service of any laborer, workman, or mechanic employed on the Work shall be limited and restricted to eight (8) hours during any one (1) calendar day and forty (40) hours in any one (1) calendar week, except as otherwise provided in said sections, and the Contractor shall forfeit to the Owner as a penalty, \$25.00 for each laborer, workman, or mechanic employed in the execution of the Work by him or any Subcontractor under him for each calendar during which such laborer, workman, or mechanic is required or permitted to labor more than eight (8) hours in violation of provisions of the California Labor Code.
- (b) The Contractor shall make travel and subsistence payments to each workman needed to execute the Work in accordance with the requirements of Section 1773.8 of the California Labor Code.
- (c) The Contractor shall conform to all the requirements of Sections 1777.5 and 1777.6 of the California Labor Code concerning the employment of apprentices by the Contractor or any subcontractor under him.
- (d) Contractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice or worker employed by him. Such record shall be

available for inspection at all reasonable hours, and a copy shall be made available to the employee or his authorized representative, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards in compliance with the Section 1776 of the California Labor Code and other relevant state law. Upon written notice from Owner or the Division of Labor Standards Enforcement, Contractor shall within ten (10) days file with Owner a certified copy of the payroll records. Contractor shall cause an identical clause to be included in every subcontract for work pursuant to this Contract.

23.17.2 Safety Orders. The California Construction Safety Orders in effect during the Work shall apply continuously until final acceptance of the Work.

23.17.3 Subcontractors. In compliance with the California Government Code Section 4100 et seq., each bidder shall state in his bid the name and business address of each subcontractor who will perform work or a labor or render services to the Contractor in or about the construction of the Work in an amount in excess of one-half of one percent (0.5%) of the total bid amount, and the portion of the Work which will be done by each subcontractor. Each portion of the Work shall be performed by an organization equipped and experienced to do the Work in the particular field, and no portion of the Work shall be reserved by the bidder or Contractor to himself unless he is so equipped and experienced. Not more than one (1) subcontractor shall be listed for the same portion of the Work. If a particular portion of the Work would be modified by an alternative bid or work in a bid item required by the bid, the bidder shall separately identify such portions of the Work, and list the subcontractors appropriately where they differ from those listed for the basic Work. The substitution of subcontractor shall comply with California Government Code Section 4107. Requirements of General Conditions, Paragraph 2.11 and 10.2 shall also govern except where differing, in which instances the requirement of this Paragraph shall govern.

23.18 Substitution of Securities for Monies Withheld to Ensure Performance of Contractor. The Contractor, at his request and expense, will be permitted to substitute equivalent securities for any moneys withheld to insure performance as follows, and in accordance with Section 4590 Chapter 13 of Division 5 of Title 1 and with amended Section 14402.5, each of the State of California Government Code. The term satisfactory completion of the contract in Section 4590 of the California Government Code shall mean the time the Owner has issued written final acceptance of the Work and filed a Notice of Completion required by law.

At the Contractor's request, securities equivalent to the monetary amount withheld shall be deposited with the Owner, or with an escrow agent, who shall pay such moneys to the Contractor upon satisfactory completion of the Contract. Securities eligible for this investment shall include those listed Section 16430 of the State of California Government Code or bank or savings and loan certificates of deposit. The Contractor shall be the beneficial owner of any securities substituted for moneys withheld and shall receive any interest thereon. Any escrow agreement entered into pursuant to these conditions shall contain as a minimum, the following provisions:

- (1) The amount and type of securities to be deposited;
- (2) The terms and conditions of conversion to cash in case of the default of the Contractor; and
- (3) The termination of the escrow upon completion of the Contract.
- (4) The Contractor shall pay all costs and fees associated with the escrow or deposit.

23.19 No Discrimination. Contractor shall not discriminate in the employment of persons upon the Contract Work because of the race, religious creed, color, national origin, ancestry, physical

handicap, medical condition, marital status or sex of such persons, except as provided by California Labor Code Section 1420. Contractor shall cause an identical clause to be included in every subcontract for Contract Work.

- 23.20 Domestic Materials and Machinery (See Note). In the performance of this Contract, there shall be used only such unmanufactured articles, materials, and supplies as have been mined or produced in the United States, and only such manufactured articles, materials, and supplies as have been mined, produced, or manufactured, as the case may be, in the United States, substantially all from materials produced in the United States in accordance with Section 4300 through 4305 of the Government Code of California, except to the extent, if any, that such provision may be superseded by any law or treaty of the United States. (Note: This provision is included within the General Conditions as required by the provisions of Section 4300 - 4305 of the Government Code. However, the Owner will not enforce this provision by reason of Bethlehem Steel Corp. v. Board of Commissioners (1969) 276 C.A. 2d 221 which held Sections 4300 - 4306 to be unconstitutional.)
- 23.21 Copyrights and Patents. The Contractor shall and does hereby hold and save the Owner harmless from liability of any nature and kind, including costs and expenses, for or on account of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article or appliance, manufactured, furnished or used by him in the performance of this Contract, including their use by the Owner unless otherwise specifically stipulated in this Contract.
- 23.22 Anti-Trust Claims. In entering into a Public Works Contract or a subcontract to supply goods, services, or material pursuant to a Public Works Contract, the Contractor or subcontractor offers and agrees to assign to the Owner all rights, title, and interest in and to and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2 of Part 2 of Division 7 of the Business and Professions Code), arising from the purchase of goods, services, or materials pursuant to the Public Works Contract or the subcontract. This assignment shall be made and become effective at the time the Owner tenders final payment to the Contractor, without further acknowledgment by the parties.
- 23.23 Attorneys' Fees. In the event any legal action is commenced to enforce or interpret the terms or conditions of this Agreement, the prevailing party shall, in addition to any other costs and relief, be entitled to reasonable attorneys' fees.

INLAND EMPIRE BRINE LINE  
REACH V REHABILITATION & IMPROVEMENT PROJECT – PHASE 1

**MISCELLANEOUS  
CONSTRUCTION FORMS**

# SHOP DRAWING SUBMITTAL FORM

Submittal No. \_\_\_\_\_ Specifications Section: \_\_\_\_\_

Submittal Description: \_\_\_\_\_

PROJECT INFORMATION	ROUTING	DATE
<b>Client/Owner:</b> Santa Ana Watershed Project Authority	Contractor to C.M.	
<b>Project Name:</b>	C.M. to Engineer	
<b>Project No.:</b>	Engineer to C.M.	
<b>Contractor:</b>	C.M. to Contractor	

We are sending you: \_\_\_\_\_ Attached \_\_\_\_\_ Under Separate Cover Via \_\_\_\_\_  
Other: \_\_\_\_\_

\_\_\_\_\_ Submittals for Approval (*Submit a minimum of 7 copies for approval*).

\_\_\_\_\_ Product Data for Information Only (*Submit a minimum of 4 copies*).

Item	Copies	Date	Section No.	Description	Review/Action

**Contractor to Certify either A or B:**

\_\_\_\_\_ A. We have verified that the material or equipment contained in this submittal meets all requirements, including coordination with all related work, as specified (no exceptions).

\_\_\_\_\_ B. We have verified that the material or equipment contained in this submittal meets all the requirements specified, except for the following (or attached) deviations: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Certified By:** \_\_\_\_\_  
Contractor's Signature

\_\_\_\_\_  
Date Signed

# REQUEST FOR INFORMATION

Owner: Santa Ana Watershed Project Authority      Project: \_\_\_\_\_

Contractor: \_\_\_\_\_      Project No.: \_\_\_\_\_

Date: \_\_\_\_\_      RFI No.: \_\_\_\_\_

## RFI DATA / INFORMATION

**Originator:**

**Date Transmitted:**

**Directed To:**

**Date Received:**

**Drawing Reference:**

**Date Reply Transmitted:**

**Specification Section:**

**Date Reply Received:**

**Subject:**

**Date Reply Required:**

**Message:**

**Originator:**

**Date:**

**Reply:**

**Reply By:**

**Firm:**

**Date:**

**AUTHORIZATION OF ENGINEERING COSTS  
FOR  
EVALUATION OF SUBSTITUTES AND EQUALS**

To: \_\_\_\_\_ Date: \_\_\_\_\_  
*Contractor*

PROJECT NAME: \_\_\_\_\_

We have received a submittal for \_\_\_\_\_ on \_\_\_\_\_. The equipment submitted is being substituted as being “equal” to the equipment originally specified. Per the General Conditions or the Contract Documents, the Contractor shall pay for Santa Ana Watershed Authority (SAWPA) effort in establishing the quality of the submitted equipment and the suitability for the intended purpose. The estimated time to review this submittal is \_\_\_\_\_ hours at an hourly rate of \$\_\_\_\_\_ Dollars, for a total of \$\_\_\_\_\_ dollars. Before any work can be done on this review submittal, a signed copy of this authorization form must be received from the Contractor by SAWPA. The starting date for the submittal review shall be the date that SAWPA receives the signed authorization from the Contractor.

\_\_\_\_\_  
*Santa Ana Watershed Project Authority*

**APPROVED:**

*Contractor*

*Date*

Distribution of Executed Document:    Rich Haller, SAWPA Executive Manager of Engineering & Operations  
    David Ruhl, SAWPA Program Manager  
    Owner’s Representative  
    Contractor



**AUTHORIZATION OF ENGINEERING COSTS  
FOR  
REDESIGN DUE TO SUBSTITUTIONS AND EQUALS**

To: \_\_\_\_\_ Date: \_\_\_\_\_  
*Contractor*

PROJECT NAME: \_\_\_\_\_

As a result of the contractor's request to use the substitution (or equal) titled \_\_\_\_\_, the following redesign is required to adjoining and/or related Work shown on the Plans and referred to in the Specifications as \_\_\_\_\_. The cost of the required engineering redesign work is detailed as follows:

Work Description	Labor Hours	Hourly Rate	Total Cost
1.		\$	\$
2.		\$	\$
3.		\$	\$
4.		\$	\$
<b>TOTAL AUTHORIZED AMOUNT</b> ..... \$			

Before any work can be completed on this redesign effort, a signed copy of this authorization form must be received from the Contractor by SAWPA. The starting date for this redesign shall be the date that SAWPA receives the signed authorization from the Contractor.

\_\_\_\_\_  
*Santa Ana Watershed Project Authority*

**APPROVED:**

*Contractor*

*Date*

Distribution of Executed Document:    Rich Haller, SAWPA Executive Manager of Engineering & Operations  
David Ruhl, SAWPA Program Manager  
Owner's Representative  
Contractor

## NOTICE OF AWARD

TO: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

OWNER: Santa Ana Watershed Project Authority

PROJECT TITLE: Contract Documents and Specifications for

**INLAND EMPIRE BRINE LINE  
REACH V REHABILITATION & IMPROVEMENT PROJECT – PHASE 1**

The Owner has considered the bid submitted by you dated \_\_\_\_\_, 201\_\_ for the above-described work in response to its Invitation to Bid and in accordance with the BIDDING PROVISIONS.

You are hereby notified that your bid has been accepted in the total base amount of \$\_\_\_\_\_ including the following schedules and bid items:

Bidding Schedule for

You are required under the terms of the BIDDING PROVISIONS to execute the Agreement and furnish the required bonds and certification of Insurance within ten (10) work days from the date of this Notice to you.

If you fail to execute said Agreement and furnish said bonds and certification of Insurance within ten (10) days from the date of this Notice, Owner will be entitled to consider all of your rights arising out of Owner's acceptance of your bid to be abandoned as a forfeiture of your Proposal Guarantee. Owner will be entitled to such other rights as may be granted by law.

A Pre-Construction Conference is proposed at \_\_\_\_\_  
office on \_\_\_\_\_, 20\_\_\_\_, at \_\_\_\_\_.

PLEASE CONFIRM THIS DATE AND TIME.

You are required to return an acknowledged copy of this Notice of Award to Owner.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

By: \_\_\_\_\_

Title: \_\_\_\_\_

ACCEPTANCE OF NOTICE

Receipt of the foregoing Notice of Award is hereby acknowledged

By Contractor:\_\_\_\_\_

this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

By:\_\_\_\_\_

Title:\_\_\_\_\_

## NOTICE TO PROCEED

TO: \_\_\_\_\_

DATE: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### **INLAND EMPIRE BRINE LINE REACH V REHABILITATION & IMPROVEMENT PROJECT – PHASE 1**

You are hereby notified to commence Work in accordance with the Agreement dated \_\_\_\_\_, and you shall achieve Final Completion of the Work no later than 400 days from the Owner's Notice of Award Date of \_\_\_\_\_, 2014.

The Contract provides for an assessment of the sum of \$5,000 as liquidated damages for each consecutive calendar day after the Final Completion date that the work remains incomplete.

Santa Ana Watershed Project Authority  
Owner

\_\_\_\_\_  
By: Celeste Cantu

General Manager  
Title

### ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged by \_\_\_\_\_, this the \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

By: \_\_\_\_\_

Title: \_\_\_\_\_

**CONTRACT CHANGE ORDER NO. \_\_\_\_\_**

CONTRACT \_\_\_\_\_ DATED \_\_\_\_\_  
BY AND BETWEEN Santa Ana Watershed Project Authority (OWNER),  
AND \_\_\_\_\_ (CONTRACTOR),  
is hereby directed to make the following change(s) in Contract Work:

ITEM NO.	DESCRIPTION OF CHANGE	DECREASE \$	INCREASE \$

Total DECREASE in Contract Amount \_\_\_\_\_

Total INCREASE in Contract Amount \_\_\_\_\_

Net change in Contract Amount \_\_\_\_\_

Contract Amount Prior to Change \_\_\_\_\_

Contract Amount Adjusted for Change \_\_\_\_\_

By reason of Change Order No. \_\_\_\_, time of completion shall be adjusted as follows:

\_\_\_\_\_ Working Days. Adjusted Contract Completion Date shall be \_\_\_\_\_.

All provisions of the Contract shall apply hereto, and shall become effective when fully executed (signed and dated) by both parties.

Recommended by (Engineer) \_\_\_\_\_ Date: \_\_\_\_\_

Accepted by (Contractor) \_\_\_\_\_ Date: \_\_\_\_\_

Approved by (Owner) \_\_\_\_\_ Date: \_\_\_\_\_

Remarks \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## UNCONDITIONAL WAIVER AND RELEASE UPON FINAL PAYMENT

TO: Santa Ana Watershed Project Authority  
(Owner)

Work Order No. \_\_\_\_\_

Contract Dated \_\_\_\_\_, 20 \_\_\_\_\_

### CONTRACTOR:

Name: \_\_\_\_\_

Address: \_\_\_\_\_

DESCRIPTION OF PROJECT: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

DESCRIPTION OF SITE (LOCATION): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

With reference to said Contract, as amended, between the undersigned Contractor and the Owner, the Undersigned hereby certifies and represents that it has made full payment of all costs, charges and expenses incurred by it or on its behalf for work, labor, services, materials and equipment supplied to the foregoing site and/or used in connection with its work under said Contract.

The undersigned further certifies that to its best knowledge and belief, each of its subcontractors and materialmen has made full payment of all costs, charges and expenses incurred by them or on their behalf for work, labor, services, materials and equipment supplied to the foregoing site and/or used by them in connection with the Undersigned's work under said Contract.

In consideration of \$ \_\_\_\_\_ as final payment under the Contract, the Undersigned does hereby waive and release any right to a mechanic's lien, stop notice, or any right against a labor and material bond on the job, and obligations of every nature arising out of or in connection with the performance of said Contract and all amendments thereto except for disputed claims for extra work in the amount of \_\_\_\_\_. As described below: \_\_\_\_\_

NOTE: *If none, write "NONE" in space above. (Any claims excepted must be described and the specific amount claimed must be set forth.)*

Unless any claims, stop notices, and obligations are described and the specific amounts claimed, are described in the space above, Contractor certifies that there are none.

As additional consideration for the final payment, the Contractor agrees to indemnify and hold harmless the Owner from and against all costs, losses, damages, claims, causes of action, judgments and expenses, including attorney's fees arising out of or in connection with claims against the Owner which claims arise

out of the performance of the Work under the Contract and which may be asserted by the Contractor or any of its suppliers, subcontractors of any tier or any of their representatives, officers, agents or employees, except for those claims listed above.

The foregoing shall not relieve the Undersigned of its obligations under the provisions of said Contract, as amended, which by their nature survive completion of the work including, without limitation, warranties, guarantees and indemnities.

**NOTICE: THIS DOCUMENT WAIVES RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL RELEASE FORM.**

Executed this \_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

\_\_\_\_\_  
Notary Public

\_\_\_\_\_  
(Name of Contractor)

By: \_\_\_\_\_

Title: \_\_\_\_\_



**END OF SECTION**

**INTENTIONALLY LEFT BLANK**

## **SECTION 00800CA**

### **CALIFORNIA STATE REQUIREMENTS**

#### **CALIFORNIA STATE REQUIREMENTS**

**A. State Wage Determinations:**

1. As required by Sections 1770 and the following, of the California Labor Code, the Contractor shall pay not less than the prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations. The Owner has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which the Public Work is to be performed for each craft, classification or type of workman needed to execute this Contract. Copies of the wage determination are on file and may be obtained by interested parties at the State website (<http://www.dir.ca.gov/OPRL/pwd/>). The Contractor shall post a copy of such determination at each job site.
2. The Contractor and all Subcontractors shall comply with all requirements and provisions of Section 1775 and 1776 of the California Labor Code. The Contractor shall forfeit, as a penalty to the Owner, \$50.00, for each calendar day, or portion thereof, for each workman paid less than stipulated prevailing rates for Work done under the Contract Agreement by him, or any Subcontractor under him, in violation of the provisions of the California Labor Code. Copies of these wage determinations shall be posted and maintained at the job site by the successful bidding Contractor.
3. The Contractor shall not perform the Work with a subcontractor who is ineligible to perform work on a public works project in accordance with the requirements of Sections 1777.1 and 1777.7 of the California Labor Code.

**B. Workers' Compensation:**

1. In accordance with the provisions of Section 3700 of the California Labor Code, the Contractor shall secure the payment of compensation to his employees.
2. Prior to beginning work under the Contract, the Contractor shall sign and file with the Owner the following certification:

"I am aware of the provisions of Section 3700 of the 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."
3. Notwithstanding the foregoing provisions, before the Contract is executed on behalf of the Owner, a bidder to whom a Contract has been awarded shall furnish satisfactory evidence that it has secured in the manner required and provided by law the payment of workers' compensation.

- C. Apprentices on Public Works Contracts:** The Contractor shall conform to all the requirements of Sections 1777.5 and 1777.6 of the California Labor Code concerning the employment of apprentices by the Contractor or any subcontractor under him.

- D. Working Hours: The Contractor shall comply with all applicable provisions of Section 1810 to 1815, inclusive, of the California Labor Code. The time of service of any laborer, workman, or mechanic employed on the Work shall be limited and restricted to eight (8) hours during any one (1) calendar day and forty (40) hours in any one (1) calendar week, except as otherwise provided in said sections. The Contractor shall forfeit to the Owner as a penalty, \$25.00 for each laborer, worker, or mechanic employed in the execution of the Work by him or any Subcontractor under him for each calendar day during which such laborer, worker, or mechanic is required or permitted to labor more than eight (8) hours in violation of provisions of the California Labor Code, unless such worker receives compensation for all hours worked in excess of eight (8) hours per day, at not less than 1-1/2 times the basic rate of pay.
- E. Contractor Not Responsible For Damage Resulting From Certain Acts of God: As provided in Sections 7105 of the California Public Contract Code, the Contractor shall not be responsible for the cost of repairing or restoring damage to the Work which damage is determined to have been proximately caused by an Act of God, in excess of five percent (5%) of the contracted amount, provided, that the Work damaged was built in accordance with accepted and applicable building standards and the plans and specifications of the Owner. The Contractor shall obtain insurance to indemnify the Owner for any damage to the Work caused by an Act of God if the insurance premium is a separate bid item in the bidding schedule for the Work. For purposes of this Section, the phrase "Act of God" shall include only the following occurrences or conditions and effects: earthquakes in excess of a magnitude of 3.5 on the Richter Scale and tidal waves.
- F. Notice of Completion: In accordance with the Sections 3086 and 3093 of the California Civil Code, within 10 days after date of acceptance of the Work and after Owner receives an unconditional waiver and release form from all subcontractors and suppliers, the Owner will file, in the County Records office, a Notice of Completion of the Work.
- G. Unpaid Claims: If at any time prior to the expiration of the period for service of a stop notice, there is served upon the Owner a stop notice as provided in Sections 3179 and 3210 of the California Civil Code, the Owner shall, until the discharge thereof, withhold from the monies under its control so much of said monies due or to become due to the Contractor under this Contract as shall be sufficient to answer the claim stated in such stop notice and to provide for the reasonable cost of any litigation thereunder provided, that if the Engineer shall, in its discretion, permit Contractor to file with the Owner the bond referred to in Section 3196 of the Civil Code of the State of California, said monies shall not thereafter be withheld on account of such stop notice.
- H. Concrete Forms, Falsework, and Shoring: The Contractor shall comply fully with the requirements of Section 1717 of the Construction Safety Orders, State of California, Department of Industrial Relations, regarding the design of concrete forms, falsework and shoring, and the inspection of same prior to placement of concrete. Where the said Section 1717 requires the services of a civil engineer registered in the State of California to approve design calculations and working drawings of the falsework or shoring system, or to inspect such system prior to placement of concrete, the Contractor shall employ a registered civil engineer for these purposes, and all costs therefore shall be included in the price named in the Contract for completion of the Work as set forth in the Contract Documents.
- I. Retainage from Monthly Payments: Pursuant to Section 22300 of the California Public Contract Code, the Contractor may substitute securities for any money withheld by the Owner to insure performance under the Contract. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the Owner or with a state or federally chartered bank in California as the escrow agent, who shall return such securities to the Contractor upon satisfactory completion of the Contract. Alternatively, the Contractor may

request and the Owner shall make payment of retentions earned directly to the escrow agent at the expense of the Contractor. At the expense of the Contractor, the Contractor may direct the investment of the payments into securities and the Contractor shall receive the interest earned on the investments upon the same terms provided for in this section for securities deposited by the Contractor. Upon satisfactory completion of the Contract, the Contractor shall receive from the escrow agent all securities, interest, and payments received by the escrow agent from the Owner, pursuant to the terms of this section. The Contractor shall pay to each subcontractor, not later than 20 days of receipt of the payment, the respective amount of interest earned, net of costs attributed to retention withheld from each subcontractor, on the amount of retention withheld to insure the performance of the Contractor. Deposit of securities with all escrow agent shall be subject to a written agreement between the escrow agent and the Owner which provides that no portion of the securities shall be paid to the Contractor until the Owner has certified to the escrow agent, in writing, that the Contract has been satisfactorily completed. The Owner will not certify that the Contract has been satisfactorily completed until at least 30 days after filing by the Owner of a Notice of Completion. Securities eligible for investment under Section 22300 shall be limited to those listed in Section 16430 of the Government Code and to bank or savings and loan certificates of deposit, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by the Contractor and the Owner.

- J. Public Works Contracts; Assignment to Awarding Body: In accordance with Section 7103.5 of the California Public Contract Code, the Contractor and Subcontractors shall conform to the following requirements. In entering into a public works Contract or a subcontract to supply goods, services, or materials pursuant to a public works Contract, the Contractor or subcontractor offers and agrees to assign to the awarding body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works Contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the Contractor, without further acknowledgment by the parties.
- K. Payroll Records; Retention; Inspection; Noncompliance Penalties; Rules and Regulations:
1. In accordance with Section 1776 of the California Labor Code, the Contractor and each Subcontractor shall keep all accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each, journeyman, apprentice, worker, or other employee employed by him or her in connection with the public work.
  2. The payroll records enumerated under Paragraph K.1 shall be certified and shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following basis:
    - a. A certified copy of all employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request, and will accompany each progress payment to Owner.
    - b. A certified copy of all payroll records enumerated in Paragraph K.1 shall be made available for inspection or furnished upon request to a representative of the body awarding the Contract, the Division of Labor Standards enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations.
    - c. A certified copy of all payroll records enumerated in Paragraph K.1 shall be made available upon request by the public for inspection or copies thereof made; provided, however, that a request by the public shall be made through either the

body awarding the Contract, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided pursuant to Paragraph K.1(b) the requesting party shall, prior to being provided the records, reimburse the costs of preparation by the Contractor, Subcontractors, and the entity through which the request was made. The public shall not be given access to the records at the principal office of the Contractor.

3. The Contractor and Subcontractors shall file a certified copy of the records, enumerated in Paragraph K.1 with the entity that requested the records within ten (10) days after receipt of a written request.
  4. Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the awarding body, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address, and social security number. The name and address of the Contractor awarded the Contract or performing the Contract shall not be marked or obliterated.
  5. The Contractor shall inform the body awarding the Contract of the location of the records enumerated under Paragraph K.1 including the street address, city and county, and shall, within five (5) working days, provide a notice of change of location and address.
  6. In the event of noncompliance with the requirements of this Section, the Contractor shall have ten (10) days in which to comply subsequent to receipt of written notice specifying in what respects the Contractor must comply with this Section. Should noncompliance still be evident after the 10-day period, the Contractor shall, as a penalty to the state or political subdivision on whose behalf the Contract is made or awarded, forfeit twenty-five dollars (\$25.00) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due.
  7. Contractor shall cause an identical clause to be included in every subcontract for work pursuant to this Contract.
- L. Protection of Workers in Trench Excavations: As required by Section 6705 of the California Labor Code and in addition thereto, whenever work under the Contract involves the excavation of any trench or trenches 5 feet or more in depth, the Contractor shall submit for acceptance by the Owner or by a registered civil or structural engineer, employed by the Owner, to whom authority to accept has been delegated, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during excavation, of such trench or trenches. If such plan varies from the shoring system standards established by the Construction Safety Orders of the Division of Occupational Safety and Health, the plan shall be prepared by a registered civil or structural engineer employed by the Contractor, and all costs therefore shall be included in the price named in the Contract for completion of the Work as set forth in the Contract Documents. Nothing in this Section shall be deemed to allow the use of a shoring, sloping, or other protective system less effective than that required by the Construction Safety Orders. Nothing in this Section shall be construed to impose tort liability on the Owner, the ENGINEER, or any of their officers, agents, representatives, or employees. The California Construction Safety Orders in effect during the Work shall apply continuously until final acceptance of the Work.

M. Removal, Relocation, or Protection of Existing Utilities:

1. In accordance with the provisions of Section 4215 of the California Government Code, any Contract to which a public agency as defined in Section 4401 is a party, the public agency shall assume the responsibility, between the parties to the Contract, for the timely removal, relocation, or protection of existing main or trunk line utility facilities located on the site of any construction project that is a subject of the Contract, if such utilities are not identified by the public agency in the plans and specifications made a part of the invitation for bids. The agency will compensate Contractor for the costs of locating, repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating such utility facilities not indicated in the plans and specifications with reasonable accuracy, and for equipment on the project necessarily idled during such work.
2. The Contractor shall not be assessed liquidated damages for delay in completion of the project, when such delay was caused by the failure of the public agency or the owner of the utility to provide for removal or relocation of such utility facilities.
3. Nothing herein shall be deemed to require the public agency to indicate the presence of existing service laterals or appurtenances when the presence of such utilities on the site of the construction project can be inferred from the presence of other visible facilities, such as buildings, meter and junction boxes, on or adjacent to the site of construction; provided, however, nothing herein shall relieve the public agency from identifying main or trunk lines in the plans and specifications.
4. If the Contractor while performing the Contract discovers utility facilities not identified in the plans, nor by the public agency in the Contract Documents it shall immediately notify the public agency and utility in writing.
5. The public utility, where they are the owner, shall have the sole discretion to perform such repair or relocation work or permit the Contractor to do such repair or relocation work at a reasonable price.

N. Contractor License Requirements: In accordance with Section 7028.15 of the California Business and Professions Code, a licensed Contractor shall not submit a bid to a public agency unless his or her Contractor's license number appears clearly on the bid, and the license expiration date is stated. Any bid not containing this information, or a bid containing information which is subsequently proven false, shall be considered non-responsive and shall be rejected by the public agency.

O. Resolution of Construction Claims:

1. In accordance with Section 20104 et. Seq. of the California Public Contract Code. This paragraph O applies to all claims of \$375,000 or less which arise between the Contractor and the Owner under this Contract for
  - a. A time extension;
  - b. Payment of money or damages arising from work done by or on behalf of the Contractor pursuant to this Contract and payment of which is not otherwise expressly provided for as the Contractor is not otherwise entitled; or
  - c. An amount the payment of which is disputed by the Owner
2. For any claim set out in Paragraphs O1.a, b. or c. above the following requirements apply:
  - a. The claim shall be in writing and include the documents necessary to substantiate the claim. Claims must be filed on or before the date of final payment. Nothing

herein is intended to extend the time limit or supersede notice requirements otherwise provided by Contract for the filing of claims.

- b. For claims of less than fifty thousand dollars (\$50,000), the Owner shall respond in writing to any written claim within forty-five (45) days of receipt of the claim, or may request, in writing, within thirty (30) days of receipt of the claim, any additional documentation supporting the claim or relating to defenses or claims the Owner may have against the Contractor.

If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the Owner and the Contractor.

The Owner's written response to the claim, as further documented, shall be submitted to the Contractor within fifteen (15) days after receipt of further documentation or within a period of time no greater than that taken by the Contractor in producing the additional information, whichever is greater.

- c. For claims of over fifty thousand dollars (\$50,000) and less than or equal to three hundred seventy-five thousand dollars (\$375,000), the Owner shall respond in writing to all written claims within sixty (60) days of receipt of the claim may request, in writing, within thirty (30) days of receipt of the claim, any additional documentation supporting the claim or relating to defenses or claims the Owner may have against the Contractor.

If additional information is therefore required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the Owner and the Contractor.

The Owner's written response to the claim, as further documented, shall be submitted to Contractor within thirty (30) days after receipt of the further documentation, or within a period of time no greater than that taken by the Contractor in producing the additional information or requested documentation, whichever is greater.

- d. If the Contractor disputes the Owner's written response, or the Owner fails to respond within the time prescribed, the Contractor may notify the Owner, in writing, either within fifteen (15) days of receipt of the Owner response or within fifteen (15) days of the Owner failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a demand, the Owner shall schedule a meet and confer conference within thirty (30) days for settlement of the dispute.
- e. If following the meet and confer conference the claim or any portion remains in dispute, the Contractor may file a claim pursuant to Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time Contractor submits its written claim pursuant to subdivision (a) until the time the claim is denied, including any period of time utilized by the meet and confer conference.

- 3. The following procedures are established for all civil actions filed to resolve claims subject to this article:

- a. Within sixty (60) days, but no earlier than thirty (30) days, following the filing or responsive pleadings, the court shall submit the matter to nonbinding mediation unless waived by mutual stipulation of both parties. The mediation process shall



provide for the selection within fifteen (15) days by both parties of a disinterested third person as mediator, shall be commenced within thirty (30) days of the submittal, and shall be concluded within fifteen (15) days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court.

- b. If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1 141.11 of that code. The Civil Discovery Act of 1986 (Article 3 (commencing with Section 2016) of Chapter 3 of Title 3 of Part 4 of the Code of Civil Procedure) shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration.

In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure (A) arbitrators shall, when possible, be experienced in construction law, and (B) any party appealing an arbitration award who does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, also pay the attorney's fees or appeal of the other party.

4. The Owner shall not fail to pay money as to any portion of a claim which is undisputed except as otherwise provided in this Contract.
5. In any suit filed under Section 20104.4 of the California Public Contract Code the Owner shall pay interest at the legal rate on any arbitration award or judgment. The interest shall begin to accrue on the date the suit is filed in a court of law.

- P. Digging trenches or excavations; notice on discovery of hazardous waste or other unusual conditions; investigations; change orders; effect on Contract. If this Contract involves digging trenches or other excavations that extend deeper than four feet below the surface, the following shall apply:

The Contractor shall promptly, and before the following conditions are disturbed, notify the Owner in writing, of any:

1. Material that the Contractor believes may be material that is hazardous waste, as defined in Section 251 17 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.
2. Subsurface or latent physical conditions at the site differing from those indicated.
3. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract.
4. The Owner shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the work shall issue a change order under the procedures described in the Contract.
5. In the event that a dispute arises between the Owner and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the work, the Contractor shall not be excused from any scheduled completion date provided for by the Contract, but shall proceed with all work to be performed under the Contract. The Contractor shall retain any and all rights provided either by Contract or by law which pertain to the resolution of disputes and protests between the contracting parties.

Q. Retention Proceeds; Withholding; Disbursement. In accordance with Section 7107 of the Public Contracts Code with respect to all Contracts entered into on or after January 1, 1993 relating to the construction of any public work of improvement the following shall apply:

1. The retention proceeds withheld from any payment by the Owner from the original Contractor, or by the original Contractor from any subcontractor, shall be subject to this paragraph Q.
2. The retention will be paid 60 days "after" the date when Notice of Completion was filed with the County Records Office. In the event of a dispute between the Owner and the original Contractor, the Owner may withhold from the final payment an amount not to exceed one hundred and fifty percent (150%) of the disputed amount. For the purposes of this paragraph, "completion" means any of the following:
  - a. The occupation, beneficial use, and enjoyment of a work of improvement, excluding any operation only for testing, startup, or commissioning, by the Owner, accompanied by cessation of labor on the work of improvement.
  - b. The acceptance by the Owner of the work of improvement.
  - c. After the commencement of a work of improvement, a cessation of labor on the work of improvement for a continuous period of 100 days or more, due to factors beyond the control of the Contractor.
  - d. After the commencement of a work of improvement, a cessation of labor on the work of improvement for a continuous period of 30 days or more, if the Owner files for record a notice of cessation or a notice of completion.
3. Subject to subparagraph 4, within ten (10) days from the time that all or any portion of the retention proceeds are received by the original Contractor, the original Contractor shall pay each of its subcontractors from whom retention has been withheld, each subcontractor's share of the retention received. However, if a retention payment received by the original Contractor is specifically designated for a particular subcontractor, payment of the retention shall be made to the designated subcontractor, if the payment is consistent with the terms of the subcontract.
4. The original Contractor may withhold from a subcontractor its portion of the retention proceeds if a bona fide dispute exists between the subcontractor and the original Contractor. The amount withheld from the retention payment shall not exceed one hundred and fifty percent (150%) of the estimated value of the disputed amount.
5. In the event that retention payments are not made within the time periods required by this paragraph Q., the Owner or original Contractor shall be subject to a charge of one-quarter percent (0.25%) per month on the improperly withheld amount, in lieu of any interest otherwise due. Additionally, in any action for the collection of funds wrongfully withheld, the prevailing party shall be entitled to attorney's fees and costs.
6. Any attempted waiver of the provisions of this section shall be void as against the public policy of this state.

R. Subcontractors

1. In compliance with the California Public Contract Code Section 4100 et seq., each bidder shall state in his bid the name and business address of each subcontractor who will perform work or a labor or render services to the Contractor in or about the construction of the Work in an amount in excess of one-half of one percent (0.5%) of the total bid amount, and the portion of the Work which will be done by each subcontractor.

2. Each portion of the Work shall be performed by an organization equipped and experienced to do the Work in the particular field, and no portion of the Work shall be reserved by the bidder or Contractor to himself unless he is so equipped and experienced.
3. Not more than one (1) subcontractor shall be listed for the same portion of the Work.
4. If a particular portion of the Work would be modified by an alternative bid or work in a bid item required by the bid, the bidder shall separately identify such portions of the Work, and list the subcontractors appropriately where they differ from those listed for the basic Work.
5. The substitution of subcontractor shall comply with California Public Contract Code Section 4107. Requirements of General Conditions, Paragraph 2.11 and 10.2 shall also govern except where differing, in which instances the requirement of this Paragraph shall govern.

**END OF SECTION**

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## **SECTION 00900**

### **SPECIAL CONDITIONS**

These Special Conditions amend or supplement the General Conditions of the Construction Contract and other provisions of the Contract Documents.

#### **ARTICLE 1 - TEST PITS**

Contractor shall create three (3) test pits along Reach V, Contract 4 at the locations shown on the Contract Drawings. Test pits shall be a minimum of four (4) feet wide by six (6) feet long and to a depth necessary to expose the existing pipe bedding. Test pits shall include the excavation of the existing pipeline. Contractor shall measure vertical height, horizontal width, pipe condition, depth, and groundwater conditions. Contractor-retained Approved Soil Testing Firm shall conduct testing of compaction of bedding and backfill at 3-foot intervals. Contractor shall document rocks, cobbles, or large debris in backfill materials. Contractor shall have all existing utilities within the excavation area marked out prior to construction, and Contractor shall protect all existing utilities in place. If an existing utility obstructs the excavation, the Contractor, having identified the utility prior to excavation in accordance with these specifications, shall relocate the test pit to the nearest available unobstructed location on the Brine Line alignment. The relocated test pit shall be coordinated with the Owner and Construction Manager, and shall be approved by the Owner and Construction Manager prior to excavation. The Contractor shall remove rocks, cobbles, and large debris from the backfill, refill the test pit and compact the bedding and backfill to 90% compaction in a maximum of six (6) inch lifts. The roadway shall be replaced to match pre-excavation conditions or better, consistent with the standards of the agency having jurisdiction over the roadway.

#### **ARTICLE 2 - AIS REQUIREMENTS**

All iron or steel products used must be manufactured (includes application of coatings) within the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap, and the materials being applied as a coating are not included. The Contractor shall sign and submit the AIS Statement included in the contracting documents of this bid request.

#### **ARTICLE 3 - PROJECT SIGN**

Contractor shall furnish and provide all that is necessary to install project signs at specific locations designated by the Owner. Three (3) signs shall be provided for the project. The signs shall be located as follows:

- (1) At the northern boundary of the project, readable from the southbound lane of Temescal Canyon Road, near the intersection of La Gloria Street and Temescal Canyon Road, within the City of Corona right-of-way. Contractor shall be responsible for acquiring written permission for access to property where sign shall be constructed.
- (2) On Temescal Canyon Road, readable from the northbound lane of Temescal Canyon Road, just north of the I-15 interchange. Contractor shall be responsible for acquiring written permission for access to property where sign shall be constructed.

- (3) At the southern boundary of the project, readable from the northbound lane of Temescal Canyon Road, just south of its intersection with Earth Mover Circle, within the County of Riverside right-of-way. Contractor shall be responsible for acquiring written permission for access to property where signs shall be constructed.

The signs shall measure 4'x 8' and will be made of 3/4" exterior grade plywood and shall adhere to the format and details given in Appendix B. The sign shall be prepared by a professional sign painter. The Contractor shall maintain the signs for the duration of the project.

The Contractor shall provide three (3) lighted Changeable Message Signs (CMS) at least two weeks before beginning construction, stating the following information:

Construction Ahead

Expect Delays \_/\_/\_ to \_/\_/\_

Recommend Alt Route

Contractor shall situate the CMS as directed by the Owner, typically for both directions of traffic to view. Contractor shall expect that Signs will be moved weekly as the project progresses. Contractor is responsible to maintain and keep CMS in operating condition throughout project duration. If required, Contractor is responsible to relocate CMS board as directed by Owner at no additional cost to Owner.

#### **ARTICLE 4 - DAVIS BACON REQUIREMENTS (CWSRF FUNDING REQUIREMENT)**

The Owner has secured funding for the project through a variety of agencies. The requirements of those funding programs are hereby included in these specifications by reference. The Contractor shall comply with the requirements of the CWSRF Program, as well as the funding requirements of other funding agencies, throughout the duration of the project contract.

##### **1 Contract and Subcontract Provisions**

- (a) The Owner has inserted, and Contractor shall comply with, the following contract requirements, in full for the actual construction, alteration and/or repair, including painting and decorating, or other work under the CWSRF the following clauses:

##### **(1) Minimum Wages**

- (i) All laborers and mechanics employed or working upon the site of the work shall 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.

Contractor may obtain wage determinations from the U.S. Department of Labor's web site, [www.dol.gov](http://www.dol.gov).

(ii) Including the following:

(A) The Contractor 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 Owner 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 Owner 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 Owner 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.

(ii) 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.

(iii) 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.

(iv) The Owner, will 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.

(v) 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.

(vi) Including the following:

- (A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the Owner, 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 or EPA. As to each payroll copy received, the Owner 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 <http://www.dol.gov/esa/whd/forms/wh347instr.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 Owner for transmission to the State Water Board or EPA if requested by EPA, the State Water Board, 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 Owner.
- (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.
- (vii) 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.
- (viii) 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 subcontractor'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.

(ix) 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.

(x) 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 Owner, State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of Eligibility.

(xi) 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).

(xii) 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).

(xiii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

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

(a) Contract Work Hours and Safety Standards Act. The Owner 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 Section 1, 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 \$10 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 Owner, 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 Section 1, 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 Owner 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 Owner 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 United States Environmental Protection Agency, the Department of Labor, or the State Water Resources Control Board, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

### 3 Compliance Verification

- (c) The Owner will 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)(6), all interviews must be conducted in confidence. The Owner 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.
- (d) The Owner will 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. At a minimum, the Owner should conduct interviews with a representative group of covered employees within two weeks of each contractor or subcontractor's submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract. The Owner must conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. The Owner shall immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.
- (e) The Owner will 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 Owner 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 Owner 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. The Owner 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 Owner will verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

- (f) The Owner will periodically review contractors and subcontractors 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.
- (g) The Owner 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 <http://www.dol.gov/esa/contacts/whd/america2.htm>.

## **ARTICLE 5 - FUNDING-ASSOCIATED CONTRACTOR FORMS**

The Contractor shall provide the following information on approved US Environmental Protection Agency forms (EPA Forms 6100-2, 6100-3, and 6100-4) provided in Appendix C, and available at [http://www.epa.gov/osbp/dbe\\_contract\\_admin.htm](http://www.epa.gov/osbp/dbe_contract_admin.htm). The required forms are as follows:

- **EPA Form 6100-2 DBE Program Subcontractor Participation Form:** This form gives a DBE subcontractor the opportunity to describe the work the DBE subcontractor received from the prime contractor, how much the DBE subcontractor was paid and any other concerns the DBE subcontractor might have.
- **EPA Form 6100-3 DBE Program Subcontractor Performance Form:** This form captures an intended subcontractor's description of work to be performed for the prime contractor and the price of the work submitted to the prime.
- **EPA Form 6100-4 DBE Program Subcontractor Utilization Form:** This form captures the prime's intended use of an identified DBE subcontractor, and the estimated dollar amount of the subcontract.

## **ARTICLE 6 - STORM WATER POLLUTION PREVENTION REQUIREMENTS**

The Contractor shall abide by the conditions of the Regional Water Quality Control Board, General Construction Activity Storm Water Permit.

## **ARTICLE 7 - OPERATIONS IN PUBLIC RIGHT-OF-WAY**

Work in public right-of-way shall be done in accordance with the requirements of the permit issued by the public agency in whose right-of-way the work is located, in addition to the requirements of the Approved Plans and Specifications. If a permit is not required, the work shall conform to the standards of the public agency involved in addition to conforming to the Approved Plans and Specifications.

## **ARTICLE 8 - MATERIAL STORAGE**

Materials shall not be stored on Owner property without the written permission of the Owner. The Contractor shall be responsible to provide its own storage area or property. Materials for use on the work shall be stored on private property only as allowed by law and with the written permission of the property owner, and a copy of such permission shall be provided to the Owner. In addition, a release

letter signed by said property owner and stating that materials are no longer stored on the property and that Contractor has restored the area to original condition is required prior to the filing of the Notice of Completion.

The Contractor shall not store any construction materials or equipment within the extents of the improved roadway during non-working hours, unless otherwise allowed in writing by these Specifications or by the appropriate jurisdictional or permitting agency. All materials and equipment must be removed from the public right-of-way each day unless explicitly permitted otherwise by the appropriate jurisdictional agency. The Contractor shall not store any excavation materials within the public right of way unless permitted by the appropriate jurisdictional agency in writing. Contractor shall provide a copy of written authorizations to Owner prior to storage excavated materials in public right of way.

## **ARTICLE 9 - PUBLIC SAFETY AND TRAFFIC CONTROL**

The Contract Documents include prepared traffic control plans for the Contractor's use. Any deviations from the traffic control strategy provided in the Contract Documents shall be prepared by a Licensed Engineer under the employ of the Contractor and submitted to the appropriate jurisdictional agency related to the Work. The Contractor shall obtain approval of any alternate traffic control plans by the jurisdictional agencies and submit approved plans to the Owner prior to starting the Work.

The Contractor shall at all times conduct operations in a manner causing the minimum obstruction and inconvenience to public traffic. The Contractor shall not interfere with the normal operation of public transit vehicles unless otherwise authorized. Open trenches and excavations shall be provided with adequate barricades in accordance with the approved traffic control plan or the requirements of the agency of jurisdiction. At night, lights shall mark all open work and obstructions. The Contractor shall install and maintain all signs, lights, flares, barricades, traffic plates, railings, runways, stairs, bridges and other equipment necessary to safeguard the public. Safety instructions and traffic control plans received from governmental authorities or included in the Contract Documents shall be followed, but compliance with such instructions shall not diminish the Contractor's responsibility or liability for accidents to workers or damage or injury to persons or property.

In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work, and the Contractor shall fully comply with all state, federal, and other laws, rules, regulations, and orders relating to the safety of workers and others.

The right of the Owner to conduct construction review or observation of the Contractor's performance does not include review or observation of the adequacy of the Contractor's safety measures in, on, or near the construction site.

The Contractor shall take immediate action to correct any condition adversely affecting public safety.

## **ARTICLE 10 - ARCHEOLOGICAL MONITORING**

The Owner will provide a qualified archaeologist to monitor all ground disturbing activities during construction. Any cultural resources discovered during construction will be tested to determine significance and mitigated through avoidance or data recovery. Should data recovery be necessary, it will be done as mandated by the Natural Historic Preservation Act (NHPA) and CEQA, and the local Luiseño Indians and other appropriate Tribes will be consulted. Any artifacts or fossils impacted during construction will be repaired by the archaeological monitor to a point of identification and Owner will pay potential curation fees. The Contractor shall provide the Owner a minimum 48-hour notice prior to any ground disturbing activities so that mitigation monitoring staff can be scheduled. In

the event that cultural resources are discovered during construction, the Contractor shall stop ground disturbing work in that area while the Owner's archaeologist takes appropriate action. The Contractor shall complete work within that work day's construction zone, but outside the identified cultural area. If the recovery of cultural resources is not completed by the time the Contractor has completed all other reasonable work in that construction zone, and substantial time still remains in the work day, the Owner will direct the Contractor to remobilize to another project area and resume work.

#### **ARTICLE 11 - COORDINATION AND WORK TO BE PERFORMED BY OTHERS**

Other projects may be ongoing and in construction in the Project vicinity during the construction of the SAWPA Brine Line Reach V Rehabilitation and Improvement Project. This includes the Riverside County Flood Control and Water Conservation District Temescal Creek Foster Road Storm Drain Stage 1 Project. The Contractor shall coordinate with the construction of the Riverside County Flood Control and Water Conservation District Temescal Creek Foster Road Storm Drain Stage 1 Project. All costs for this task shall be included in the bid proposal and no additional compensation will be allowed.

**END OF SECTION**



## SECTION 01010

### SUMMARY OF WORK

#### PART 1 - GENERAL

##### 1.01 WORK OF THIS SECTION

- A. The project consists of providing all labor, materials, and equipment required to construct the facilities depicted in the Approved Plans entitled, "**Inland Empire Brine Line Reach V Rehabilitation and Improvement Project – Phase 1.**" The project includes but is not limited to furnishing and installing all materials and appurtenances, all traffic control, and all equipment and labor required to construct the facilities depicted on the Approved Plans and described herein.
- B. The work is located within and adjacent to the right-of-way of Temescal Canyon Road in the City of Corona and in various unincorporated areas of the County of Riverside, California.
- C. The Work shall generally consist of trenchless rehabilitation of portions of the existing 24-inch Inland Empire Brine Line - Reach V, and the construction of access and isolation facilities along the pipeline, as detailed below and shown on the drawings:
  - 1. Trenchless rehabilitation of existing nominal 24-inch diameter AWWA C905 DR51 polyvinyl chloride (PVC) pipe (ID=24.8 inches) using both fiberglass-reinforced and non-reinforced cured-in-place-pipe (CIPP) liner materials, including pipe cleaning, pre- and post-lining inspections (using both closed-circuit video and laser profiling operations), access pits, reinstatement and replacement of air/vacuum valve and blow-off assembly connections, CIPP mechanical end seals, pipe closures, and all other associated Work.
  - 2. Construction of below-grade maintenance access structure (MAS) assemblies along the existing 24-inch PVC pipe in accordance with the Approved Plans and the various details therein, which include Type A MAS structures with a nominal 24-inch man-way tee, 24-inch plug valve, 14-inch flow diversion connection, and connections to the existing pipe and Type B MAS structures with a nominal 24-inch man-way tee, and connections to the existing pipe.
  - 3. New 4-inch air/vacuum valves at air valve locations (both existing and reinstated) and new 4-inch blow-off assemblies and piping modifications at all blow-off/drain locations along the project alignment.
  - 4. Temporary by-pass piping sized to divert up to 4.5 MGD of flow by gravity around sections of pipe to be isolated for CIPP lining and MAS construction, including shallow crossing at roadways and driveways to maintain traffic flow. Also, all coordination with the Owner and other agencies for the shutdown and reinstatement of existing brine line flows as necessary to construct said bypass facilities within the allowable time restriction as outlined in the Approved Plans.
  - 5. Associated traffic control, pavement removal, and pavement replacement required to complete the Work, including all necessary permits.

## 1.02 WORK RESTRICTIONS

- A. Contractor is advised of the following work restrictions. Contractor shall accommodate traffic through the work area in accordance with the traffic control plans provided in the Approved Plans and in accordance with all local jurisdictional agency requirements and permits.
- B. No materials or equipment shall be left within the public right-of-way or the improved roadway during non-working hours, unless otherwise allowed by these specifications or by written permission of the jurisdictional or permitting agency. The Contractor shall remove all materials and equipment, excepting trench plating, required traffic control, and other safety devices, during non-working hours each day. Permission to leave equipment within the right-of-way may be provided by individual jurisdictional or permitting agencies, and the Contractor shall receive written permission and conform to all permitting and jurisdictional requirements prior to leaving equipment in the public rights-of-way. Contractor shall provide a copy of all written permissions to Owner or its designated representative upon receipt from jurisdictional or permitting agency, and before leaving any equipment or materials in any roadway during non-working hours.
- C. Contractor shall provide residential and business notifications along Temescal Canyon Road when impacting (temporarily or permanently) ingress and egress to any parking area, driveway, traveled way or any portion of any parking area. All residences and businesses shall be notified a minimum of two (2) weeks prior to impacting any parking area or driveway, ingress or egress. It is the Contractor's responsibility to identify means and methods for public outreach to any affected residence, business, property or parcel. The means and methods chosen by the Contractor shall be submitted to the Owner or the Owner's representative for review and approval prior to implementation.
- D. The Contractor's working hours shall be limited to the hours shown on the drawings, unless otherwise noted by these specifications or by the permitting or jurisdictional agency. Deviation from the normal working hours will not be allowed without prior written consent of the Owner and the respective permitting or jurisdictional agency.
- E. At the end of every workday, the Contractor shall close all trenches and open all travel-ways to normal traffic. No trench shall be left open after work hours without special approval of the Owner and the respective permitting or jurisdictional agency. The Contractor shall be allowed to use temporary trench plating installed flush with the pavement as approved by the Owner and jurisdictional agency.
- F. At the completion of construction, the Contractor shall replace all pavement, striping, hardscape and landscape in kind or better than existing. It is required that the Contractor conduct a pre-construction video of all work areas to document existing conditions prior to the start of work. A copy of the Contractor's pre-construction video shall be provided to the Owner prior to the commencement of any work within the subject area of work. The pre-construction video shall completely define the existing condition of the subject work area, and be clearly visible when viewed.

## 1.03 DEFINITIONS

- A. *Reach* – Segment or portion of the existing SAWPA Reach V Brine Line as defined by the numbering and stationing along the pipeline alignment.
- B. *Bypass* – Temporary pipeline used to convey brine flows during construction; Location defined by reach numbering along the pipeline alignment.

- C. *Segment* – Smaller portion of a Reach in which CCTV, laser profiling and CIPP lining operations are conducted; Approximately 1,500 linear feet of pipeline length (typical).

#### **1.04 SUBMITTALS**

- A. The Contractor shall provide the following submittals in accordance with Section 01300.
1. Project Approach
  2. Project Sequencing and Schedule

#### **1.05 CONSTRUCTION CONSTRAINTS**

- A. The Contractor shall develop his/her project sequencing, schedule and approach to accommodate all Construction Constraints imposed on the project by the Owner or other agency having jurisdiction in the vicinity of the Work. The Contractor shall incorporate the following construction constraints, as well as other imposed by the Contract Documents or agencies have jurisdiction within the area of the Work, whether listed below or not:
1. The Work, as shown on the Approved Plans, is subdivided into four Bypass Reaches. The Contractor shall confine his/her work to a single Bypass Reach, completing all Work, including final acceptance of the Work, within the subject Bypass Reach before establishing the next Bypass Reach. The Contractor shall establish Bypass Reaches from downstream to upstream.
  2. All Work within the City of Corona shall be completed first in the sequence of construction, and once the Contractor has commenced Work within the City of Corona shall prosecute that Work until all Work within the City of Corona is completed.
  3. The Contractor shall clean and complete CCTV and laser profiling on all portions of the pipeline in accordance with the Contract documents. However, as defined in the Contract Documents, CIPP lining will only be installed in specific pipeline segments. The Contractor shall submit the CCTV and laser profiling results to the Owner and receive approval from the Owner, in accordance with the Contract Documents, prior to ordering or preparing CIPP liners for installation. Pipeline segments with ovality deflections greater than five (5) percent shall be lined, and only as approved by the Owner.
  4. Installation of the bypass pipelines, shallow pipeline crossings, Bypass MAS structures, pressure testing, required bypass pipeline thrust restraint, and other work defined by the Contract Documents necessary for bypass establishment shall be coordinated with the Owner and the agencies providing tributary flow to the Brine Line. Once flow in the Brine Line is shut down, the Contractor shall complete all Work necessary for a complete, safe and functional bypass within a maximum of three (3) calendar days. The bypass shall be placed into operation immediately following bypass establishment, in cooperation with the Owner and the agencies providing tributary flow to the Brine Line. Simultaneous construction of Bypass MAS structures shall be provided as necessary to complete the work within the three calendar day construction limit. Contractor shall minimize the overall brine line shutdown time to the greatest extent possible without compromising the quality and completeness of the work. Contractor shall notify the Owner two (2) weeks prior to all system shutdowns and coordinate all activities associated with the shutdown of the system with the Owner and all jurisdictional agencies affected by the shutdown.
  5. Failure to complete all work required for a complete and operable bypass system within the available shutdown period shall necessitate re-establishment of brine line connectivity and reinstatement of brine line flows. All work required to re-establish brine line

connectivity, to reinstate brine line flows, and subsequent work to take the brine line back to a shutdown condition for completion of the work as a result of not completing the work within the identified shutdown period shall be the sole responsibility of the Contractor and no additional payment shall be made therewith.

6. All personnel, materials and equipment shall be on site prior to initiation of the shutdown.
7. Contractor shall have sufficient facilities available to dewater the brine line to the extent necessary to maintain the overall shutdown construction schedule. Contractor shall have sufficient facilities available to dewater the brine line to the extent necessary to maintain the overall shutdown construction schedule.
8. Contractor shall provide CCTV and laser profiling results to the Owner for review on a segment by segment basis within two working (2) days of completing inspection of said segment. Within two working (2) days of receiving the CCTV and laser profiling inspection results for a given segment (approximately 1,500 linear feet of pipeline length), the Owner and Construction Manager will provide the Contractor with direction on whether the subject segment (or part thereof) will require CIPP lining.
9. During dewatering of Bypass Reach No. 2, the Contractor shall dewater the Caltrans Reach to allow it to be cleaned and inspected prior to initiation of the Reach No. 2 bypass. The Caltrans Reach shall be cleaned, video inspected and laser profile inspected prior to the installation of MAS V-0440-B.
10. All existing air vacuum valves shall be replaced as defined in the Contract Documents.
11. Contractor shall pothole all existing utilities, whether shown on the Approved Plans or not, prior to commencement of excavation in accordance with the Contract Documents, and shall make certain that required agency inspectors are present prior to excavation.
12. As the need to CIPP line a specific pipeline segment will be determined based on the CCTV and laser profile inspections, the Contractor shall incorporate into his/her sequence of work and approach that liner materials not used as a result of Owner decision not to line a segment shall be used for subsequent liner installations. As a result, the Contractor shall not prepare the liner for installation until Owner approval is provided.
13. Brine and debris shall be fully removed from all pipeline segments prior to liner installation in accordance with the Contract Documents.
14. Test pit location and excavation shall be coordinated with the Owner prior to excavation. Existing utilities shall be marked out and potholed prior to excavation.
15. Owner has prepared and obtained approval of required traffic control plans for construction. The Contractor shall incorporate the traffic control plans, and any additional permit requirements, into his/her sequence of construction. Traffic control and safety equipment shall be maintained throughout the project duration, including weekends and holidays.
16. The Contractor shall maintain a person on site at all times while the bypass is in operation. The Contractor shall patrol the bypass installation to make certain that no brine discharges are experienced at any time. Clean up of all brine discharges, including any associated fines, shall be the sole responsibility of the Contractor and no additional payment shall be provided.
17. The bypass pipeline shall be installed behind the curb or within the curb line, as appropriate and approved by the Owner and jurisdictional agencies. Blocking shall be installed under the bypass pipeline, when installed within the curb line, to allow stormwater to flow into all street drains. Where sidewalks may be potentially blocked by

the bypass pipeline, the sidewalk shall be closed. Contractor shall provide air release valving at high points in the bypass piping.

## **1.06 CONCEPTUAL SEQUENCE OF CONSTRUCTION**

- A. The following Conceptual Sequence of Construction is provided to further clarify the intent of the Contract Documents with respect to prosecution of the Work. Variations to this concept shall be submitted for review and acceptance as part of the required submittal process. The concept provided below does not include specific steps for compliance with all of the requirements of the Contract Documents, such as submittal review, permit acquisition, traffic control, water pollution prevention measures, and other required tasks. Following this concept or any similar sequence of construction does not relieve the Contractor from overall compliance with all requirements of the Contract Documents and the jurisdictional or permitting agencies. This concept is provided only to clarify the overall progression of the Work and the Contractor shall develop his/her own sequence of construction, project approach and schedule for submittal to and approval by the Owner.

### Reach No. 1 (Station 622+35 to Station 501+50):

1. Procure necessary equipment and materials required for the flow bypass system and MAS installation within the limits of Reach No. 1 (Sta 622+35 to Sta 501+50).
2. Install and pressure test the flow bypass piping (above-ground and below-ground as required) for isolation of Reach No. 1, connection to MAS V-0580-B and MAS V-0500-B as shown on the Approved Plans.
3. Excavate areas required for installation of the flow bypass (MAS V-0500-B) and flow receiving (MAS V-0580-B) structures prior to initiating brine line shutdown. Installation of both flow bypass and flow receiving structures shall be completed simultaneously, and shall be completed to limit the total shutdown time to a maximum of three (3) calendar days, from shutdown to reinstatement of flow.
4. Contractor shall pre-assemble the components of MAS structures to the maximum extent possible, such that, upon shutdown, dewatering and cutting of the brine line, the Contractor can install the MAS facilities in the least amount of time possible to minimize the duration of the overall shutdown time. All personnel, materials and equipment shall be on site prior to initiation of the shutdown.
5. Coordinate shutdown of upstream tributary flows to the Inland Empire Brine Line - Reach V with SAWPA, its Construction Manager, and all jurisdictional or permitting agencies contributing flow to the brine line facility.
6. Perform the following work during the brine line shutdown period:
  - a. Use existing blow-off connection(s) to dewater the work areas for MAS V-0580-B and MAS V-0500-B, and dispose of drained brine per Specification Section 02999 in cooperation with and as directed by the Owner or Construction Manager.
  - b. Cut the pipe and simultaneously install MAS V-0580-B and MAS V-0500-B to minimize overall shutdown duration. The plug valves at MAS V-0580-B and MAS V-0500-B shall be installed in the closed position. Connect the upstream side of MAS V-0500-B and the downstream side of MAS V-0580-B as shown on the Approved Plans.

- c. Connect bypass piping to MAS V-0580-B and MAS V-0500-B, and verify all connectivity of the bypass system prior to reinstatement of brine line flows.
  - d. Coordinate reinstatement of upstream tributary flows with the Owner, its Construction Manager, and all jurisdictional or permitting agencies contributing flow to the brine line facility.
7. Fully dewater and cut the pipe along Reach No. 1, as defined in the Approved Plans, at identified MAS and liner installation pit locations, as necessary, to provide access for cleaning and inspection operations.
  8. Clean and inspect each segment of Reach No. 1 of pipe in accordance with Section 15045 Cleaning and Inspection of Pipe, and provide CCTV and laser profiling results to the Owner for review within two working (2) days of completing inspection of said segment.
  9. Commence CIPP lining for Owner-directed segments in accordance with Section 15121 with fiberglass-reinforced or non-reinforced CIPP (as submitted and approved by the Owner) until completion of all required CIPP lining within Reach No. 1 is achieved, including reinstatement of all existing air/vacuum valves and blow-off assembly connections, installation of any new air-vac or blow-off facilities, and all liner testing and acceptance criteria have been met.
  10. Install MAS V-0570-A, MAS V-0560-B, MAS V-0550-A, MAS V-0540-A, MAS V-0530-B, MAS V-0520-A, and MAS V-0510-A, including pipe closures at MAS V-0580-B and MAS V-0500-B, consecutively immediately after each CIPP lining and testing of adjacent pipe segments is complete. The plug valves at MAS V-0570-A through MAS V-0510-A shall be installed and locked out in the open position.
  11. Install new air/vacuum valves and blow-offs (including blow-off discharge piping modifications) at the locations required by the Approved Plans concurrently with completion of CIPP lining and MAS installation work. Backfill, fully compact, and repair paving, as necessary, to the approval of the Construction Manager.
  12. Once all required Work within Reach No. 1 is complete and approved, coordinate with Owner for opening of the plug valve at MAS V-0580-B. Subsequent to the complete opening of the MAS V-0580-B valve, coordinate with the Owner to open the MAS V-0500-B valve, opening the valve exceptionally slow as to prevent excessive hydraulic loading of downstream facilities and hydraulic transient development.
  13. Upon Owner approval, disconnect all bypass piping. Newly constructed MAS structures are closed and locked, as required.
  14. Work areas of Reach No. 1 shall be returned to full operation, in a clean and safe manner. All road surfaces shall be returned to pre-construction condition or better. It is the intent that the work for this reach of the project be complete and not require any return for cleaning or other Contractor operation.

Reach No. 2 (Station 501+50 to Station 412+25):

15. Procure necessary equipment and materials required for the flow bypass system and MAS installation within the limits of project pipeline Reach No. 2 (Sta 501+50 to Sta 412+25).
16. Install the flow bypass piping, similar to that of Reach No. 1, for isolation of Reach No. 2, connecting to MAS V-0500-B and MAS V-0440-B. Provide air release valving at high points in the bypass piping.
17. Excavate areas required for installation of the flow bypass (MAS V-0440-B) structure prior to initiating brine line flow shutdown, completing the work to limit the total flow shutdown time to a maximum of three (3) calendar days.

18. Pre-assemble the components of MAS structure to the maximum extent possible, such that, upon shutdown, dewatering and cutting of the brine line, the MAS can be installed in the least amount of time possible.
19. Coordinate shutdown of upstream tributary flows with the Owner, its Construction Manager, and all jurisdictional or permitting agencies contributing flow to the brine line facility.
20. Perform the following work during the brine line shutdown period:
  - a. Use existing blow-off connections to dewater the work areas for MAS V-0440-B below the level required to install MAS V-0440-B, disposing of drained brine per Specification Section 02999 in cooperation with and as directed by Owner or its Construction Manager.
  - b. Dewater the Caltrans Reach to allow it to be cleaned and inspected prior to initiation of the Reach No. 2 bypass and prior to the installation of MAS V-0440-B. Cleaning and inspection of the Caltrans Reach (Station 412+25 to Station 400+75) shall be completed in accordance with Section 15045 Cleaning and Inspection of Pipe and provide CCTV and laser profiling results to the Owner for review within two working (2) days of completing inspection of said segment.
  - c. Install MAS V-0440-B with the plug valves at MAS V-0500-B and MAS V-0440-B in the closed position. Connect the upstream side of MAS V-0440-B and the downstream side of MAS V-0500-B to the existing system and provide installation of required thrust wall to maintain MAS stability against thrust during bypass operation.
  - d. Connect the bypass piping to MAS V-0500-B and MAS V-0440-B, and verify all connectivity of the bypass system prior to reinstatement of brine line flows.
  - e. Coordinate reinstatement of upstream tributary flows with Owner, its Construction Manager, and all jurisdictional or permitting agencies contributing flow to the brine line facility.
21. Fully dewater and cut the pipe along Reach No. 2, as defined in the Approved Plans, at identified MAS and liner installation pit locations.
22. Clean and inspect each segment of Reach No. 2 in accordance with Section 15045 Cleaning and Inspection of Pipe, and provide CCTV and laser profiling results to the Owner for review within two working (2) days of completing inspection of said segment.
23. Commence CIPP lining for confirmed segments in accordance with Section 15121 with fiberglass-reinforced or non-reinforced CIPP until completion of all required CIPP lining is achieved, including reinstatement of all existing air/vacuum valves and blow-off assembly connections, installation of any new air-vac or blow-off facilities, and all liner acceptance criteria.
24. Install MAS V-0490-A, MAS V-0480-A, MAS V-0470-B, MAS V-0460-A, and MAS V-0450-A, including pipe closures at MAS V-0500-B and MAS V-0440-B, consecutively immediately after CIPP lining and testing of adjacent pipe segments is complete. The plug valves at MAS V-0490-A through MAS V-0450-A shall be installed in the open position.
25. Install new air/vacuum valves and blow-off valves (including blow-off discharge piping modifications) at the locations required by the Approved Plans concurrently with completion of CIPP lining and MAS installation work.

26. Once all required work with Reach No. 2 is complete and approved, coordinate with Owner for opening of the plug valve at MAS V-0500-B. Subsequent to the complete opening of the MAS V-0500-B valve, coordinate with the Owner to open the MAS V-0440-B valve, opening the valve exceptionally slow to prevent hydraulic loading of downstream facilities and hydraulic transient development.
27. Upon approval by the Owner, disconnect all bypass piping. Close and lock all newly constructed MAS structures. The work areas of Reach No. 2 shall be returned to full operation, in a clean and safe manner. All road surfaces shall be returned to pre-construction condition or better. It is the intent that the work for this reach of the project be complete and not require any return for cleaning or other Contractor operation.

Reach No. 3 (Station 400+75 to Station 362+00):

28. Procure necessary equipment and materials required for the flow bypass system and MAS installation within the limits of project pipeline Reach No. 3 (Sta 400+75 to Sta 362+00).
29. Install the flow bypass piping in accordance with the Approved Plans for isolation of Reach No. 3 with connection to MAS V-0430-B and MAS V-0400-B. Provide air release valving at high points in the bypass piping.
30. Excavate areas required for installation of the flow bypass (MAS V-0400-B) and flow receiving (MAS V-0430-B) structures prior to initiating brine line flow shutdown, completing Work simultaneously to minimize the shutdown time.
31. Pre-assemble the components of MAS structure to the maximum extent possible, such that, upon shutdown, dewatering and cutting of the brine line, the MAS can be installed in the least amount of time possible.
32. Coordinate shutdown of upstream tributary flows with the Owner, its Construction Manager, and all jurisdictional or permitting agencies contributing flow to the brine line facility.
33. Perform the following work during the brine line shutdown period:
  - a. Use existing blow-off connections to dewater the work areas for MAS V-0430-B and MAS V-0400-B, disposing of drained wastewater per Specification Section 02999 in cooperation with and as directed by the Owner or its Construction Manager.
  - b. Cut the pipe and simultaneously install MAS V-0430-B and MAS V-0400-B to minimize overall shutdown duration, with plug valves installed in the closed position. Connect the upstream side of MAS V-0400-B and the downstream side of MAS V-0430-B to the existing system, with required thrust blocking to maintain MAS stability during bypass operation.
  - c. Connect the bypass piping to MAS V-0430-B and MAS V-0400-B, and verify all connectivity of the bypass system prior to reinstatement of brine line flows.
  - d. Coordinate reinstatement of upstream tributary flows with the Owner, its Construction Manager, and all jurisdictional or permitting agencies contributing flow to the brine line facility.
34. Fully dewater and cut the pipe along Reach No. 3, as defined in the Approved Plans, at identified MAS and liner installation pit locations, as necessary, to provide access for cleaning and inspection operations.



35. Clean and inspect each segment of pipe in accordance with Section 15045 Cleaning and Inspection of Pipe, providing CCTV and laser profiling results to the Owner for review within two working (2) days of completing inspection of said segment.
36. Commence CIPP lining for confirmed segments of pipe in accordance with Section 15121 with fiberglass-reinforced or non-reinforced CIPP until completion of all required CIPP lining within Reach No. 3 is achieved, including reinstatement of all existing air/vacuum valves and blow-off assembly connections, installation of any new air-vac or blow-off facilities, and all liner acceptance criteria have been met.
37. Install MAS V-0420-A and MAS V-0410-A, including pipe closures at MAS V-0430-B and MAS V-0400-B, consecutively immediately after CIPP lining and testing of adjacent pipe segments is complete. The plug valves at MAS V-0420-A and MAS V-0410-A shall be installed in the open position.
38. Install new air/vacuum valves and blow-off valves (including blow-off discharge piping modifications) at the locations required by the Approved Plans concurrently with completion of CIPP lining and MAS installation work.
39. Once all required work with Reach No. 3 is complete and approved, coordinate with Owner for opening of the plug valve at MAS V-0430-B. Subsequent to the complete opening of the MAS V-0430-B valve, coordinate with the Owner to open the MAS V-0400-B valve, opening the MAS V-0400-B valve exceptionally slow as to prevent hydraulic loading of downstream facilities and hydraulic transient development.
40. Upon approval by the Owner, disconnect all bypass piping, with newly constructed MAS structures closed and locked as required. The work areas of Reach No. 3 shall be returned to full operation, in a clean and safe manner. All road surfaces shall be returned to pre-construction condition or better. It is the intent that the work for this reach of the project be complete and not require any return for cleaning or other Contractor operation.

Caltrans Reach (between Reach 2 and Reach 3 Station 412+25 to Station 400+75), if required:

41. Procure all equipment and materials required for the CIPP lining within the limits of the pipeline segment located in the Caltrans right-of-way between MAS V-0440-B and MAS V-0430-B (Sta 412+25 to Sta 400+75).
42. Install the flow-bypass piping required for isolation of the Caltrans Reach, including connections to MAS V-0440-B and MAS V-0430-B, as defined by the Caltrans Approved Plans. Only after opening the bypass gate valve, close the plug valves at MAS V-0440-B and MAS V-0430-B. It is critical that the bypass gate valves be opened before the MAS plug valves are closed to divert upstream flows through the bypass piping.
43. Perform the following work during the fourth scheduled pipeline shutdown:
  - a. Utilize previously installed MAS structure to drain brine water remaining in low spots along Caltrans Reach. Swab existing pipeline to fully remove water from the pipe segment prior to liner installation.
44. Excavate and disconnect the Brine Line on the downstream side of MAS V-0430-B and upstream side of MAS V-0440-B.
45. Install CIPP liner between MAS V-0440-B and MAS V-0430-B.
46. Once all liner acceptance criteria have been met and pipe closures have been installed, open the plug valves at MAS V-0440-B and MAS V-0430-B and disconnect the by-pass piping to allow flow to resume through the newly rehabilitated Caltrans Reach.

Reach No. 4 (Station 221+50 to Station 108+50):

47. Procure all equipment and materials required for test pits within the limits of project pipeline Reach No. 4 (Sta 221+50 to Sta 108+50).
48. Excavate three (3) test pits to verify the pipe material and ovality per the Special Conditions.

**PART 2 - MATERIALS (NOT APPLICABLE)**

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

**END OF SECTION**

## SECTION 01025

### MEASUREMENT AND PAYMENT

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. This section defines the Lump Sum Prices, Unit Prices and Allowances listed in the Proposal Bidding Schedule, and the manner in which they will be used to determine measurement and payment for all items included in the Bid Schedule. Parts 2 and 3 of this section describe the procedures required to be followed for monthly payments to the Contractor.
- B. Payment for all items of the Bid Schedule whether lump sum or unit price shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the work all in accordance with the requirements of the Contract Documents, including all appurtenances hereto, and including all costs of permits and costs 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 shall be included in the prices named in the Bid Schedule for the various items of work.
- C. Final payment for work covered by Unit Prices will be made on the basis of the actual measured quantities accepted by the Construction Manager multiplied by the Unit Price of the Bid Schedule.
- D. Monthly pay requests are due on a certain day of each month (to be determined by Owner), and while pay requests will be accepted prior to this date, pay request processing will not begin until this date for purposes of meeting the District's pay request processing obligations under the California Public Contract Code. Failure of the Contractor to submit his pay requests by this day may be cause for rejection of the pay request. If rejected, the Contractor may have to resubmit his pay request the next month. Should the submittal date fall on a holiday or weekend day during the month, the Contractor shall consider the next working day as the due date.

##### 1.02 BID PROPOSAL

Measurement and payment will be made for each Bid Schedule Item independently and in accordance with the Contract Documents as follows:

- A. Lump Sum Prices: The Contractor shall provide Lump Sum Prices in the Bid Schedule for all work in the Contract Documents, except items of work listed in the Contract as Unit Priced Items. For Lump Sum items, only the total amount need be filled in.
- B. Unit Priced Items: Unit Price Items are provided by the Owner for Work identified in the Contract Documents. In the appropriate places on the Bid Schedule, each Bidder shall quote Unit Prices for the items of work in the units stated. Each unit price shall cover all costs and charges, including, without limitation, the costs of material, fabrication, delivery, installation or application, supervision, bond and insurance charges, overhead, profit, and taxes. Unit Prices

shall be the exact amount per unit to be applied to the units of work actually provided or not provided for the purpose of modifying the Contract Price or establishing the payment due the Contractor, as applicable. Unit Prices provided by the Contractor shall be held good and in effect until the work is completed and accepted by Owner. Contractor-proposed Unit Prices which are so unbalanced as to be detrimental to the Owner's interest may be rejected or cause rejection of the Bidder's entire bid at the discretion of the Owner.

- C. Allowance Items: Allowance Item amounts are for the convenience of the Owner to cover the cost of additive Work identified in the Contract Documents. Payment for Allowance Items will be made only when authorized by the Owner, as described in Part 1.03, below. Without authorization, the Contractor will not be paid from an Allowance Item.
- D. Retention: Payment for all bid items is subject to the retention provisions set forth in these specifications, or five percent (5%), whichever is greater.
- E. Schedule: All scoped Allowance Bid Items and Unit Priced Bid Items are included in the scope of the Contract without specific locations for the work provided. The Owner reserves the right to direct that these scoped items of work be performed when they are encountered, and the Contractor is obligated to accommodate this work within the original contract duration. The Contractor will not be entitled to additional time regardless of where work is encountered.
- F. The Owner reserves the right to vary the total contract price by varying the Unit Price quantities and authorized Allowance amounts within their respective individual limits.
- G. Stipulated or Bid Unit Prices: When the Owner's use of a Unit Price Bid Item exceeds 200% of the Bid Item quantity, the Contractor or Owner may demand that the Unit Price Item be renegotiated for quantities in excess of 200%, whether the price is stipulated or bid. This provision is to prevail over any conflicting general condition provision.
- H. Specified Items and Stipulated Priced: The stipulated price for these items cannot be invoiced until the item is complete and accepted by the Construction Manager and the Owner.

### **1.03 MEASUREMENT AND PAYMENT**

- A. General: This article defines the manner and method to develop the Lump Sum, Unit Price, and Allowance bid amounts of all items identified in the Bid Schedule. Bid amounts will include all plant, equipment, tools, materials, labor, service, and all other items required to complete the work included in the Contract unless specifically excluded by this section. Work required for which no separate bid item is identified will be considered as a subsidiary obligation of the Contractor, and the cost therefore shall be included in the most applicable bid item. Compensation for completion of the Work will be determined by use of the cost loaded CPM schedule (reference Section 01311). Bid amounts for each item will be the basis for development of budget values for activities included in the cost loaded CPM schedule as describe in Section 01311. Unit Price and Allowance Bid Item amounts will also be adjusted by a Change Order to the contract amount when work is completed, and actual authorized quantities and Allowance amounts are established.
- B. Contract Required Work Schedule:
  - 1. Bid Item 1: Mobilization and Demobilization

Description: Payment for work, and all work incidental thereto, necessary in advance of and after completion of all construction operations, including but not limited to: contract bonds, project insurance, mobilizing workers, equipment, office set-up, project signage,

and general cost of works in advance of construction; after construction activities consisting of, but not limited to; demobilizing workers, moving equipment off –site, etc, clean-up and general cost of work to closeout construction. Not to exceed 5% of the total base bid proposal price.

Payment: Payment requirements for mobilization as required by the Contract Documents are specified in the General Conditions.

- a. The lump sum bid price shall be distributed such that no more than fifty (50) percent of the bid item amount shall be paid as mobilization in the first Progress Payment Request. At least ten (10) percent of the bid item amount shall be paid in the Final Progress Payment Request as demobilization. The remainder shall be paid in equal installments over the duration of the Work.
- b. Contractor may request the initial payment for mobilization no sooner than 30 days following the Notice to Proceed and following submittal of all of the Contractor's submittals due within 30 days following the Notice to Proceed as required by Section 01505 – Mobilization.

2. **Bid Item 2:** State Required Line Item for Labor Code Sections 6705 and 6707 – Trench Excavation Plan and Sheeting, Shoring, and Bracing Including all Labor, Equipment, and Materials

Description: Payment for all work, and all work incidental thereto, performed including all labor, supervision, materials, and equipment purchased, installed and utilized for sheeting, shoring and bracing. Activities and works include, but are not limited to, furnishing, installing, erecting, maintaining and removal of sheeting, shoring and bracing for protection of life and limb and utilities in trenches, open excavations and confined spaces per Specification Section 02350. Sheeting, shoring and bracing system's installation, and usage shall meet or exceed the requirements of all State, Local, and Regional regulatory agencies. All sheeting, shoring, and bracing shall be removed prior to completion of the construction activities.

Payment: Payment for Bid Item 2 will be made at the lump sum bid price.

3. **Bid Item 3:** Water Pollution Control Plan

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized to prepare a Water Pollution Control Plan (WPCP) and properly implement the WPCP, in accordance with all applicable laws, rules, regulations, permit requirements and conditions, these Contract Documents, all other contractual provisions, and the latest version of the Caltrans "Construction Site Best Management Practices Manual.

Payment: Payment for Bid Item 3 will be made at the lump sum bid price.

4. **Bid Item 4:** Flow Bypass 1-3 (Outside of Caltrans Right-of-Way)

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for furnishing, installing, and maintaining the flow by-pass systems, 24 hours per day, seven days per week, required to perform the pipeline cleaning, field repairs and preparing existing pipeline for pipe rehabilitation and improvement work outside of the Caltrans right-of-way, including preparing and submitting a Spill Prevention and Emergency Response Plan; installing/fusing 14-inch HDPE pipe and fittings above ground and in shallow plated trenches at driveway and road crossings; fittings, valves, and appurtenances as required for inlet and outlet connections to Maintenance Access Structures; removing, transporting, reconfiguring, and reinstalling by-pass piping at a

new location; protection of exposed pipe and fittings; security and inspection of bypass system; and inspection and repair of defective or damaged pipe and fittings.

Payment: Payment for Bid Item 4 will be made at the lump sum bid price. The lump sum bid price shall be distributed such that no more than fifty (50) percent of the bid item amount shall be paid for the bypass of Reach No. 1. The remainder shall be paid at the time of installation of subsequent bypass systems and in an amount proportional to the length of the by-pass piping installed.

5. Bid Item 5: Flow Bypass in Caltrans Right-of-Way

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for furnishing, installing, and maintaining the flow by-pass system, 24 hours per day, seven days per week, required to perform the pipeline cleaning, field repairs and preparing existing pipeline for pipe rehabilitation and work within the Caltrans right-of-way, including installing/fusing 14-inch HDPE pipe and fittings above ground, in shallow plated trenches, and by jack and bore construction, as shown on the Drawings; fittings, valves, and appurtenances as required for inlet and outlet connections to Maintenance Access Structures; protection of exposed pipe and fittings; security and inspection of bypass system; and inspection and repair of defective or damaged pipe and fittings.

Payment: Payment for Bid Item 5 will be made at the lump sum bid price.

6. Bid Item 6: Drain Brine as Required for Cleaning and Inspection

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased and utilized for draining wastewater remaining in the Brine Line after shutdown of upstream flow as required to cut the pipe for maintenance access structure and by-pass system installation, including traffic control, operation and connection to existing blow-off valves, and disposal of brine collected at a location approved by the Owner.

Payment: Payment for Bid Item 6 will be made at the lump sum bid price.

7. Bid Item 7: Cleaning of 24" PVC Pipe

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased and utilized for performing cleaning of the existing 24-inch PVC pipe during the cleaning and inspection phase in accordance with National Association of Sewer Service Companies (NASSCO) standards and definitions, including the cost of cleaning water, dewatering and disposal of debris collected at a location approved by the Owner.

Payment: Payment for Bid Item 7 will be by lineal foot price for the actual quantity of pipe cleaned using standard cleaning practices measured from the end of the host pipe to the end of the host pipe between points of access.

8. Bid Item 8: Traffic Control

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials and equipment purchased, including recessed surface plates, and project signage, installed and utilized to furnish complete traffic control system(s) as shown on the approved Traffic Control Plans, as required by applicable permits, and as required for safe prosecution of the work.

Payment: Payment for Bid Item 8 will be made at the lump sum bid price.

9. Bid Item 9: High Definition CCTV Inspection with Laser Profiling of 24" PVC Pipe Along Entire Project Alignment

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased and utilized for performing high definition CCTV inspection and laser profiling of the existing 24-inch PVC pipe during the cleaning and inspection phase, including digital submittal of CCTV and laser inspection results.

Payment: Payment for Bid Item 9 will be by lineal foot price for the actual quantity of pipe inspected measured from the end of the host pipe to the end of the host pipe between points of access.

10. Bid Item Number 10: Maintenance Access Structure A Assembly, Including Potholing

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for furnishing and installation of Maintenance Access Structure A assemblies, including potholing of existing utilities, saw-cutting, excavation, dewatering, handling of excess water from existing pipe that did not drain during initial draining, cutting and removal of existing pipe, over-excavation, crushed rock bedding, installation of new pipe, fittings, valves, appurtenances, concrete access structures, connections to adjacent piping, backfilling and compacting, disposal of all excess materials, and surface restoration including but not limited to turf, plant and irrigation replacement, curb and gutter replacement, and pavement restoration in accordance with the requirements of the jurisdictional agency. Pavement restoration shall include, but may not necessarily be limited to, the required saw-cutting, removal and disposal of asphalt concrete damaged as part of the work, cold-milling, subgrade compaction, aggregate base, base course asphalt concrete, surface course asphalt concrete, and re-striping.

Payment: Payment for Bid Item 10 will be made for each Maintenance Access Structure A assembly installed.

11. Bid Item Number 11: Maintenance Access Structure B Assembly, Including Potholing

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for furnishing and installation of Maintenance Access Structure B assemblies, including potholing of existing utilities, saw-cutting, excavation, dewatering, handling of excess water from existing pipe that did not drain during initial draining, dewatering, handling of excess water from existing pipe that did not drain during initial draining, cutting and removal of existing pipe, over-excavation, crushed rock bedding, installation of new pipe, fittings, valves, appurtenances, concrete access structures, connections to adjacent piping, backfilling and compacting, disposal of all excess materials, and surface restoration including but not limited to turf, plant and irrigation replacement, curb and gutter replacement, and pavement restoration in accordance with the requirements of the jurisdictional agency. Pavement restoration shall include, but may not necessarily be limited to, the required saw-cutting, removal and disposal of asphalt concrete damaged as part of the work, cold-milling, subgrade compaction, aggregate base, base course asphalt concrete, surface course asphalt concrete, and re-striping.

Payment: Payment for Bid Item 11 will be made for each Maintenance Access Structure B assembly installed.

12. Bid Item Number 12: Offset Maintenance Access Structure A Assembly Perpendicular to Brine Line Pipe, Including Potholing

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for furnishing and installation piping, and fittings required to construct a Maintenance

Access Structure A at a location offset away from the brine line pipe. Work includes, but is not limited to, including potholing of existing utilities, saw-cutting, excavation, dewatering, handling of excess water from existing pipe that did not drain during initial draining, over-excavation, crushed rock bedding, installation of pipe and fittings (including piping used to offset), backfilling and compacting, disposal of all excess materials, and surface restoration including but not limited to turf, plant and irrigation replacement, curb and gutter replacement, and pavement restoration in accordance with the requirements of the jurisdictional agency. Pavement restoration shall include, but may not necessarily be limited to, the required saw-cutting, removal and disposal of asphalt concrete damaged as part of the work, cold-milling, subgrade compaction, aggregate base, base course asphalt concrete, surface course asphalt concrete, and re-striping.

Payment: Payment for Bid Item 12 will be made for each offset for a Maintenance Access Structure A installed.

13. Bid Item Number 13: Offset Maintenance Access Structure B Assembly Perpendicular to Brine Line Pipe, Including Potholing

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for furnishing and installation piping, and fittings required to construct a Maintenance Access Structure B at a location offset away from the brine line pipe. Work includes, but is not limited to, including potholing of existing utilities, saw-cutting, excavation, dewatering, handling of excess water from existing pipe that did not drain during initial draining, over-excavation, crushed rock bedding, installation of pipe and fittings (including piping used to offset), backfilling and compacting, disposal of all excess materials, and surface restoration including but not limited to turf, plant and irrigation replacement, curb and gutter replacement, and pavement restoration in accordance with the requirements of the jurisdictional agency. Pavement restoration shall include, but may not necessarily be limited to, the required saw-cutting, removal and disposal of asphalt concrete damaged as part of the work, cold-milling, subgrade compaction, aggregate base, base course asphalt concrete, surface course asphalt concrete, and re-striping.

Payment: Payment for Bid Item 13 will be made for each offset for a Maintenance Access Structure B installed.

14. Bid Item 14: Fiberglass Reinforced CIPP Liner for 24" PVC Pipe, Including Post-Installation CCTV, and Pressure Testing

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for furnishing and installation of fiberglass reinforced CIPP liner, including draining of brine line, CCTV inspection after lining to observe liner conditions, CIPP liner installation, end seals installed at maintenance access structures, pressure testing, and Contractor's requirements for sampling and testing of liner properties and installed thickness.

Payment: Payment for Bid Item 14 will be made by lineal foot for the actual quantity of 24-inch brine pipe lined by the fiberglass reinforced CIPP process as measured from the end of the host pipe to the end of the host pipe between points of access.

15. Bid Item 15: Non- Reinforced CIPP Liner for 24" PVC Pipe, Including Post-Installation CCTV, and Pressure Testing

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for draining of the brine line, furnishing and installation of non-reinforced CIPP liner, including CCTV inspection after lining to observe liner conditions, CIPP liner installation, end



seals installed at maintenance access structures, pressure testing, and Contractor's requirements for sampling and testing of liner properties and installed thickness.

Payment: Payment for Bid Item 15 will be made by lineal foot for the actual quantity of 24-inch brine pipe lined by the non-reinforced CIPP process as measured from the end of the host pipe to the end of the host pipe between points of access.

16. Bid Item 16: CIPP Liner Installation Pit with End Seals and Pipe Closure, Including Potholing

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for draining of the brine line, furnishing and installation of CIPP liner installation pit, including potholing of existing utilities, saw-cutting, excavation, dewatering, handling of excess water from existing pipe that did not drain during initial draining, cutting and removal of existing pipe, over-excavation, crushed rock bedding, installation of end seals, closure pipe, and fittings, backfilling and compacting, disposal of all excess materials, and surface restoration including but not limited to turf, plant and irrigation replacement, curb and gutter replacement, and pavement restoration in accordance with the requirements of the jurisdictional agency. Pavement restoration shall include, but may not necessarily be limited to, the required saw-cutting, removal and disposal of asphalt concrete damaged as part of the work, cold-milling, subgrade compaction, aggregate base, base course asphalt concrete, surface course asphalt concrete, and re-striping.

Payment: Payment for Bid Item 16 will be made for each liner installation pit as listed in the bid price. Additional liner installation pits will not be permitted without prior approval of the Engineer.

17. Bid Item 17: Disconnect and Reinstatement of 4" Air/Vacuum Valve Assembly, Including New Valve (along pipe segments that are CIPP lined)

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for furnishing and installation of reinstatement of existing air/vacuum valve assemblies located along piping segments that are CIPP lined. Work includes confined space entry, disconnect of existing valve assembly, cutting and removal of existing pipe and air/vacuum valve within vault, installation of temporary "clamshell" spool piece and couplings, new tapping sleeve, retrieval of coupon, and new 4-inch combination air valve.

Payment: Payment for Bid Item 17 will be made for each air/vacuum disconnect and reinstatement completed along pipe segments that are CIPP lined.

18. Bid Item 18: New 4" Air/Vacuum Valve Assembly, Including New Valve (along pipe segments that are not CIPP lined)

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for furnishing and installation of new 4-inch air/vacuum valve assembly installed along pipe segments that are not CIPP lined, including confined space entry, 4-inch combination air valve, connections to existing piping, removal of existing air-vacuum valve within vault, and disposal of all excess materials.

Payment: Payment for Bid Item 18 will be made for each modified 4" air/vacuum valve assembly installed along pipe segments that are not CIPP lined.

19. Bid Item 19: Disconnect and Reinstatement of 8” Blow-off Assembly (along pipe segments that are CIPP lined)
- Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for furnishing and installation of the disconnect and reinstatement of existing blow-off assemblies located along piping segments that are CIPP lined, including modifications to existing piping and valves and abandonment of the vault. Work includes confined space entry, potholing of existing utilities, saw-cutting, excavation, dewatering, cutting and removal of existing pipe, over-excavation, installation of temporary “clamshell” spool piece and couplings, new tapping sleeve, pipe, fittings, valves, and pipe supports, backfilling and compacting, abandonment of existing vault, disposal of all excess materials, and surface restoration including but not limited to turf, plant and irrigation replacement, curb and gutter replacement, and pavement restoration in accordance with the requirements of the jurisdictional agency. Pavement restoration shall include, but may not necessarily be limited to, the required saw-cutting, removal and disposal of asphalt concrete damaged as part of the work, cold-milling, subgrade compaction, aggregate base, base course asphalt concrete, surface course asphalt concrete, and re-striping.
- Payment: Payment for Bid Item 19 will be made for each blow-off assembly disconnect and reinstatement completed along pipe segments that are CIPP lined.
20. Bid Item 20: Disconnect and Reinstatement of Existing 8” Blow-off Assembly (along pipe segments that are not CIPP lined)
- Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for furnishing and installation of the disconnect and reinstatement of existing blow-off assemblies located along piping segments that are not CIPP lined, including modifications to existing piping and valves and abandonment of the vault. Work includes confined space entry, potholing of existing utilities, saw-cutting, excavation, dewatering, cutting and removal of existing pipe, over-excavation, installation of couplings, new tapping sleeve, pipe, retrieval of coupon, fittings, valves, and pipe supports, backfilling and compacting, abandonment of existing vault, disposal of all excess materials, and surface restoration including but not limited to turf, plant and irrigation replacement, curb and gutter replacement, and pavement restoration in accordance with the requirements of the jurisdictional agency. Pavement restoration shall include, but may not necessarily be limited to, the required saw-cutting, removal and disposal of asphalt concrete damaged as part of the work, cold-milling, subgrade compaction, aggregate base, base course asphalt concrete, surface course asphalt concrete, and re-striping.
- Payment: Payment for Bid Item 20 will be made for each blow-off assembly disconnect and reinstatement completed along pipe segments that are not CIPP lined.
21. Bid Item 21: Abandonment of Existing Inline Valve Prior to CIPP Lining
- Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for abandoning an existing inline valve, prior to CIPP lining, including potholing of existing utilities, saw-cutting, excavation, dewatering, cutting and removal of existing piping valve, fittings, etc., over-excavation, crushed rock bedding, installation of new pipe spool, connections to existing piping, backfilling and compacting, disposal of all excess materials, and surface restoration including but not limited to turf, plant and irrigation replacement, curb and gutter replacement, and pavement restoration in accordance with the requirements of the jurisdictional agency. Pavement restoration shall include, but may not necessarily be limited to, the required saw-cutting, removal and disposal of asphalt

concrete damaged as part of the work, cold-milling, subgrade compaction, aggregate base, base course asphalt concrete, surface course asphalt concrete, and re-striping.

Payment: Payment for Bid Item 21 will be made for each inline valve abandoned.

22. Bid Item 22: Record Drawings

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment utilized for maintaining and submitting accurate record drawings showing the final surveyed location of piping, maintenance access structures, air/vacuum valve assemblies, blow-off assemblies, and other components of the work, in accordance with Section 01720.

Payment: Payment for Bid Item 22 will be made at the lump sum bid price after the receipt and acceptance of record drawings by the Owner.

23. Bid Item 23: Materials Testing

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment utilized for conducting materials testing, in accordance with Section 02223.

Payment: Payment for Bid Item 23 will be made on a per test basis not to exceed the lump sum bid price after the receipt and acceptance of test data by the Owner.

24. Bid Item 24: Owner-Directed Demobilization and Remobilization

Description: Payment for stopping work, and all work incidental thereto, in one area and moving equipment, materials, and labor to another area along the project alignment and start work in the new area as directed by the Owner. Unit price shall cover all costs associated with mobilizing to another location on the project at the direction of the Owner, and remobilizing back to the skipped area to complete work. This bid item is intended for, but not limited to, work stoppages. The bid price shall include installation of traffic control at the new work area, if required. The Contractor shall maintain traffic control around the original work area as necessary to facilitate Owner staff in safely accessing the excavation as required.

Payment: Payment for Bid Item 24 will be made at the bid unit price per occurrence.

25. Bid Item 25: Permit Fee Allowance

Description: Payment for permit fees, including encroachment permits from the City of Corona, County of Riverside, and Caltrans, shall not exceed the pre-determined allowance identified in the bid schedule.

Payment: Payment for Bid Item 25 shall be made as identified in the bid schedule.

26. Bid Item 26: Field Order Allowance

Description: Payment for field orders, and all work incidental thereto, shall not exceed the pre-determined allowance identified in the bid schedule. Issuance of a written field order by the Owner will be required prior to billing any amount under this bid item. In the event that no field orders are issued by the Owner, the Contractor shall not be entitled to any payment from this bid item. This bid item is intended for small field adjustments to facilitate construction activities, and does not replace or circumvent the contract change order process. Field orders shall be documented in the same manner as change orders under the contract.

Payment: Payment for Bid Item 26 shall be made as identified in the bid schedule on a case by case basis.

27. Bid Item 27: Test Pits from STA 221+40 to STA 108+50.

Description: Payment for all work, and all work incidental thereto, performed including all labor, supervision, materials, and equipment purchased, installed and utilized for conducting test pits of Reach 4 from STA 221+50 to STA 108+50 per Special Conditions, Article 1, including traffic control, potholing of existing utilities, saw-cutting, excavation, dewatering, backfilling and compacting, disposal of all excess materials, and surface restoration including but not limited to turf, plant and irrigation replacement, curb and gutter replacement, and pavement restoration in accordance with the requirements of the jurisdictional agency. Pavement restoration shall include, but may not necessarily be limited to, the required saw-cutting, removal and disposal of asphalt concrete damaged as part of the work, cold-milling, subgrade compaction, aggregate base, base course asphalt concrete, surface course asphalt concrete, and re-striping.

Payment: Payment for Bid Item 27 will be made at the unit bid price.

28. Additive Bid Item 28: Fiberglass Reinforced CIPP Liner for 24" PVC Pipe, Including Post-Installation CCTV, and Pressure Testing

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for furnishing and installation of fiberglass reinforced CIPP liner, including draining of brine line, CCTV inspection after lining to observe liner conditions, CIPP liner installation, end seals installed at maintenance access structures, pressure testing, and Contractor's requirements for sampling and testing of liner properties and installed thickness.

Payment: Payment for Bid Item 28 will be made by lineal foot for the actual quantity of 24-inch brine pipe lined by the fiberglass reinforced CIPP process as measured from the end of the host pipe to the end of the host pipe between points of access, and as approved by the Owner.

29. Additive Bid Item 29: Non- Reinforced CIPP Liner for 24" PVC Pipe, Including Post-Installation CCTV, and Pressure Testing

Description: Payment for all work, and all work incidental thereto, performed includes all labor, supervision, materials, and equipment purchased, installed and utilized for draining of the brine line, furnishing and installation of non-reinforced CIPP liner, including CCTV inspection after lining to observe liner conditions, CIPP liner installation, end seals installed at maintenance access structures, pressure testing, and Contractor's requirements for sampling and testing of liner properties and installed thickness.

Payment: Payment for Bid Item 29 will be made by lineal foot for the actual quantity of 24-inch brine pipe lined by the non-reinforced CIPP process as measured from the end of the host pipe to the end of the host pipe between points of access, and as approved by the Owner.

## **PART 2 - PRODUCTS**

### **2.01 GENERAL PROGRESS PAYMENT REQUIREMENTS**

- A. Payment for work performed shall be in accordance with the Cost Loaded CPM. The Construction Manager will verify measurements and quantities. Each activity necessary to manage and complete the work is identified on the contract schedules. Each activity will be assigned its respective value, a portion of the contract price, as shown on the Summary of Values.

- B. Payment for all lump sum costs and services incurred on this Contract shall be based on the earned value of work accomplished during the reporting period. Earned value is determined by the completion percentage of each activity applied to the total value of the activity. No construction activity shall be deemed 100% complete until the Contractor has completed the physical check out and inspection of the completed work and has submitted a signed inspection form to the Construction Manager.
- C. Unit price items will be paid based on quantities (or equivalent quantities) installed.
- D. Earned value is derived from the current status of the Contractor Construction Schedule as determined by the monthly schedule status submittals (Reference Section 01311). Each schedule status submittal is reviewed and approved by the Construction Manager prior to the Contractor obtaining approval for the Summary of Earned Values or quantities installed and the Application for Payment.
- E. The Contractor shall not take advantage of any apparent error or omission on the Drawings or Specifications, and the Construction Manager shall be permitted to make corrections and interpretations as may be deemed necessary for fulfillment of the intent of the Contract Documents at no additional cost to the Owner.
- F. Six (6) copies of the application for payment shall be submitted. Application shall be made monthly.
- G. The Application for Payment contains all necessary references and attachments that substantiate the invoice for progress payment, (e.g., certified payrolls, labor reports, progress schedule data, and Summary of Earned Values). It must be preceded or accompanied by schedule and status data in accordance with Section 01311.
- H. The Application for Payment is submitted according to the format and instructions provided by the Owner and is based on work completed through the last day of the previous month or through the date established by the Construction Manager.

## **PART 3 - EXECUTION**

### **3.01 MONTHLY REVIEWS/APPLICATION FOR PAYMENT**

- A. Monthly review meetings between the Contractor and the Construction Manager will be held within seven (7) days prior to the payment application date designated by the Construction Manager. Prior to the monthly review meeting, the Contractor will submit the Contractor's copy of the Record Drawings as directed by the Construction Manager, an updated schedule and a signed application for payment showing a Summary of Earned Values for the reporting and payment period so that the Construction Manager can compare earned values to available status data. The Contractor shall make any adjustments to the Record Drawings, updated schedule, and payment applications deemed necessary. Upon completion of the adjustments the Construction Manager will sign the payment upon request and forward it to the Owner. The Construction Manager will determine payment amounts if agreement with Contractor is not reached.

### **3.02 PAYMENT FOR PRODUCTS STORED ON SITE**

- A. The Contractor may request payment for products (material and/or equipment) which will be incorporated in the work and which will be delivered and stored on-site. Payments for products stored at the site shall be based upon the cost of all acceptable materials and equipment not

incorporated in the work but delivered and suitably stored at the site; provided each such individual item has a value of more than \$5,000 and will become a permanent part of the work. The Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that the Contractor has received the materials and the equipment free and clear of all liens, charges, secured interests, and encumbrances and evidence that the materials and equipment are covered by appropriate property insurance as specified in the insurance provisions and other arrangements to protect the Owner's interest.

**END OF SECTION**

## **SECTION 01300**

### **SUBMITTALS**

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

##### **1.01 GENERAL**

- A. Where required by the Specifications, the Contractor shall submit descriptive Information which will enable the Engineer to determine whether the Contractor's proposed materials, equipment or methods of work are in general conformance with the design concept and are in compliance with the drawings and specifications. The information to be submitted shall consist of drawings, specifications, descriptive data, certificates, samples, test results and other such information, all as specifically required in the specifications.

##### **1.02 CONTRACTOR'S RESPONSIBILITIES**

- A. The Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the material, equipment or method of work shall be as described in the submittal. Submittals shall contain all required information, including satisfactory identification of items, units and assemblies in relation to the contract drawings and specifications. The Contractor shall verify that the material and equipment described in each submittal conforms to the requirements of the specifications and drawings. Unless otherwise approved by the Engineer, submittals shall be made only by the Contractor, who shall indicate by a signed stamp on the submittals that the Contractor has checked the submittals and that the work shown conforms to contract requirements and has been checked for dimensions and relationship with work of all other trades involved. If the information shows deviations from the specifications or drawings, the Contractor, by statement in writing accompanying the information, shall identify the deviations and state the reason(s) therefore. The Contractor shall insure that there is no conflict with other submittals and shall notify the Engineer in each case where the Contractor's submittal may affect the work of another Contractor. The Contractor shall insure coordination of submittals among the related crafts and subcontractors.
- B. The Contractor may authorize a material or equipment supplier to deal directly with the Engineer with regard to a submittal. The Contractor, however, shall be responsible for the accuracy and completeness of information contained in all submittals.

##### **1.03 TRANSMITTAL PROCEDURE**

- A. General: Submittals regarding material and equipment shall be accompanied by a transmittal form from the Contractor. A separate form shall be used for each specific item, class of material, equipment, and items specified in separate, discrete sections for which a submittal is required. However, submittals for various items shall be made with a single form only when the items taken together constitute a manufacturer's package or are so functionally related that expediency indicates checking or review of the group or package as a whole.

Each set of submittals or samples shall be attached to the submittal transmittal form. The submittal number shall be made up of two parts: XXX-ZZ. The XXX shall be sequential number 001 for the first item submitted, 002 for the second, etc. The ZZ shall be the sequential number of a specific submittal or resubmittal (01 for the first submittal, 02 for the first resubmittal, etc.). All submittals shall show the contract title, shall indicate the name of the vendor, and shall indicate

when the equipment and/or material will be required by the construction schedule. The submittal must be adequate to permit a comprehensive review without further reference to the Contractor. The documents submitted must be separately identifiable on the Contractor's submittal transmittal form.

- B. Deviation from Contract: If the Contractor proposes to provide material or equipment which does not conform to the specifications and drawings, it shall indicate so under "deviations" on the submittal transmittal form accompanying the submittal copies.
- C. Submittal Completeness: Submittal which do not have all the information required to be submitted, including deviations, shall be considered as not complying with the intent of the contract and are not acceptable and will be returned without review.
- D. Review of Second and Subsequent Resubmittals: Costs associated with the review of the second resubmittal and any subsequent resubmittals shall be borne by the Contractor. The Contractor will be billed for these costs by the Owner. Costs due may be deducted from progress payments due the Contractor by the Owner.

#### **1.04 REVIEW PROCEDURE**

- A. When the contract requires a submittal, the Contractor shall submit the specified information as follows to the Engineer for review:
  - 1. Six (6) copies of all the submitted information. When individual sheets in the submittal exceed 8-1/2 inches by 11 inches, one original and six (6) reduced size copies may be submitted.
  - 2. Only three (3) sets of sample materials need to be submitted.
- B. Unless otherwise noted in these Specifications, within fifteen (15) calendar days after receipt of the submittal by the Engineer, the submittal shall be reviewed and returned. The returned submittals shall indicate one of the following actions:
  - 1. If the review indicates that the material, equipment or work method is in general conformance with the design concept and complies with the Drawings and Specifications, submittal copies will be marked "NO EXCEPTIONS TAKEN". In this event, the Contractor may begin to implement the work method or incorporate the material or equipment covered by the submittal.
  - 2. If the review indicates limited corrections are required, copies will be marked "MAKE CORRECTIONS NOTED". The Contractor may begin implementing the work method or incorporating the material and equipment covered by the submittal in accordance with the noted corrections. Where submittal information will be incorporated in Operation and Maintenance Data, a corrected copy shall be provided.
  - 3. If the review reveals that the submittal is insufficient or contains incorrect data, copies will be marked "REVISE AND RESUBMIT". Except at its own risk, the Contractor shall not undertake work covered by this submittal until the submittal has been revised, resubmitted and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED".
  - 4. If the review indicates that the material, equipment or work method is not in general conformance with the design concept or in compliance with the Drawings and Specifications, copies of the submittal will be marked "REJECTED - SEE REMARKS". Submittal with deviations which have not been identified clearly may be rejected. Except at his own risk, the Contractor shall not undertake work covered by such submittal until a



new submittal is made and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED".

- C. Resubmittals shall include the entire submittal package. No changes shall be made by the Contractor on resubmittals other than those changes indicated on the reviewed submittal, unless such changes are clearly described in a letter accompanying the resubmittal.
- D. All submittal review cost incurred by the Engineer for review of second and subsequent shop drawing submittals due to incompleteness shall be borne by the Contractor.

#### **1.05 EFFECT OF REVIEW OF CONTRACTOR'S SUBMITTAL**

- A. Review of drawings, methods of work, or information regarding materials or equipment the Contractor proposes to provide, shall not relieve the Contractor of its responsibility for errors therein and shall not be regarded as an assumption of risk or liability by the Engineer or the Owner, or by any officer, employee or subcontractor thereof, and the Contractor shall have no claim under the contract on account of the failure or partial failure, of the method of work, material, or equipment so reviewed. A mark of "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED" shall mean that the Owner has no objection to the Contractor, upon its own responsibility, using the plan or method of work proposed, or providing the materials or equipment proposed.

#### **PART 2 - PRODUCTS (NOT APPLICABLE)**

#### **PART 3 - EXECUTION (NOT APPLICABLE)**

#### **END OF SECTION**

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## **SECTION 01301**

### **SCHEDULE OF VALUES**

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

##### **1.01 DESCRIPTION**

This Section defines the process whereby the Schedule of Values (lump sum price breakdown) shall be developed and incorporated into the cost loading function of the Schedule as specified in General Conditions. Monthly progress payment amounts shall be determined from the monthly progress updates of the Schedule activities.

##### **1.02 PRELIMINARY SCHEDULE OF VALUES**

- A. The Contractor shall submit a Preliminary Schedule of Values for all Bid Items for the major components of the Work at the Preconstruction Conference. The listing shall include, at a minimum, the proposed value for the following major work components associated with the Bid Schedule.
1. The total value of each liner installation pit.
  2. The total value of the installation of the CIPP liner, on a per foot basis.
  3. The total value of the construction of the maintenance access structures, type "A" and "B".
  4. The total value of pipeline installed by traditional trenching, based on pipe diameter, including all trenching, bedding, pipe installation, backfill, compaction, cleanup and all incidental work associated with underground pipe installations.
  5. The total value of bypass piping installation on a bypass reach basis.
  6. The total value of air-vac and blowoff disconnect, reinstallations, installations, and refitments.
  7. The total value of miscellaneous structures, including metering and control vaults and discharge structures, including all excavation, installation, backfill, compaction, cleanup and all incidental work associated with structure installation.

The Contractor and Construction Manager shall meet and jointly review the preliminary Schedule of Values and make any adjustments in value allocations if, in the opinion of the Construction Manager, these are necessary to establish fair and reasonable allocation of values for the major work components. Front end loading will not be permitted. The Construction Manager may require reallocation of major work components from items in the above listing if in the opinion of the Engineer such reallocation is necessary. This review and any necessary revisions shall be completed within 15 days from the date of Notice to Proceed.

##### **1.03 DETAILED SCHEDULE OF VALUES**

The Contractor shall prepare and submit a detailed Schedule of Values for the Bid Schedule to the Construction Manager within 30 days from the date of Notice to Proceed. The detailed Schedule of Values shall be based on the accepted preliminary Schedule of Values for major work components. The Construction Manager shall be the sole judge of acceptable numbers, details and description of values

established. If, in the opinion of the Construction Manager, a greater number of Schedule of Values items than proposed by the Contractor is necessary, the Contractor shall add the additional items so identified by the Construction Manager.

- A. The minimum detail of breakdown of the major work components is indicated below. Greater detail shall be provided as directed by the Construction Manager.
  - 1. Mobilization
  - 2. The bypass operations shall defined on a per bypass reach basis.
  - 3. The installation of the maintenance access structures shall be broken down by individual location as required by the Approved Plans.
  - 4. The installation of CIPP liners shall be broken down by type and location as required by the Approved Plans.
  - 5. The installation of air-vac and blowoff facilities shall be broken down by location as required by the Approved Plans.
  - 6. All other work not specifically included in the above items shall be broken down as necessary for establishment of pay and Schedule activity items.

#### **1.04 REVIEW PROCEDURE**

- A. The Contractor and Construction Manager shall meet and jointly review the detailed Schedule of Values within thirty-five (35) days from the date of Notice to Proceed. The value allocations and extent of detail shall be reviewed to determine any necessary adjustments to the values. Any adjustments deemed necessary to the value allocation or level of detail shall be made by the Contractor and a revised detailed Schedule of Values shall be submitted within 40 days from the date of Notice to Proceed.

#### **PART 2 - PRODUCTS (NOT APPLICABLE)**

#### **PART 3 - EXECUTION (NOT APPLICABLE)**

**END OF SECTION**

## SECTION 01311

### PROGRESS SCHEDULE

#### PART 1 - GENERAL

##### 1.01 WORK OF THIS SECTION

- A. This section specifies the scheduling of the work which shall be performed by the Contractor. The development of the schedule, the cost loading of the schedule, monthly payment requisitions and project status reporting requirements of the Contract shall employ computerized Critical Path Method (CPM) scheduling. The CPM Schedule shall be cost loaded based on the schedule of values as approved by the Engineer. The CPM schedule and all reports shall be prepared with Oracle Primavera (P6) Microsoft Windows. Where submittals are required hereunder, the Contractor shall submit four copies of each submittal item.

##### 1.02 CONTRACTOR SUBMITTALS

- A. The Contractor shall submit two short term schedule documents at the Preconstruction Conference which shall serve as the Contractor's Plan of Operation for the initial sixty (60) day period of the Contract Time and to identify the manner in which the Contractor intends to complete all work within the Contract Time. The Contractor shall submit (1) a sixty (60) day Plan of Operation bar chart, and (2) a project overview bar chart type plan for all work as indicated below:
1. 60-Day Plan of Operation: During the initial sixty (60) days of the Contract Time, the Contractor shall conduct Contract operations in accordance with the 60 day bar chart Plan of Operation. The bar chart so prepared and submitted shall show the accomplishment of the Contractor's early activities (mobilization, permits, submittals necessary for early material and equipment procurement, submittals necessary for long lead equipment procurement, CPM submittals, initial site work and other submittals and activities required in the first 60 days).
  2. Project Overview Bar Chart: The overview bar chart shall indicate the major components of the project work and the sequence relations between major components and subdivisions of major components. The overview bar chart shall indicate the relationships and time frames in which the various components of the work will be made substantially complete and placed into service to meet the project milestones. Sufficient detail shall be included for the identification of subdivisions of major components into such activities as (1) flow bypass, (2) pipe inspection, (3) CIPP installation, (4) maintenance access structure installation, and (5) surface repairs within the overall project scope. Planned durations and start dates shall be indicated for each work item subdivision. Each major component and subdivision component shall be accurately plotted on time scale sheets not to exceed 36-inch by 60-inch in size.
- B. The Engineer and the Contractor shall meet to review and discuss the 60-day plan of operations and project overview bar chart within 5 days after they have been submitted to the Engineer. The Owner Representative's review and comment on the schedules shall be limited to Contract conformance with the sequencing and milestone requirements as stated in other sections of the specifications. The Contractor shall make corrections to the schedules necessary to comply with the Contract requirements and shall adjust the schedules to incorporate any missing information requested by the Engineer.

- C. Original CPM Schedule Submittal: Within fifteen (15) days after the commencement date stated in the Notice to Proceed, the Contractor shall submit for review by the Engineer a hard copy of the CPM Network Schedule and the Computerized Schedule Report tabulations. The Contractor shall also submit a standard CD or DVD disk that contain all of the schedule submittal information and data. A new disk with updated information shall be submitted with each change or submission of the CPM schedule. The disk shall contain data compatible with the software described in Paragraph 1.01A above, to generate network diagrams and schedule reports identical to the hard copies submitted. This submittal shall have already been reviewed and approved by the Contractor's Project Manager, Project Superintendent, and the Project Estimator prior to submission. The CPM Schedule shall be a time-scaled network diagram of the "I-j" activity-on-arrow or precedence type. The Network Diagram shall describe the activities to be accomplished and their logical relationships and show the Critical Path. The schedule shall contain sufficient detail and information to cost load the CPM schedule. Each installation and site work activity shall have been cost loaded. The Computerized Schedule Report tabulations shall include the following:
1. Report of activities sorted by Activity Number.
  2. Report of activities sorted by Early Start date.
  3. Report of activities sorted by Total Float.
  4. Report of activities sorted by Responsibility Code. Responsibility Codes shall be established for the Contractor, Resident Engineer, Owner, subcontractors, suppliers, etc. These codes shall be identified in the Network Diagram.
  5. A successor-predecessor report which shall identify the successor and predecessor activities for each activity and ties between schedule activities.
  6. Cost loaded report supporting partial payment request.
- D. Original CPM Schedule Review Meeting: The Contractor shall, within fifteen (15) days from the commencement date stated in the Notice to Proceed, meet with Engineer to review the original CPM schedule submittal. The Contractor shall have his Project Manager, Project Superintendent, and the Project Scheduler in attendance. The Owner Representative's review will be limited to the submittal's conformance to the Contract requirements. However, the review may also include:
1. Clarifications of the design intent, process, and startup requirements.
  2. Directions to include activities and information missing from the submittal.
  3. Requests to the Contractor to clarify the schedule.
- E. Revisions to the Original CPM Schedule: Within thirty (30) days after the commencement date stated in the Notice to Proceed, the Contractor shall have revised the original CPM schedule submittal to address all review comments from the original CPM schedule review meeting and resubmit the network diagrams and reports for the Owner Representative's review. The Engineer, within five (5) days from the date that the Contractor submitted the revised schedule will either (1) accept the schedule and cost loaded activities as submitted, or (2) advise the Contractor in writing to review any part or parts of the schedule which either do not meet the Contract requirements or are unsatisfactory for the Engineer to monitor the project's progress and status or evaluate monthly payment requests by the Contractor. The Engineer may accept the schedule with conditions that the first monthly CPM schedule update be revised to correct deficiencies identified. When the schedule is accepted, it shall be considered as the "Original CPM Construction Schedule" until an updated schedule has been submitted. The Owner reserves the right to require that the Contractor adjust, add to, or clarify any portion of the schedule which may later be discovered to be insufficient for the monitoring of the Work or approval of partial

payment requests. No additional compensation will be provided for such adjustments, additions or clarifications.

- F. Acceptance: The acceptance of the Contractor's schedule by the Engineer will be based solely upon the schedule's compliance with the Contract requirements. By way of the Contractor assigning activity duration's and proposing the sequence of the Work, the Contractor agrees to utilize sufficient and necessary management and other resources to perform the work in accordance with the schedule. Upon submittal of a schedule update, the updated schedule shall be considered the "current" project schedule.
1. Submission of the Contractor's progress schedule to the Owner or Engineer shall not relieve the Contractor of the Contractor's total responsibility for scheduling, sequencing, and pursuing the Work to comply with the requirements of the Contract Documents, including adverse effects such as delays resulting from ill-timed work.
- G. Following the acceptance of the Contractor's Original Construction Schedule, the Contractor shall monitor the progress of the Work and adjust the schedule each month to reflect actual progress and any changes in planned future activities. Each schedule update submitted must be complete including all information requested in the original schedule submittal and that shown in Subsection 1.6. Each update shall continue to show all work activities including those already completed. These completed activities shall accurately reflect the "as built" information by indicating when the work was actually started and completed.
1. Neither the submission nor the updating of the Contractor's original schedule submittal nor the submission, updating, change or revision of any other report, curve, schedule or narrative submitted to the Engineer by the Contractor under this Contract, nor the Engineer's review or acceptance of any such report, curve, schedule or narrative shall have the effect of amending or modifying, in any way, the Contract completion date or milestone dates or of modifying or limiting, in any way, the Contractor's obligations under this Contract. Only a signed, fully executed change order can modify these contractual obligations.
  2. The monthly schedule update submittal will be reviewed with the Contractor during a monthly construction progress meeting held on the twentieth (20th) work day of each month. The goal of these meetings is to enable the Contractor and the Engineer to initiate appropriate remedial action to minimize any known or foreseen delay in completion of the Work and to determine the amount of Work completed since the last month's schedule update. The status of the Work will be determined by the percent complete of each activity shown in the Network Diagram. These meetings are considered a critical component of the overall monthly schedule update submittal and the Contractor shall have appropriate personnel attend. As a minimum, these meetings shall be attended by the Contractor's Project Manager and General Superintendent. Within seven (7) working days after the monthly progress meeting, the Contractor shall submit the revised CPM Network Diagram, the revised CPM computerized tabulations as noted in this Section, the revised successor/predecessor report, the Project Status Reports as defined by Subsection 1.6 and the Contractor's Application for Payment. Within five (5) working days of receipt of the above noted revised submittals, the Engineer will either accept or reject the monthly schedule update submittal. If accepted, the percent complete shown in the monthly update will be the basis for the Application for Payment to be submitted by the Contractor. If rejected, the update shall be corrected and resubmitted by the Contractor before the Application for Payment for the update period can be processed.
- H. Schedule Revisions: The Contractor shall highlight or otherwise identify all changes to the Network Diagram Schedule Logic or activity duration's made from the previous schedule. The

Contractor shall modify any portions of the CPM schedule which become infeasible because of activities behind schedule or for any other valid reason.

### **1.03 CHANGE ORDERS**

- A. Upon approval of a change order, or upon receipt by the Contractor of authorization to proceed with additional work, the change shall be reflected in the next submittal of the CPM schedule by the Contractor. The Contractor shall utilize a sub-network in the schedule depicting the changed work and its effect on other activities. This sub-network shall be tied to the main network with the appropriate logic so that a true analysis of the Critical Path can be made.

### **1.04 CPM STANDARDS**

- A. Definitions: CPM, as required by this Section, shall be interpreted to be generally as outlined in the Association of General Contractors (AGC) publication, "The Use of CPM in Construction," except that either "I-j" arrow diagrams or precedence diagramming format may be utilized. In the case of conflicts between this specification and the AGC Document, this specification shall govern.
- B. Construction Schedules: Construction schedules shall include a graphic network diagram and computerized construction schedule reports as described in Section 1.02 C.
- C. Networks: The CPM network shall be in a form of a pure logic diagram or, if directed or approved by the Engineer, a time scaled "I-j" activity-on-arrow or precedence type diagram and may be divided into a number of separate sheets with suitable match lines relating the interface points among the sheets. Individual sheets shall not exceed 36-inch by 60-inch.
- D. Except for a pure logic diagram, all construction activities and procurement shall be indicated in a time-scaled format and a calendar time line shall be shown along the entire sheet length. Each activity arrow or node shall be plotted so that the beginning and completion dates of each activity are accurately represented along the calendar time line. All activities shall be shown using the symbols that clearly distinguish between critical path activities, non-critical activities and free float for each non-critical activity. All activity items shall be identified by their respective Activity Number, Responsibility Code, Work Duration, and their Dollar Value. All non-critical path activities shall show their total float time in scale form by utilizing a dotted line or some other graphical means.
- E. Duration Estimates: The duration estimate indicated for each activity shall be computed in working days and shall represent the single best estimate considering the scope of the activity work and resources planned for the activity. Except for certain non-labor activities, such as delivery of materials, activity duration shall not exceed ten (10) working days nor be less than one (1) working day unless otherwise accepted by the Engineer.
- F. Float Time: Float time shall be as follows:
  - 1. Definition: Unless otherwise provided herein, float as referenced in these documents, is total float. Total float is the period of time measured by the number of working days each non-critical path activity may be delayed before it and its succeeding activities become part of the critical path. If a non-critical path activity is delayed beyond its float period, that activity then becomes part of the critical path and controls the end date of the project. Thus, the delay of the non-critical path activity beyond its float period will cause delay to the project itself.



2. Float Ownership: Neither the Owner nor the Contractor owns the float time. The project owns the float time. As such, liability for delay of the project completion date rests with the party actually causing delay to the project completion date. For example, if Party A uses some, but not all of the float time and Party B later uses the remainder of the float time as well as additional time beyond the float time, Party B shall be liable for the costs associated with the time that represents a delay to the project's completion date. Party A would not be responsible for any costs since it did not consume all of the float time and additional float time remained, therefore, the project's completion date was unaffected.

#### **1.05 SCHEDULE REPORTS (FORMAT)**

- A. Schedule Reports: Schedule Reports shall be prepared based on the Construction Schedule, and shall include the following minimum data for each activity:
  1. Activity Numbers and Responsibility Codes.
  2. Contract Number
  3. Estimated Activity Duration.
  4. Activity Description.
  5. Activity's Percent Completion.
  6. Early Start Date (Calendar Dated).
  7. Early Finish Date (Calendar Dated).
  8. Late Start Date (Calendar Dated).
  9. Late Finish Date (Calendar Dated).
  10. Status (Whether Critical).
  11. Total Float for Each Activity.
  12. Free Float for Each Activity.
  13. Cost Value for Each Activity.
- B. Project Information: Each Schedule Report shall be prefaced with the following summary data:
  1. Project Name.
  2. Contractor.
  3. Contract No.
  4. Type of Tabulation.
  5. Project Duration.
  6. Contract Completion Date (revised to reflect time extensions).
  7. The Commencement Date Stated in the Notice to Proceed.
  8. The Data Date and Plot Date of the Network Diagram.
  9. If an update, the new schedule completion date.

#### **1.06 PROJECT STATUS REPORT**

- A. In addition to the submittal requirements for the CPM scheduling identified in this Section, the Contractor shall provide monthly project status reports (Overview Bar Chart and a written

narrative report) to be submitted in conjunction with the revised CPM Schedules as specified in Subsection 3.0. Status reporting shall be in the form specified below.

- B. The Contractor shall prepare and submit monthly an Overview Bar Chart schedule of the major project components. The overview bar chart schedule shall be a summary of the current CPM schedule (original and as updated and adjusted throughout the entire construction period). It shall be limited to not more than two sheets which shall not exceed 36-inch by 60-inch. The major project components shall be represented as time bars which shall be subdivided into various types of work including demolition, excavation and earthwork, yard piping, concrete construction, mechanical, electrical and instrumentation installations. Major components shall include each new structure by area designation, sitework, modifications to existing structures, tie-ins to existing facilities and plant startups.

Each major component and subdivision shall be accurately time scale plotted consistent with the project overview bar chart specified above. It shall represent the same status indicated by early start and finish activity information contained in the latest update of the CPM schedule. In addition, a percent completion shall be indicated for each major component and subdivision. The initial submittal of the overview bar chart schedule shall be made at the time that the revised original CPM schedule is submitted to the Engineer (30 days from the commencement date stated in the Notice to Proceed). The Contractor shall amend the overview schedule to include any additional detail required by the Engineer. The Contractor shall include any additional information requested by the Engineer at any time during the construction of the Work.

- C. The Contractor shall prepare monthly written narrative reports of the status of the project for submission to the Engineer. Written status reports shall include:
1. The status of major project components (Percent Complete, amount of time ahead or behind schedule) and an explanation of how the project will be brought back on schedule if delays have occurred.
  2. The progress made on critical activities indicated on the CPM schedule.
  3. Explanations for any lack of work on critical path activities planned to be performed during the last month.
  4. Explanations for any schedule changes, including changes to the logic or to activity durations.
  5. A list of the critical activities scheduled to be performed in the next two month period.
  6. The status of major material and equipment procurement.
  7. The value of materials and equipment properly stored at the site, but not yet incorporated into the work-in-place.
  8. Any delays encountered during the reporting period.
  9. An assessment of inclement weather delays and impacts to the Work progress.
- D. The Contractor may include any other information pertinent to the status of the project.
- E. The Contractor shall include additional status information requested by the Engineer.

#### **1.07 INCLEMENT WEATHER PROVISIONS OF THE SCHEDULE**

- A. The Contractor's construction schedule shall include at least (ten) 10 lost days on the CPM schedule's critical path due to inclement weather.

## **1.08 LIQUIDATED DAMAGES**

- A. If any submittal required by this Section is determined by the Engineer to be incomplete or is submitted later than the Owner-authorized contract completion date, the Owner will suffer financial loss and, accordingly, liquidated damages will be assessed against the Contractor as specified in these Contract Documents.

## **PART 2 - MATERIALS (NOT APPLICABLE)**

## **PART 3 - EXECUTION (NOT APPLICABLE)**

**END OF SECTION**

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**SECTION 01400**  
**QUALITY CONTROL**

**PART 1 - GENERAL**

**1.01 WORK INCLUDED**

- A. Inspection and testing, duties and responsibilities, Contractor's quality control requirements, Owner's inspection and testing.

**1.02 REFERENCE STANDARDS**

- A. Work shall conform to Federal, State and local building codes, electrical codes, fire codes, mechanical codes and plumbing codes, and to Occupational Safety and Health Act (OSHA) Regulations. Nothing in Contract Documents shall be interpreted as permission or direction to violate any governing code or ordinance.

**1.03 SUBMITTALS**

- A. Certificates of compliance shall be submitted at Owner's request.
- B. Transcripts of results of acceptance to verify quality of manufactured products shall be submitted at Owner's request.

**1.04 CONTRACTOR'S QUALITY CONTROL**

- A. Arrange work to be readily accessible and easy to operate and maintain where detail drawings are not included in Contract Documents, supplementary drawings or shop drawings and submittals.
- B. Combinations of manufactured equipment shall be fully compatible and work safely and successfully as a unit. Furnish necessary mountings, couplings and appurtenances with each unit.
- C. Relocations or adjustment of existing facilities noted in Contract Documents shall be done as needed. If existing items are lost or damaged during construction, replace with new items of equal or better quality.
- D. Make field measurements needed to fabricate and install Work before ordering or beginning work. Make minor changes in alignments and dimensions as needed to remedy or avoid utilities and structural conflicts.

**1.05 PROJECT CONDITIONS**

- A. Ascertain suitability of native soil for backfill before submitting bid. If native soil is found to be unsuitable, provide suitable material for meeting compaction requirements at no additional cost to Owner.
- B. Items furnished shall be capable of fulfilling their intended purpose in environment in which they are installed. Allow for local temperature extremes, climactic conditions and corrosive environments where necessary to ensure proper functioning of furnished products.

## **1.06 WORK PAYMENT**

- A. Payment for Contractor-provided testing required in Contract Documents will be included in the price bid for items of work for which Contractor-provided testing is specified.

## **PART 2 - PRODUCTS (NOT APPLICABLE)**

## **PART 3 - EXECUTION**

### **3.01 INSPECTION**

- A. Notify Owner's Representative of time and place of shop tests five working days before they begin. Complete manufacturing operations, checks, adjustments and tests before factory inspection.
- B. The Owner's Representative will inspect products after delivery and throughout construction process. Products will be subject to rejection at any time on account of failure to meet Contract Documents even though samples may have been accepted as satisfactory at place of manufacture.
- C. Before backfilling, request inspection by the Owner's Representative to verify proper installation of buried work.
- D. Before finishing, request inspection by the Owner's Representative to verify that no surfaces to receive product have defects or errors which could result in poor or potentially defective application or cause latent defects in workmanship.

### **3.02 INSTALLATION/APPLICATION/ERECTION**

- A. Install products according to manufacturer's installation and warranty requirements. Install products to tolerances recommended by manufacturer. Unless otherwise shown, install equipment true and level using precision gauges and levels.
- B. Refer variances between manufacturer's installation instructions and Contract Documents to the Owner's Representative.
- C. Construct walls plumb, straight, level, square and true.
- D. Welds, unless otherwise shown, shall be continuous, watertight, and conforming to Structural Welding Code of American Welding Society. Welds shall be free of sharp points or edges.
- E. Pipework, valves, fittings, tanks and appurtenances shall have no leaks at design pressures.
- F. Exposed surfaces shall be finished in appearance. Grind smooth exposed welds. Round or chamfer corners of exposed structural shapes for personal protection.
- G. Prime and paint exposed surfaces of ferrous products, piping, and conduit except for stainless steel or galvanized or sherardized surfaces or unless otherwise shown. Clean painted surfaces and touch up bare or marred spots with finish to match factory finish.

### **3.03 FIELD QUALITY CONTROL**

- A. Maintain complete set of Contract Documents at jobsite field office or superintendent's truck at all times.
- B. Frequency of sampling and testing shall be as shown, and shall be performed at such other times as necessary to document contract compliance.
- C. Notify the Owner's Representative and regulating authorities three days before field tests.
- D. Perform field tests in presence of the Owner's Representative who will record results.
- E. Repair damage to work that is not cause for rejection.
- F. Repair, correct or replace work failing tests or inspection. Repeat tests until results satisfy specifications. Repair damages resulting from tests

**END OF SECTION**

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## SECTION 01500

### CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

- A. Provide all necessary temporary facilities and controls required for execution of the Work, including, but not limited to mobilization, storage yard, field offices, sheds, temporary utilities, construction aids, barriers and enclosures, security, establishing fire protection system, access roads and parking areas, and demobilization. The costs of these temporary facilities and controls are considered incidental to the Work and shall be included in the Contractor's bid proposal.
- B. Construction of this project may expose the Contractor's workmen to the hazard of materials underground and materials from nearby existing facilities, such as propane gas, sewer gas, wastewater and wastewater sludge with varying degrees of treatment. The Contractor shall certify that he is experienced and qualified to anticipate and meet the safety and health requirements of this project. The Contractor shall require his personnel to observe proper safety and hygienic precautions.
- C. The Contractor shall be solely responsible for the storage, usage, handling and application of all hazardous materials encountered or provided as part of the Work.
- D. No attempt is made to set out in detail means or methods necessary to satisfy requirements. Recognition of requirements is made to assist Contractor in the identification of necessary costs.

##### 1.02 RELATED WORK

- A. Section 01300: Submittal Procedures
- B. Section 01505: Mobilization

##### 1.03 SUBMITTALS

- A. Furnish the following submittals:

Submittal	Description
Storage Yard	Description of Contractor's proposed methods for dust and noise control in storage areas
	Property owner's written approval of storage yard
Construction Facilities Plan	Layout, equipment, materials and procedures proposed for construction of temporary power, telephone, lighting, heating, water, sanitation, field offices and sheds, storm water management, security, etc., as necessary

##### 1.04 MOBILIZATION/DEMobilIZATION

- A. When using Owner's property to park, service and store products, obtain approval from Owner's Representative.

- B. Remove temporary structures and controls before inspection for Final Completion or when directed. Clean and repair damage caused by installation or use of temporary facilities and controls. Restore existing facilities used during construction to specified or original condition.

## **1.05 TEMPORARY UTILITIES**

- A. Power: Construction power shall be purchased or generated on-site for constructing Work where existing outlets are not available.
- B. Construction Water: Unless otherwise stated, Contractor shall, at his expense, arrange to develop water sources, furnish and install piping, valves and appurtenances necessary to connect to the water supply, provide backflow protection and supply labor and equipment to collect, load, transport, and apply water as needed for compaction, testing, concrete work, dust control dust, and other construction use.

Use of a local water agency's water will be under the control of that agency, and the Contractor shall follow any requirements or provisions set forth by the agency regarding its use. The Contractor shall obtain a construction water meter from the water agency to indicate and document water usage. The Contractor(s) shall be required to pay for the water used in the prosecution of the Work. If water is taken through fire hydrants, use one 2½-inch connection for construction water. Reserve the remaining outlets for use by fire department. The Contractor shall not draw water from any fire hydrant, except to extinguish a fire, without obtaining permission from the jurisdictional authority.

Construction water shall be clean and free from objectionable deleterious amounts of acids, alkalis, salts, or organic materials. The Contractor shall use reclaimed water, where applicable and when available.

- C. Drinking Water: Provide at all times abundant supply of safe drinking water for employees and give orders against the use of, for drinking purposes, any water in the vicinity of the Work known to be unsafe.
- D. Sanitation: Provide suitable and conveniently located temporary toilets, sanitation, and hand washing facilities for employees in full compliance with the rules and regulations of the State Board of Health and/or other bodies having jurisdiction. The Contractor shall not use any Owner sanitation facilities. Contractor provided toilets and sanitations facilities shall be left at the site until final inspection has been made after which temporary sanitation facilities shall be removed and site left in neat and sanitary condition. Toilets shall be cleaned at least once per week.

Do not interrupt brine conveyance and disposal. Should the Contractor disrupt existing brine facilities, convey brine in closed conduits and dispose of in the brine system. Submit a proposed bypass system for Owner review. Do not permit brine to flow in trenches or be covered by backfill.

Dispose of all rubbish, surplus, and waste materials of any nature occurring at the work site offsite in accordance with local, state, and federal codes and ordinances governing locations and methods of disposal, all at the contractor's expense. Establish regular intervals of collection and disposal of such materials and waste. Take care to prevent spillage on haul routes. Contain and remove any such spillage and clean the area.

- E. Communications: Construction telephone shall be available at site at all times Work is in progress. Cellular phones are acceptable.

- F. Lighting: Install temporary lighting when Work is performed at night or under deficient daylight conditions to ensure correct performance, to provide for inspection, and to maintain lighting levels during working hours not less than lighting levels required by OSHA and state agency administering OSHA regulations.

#### **1.06 CONSTRUCTION AIDS**

- A. Provide scaffolding, rigging, hoisting and services needed to safely deliver, support, move, and install products. Remove same from premises when installation is complete.
- B. Comply with OSHA requirements and applicable laws, ordinances, rules, regulations, and orders pertaining to construction machinery and equipment, hoists, cranes, scaffolding, staging, materials handling facilities, tools, appliances and other construction aids. OSHA requirements shall govern where mandatory; otherwise Contractor shall comply with the most stringent requirements.
- C. Provide railings, kick plates, enclosures, safety devices, and controls required by Laws and Regulations and as required for adequate protection of life and property.
- D. Design temporary supports with adequate safety factor to assure adequate load bearing capability.
1. When requested, submit design calculations by professional engineer registered in the State of California prior to application of loads.
  2. Submitted design calculations are for information and record purposes only.
- E. Prepare and implement accident prevention and safety program to include, but not be limited to:
1. Exercise precautions throughout construction for protection of persons and property.
  2. Observe safety provisions of applicable Laws and Regulations.
  3. Guard machinery and equipment, and eliminate other hazards.
  4. Make reports required by authorities having jurisdiction, and permit safety inspections of the Work.
  5. Before commencing construction Work, take necessary action to comply with provisions for safety and accident prevention.
- F. Adequately identify and guard hazardous areas and conditions by visual warning devices and, where necessary, physical barriers. Devices shall conform to minimum requirements of OSHA and State agency which administers OSHA regulations where Project is located.
- G. Mark or guard excavations in areas from which public is excluded, in manner appropriate for hazard.
- H. On multi-level structures, provide safety protection that meets requirements of OSHA and State agency which administers OSHA regulations where Project is located.

#### **1.07 ACCESS ROADS AND PARKING AREAS**

- A. Construct and maintain access or haul roads required for project, and personnel movement into and within construction and excavation areas, subject to prior approval by Owner. Access facilities shall provide for surface drainage. Install and remove earth ramps as needed to protect

concrete and asphalt curbs. Areas used for temporary access, haul roads and access from public roads shall be graded and restored to original. Grade conditions to Owner's satisfaction.

- B. Do not block any access roads or entrances unless otherwise approved by the Owner's Representative. Maintain at least one-way traffic. Provide all signs, traffic cones and other barriers for traffic detours.
- C. Emergency access routes shall remain open at all times. Do not excavate, store equipment, or otherwise restrict access for emergency vehicles on emergency routes. When work is required in emergency routes, provide necessary traffic control, including flagmen, to provide emergency access. Submit a plan to the Owner's Representative for review within 30 days of the Notice to Proceed to maintain emergency access and operator access to all operating facilities during construction. As circumstances and conditions change, submit revised access plans to the Owner's Representative. Immediately restore and pave emergency routes when Work is finished.
- D. Treat access roads and parking areas as needed to control dust and prevent tracking of mud onto paved streets. Use a street sweeper daily to remove any mud or debris tracked from project site to public streets.
- E. There is no specific contractor parking area identified for this project. It is the Contractor's responsibility to locate and contract for a suitable parking area in order to effectively execute the Contract work. The Contractor shall provide to the Owner written documentation of approval of any parking area from the owner of said property. All costs for this task shall be included in the bid proposal and no additional compensation will be allowed.
- F. Any damage to off-site and on-site roads must be repaired in kind at no cost to Owner or property owner.
- G. The Contractor shall ensure all employees, representatives, material suppliers and others acting for the Contractor, shall maintain on-site access roads free of mud. Under no circumstances shall vehicles leaving the site track mud off the site onto the public right-of-way.
- H. Consult with Owner and governing authorities and establish thoroughfares which will be used as haul routes and site access.

#### **1.08 TEMPORARY CONTROLS**

- A. Noise Control: Comply with local noise ordinances and OSHA regulations for acceptable noise exposure, including scheduling Work to comply with noise ordinances and installing sound barriers, if needed to comply with noise ordinances and Contract Documents. All internal combustion engines in vehicles and construction equipment shall be equipped with manufacturer-recommended mufflers. Do not operate noise-generating construction equipment except during normal working hours unless written permission is obtained from Owner's Representative. Back up bells on equipment may only be operated between 7:00 a.m. and 5:00 p.m. Air compressors and diesel engine operation will not be permitted between 5:30 p.m. and 7:00 a.m. Temporary generators will be permitted to operate between 7:00 a.m. and 5:00 p.m. providing the generator noise level will not exceed 85 dB at 3 feet. If noise at doorstep of any private residence exceeds allowable noise specified, Owner may require Contractor to pay each affected household \$200 per day to cover expenses of alternative lodging.
- B. Fire Prevention: Fire danger shall be minimized at and near construction site. Protect surrounding private property from fire damage resulting from construction operations. Provide sufficient

number of fire extinguishers of type and capacity required to protect the Work and ancillary facilities, per local fire code requirements.

- C. Storm Water Management: Conduct storm water management operations and maintain controls as needed to prevent runoff or seepage from entering excavations and to control erosion in conformance with Federal, State and local regulations. Legally dispose of surface and subsurface water. Do not allow mud, silt, or debris to flow on to adjoining or public property.
- D. Protection of Existing Improvements: Exercise care to avoid injury to existing improvements, adjacent property, and trees and shrubbery that are not to be moved. Protect from injury or damage trees and shrubbery that are not to be moved, poles, fences, signs, property corners, all underground pipe and conduit, and other improvements within or near the work area. If such objects, or improvements, are injured or damaged by reason of the Contractor's operations, they shall be replaced or restored, at the Contractor's expense, to a condition at least as good as prior to construction operations.
- E. Protection of Existing Utilities: For the purpose of the Contract Documents, utilities shall be considered as including but not limited to, and irrespective of ownership: pipelines (including irrigation lines), conduits, transmission lines, and appurtenances of "Public Utilities" (as defined in the Public Utilities Act of the State of California), and those of private industry, business, or individuals solely for their own use or their tenants; and storm drains, sanitary sewers, street lighting, traffic signal systems, duct banks, telephone cables, power lines, cable television, fiber optic lines, gas lines, petroleum lines, transmission cables, and completely buried structures, hereafter referred to as utilities.

Owner has endeavored to locate and indicate on the Contract Documents, utilities that exist within the limits of the project, as derived from information provided by the owners of such utilities. However, the accuracy or completeness of the utilities indicated on the Contract Documents is not guaranteed. No attempt has been made to show service connections on the Contract Documents. It shall be the Contractor's responsibility to make his own investigations, including exploratory excavations to determine exact location of utilities shown on the Contract Documents and locations of service connections prior to earthwork operations and to notify the Owner's Representative of any utility which has been incorrectly shown or omitted from the Contract Documents.

Protect in place, at no additional cost to Owner, all existing utilities running parallel to proposed pipelines, sewers, conduits, structures and all other improvements. This includes protection in place of all backfill above the utility and pipe bedding.

Work required in connection with utilities, because of interference with Contract Work, will be performed and paid for as specified in this section. However, when directed or approved by the Owner, changes in line or grade of any structure being built may be made in order to avoid utilities. Any additional costs because of such changes will be paid for as Extra Work.

The right is reserved to governmental agencies and to owners of utilities to enter at any time upon any street, alley, right-of-way, or easement for the purpose of making changes in their facilities and for the purpose of maintaining and making repairs.

The Contract Documents provide guidance regarding disclosure of utilities. This section provides guidance as to payment for protection relocation, or disposal of utilities shown and not shown on the Plans.

Contractor shall not begin any trench or excavation work until the Contractor has contacted a regional notification center as defined in California Government Code Section 4215 and the location of all utilities within the Project limits has been identified. If a Contractor hits a utility, the Contractor shall take prompt action to make sure employees and the public are not endangered. If a water line is hit, the trench must be evacuated immediately. If an oil or gas line is hit, all employees and the public shall be evacuated from the immediate vicinity. All conduits shall be treated as though they are high voltage or high current electrical conduits. Do not tamper with any conduit until the owner is called and power shut off. In all cases, call the Fire Department and utility owner immediately.

- F. Advance Notification and Exposure of Utilities – In Advance of Work: It shall be the Contractor's responsibility to determine and notify those agencies requiring advance notification for inspection or other purposes before beginning construction in any jurisdictional area of any agency. Provide a minimum of forty-eight (48) hours advance notice to the various agencies before beginning construction in the area unless specified advance times and other requirements are stated in the Contract Documents or in permit requirements.

Make exploratory excavations to determine the true location and depth of all utilities shown on the Contract Documents. Determine the type of material and condition of any utility which may be affected by or affect the Work. Conduct exploratory excavations at least 1,000 feet ahead of a pipe trench heading a minimum of five (5) days in advance of planned construction to provide sufficient lead-time to resolve utility conflicts.

All costs incurred in exposing utilities shall be included in the various bid items and no additional allowance will be made therefor.

- G. Utility Relocations by Owner: When it is stated in the Contract Documents that a utility is to be relocated, altered, or reconstructed by other than the Contractor, Owner will conduct all negotiations in respect to such work and the Work will be done at no cost to the Contractor. No additional compensation will be given for delays or inconvenience by others to finish their work on schedule due to unforeseen difficulties.
- H. Utility Relocation by Contractor as Shown in the Contract Documents: When work on a utility is specified on the Contract Documents or indicated on the drawings to be done by the Contractor, but is not included as a separate bid item, the Contractor shall make all arrangements and coordinate with the owner of the utility regarding schedule for performance of the Work. Any costs for such Work shall be included in the unit prices or included in the lump sum amounts bid for the various Contract items. Submit a proposed method of relocation or protection of the utility for review. Review by the Owner will not relieve the Contractor of any responsibility.
- I. Utility Relocation by Contractor for Its Convenience: The temporary relocation or the alteration of any utility, desired by the Contractor solely for convenience in the performance of the Work, to a position or condition other than that provided for on the Contract Documents shall be the Contractor's own responsibility. Make all arrangements with the property owners regarding such work. Any costs of such work for the Contractor's own convenience shall be absorbed in the unit prices or included in the lump sum amounts bid for the various Contract items at no additional cost to the Owner.
- J. Unknown Utility Installation by Others During Contract Work: In the event a utility is disclosed or installed subsequent to the award of Contract, such utility not being indicated on the Contract Documents, with reasonable accuracy, and when said utility is found to occupy the space required to be occupied by a part of the permanent works, that, in the judgment of the Owner's Representative, such utility requires location, relocation, removal, repair of damages, alteration,

support or protection, Owner will determine the method and manner of accomplishing such work and may order the Contractor to do so pursuant to a change order issued by Owner. The Work shall be performed in accordance with Contract Documents provided or approved by Owner and in accordance with the following:

1. When said utility is found to occupy the space required to be occupied by a part of the permanent Works to be constructed under the Contract or parallel to the permanent works and within vertical planes on each side at a distance away equal to the maximum allowable trench width measured at a point 12 inches above the top of the pipe, exclusive of branches or other facilities, as specified in the Specifications for Earthwork, or to be within the specified excavation pay lines (when such are specified in the Contract Documents); Owner shall arrange for the relocation or alteration of said utility or require the Contractor to do the same.
2. Utilities found to cross the excavation, but not intercepting the permanent works to be constructed or interfering with the construction will be maintained in place at the Contractor's expense. Utilities which interfere with the construction technique in use will be protected or relocated.
3. When said utility is more or less parallel with, and any portion of it does not lie within the vertical planes specified herein above, or does not lie within the excavation pay lines (when such are specified or shown on the Contract Documents); advise Owner and owner thereof, and in cooperation with the owner of the utility, provide and place the necessary support for proper protection to guarantee continuous and safe operation of the utility.
4. Continuous sanitary sewer service shall be maintained at all times. Should any existing sanitary sewer or manhole extend within the proposed excavation, submit a method of construction or support for approval by the Owner and assume all responsibilities therefor. All costs for such work shall be borne by the Contractor.
5. If the Work is done by others, the Contractor shall provide time and working space for protection and relocation as required.
6. Where undisclosed utilities are discovered and located by the Contractor when performing this Contract, immediately notify Owner in writing.
7. Owner will compensate the Contractor for its direct costs of locating, relocating, removal, repair, support or protection of the undisclosed utilities, together with the cost of equipment used for the Work necessarily idled during such Work. The Contractor will be granted an extension of time for the completion of the Contract equal to the time determined by Owner, to be reasonably necessary to perform the Extra Work and Owner will not assess liquidated damages against the Contractor for delay in completion of the Work when such delay was caused by the failure of Owner to provide for the removal or relocation of such utility facilities.
8. The Contractor will not be entitled to extra compensation or an extension of time when Extra Work is required to repair damage to undisclosed utilities caused by the failure of the Contractor to exercise reasonable care. The Contractor will not be entitled to any compensation for indirect or consequential costs or damages incurred as a result of the Extra Work required.

K. Monuments and Survey Markers: Do not disturb any monuments or survey markers without permission from the Owner's Representative, and bear the expense of resetting any monuments or survey markers which may be disturbed without permission.

L. Protect Landscaping and Vegetation: During the progress of construction take proper precautions to prevent damage to trees, plants, and shrubs. The Contractor shall be responsible for the protection of all the trees, shrubs, fences, and other landscape items adjacent to or within the work area, unless specific removals are indicated on the Contract Documents. The piling of excavated material, equipment, construction materials, or anything else on top of branches or against the tree trunks will not be permitted. Notify the Owner of any potential impact to any protected tree, plant, or other landscape item and shall not damage, move or otherwise harm said tree, plant, or landscape item, prior to investigation and direction from the Owner. Costs associated with damage to any protected tree, plant, or landscape item shall be the sole responsibility of the Contractor.

M. Historical or Archaeological: Should any items having historical or archaeological interest be discovered in the course of any construction activities, halt work and notify the Owner's Representative immediately. Perform an on-site inspection under direction of the Owner-retained Archaeologist. The on-site inspection shall be used to make recommendations to the Owner and other applicable jurisdictions for determination of mitigation actions to be taken.

If cultural resources are encountered at any time during project excavation, avoid altering these materials and their context until a qualified archaeologist has evaluated the situation. Project personnel will not collect or retain cultural resources. Prehistoric resources include, but are not limited to, chert or obsidian flakes, projectile points, mortars, and pestles; and dark, friable soil containing shell and bone, dietary debris, heat-affected rock, or human burials. Historic resources include stone or adobe foundations or walls; structures and remains with square nails; and refuse deposits (glass, metal, wood, and ceramics) often found in old wells and privies.

Records of site inspections will be maintained in the Owner's administrative records. Following construction, a post-construction site inspection will be made to determine the degree to which the final site modifications have impacted site descriptions and future access.

N. Human Remains: In the event of accidental discovery or recognition of any human remains, the County Coroner must be notified immediately and construction activities halted. If the remains are found to be Native American, the Native American Heritage Commission must be notified within 24 hours. Follow the guidelines of the Native American Heritage Commission regarding the treatment and disposition of the remains.

O. Protection from Weather: Heat and ventilate work areas to protect the Work from damage by freezing, high temperatures, weather, and to provide safe environment for workers.

P. First Aid Information: Post first aid facilities and information posters conforming to requirements of OSHA and other applicable Laws and Regulations in readily accessible locations.

Q. Vector Control: Provide rodent and pest control as necessary to prevent infestation of construction or storage areas. Employ methods and use materials which will not adversely affect conditions at the site or on adjoining properties.

R. Environmental Contamination: Provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious substances from construction operations. Provide equipment and personnel required to perform emergency measures required to contain any spillages and to remove contaminated soils or liquids. Excavate and dispose of any contaminated earth off-site and replace with suitable compacted fill and topsoil. Take special measures to prevent harmful substances from entering public waters. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to the river, drainages, or in sanitary or storm sewers. Provide systems for control of atmospheric pollutants.



Prevent toxic concentrations of chemicals. Prevent harmful dispersal of pollutants into the atmosphere. All Contractor's equipment used during construction shall conform to all current federal, state and local laws, ordinances, regulations and standards.

- S. Odor Control: Furnish all labor, materials, and equipment required to carry out effective measures wherever and as often as necessary to prevent the discharge of a nuisance odor from its operation into the atmosphere in such quantity as will violate the regulations of any legally constituted authority. During construction, the Contractor shall notify the Owner's Representative at least forty-eight (48) hours in advance of any potential odor-causing activities scheduled for construction.

- T. Chemicals: The following paragraph does not relieve the Contractor from its responsibility for obtaining prior approval from the Owner for chemical usage when otherwise required.

Provide four (4) copies of the MSDS to the Owner's Representative for all chemicals used during construction or operational activities, prior to bringing them on site, whether defoliant, soil sterilant, herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, which shall show approval of either the U.S. Environmental Protection Agency or the U.S. Department of Agriculture. Use of all such chemicals and disposal of residues shall be in strict accordance with the printed instructions of the manufacturer.

- U. Lead Paint Notification: The Contractor is hereby notified the facility under this Contract may contain Lead (Pb), Chromium (Cr) and Molybdenum (Mo).

If any paints containing Lead or Chromium are to be physically disturbed or made airborne during the progress of the Work by activities such as abrasive blasting, welding, cutting or torch burning; provide appropriate worker protection in accordance with OSHA Lead in Construction Standard and any other applicable regulations.

All paint which is removed or disturbed during the progress of the Work or any demolition debris which contains these paints, either of which contains in excess of 5 ppm (mg/l) Lead or Hexavalent Chromium when tested in accordance with the Waste Extraction Test (WET) method of the California Code of Regulations, Title 22, shall be disposed of as hazardous waste. The Contractor shall be responsible for such disposal in accordance with all applicable laws and regulations.

- V. Explosives for Blasting: The use of explosives on the Work shall not be permitted.

- W. Protection of Wildlife: If any work in this Contract might disturb wildlife, even in urban areas, hire a Biological Monitor to provide assistance in the field to assure that biological resources are protected and that project-specific mitigation measures are implemented. The Biological Monitor shall be qualified for the tasks to be performed. If endangered or threatened species are present in the project area and require removal or relocation, the Biological Monitor must hold the appropriate permits and approvals for access and capture or marking of the species of concern. Specific activities of the Biological Monitor may include the following:

1. Marking areas to be protected from construction activity.
2. Observing construction activities and their impacts on biota.
3. Capturing and relocating biota as necessary to protect them from construction activities.

Prior to the removal of healthy trees at a worksite, a Biological Monitor must survey the trees to determine if active bird nests are present. If nests of sensitive species are present, tree removal

will be scheduled to avoid the nesting season. Provide a written record of whether tree removal is require, and as needed, hire a biologist or provide documentation that nesting birds (listed species of special interest of those as threatened or endangered) are not present in the trees to be removed.

- X. Groundwater Dewatering: Construct all permanent improvements in areas free from water. Construct and maintain all permanent or temporary slopes, dikes, levees, drainage ditches, and sumps necessary for removal of water from work areas. Design, furnish, install, maintain, and operate all necessary pumping and other dewatering equipment required for dewatering the various work areas and for maintaining the foundation and other work areas free from water from any and all sources whatsoever.

Perform no excavation below any standing water level regardless of water source until the area has been dewatered. Perform dewatering by use of filtered well points or gravel-packed deep wells in such a manner as to protect adjacent structures.

Dewatering shall be accomplished in a manner that will prevent loss of fines from the foundation, will maintain stability of all excavated slopes and bottoms of excavations, and will permit all construction operations to be performed in the dry. Perform dewatering of excavations to the extent required to permit placement of compacted fill materials in the dry and to prevent sloughing of the excavation side slopes. Lower the groundwater level a minimum of three feet below foundation grade prior to foundation preparation and placement of structural foundations. During the placement and compaction of fill or bedding materials, maintain the water level at every point within the limits of fills being placed a minimum of three feet below fill placement level.

Dewatering shall consist of furnishing all approved Plans, labor, equipment and materials, performing all Work to design, construct, and operate dewatering systems, maintaining in a safe and dewatered condition the areas on which the construction Work will be performed, and removing the dewatering system upon completion of the Work.

Submit for the Owner's review, drawings and data showing his proposed plan for dewatering of all work areas, which shall include the planned method of dewatering, excavation and shoring plan, location and capacity of such facilities as dewatering wells, well points, pumps, sumps, collection and discharge lines, standby units proposed, and protective fills and ditches required for control of groundwater and surface water. The plan for dewatering shall be submitted to the Owner's Representative 15 days prior to the start of construction. Furnish such other information as may be required for the complete understanding and analysis of the dewatering and excavation plan by the Owner's Representative.

Review by the Owner's Representative will not relieve the Contractor of the responsibility for the adequacy of the dewatering and excavation plan or for furnishing all equipment, labor and materials necessary for performing the various parts of the Work. If, during the progress of the Work, it is determined by the Owner's Representative the dewatering system and excavation plan are inadequate or the Contractor's plan of construction is inoperative, the Contractor shall, at his expense, furnish, install, and operate such additional dewatering equipment and make such changes in other features of the plan or operation as may be necessary to perform the Work in a manner satisfactory to the Owner.

Monitor settlement and groundwater levels around existing structures during dewatering. Keep and evaluate daily records of settlement and groundwater levels. Notify the Owner's Representative immediately if excessive settlement or a significant drop in groundwater level is recorded.

Furnish standby equipment of sufficient size and capacity to insure continuous operation of the dewatering system as designed. Repair any damage or settlement to the foundation or other work or any existing structures caused by temporary or permanent failure or operation of the dewatering system to the satisfaction of the Owner at the Contractor's expense. The Contractor should consider the use of recharge systems or other methods of protecting of existing facilities. The Contractor will be required to perform the dewatering and to maintain the permanent work areas for the length of time as necessary for the Work under this contract. Upon completion of the dewatering and control of water operation, remove all temporary works and dewatering facilities in a manner satisfactory to the Owner.

Dispose of water from dewatering operations in a suitable manner in conformance with the National Pollutant Discharge Elimination System (NPDES) Permit, as approved by the Regional Water Quality Control Board, Santa Ana Region (RWQCB).

Y. Waterway Protection: Enforce strict on-site handling rules to keep construction and maintenance materials out of receiving waters, including, but not limited to:

1. Store all reserve fuel supplies only within the confines of a designated construction staging area.
2. Refuel equipment only within designated construction staging area.
3. Regularly inspect all construction vehicles for leaks.

Contractor shall prepare a Spill Prevention, Control, and Countermeasure Plan (SPCCP). The plan must include measures to be taken in the event of an accidental wastewater spill.

Clearly mark and stake on the ground the construction and staging areas shown on the Plans. Heavy equipment use outside this area shall be prohibited. The construction staging areas must be designed to contain contaminants such as oil, grease, and fuel products, so they do not drain towards receiving waters or storm drain inlets. If heavy-duty construction equipment is stored overnight adjacent to a potential receiving water, drip pans must be placed beneath the machinery engine block and hydraulic systems.

Construct a silt fence around disturbed soil areas and take all measures necessary to prevent erosion and transport of sediment into a waterway in accordance with a project Stormwater Pollution Prevention Plan. Stockpile excavated material within the construction staging area and cover stockpiles with plastic sheets to prevent erosion.

## **1.09 FUGITIVE DUST**

- A. Employ dust control measures to Owner's satisfaction throughout the project duration. Dust control operations shall prevent construction dust from harming or annoying persons living in or occupying buildings near Work. Do not allow fugitive dust to be visible beyond Owner facilities' property lines.
- B. Use reasonable and typical watering and dust preventative techniques to reduce fugitive dust emissions. Furnish all labor, equipment, and means required (including watering or soil binders) and carry out effective measures wherever and as often as necessary to prevent its operation from producing dust in amounts damaging to property, cultivated vegetation, or domestic animals; or that are causing a nuisance as determined by the Owner. All unpaved demolition and construction areas shall be wetted as necessary during excavation and construction, and temporary dust covers shall be used to reduce dust emissions and meet SCAQMD Rule 403.

- C. Cover or wet loads of excavated material or rubbish leaving site or of material being imported to prevent blowing dust.
- D. Spread soil binders on site, unpaved roads, and parking areas when needed to control dust and wind-blown particles from causing a nuisance or violating air quality standards.
- E. Submit a dust control plan and obtain the Owner's approval before beginning work off paved roads or any activity that could stir up dust.

#### **1.10 ENGINE EMISSIONS**

- A. Comply with all laws, ordinances, rules, regulations, and orders pertaining to air pollution.
- B. During construction, trucks and vehicles in loading or unloading queues shall be kept with their engines off, when not in use, to reduce vehicle emissions. Polluting construction activities shall be phased and scheduled to avoid emissions peaks.
- C. Maintain equipment engines in proper tune and operate construction equipment so as to minimize exhaust emissions. Do not discharge air pollutants (dust, smoke, or other air contaminants) into the atmosphere in such quantities that they will cause a violation of the regulations of any legally constituted authority.
- D. Visible emissions from any engine shall not be as dark as or darker than No. 1 in the Ringleman Chart for a period or periods aggregating more than three (3) minutes per hour per SCAQMD Rule 401 – Visible Emissions.

#### **1.11 PORTABLE ENGINE-DRIVEN EQUIPMENT**

- A. Comply with the air quality regulations pertaining to portable engines with rated horsepower of 50 bhp or greater and other applicable portable equipment by meeting the following minimum requirements:
  - 1. The engines or other applicable portable equipment shall have an SCAQMD permit or be registered with CARB.
  - 2. The engines furnished shall satisfy the latest applicable emissions standards, as set forth in Title 13 of the California Code of Regulations (Article 5, Sections 2450-2466) and Title 40 of the Code of Federal Regulations, Part 89.

- B. The engines shall be equipped with a non-resettable elapsed operating time meter. Activity reports shall be submitted to regulators as required.

- C. Portable engines and other portable equipment that are permitted with SCAQMD shall meet the following minimum requirements:

If any of the Contractor or subcontractor engine or equipment is to be located at Owner facilities for more than twelve (12) consecutive months, provide the Owner with all information necessary for Owner to revise its Title V operating permit. This information shall include, but is not limited to, detailed equipment description, specifications, emissions information, dispersion modeling, permits, registrations, monitoring records, and source tests reports required by the permit for the subject equipment. Submit this information to the Owner no later than the end of the sixth month the equipment is located at Owner facilities. If the Contractor fails to provide the specified information in the specified time frame, the Contractor shall bear all fees, costs, and penalties including, but not limited to, filing fees, attorney fees, fees associated to acquire necessary

offsets, fees for excessive emissions, etc. associated with Owner obtaining necessary variances from SCAQMD.

#### **1.12 FUELING OF ENGINE-DRIVEN EQUIPMENT**

- A. Provide responsible personnel in direct control of all vehicle and equipment fueling operations at all times to prevent fuel spills. All fueling must be continually monitored at all times and shall comply with SCAQMD Rule 461, Gasoline Transfer and Dispensing.

#### **1.13 RECORDS OF VOLATILE ORGANIC COMPOUNDS**

- A. Maintain usage records of volatile organic compound (VOC) materials according to SCAQMD Rule 109 and pay annual fees according to Rule 301. The usage records shall contain, at the minimum, the following information:
  - 1. Manufacturer's Name
  - 2. Product Name/Number
  - 3. Quantity (in gallons)
  - 4. VOC Content (in lb/gal)
  - 5. SCAQMD Rule Number or California Code section

#### **1.14 TRAFFIC REGULATION**

- A. Implement whatever traffic control measures may be required to facilitate the Work of this contract, at no additional cost to Owner.

#### **1.15 SAFETY AND HEALTH REGULATIONS**

- A. Comply with Safety and Health Regulations for Construction, promulgated by the Secretary Standards Act, as set forth in Title 9, C.F.R. Copies of these regulations may be obtained from Labor Building, 14th and Constitution Avenue NW, Washington, DC 20013.
- B. Comply with the provisions of the Federal Occupational Safety and Health Act, as amended, and with all applicable State of California, Department of Industrial Relations, Construction Safety Orders (Cal-OSHA) requirements.
- C. Comply with all federal, state, and local laws, regulations, and requirements for handling and storage of chemicals.
- D. Wear hardhat, safety vest, safety glasses, and steel toe shoes at all times while at Owner-owned properties and facilities.
- E. Monitor for explosive gas levels.
- F. Confined Spaces:
  - 1. The Contractor's attention is directed to the General Industry Safety Orders of the State of California Article 108, Confined spaces, Section 5157. (Title 8 of California Code of Regulations, Sections 5156, 5157, and 5158.)
  - 2. The Contractor shall retain a copy of said regulations on the worksite.

3. State law and Owner's policy on confined spaces require a two-week advance notification from the Contractor for work within confined spaces, submittal of Contractor's confined space work procedures and rescue plan, compliance with Entry Permit procedures, participation in a hazard assessment review of planned precautions and a debriefing upon completion of the confined space operation. Compliance with the General Industry Safety Orders remains the Contractor's responsibility and Owner review is for general compliance and coordination only.
4. This notice is provided for bidding purposes. In accordance with the General Industry Safety Orders, Section 5157(c)(8), Owner will provide available information to the Contractor for each confined space location.

#### **1.16 CONFINED SPACE WORK AREA(S)**

- A. Work areas for which entry is expected to be in accordance with Section 5157 (c)(5), Non-Permit required Confined Spaces;
- B. Work areas in which hazardous or potentially hazardous atmospheric conditions exist or may exist shall be in accordance with Section 5157 (d), (e) and (f) (Permit-Required Confined Space):
  1. Manholes
  2. Sewer pipes
  3. Tanks
  4. Vaults

It is the Contractor's obligation to satisfy all requirements of Title 8, CCF 5157.

Attention is also directed to "Sewer System Entry", Appendix E to CCF 5157.

NOTE: A permit required confined space may be reclassified by Owner Safety staff to a non-permit required confined space at the Contractor's expense through the provisions set forth in 5157 (c)(7), or a listed non-permit required work area may become a permit required confined space work area.

The importance of working safely in confined spaces cannot be over emphasized. Due to the continuous flow of sewage and contaminant that may be contained therein, the atmosphere may suddenly and unpredictably become lethally hazardous. Where there is conflict between applicable safety orders, laws and regulations and policies, the more stringent measures shall apply.

- C. Job Hazard Analysis: Comply with the provisions of the Hazards Communication Act (Section 5194, Title 8-CAC). If hazardous substances are to be utilized or handled in the course of the Contractor's activities, before commencing each task conduct a job hazard analysis for the Owner. The analysis shall document the following:
  1. Hazard communications program.
  2. Safety precautions for all persons who may be exposed to hazardous substances utilized by the Contractor as presented in the Construction Safety Plan.
  3. Number of people to be involved in the Work.
  4. Written verification that all safety measures will be carried out.
  5. Written verification that required safety equipment is available.

- D. Be especially careful to avoid fire hazards in all welding, cutting, and equipment fueling. Furnish all safety devices, fire extinguishers and fire watch personnel required to protect the Work and provide for worksite and public safety.
- E. Excavation Plans for Worker Protection Required by California Labor Code Section 6705:
1. The specifications require that all excavations be performed, protected, and supported as required for safety and in a manner set forth in the operation rules, orders, and regulations prescribed by the CAL/OSHA Construction Safety Orders.
  2. Submit to Owner for acceptance, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of any trench or trenches five (5) feet or more in depth. The plan shall be prepared and signed by a California registered civil or structural engineer as required by all applicable laws including CAL/OSHA construction safety orders. As a part of the plan, a note shall be included stating the registered civil or structural engineer certifies the plan complies with the CAL-OSHA Construction Safety Orders, or that the registered civil or structural engineer certifies the plan is not less effective than the shoring, bracing, sloping, or other provisions of the Safety Orders.
  3. The Owner or its Engineer(s) may have made investigations of subsurface conditions in areas where the work is to be performed. If so, these investigations are identified in the Contract Documents and the records of such investigations are available for inspection at the Owner's office. The detailed plans showing the design of shoring, etc., which the Contractor is required to submit to Owner for acceptance in advance of excavation, will not be accepted by Owner if the plan is based on subsurface conditions which are more favorable than those revealed by the investigations made by Owner or its Engineer(s); nor will the plan be accepted if it is based on soils-related design criteria which are less restrictive than the criteria set forth in the report on the aforesaid investigations of subsurface conditions.
  4. The detailed plans showing the design of shoring, etc., shall include surcharge loads for nearby embankments and structures, for spoil banks, and for construction equipment and other construction loading. The plans shall indicate, for all trench conditions, the minimum horizontal distances from the side of the trench at its top to the near side of the surcharge loads.
  5. Nothing contained in this section shall be construed as relieving the Contractor of the full responsibility for providing shoring, bracing, sloping, or other preventive measures which are necessary for worker protection, nor for the liability resulting from the failure to do so.

#### **1.17 EXCAVATIONS BELOW FOUR (4) FEET**

- A. If any work required by this Contract includes digging trenches or other excavations extending deeper than four (4) feet below the surface, promptly, and before any of the following earth conditions are excavated, moved or otherwise disturbed, notify Owner, in writing, of its findings, including, but not limited to:
1. Material the Contractor believes may be hazardous waste, as defined in Section 25117 of the California Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing law;
  2. Subsurface or latent physical conditions at the site differing from those indicated on the Plans;

3. Unknown physical conditions at the site of any unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract.

Nothing in this section is intended to relieve the Contractor of the responsibility to fully examine the Contract Documents and the site where the work is to be performed in accordance with the General Conditions; to be familiar with all local conditions and federal, state, and local laws, rules and regulations that may affect the performance of any work; to study all surveys and investigative reports about subsurface and latent physical conditions pertaining to the worksite; to perform such additional surveys and investigations as the Contractor deems necessary to complete the work at the bid price; and to correlate the results of all such data with the requirements of the Contract Documents.

If Owner determines that hazardous waste exists and that conditions exist which the Contractor could not discover through reasonable investigations herein, Owner shall notify the Contractor and the Contractor may request a Change Order in accordance with the Contract Documents. Nothing in this section shall relieve the Contractor of the obligation to pay all fees and costs associated with removal and cleanup of any hazardous waste used at, or brought to, the worksite by the Contractor, nor shall this section relieve the Contractor of responsibility for site conditions discoverable by any investigation herein.

In the event a dispute arises between Owner and the Contractor involving hazardous waste and whether site conditions differ materially from those the Contractor could or should have discovered by the investigations required by these Contract Documents, the Contractor shall not be excused from the scheduled completion date provided in the Contract Documents and shall proceed with all work in the manner and in the time required by the Contract Documents.

#### **1.18 SITE SECURITY**

- A. Safely guard all Work, materials, equipment and property from loss, theft, damage and vandalism. Contractor's duty to safely guard property shall include the Owner's property and other private property from injury or loss in connection with the performance of the Contract.
- B. Employ security staff as needed to provide the required security and prevent unauthorized entry.
- C. Contractor shall make no claim against the Owner for damage resulting from trespass.
- D. Party responsible for security shall make good all damage to property of Owner and others arising from failure to provide adequate security.
- E. If existing fencing or barriers are breached or removed for purposes of construction, Contractor shall provide and maintain temporary security fencing equal to the existing in a manner satisfactory to the Owner.
- F. Protect temporary and permanent openings to prevent intrusion by unauthorized persons. Bear responsibility for protection of material on site of the work when openings are not closed. Provide temporary fencing around construction staging area. Fence temporary openings when openings are no longer necessary.
- G. During night hours, weekends, holidays, and other times when no work is performed at site, provide temporary closures or enlist services of security guards to protect temporary openings.



- H. Install and maintain for the duration of construction a remotely monitored site surveillance system to include video cameras mounted on temporary poles. Install surveillance system to provide full video surveillance of site with connection to monitoring station where police can be notified when unauthorized activity occurs.
- I. Maintain security program throughout construction until Owner's acceptance and occupancy precludes need for Contractor's security program.
- J. All costs for security as specified in this Section shall be borne by the Contractor.

#### **1.19 UNIT PRICES**

- A. Payment for mobilization, demobilization, including payment for construction, modification, maintenance, removal and restoration associated with access, and storage facilities, will be included in the price bid for major items of Work for which mobilization is required.
- B. Payment for verification of field dimensions and utility locations will be included in the price bid for items of Work which may require relocation or refitting if field dimensions differ from those shown on plans.
- C. Payment for temporary utilities to be furnished by Contractor for construction use will be included in the price bid for items to which it is appurtenant. Payment under these items will include full compensation for furnishing labor, products, tools and equipment and doing work necessary to develop and furnish necessary equipment for temporary utilities as specified.
- D. Payment for water to be furnished by Contractor for construction use will be included in the price bid for items to which it is appurtenant. Payment under these items will include full compensation for furnishing labor, products, tools and equipment and doing work necessary to develop sufficient water supply and furnishing necessary equipment for applying water as specified. Owner will provide water for construction use without charge to the Contractor.
- E. Payment for power to be furnished by Contractor for construction use will be included in the price bid for items to which it is appurtenant. Payment under these items will include full compensation for furnishing labor, products, tools, and equipment and doing work necessary to obtain and distribute power for construction purposes. Owner will provide incidental power for 120V tools and equipment without charge to the Contractor where Owner utility power is available. Contractor will generate its own power or pay for power usage for tools and equipment requiring 240V or higher voltage.
- F. Payment for construction aids, including scaffolding, rigging, hoisting, and various safety devices will be included in the price bid for items of work for which construction aids during construction is appurtenant.
- G. Payment for constructing and maintaining access roads and parking areas will be included in the price bid for items of work for which access roads and parking areas during construction are appurtenant.
- H. Payment for temporary controls, including noise control, fire prevention, storm water management, protection of existing facilities, protection of existing utilities, advance notification and exposure of utilities in advance of work, utility relocations by the contractor as shown in the contract documents, protection or resetting of monuments or survey markers, protecting landscaping and vegetation, protection from weather, vector control, prevention of environmental contamination, odor control, protection of wildlife, groundwater dewatering and monitoring, and

waterway protection will be included in the price bid for items of work for which temporary controls during construction are appurtenant.

- I. Payment for dust control, including dust palliatives and water supply and application will be included in the price bid for items of work for which dust control during construction is appurtenant.
- J. Payment for compliance with air pollution laws, ordinances, rules, regulations, and orders pertaining to air pollution will be included in the price bid for items of work for which air pollution control during construction is appurtenant.
- K. Payment for traffic control will be included in the price bid for items of work for which traffic control during construction is appurtenant.
- L. Payment for complying with safety and health regulations, including confined space entry procedures and safety provisions, and excavations greater than four feet in depth, will be included in the lump-sum or unit-price bid item for such work as may be required to complete this portion of the Work.
- M. Payment for site security will be included in the price bid for items of work for which site security during construction is appurtenant.

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

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

**END OF SECTION**

## **SECTION 01505**

### **MOBILIZATION**

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

##### **1.01 GENERAL**

- A. Mobilization shall include the acquisition of all permits; moving onto the site of all equipment; furnishing and erecting temporary buildings, and other construction facilities; and implementing security requirements; all as required for the proper performance and completion of the work. Mobilization shall include but not be limited to the following principal items:
1. Moving on to the site of all Contractor's equipment required for construction operations.
  2. Installing temporary construction power, wiring, and lighting facilities.
  3. Establishing fire protection system.
  4. Developing construction water supply as required.
  5. Providing field office trailer for the Contractor (at Contractor's option).
  6. Providing all on-site communication facilities, including telephones and radios for Contractor personnel.
  7. Providing on-site sanitary facilities and potable water facilities for Contractor personnel.
  8. Arranging for, and establishment of, Contractor's storage yard as required. (Contractor is solely responsible for obtaining property owner agreements to use private property for storage or laydown areas per the contract documents.)
  9. Constructing and implementing security features and requirements in compliance with the Contract Documents.
  10. Obtaining all required permits.
  11. Having all OSHA required notices and establishment of safety programs.
  12. Submitting initial submittals.

##### **1.02 CONSTRUCTION FACILITIES PLAN**

- A. Prior to commencement of any field work, the Contractor shall submit a Construction Facilities Plan to Engineer for approval. Said plan shall show the layout, equipment, materials and procedures that Contractor proposes for construction of temporary electrical, telephone, lighting, heating, water, sanitation, field offices and sheds, and other similar site facilities needed for the Work.
- B. The Contractor's site office and other construction facilities shall be of a temporary nature. The Contractor shall be wholly responsible for the security of his site office and laydown area, and for all its materials, equipment and tools at all times.

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

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

**END OF SECTION**

## SECTION 01560

### TEMPORARY ENVIRONMENTAL CONTROLS

#### PART 1 - GENERAL

##### 1.01 EXPLOSIVES AND BLASTING

- A. The use of explosives on the work will not be permitted.

##### 1.02 AIR QUALITY

- A. General: The Contractor shall not create significant direct air quality impacts during the performance of the work. The Contractor shall take corrective measures, as required by the Engineer, to prevent significant air quality impacts during the work period.
- B. Dust Control: The Contractor shall furnish all labor, equipment, and means required and shall carry out effective measures wherever and as often as necessary to prevent its operation from producing dust in amounts damaging to property, cultivated vegetation, or domestic animals, or causing a nuisance to persons living in or occupying buildings in the vicinity. The Contractor shall be responsible for damage resulting from any dust originating from its operations. The Contractor shall provide adequate watering or other dust control measures to control dust on the work site. Dust control shall prevent fugitive dust from leaving the work area. Dust control or ground cover on graded areas left exposed for more than 90 days shall be provided by the Contractor. If necessary, the Contractor shall wash or sweep the adjacent access roads on the construction site to keep adjoining public roads clean.
- C. Equipment Control: All motorized construction vehicles operating onsite for more than 90 days shall have a low NOx emission engine tune-up. Documented proof of tune-ups shall be made available to the Engineer when requested.
- D. Management: The Contractor shall encourage ride sharing among Contractor personnel and shall develop a voluntary ride share program.

##### 1.03 RUBBISH CONTROL

- A. During the progress of the work, the Contractor shall keep the site of the work and other areas used by it in a neat and clean condition, and free from any accumulation of rubbish. The Contractor shall provide sufficient dumpsters and trash containers for collection of rubbish. The Contractor shall dispose of all rubbish and waste materials of any nature occurring at the work site, and shall establish regular intervals, at least weekly, for collection and disposal of such materials and waste. The Contractor shall also keep all roads free from dirt, rubbish, and unnecessary obstructions resulting from its operations. Disposal of all rubbish and surplus materials shall be off the site of construction in accordance with local codes and ordinances governing locations and methods of disposal, and in conformance with all applicable safety laws, and to the particular requirements of Part 1926 of the OSHA Safety and Health Standards for Construction. The Contractor shall not dispose of rubbish or debris into storm drains or stream channels.

#### **1.04 SANITATION**

- A. Toilet Facilities: Fixed or portable chemical toilets shall be provided wherever needed for the use of employees. Toilets at construction job sites shall conform to the requirements of Part 1926 of the OSHA Standards for Construction.
- B. Sanitary and Other Organic Wastes: The Contractor shall establish a regular daily collection of all sanitary and organic wastes. All wastes and refuse from sanitary facilities provided by the Contractor or organic material wastes from any other source related to the Contractor's operations shall be disposed of away from the site in a manner satisfactory to the Engineer and in accordance with all laws and regulations pertaining thereto.

#### **1.05 CHEMICALS**

- A. All chemicals used during project construction or furnished for project operation, whether defoliant, soil sterilant, herbicide, pesticide, disinfectant, polymer, reactant or of other classification, shall be stored in accordance with the manufacturer's instructions. The Contractor shall maintain copies of Material Safety Data Sheets for all chemicals used or furnished by the Contractor. Use of all such chemicals and disposal of residues shall be in strict accordance with the printed instructions of the manufacturer.
- B. All chemicals used during the project construction or furnished for project operation, whether defoliant, soil sterilant, herbicide, pesticide, fertilizer, disinfectants, polymers, reactants, fuel, oil, hydraulic fluid, detergent, paint, solvent, glue, or any other classification, shall be stored within a containment area that minimizes contact of the chemicals and the storage containers with precipitation and surface water flows due to precipitation or flows from adjacent areas. If precipitation or surface water flows contact the chemicals or the storage containers, the Contractor shall notify the Engineer to determine if the surface water has been contaminated or may be allowed to be discharged to the storm drains or stream channels. If the surface water flows have become contaminated due to contact with the chemicals or the storage containers, the Contractor shall provide for removal and/or treatment of the surface water flows at no additional costs to the Owner. If spills occur in the containment area, the Contractor shall immediately notify the Engineer and shall contain and clean up the spill to prevent spilled material from entering storm drains, stream channels, or groundwater or from being absorbed by the underlying pavement or soil.
- C. All chemicals shall be stored, handled, and used in compliance with the appropriate regulatory agency requirements.

#### **1.06 HAZARDOUS MATERIALS, WASTE AND UNKNOWN PHYSICAL CONDITIONS**

- A. The Contractor shall collect waste oil, used oil filters, other waste petroleum materials, and any other Contractor generated hazardous materials. Remove and legally dispose of all waste petroleum products and any other Contractor generated hazardous materials at suitable disposal facilities off of the job site at the Contractor's expense.
- B. On site temporary fuel storage facilities shall be constructed to comply with current regulations. Such facilities shall be diked to contain any fuel spills. Fuel tanks shall be properly grounded.
- C. The Contractor shall park construction vehicles in locations designated by the Engineer. The Contractor shall provide oil drip pans to contain any oil leakage from construction vehicles.

- D. If conditions listed below are found during construction, or if any other conditions are found during construction that may be detrimental to the Owner's facilities being constructed, or to the health and safety of the public, the Contractor shall promptly notify the Owner.
1. Material that the Contractor or Construction Manager believes may be hazardous waste, as defined in Section 25117 of the Health and Safety Code, and is thus required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing law. If such material is discovered, Contractor shall immediately cease work and shall not disturb the job site except as required to protect public safety.
  2. Subsurface or latent physical conditions at the site differing from those indicated.
  3. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided in the Contract.
- E. The Contractor shall promptly inform the Owner of any such conditions found during construction. The Owner shall investigate the conditions, and if it finds that the conditions do materially differ from those shown or expected, or do involve material that may be hazardous waste, Contractor shall cease work in the impacted area. If material that may be hazardous waste is discovered, the Contractor shall insure that the appropriate government agencies are contacted prior to any further work being performed and that a solution is implemented.

#### **1.07 PROGRESS CLEANING**

- A. The Contractor shall maintain areas free of waste materials, debris, and rubbish. The site shall be maintained in a clean and orderly condition. Broom all concrete or other finished work areas at least once per month, prior to each progress payment request. Where material or debris has washed or flowed into or has been placed in existing watercourses, ditches, shoreline areas or elsewhere, remove such material or debris and legally dispose of it during the progress of the work.
- B. Remove debris and rubbish from channels, wet wells, clarifiers, pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

#### **1.08 SITE MAINTENANCE**

- A. The Contractor is responsible for site maintenance in the Contractor's work area, laydown area, and in all areas impacted by the Contractor's work activities. Such site maintenance activities include but are not limited to dust control, rubbish control, fence repair, maintenance of construction access roads and parking lots, and maintenance of erosion and sediment control facilities.
- B. The Engineer may direct the Contractor to perform site maintenance activities in other areas of the project site. The cost of such site maintenance activities in areas other than those identified in Paragraph 1.08A will be reimbursed to the Contractor in accordance with the contract documents.

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

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

**END OF SECTION**



## **SECTION 01570**

### **TRAFFIC REGULATION**

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

##### **1.01 GUIDANCE**

- A. The Contractor shall comply with the guidance provided by the Local Authorities, the State Department of Transportation, Specification Requirements, Permit Restrictions, and any other Governing Source, when regulating traffic on public roads.
- B. Contractor shall comply with requirements of, in order of primacy, permits issued by jurisdictional agencies, the approved plans in the Construction Documents, and these traffic regulation specifications.
- C. The following documents and all their requirements and practices are hereby incorporated by reference:
  - 1. State of California Department of Transportation Manual on Uniform Traffic Control Devices for Streets and Highways (CAMUTCD), edition in effect by the appropriate jurisdictional agency on the date shown at the end of the Notice Inviting Bids.
  - 2. Work Area Traffic Control Handbook (WATCH Manual), edition in effect by the appropriate jurisdictional agency on the date shown at the end of the Notice Inviting Bids.
  - 3. State of California Department of Transportation Department Standard Plans and Standard Specifications (herein referred to as "Standard Specifications")

##### **1.02 PUBLIC CONVENIENCE, PUBLIC SAFETY AND MAINTAINING TRAFFIC**

- A. The Contractor shall at all times conduct operations in a manner causing the minimum obstruction and inconvenience to public traffic. The Contractor shall not interfere with the normal operation of public transit vehicles unless otherwise authorized. Open trenches and excavations shall be provided with adequate barricades in accordance with the approved traffic control plan or the requirements of the agency of jurisdiction. At night, lights shall mark all open work and obstructions. The Contractor shall install and maintain all signs, lights, flare, barricades, traffic plates, railings, runways, stairs, bridges, and other equipment necessary to safeguard the public. Safety instructions received from governmental authorities shall be followed, but compliance with such instructions shall not diminish the Contractor's responsibility or liability for accidents to workers or damage or injury to persons or property. The Contractor shall take immediate action to correct any condition adversely affecting public safety.
- B. Contractor shall erect construction warning signs at least 30-days prior to any lane closure activity. Provide signs at each end of the project site and at all significant intersections. The construction zone signs shall remain in place and be maintained in good condition for the entire duration of the construction activity. See Paragraph 2.03 herein for specifications for Special Signs. The advanced warning signs shall provide the following information at a minimum:
  - 1. Limits of work including street names.
  - 2. Dates of construction.

- C. Contractor shall erect construction warning signs specific for motorcycles and bicyclists warning of construction zones and slippery surfaces. The sign shall be posted a minimum two weeks prior to any construction activity in the public right-of-way. Provide signs at each end of the project site and at all significant intersections. See Paragraph 2.03 herein for specifications for Special Signs.
- D. The Contractor shall furnish, install, and maintain temporary reduced speed signage at the approach to and throughout the project area for the duration of the project. Reduced speed signage shall be securely affixed over the permanent speed limit postings. Speed reductions shall extend at least 1,000 feet as traffic approaches the project area.
- E. Contractor shall perform daily housekeeping of the project site including, but not limited to, removal and disposal of loose aggregate.
- F. Maintaining traffic shall conform to the provisions in 7-1.02K(6) "Occupational Safety and Health Standards", 7-1.03 "Public Convenience", 7-1.04 "Public Safety", and 12-3.04 "Portable Delineators" of the Standard Specifications, the California Manual on Uniform Traffic Control Devices, latest edition, and subsequent modifications as adopted by the State of California Department of Transportation, the Section of these contract documents entitled "Insurance - Hold Harmless", and these Specifications.
- G. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work, and the Contractor shall fully comply with all state, federal, and other laws, rules, regulations, and orders relating to the safety of workers and others.
- H. The right of the Owner to conduct construction review or observations of the Contractor's performance does not include review or observation of the Contractor's safety measures in, on, or near the construction site.
- I. All existing traffic control signs and street name signs shall be maintained in visible locations as directed by the Engineer.
- J. No detours will be provided, unless specifically allowed herein. The Contractor will be required to conduct his operations in such a manner that traffic will be permitted to pass through the work area with as little delay, and as safely as possible.
- K. All warning lights, signs, flares, barricades and other facilities for the sole convenience and direction of public traffic shall be furnished and maintained by the Contractor. All traffic control devices shall conform to and be placed in accordance with the California Manual on Uniform Traffic Control Devices, latest edition, and subsequent modifications as adopted by the State of California Department of Transportation.
- L. All construction signs shall be either covered or removed when not required by the nature of the work or if no present hazard to the motorist exists.

- M. The Contractor shall notify the appropriate regional notification center for operators of subsurface installations at least 2 working days, but not more than 14 calendar days, prior to commencing excavation for construction area sign posts. The regional notification centers include, but are not limited to, the following:

Notification Center	Telephone Number
Underground Service Alert-Southern California (USA)	1-800-422-4133 1-800-227-2600

- N. Excavations required to install construction area signs shall be performed by hand methods without the use of power equipment, except that power equipment may be used if it is determined there are no utility facilities in the area of the proposed post holes.
- O. No payment for extra work will be allowed for work performed as specified in Section 12-1.03 (Flagging Costs) of the Standard Specifications. Flagging costs will be borne entirely by the Contractor shall be included in the appropriate bid proposal line item.
- P. Portable Changeable Message Signs shall be furnished, placed, operated, and maintained at those locations shown on the approved Traffic Control Plans or where designated by the Engineer in conformance with the provisions in Section 12, "Temporary Traffic Control," of the Standard Specifications and these Specifications. Full compensation for the provision, installation, operation and maintenance of three (3) Portable Changeable Message Signs will be considered as included in the contract price for "Traffic Control", and no additional compensation will be allowed therefore.
- Q. Dust control shall conform to the provision of Sections 14-9.03 and 14-11.02C of the Standard Specifications except that no extra work will be allowed when the Engineer orders the application of water for the purpose of controlling dust caused by public traffic as provided for in the Standard Specifications.

### **1.03 CONSTRUCTION PARKING CONTROL**

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and Owner's operations.
- B. Submit a plan for parking of construction personnel's vehicles to Owner for approval. No personal vehicles will be permitted beyond the approved designated construction parking area. Maintain vehicular access to and through parking areas.
- C. Prevent parking on or adjacent to access roads or in non-designated areas.
- D. At least ten (10) working days before the start of construction, the Contractor is required to notify, in writing, abutting property occupants of the proposed construction start date.
- E. Furnish, install and maintain in-place "No Parking - Tow Away" signs (even if streets have posted "No Parking" signs) which shall be posted at least two (2) working days prior to commencement of roadwork. On the sign Contractor shall print the hours, day(s) and date of closure in two-inch high letters and numbers. A sample of the completed sign shall be approved by the Engineer prior to posting. For any work to be performed on Monday morning or a morning following a holiday, the Contractor must post "No Parking - Tow Away" signs with all requirements as specified at least 48 hours prior to weekend or holiday begins.

## **1.04 TRAFFIC CONTROL**

- A. Vehicular and Pedestrian Access: The Contractor's operations shall cause no unnecessary inconvenience to the public, including trash, mail, and other services provided to the public over City rights-of-way. The access rights of the public shall be considered at all times, and vehicular and pedestrian traffic shall be permitted to pass on public rights of way through the work at all times, unless the Contractor receives prior written approval of a detour plan from the Engineer. The Contractor shall provide at least seventy-two (72) hours written notice to the Engineer requesting approval of a detour plan, prior to the performance of any work or the establishment of any detour or closure in the public right-of-way. The Contractor shall notify the occupants or owners of all affected properties at least forty-eight (48) hours prior to any temporary obstruction of access.
- B. Safe and adequate pedestrian and vehicular access shall be provided and maintained to fire hydrants, commercial and industrial establishments, churches, schools, parking lots, service stations, motels, fire and police stations, hospitals, and establishments of similar nature. Access to these facilities shall be continuous and unobstructed unless prior approval of a detour plan is received from the Engineer.
- C. Safe and adequate pedestrian zones and public transportation stops, as well as pedestrian crossings of the work at intervals not exceeding 300 feet (90 m), also shall be maintained unless prior approval of a detour plan is received from the Engineer.
- D. Vehicular access to residential driveways shall be maintained to the property line unless prior approval of a detour plan is received from the Engineer.
- E. The Contractor shall cooperate with owners and occupants of affected properties as well as other parties involved in providing services to the public (trash collection, mail delivery, etc.), in order to maintain existing schedules for these services.
- F. Grading operations, roadway excavation and fill construction shall be conducted by the Contractor in a manner to provide a reasonably satisfactory surface for traffic. When rough grading is completed, the roadbed surface shall be brought to a smooth, even condition satisfactory for traffic.
- G. Unless otherwise authorized, work shall be performed in only one-half of the roadway at any one time. One-half shall be kept open and unobstructed until the opposite side is ready for use. If one-half a street only is impacted, the other half shall be conditioned and maintained as a detour.

## **1.05 DETOUR PLANS**

- A. In the event that the Contractor submits a detour plan and receives approval from the jurisdictional agency and the Engineer, the Contractor shall perform in accordance with the approved detour plan, which shall include, at a minimum the following requirements:
  - 1. At least one twelve foot (12') wide traffic lane shall be provided for each direction of travel on all streets at all times. If there is inadequate space to provide a lane in each direction, one lane with a traffic flagger will be permissible. The traffic lanes shall remain unobstructed. Lane transitions shall not be sharper than a taper of thirty to one (30:1).
  - 2. Clearances from traffic lanes shall be five feet (5') to the edge of any excavation and two feet (2') to the face of any curb, pole, barricade, delineators, or other vertical obstruction.

3. Traffic control warning signs, lights, and devices shall conform to the California Department of Transportation, Caltrans Traffic Control Manual, (latest edition).
4. The Contractor shall provide barriers, guards, lights, signs, temporary bridges, flag-persons and watch-persons, advising the public of detours and construction hazards. The Contractor shall also be responsible for compliance with additional public safety requirements which may arise during construction. The Contractor shall furnish and install, and upon completion of the work, promptly remove all signs and warning devices.
5. At least forty-eight (48) hours in advance of closing, or partially closing, or of reopening, any street, alley, or other public thoroughfare, the Contractor shall notify the Police, Fire, Traffic and Engineering Departments of jurisdictional agencies involved, and comply with their requirements. Deviations must first be approved in writing by the Engineer.
6. The Contractor shall secure approval, in advance, from authorities concerned, for the use of any bridges proposed by it for public use. Temporary bridges shall be clearly posted as to load limit, with signs and posting conforming to current requirements set forth in the Traffic Manual published by the California Department of Transportation, covering "signs." This manual shall also apply to the street closures, barricades, detours, lights, and other safety devices required.
7. Temporary traffic channelization shall be accomplished with barricades or delineators. Temporary striping will not be allowed unless specifically permitted by the Engineer. The Contractor shall prepare any plans that may be required for temporary striping to the satisfaction of the Engineer. In no event will temporary striping on pavement surfaces be allowed to remain.

## **1.06 K-RAIL**

- A. In addition to any other measures taken by the Contractor pursuant to the provisions of Section 7-1.04, "Public Safety," of the Standard Specifications, the Contractor shall install temporary railing (Type K) between any lane carrying public traffic and any excavation, obstacle, or storage area when any of the following apply:
  1. When required by the approved traffic control plan.
  2. When required by an encroachment permit issued for the work.
  3. When ordered by the Engineer for the purpose of public safety.
  4. For any excavation, obstacle, or storage area, the near edge of which is 12-feet or less from the edge of the lane, except when:
  5. Excavations covered with sheet steel or concrete covers of adequate thickness to prevent accidental entry by traffic or the public.
  6. Excavations are less than 1 foot deep and are adequately delineated.
  7. Trenches less than 1 foot wide for irrigation pipe or electrical conduit or excavations less than 1 foot in diameter.
  8. Excavations parallel to the lane for the purpose of pavement widening or reconstruction.
  9. Excavations in side slopes, where the slope is steeper than 4:1.
  10. Excavations protected by existing barrier or railing.
- B. Temporary railing (Type K) shall be furnished and installed in accordance with the State of California Department of Transportation Department Standard Plans T3, Standard Specifications Section 12-3.08, and as directed by the Engineer.

- C. Full compensation, except as otherwise provided herein, for conforming to the requirements of this article, including all costs to furnish, transport, install and maintain temporary railing (Type K) as required, and including furnishing, installing and maintaining all traffic control devices, temporary pavement markings, construction signs, and all other items shown on the traffic control plan, shall be paid for on a lump sum basis and no additional compensation will be allowed therefore.

#### **1.07 CONSTRUCTION SEQUENCING AND DEVIATIONS FROM APPROVED PLANS**

- A. The Owner has provided traffic control plans with the Construction Documents for the Contractor's use. These traffic control plans have been reviewed by the respective jurisdictional agencies. Any deviation from these plans by the Contractor shall be formally approved by the jurisdictional agency and by the Owner prior to implementation.
- B. Contractor shall prepare construction staging and traffic control plans for review and approval by the Transportation Department for work areas not shown on the Project Traffic Control Plans, or for potholing or other work required but not shown on the Approved Plans.
- C. Proposed plans shall be submitted by the Contractor for review and approval by the respective Transportation Department at least 2 weeks prior to the start of construction. The construction staging and traffic control plans shall be prepared, signed and stamped by a Civil Engineer or Traffic Engineer who is registered as such in the State of California.
- D. Construction staging and traffic control plans shall be in accordance with the appropriate standards and specifications for construction staging, detour roads, traffic control, including the State of California Highway Design Manual, the California Manual on Uniform Traffic Control Devices, latest edition, and subsequent modifications as adopted by the State of California Department of Transportation, Standard Plans and Standard Specifications, and the Work Area Traffic Control Handbook (WATCH), as published by Building News, Inc. Any requests for deviation from the established design standards or specifications shall be submitted to the respective jurisdictional agency for review and approval prior to submittal of the required plans.
- E. With regard to the preparation and implementation of the plans, attention is especially directed to sections 7-1.06, 7-1.08, 7-1.09, 7-1.11, and Section 12 of the State of California Standard Specifications.
- F. Full compensation for the preparation and implementation of the traffic control plans and construction staging plans shall be considered as included in the lump sum price paid for "Traffic Control" and no additional compensation shall be allowed therefore.

#### **1.08 CONSTRUCTION EQUIPMENT**

- A. Attention is directed to Sections 7-1.02O, "Vehicle Code," and 51-1.03B, "Methods and Equipment," of the Standard Specifications and these Specifications.
- B. Pursuant to the authority contained in Section 591 of the Vehicle Code, the Department has determined that, within such areas as are within the limits of the project and are open to public traffic, the Contractor shall comply with all the requirements set forth in Divisions 11, 12, 13, 14 and 15, of the Vehicle Code. Attention is directed to the statement in Section 591 that this section shall not relieve him or any person from the duty of exercising due care. The Contractor shall take all necessary precautions for safe operation of his equipment and the protection of the public from injury and damage from such equipment.

- C. The Contractor shall not leave any equipment within the road right-of-way during non-working hours without the written approval of the Owner and the agencies have jurisdiction on the specific right-of-way in question.

## **PART 2 - PRODUCTS**

### **2.01 GENERAL**

- A. All traffic control signs, signals, devices, equipment, and appurtenances to provide complete traffic control system shall be in conformance with the Contract Documents and these Specifications.

### **2.02 TRAFFIC CONTROL SIGNS**

- A. Traffic control signs shall conform to the provisions in Section 56-4, "Roadside Signs" of the Standard Specifications and the details on the construction plans.
- B. Traffic control signs shall be installed at the locations shown on the construction plans or where directed by the Engineer.
- C. Traffic control sign faces, including lettering and borders, shall be 3M brand Diamond Grade cubed corner reflective sheeting or approved alternative.
- D. Traffic control signs shall be of the standard size specified in the State of California Department of Transportation Sign Specification Sheets, unless otherwise indicated on the construction plans.
- E. Full compensation for Traffic Control Signs, including all necessary concrete, excavation, and backfill, as specified in the Standard Specifications and these Specifications, shall be considered as included in the contract lump sum price paid for "Traffic Control" and no additional compensation shall be allowed therefore.

### **2.03 SPECIAL SIGNS**

- A. The Contractor shall furnish and erect Special Signs at the locations designated by the Engineer in accordance with the Standard Plans and these Specifications.
- B. These signs will be requested either prior to construction, or during construction, by the Resident Engineer as he deems them necessary. For bidding purposes, the signs shall be assumed to be 4'X8' in size and shall be mounted on two 4" X 6" posts.
- C. The signs shall be professionally manufactured and installed in accordance with Section 56-2 of the Standard Specifications.
- D. Signs shall be manufactured using 3/4" polyglaze or equivalent support material, 3" minimum lettering size, 1" border, and reflective sheeting conforming to FHWA FP-85 Type IIA or AASHTO M268 Type III. The signs shall be assumed to have logos.
- E. Full compensation shall be considered as included in the contract price paid for Traffic Control, including the furnishing of all labor, materials, tools, equipment and incidentals, and for furnishing, erecting, maintaining, and removing the signs, and no additional compensation will be allowed therefore.

## **2.04 TRENCH PLATES**

- A. Trench plates, where approved by the traffic control plans, shall be skid-resistant.
- B. Trench plates shall be recessed into the adjoining pavement surface(s) to provide a flush joint at all times. Trench plates shall be tack-welded together to prevent separation under vehicular loads.
- C. Trench plate installation shall be designed in conjunction with the trench shoring plans and shall be signed by a Contractor-retained Professional Engineer.

## **PART 3 - EXECUTION**

### **3.01 FLAG-PERSONS**

- A. Provide trained and equipped flag-persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

### **3.02 FLARES AND LIGHTS**

- A. Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

### **3.03 HAUL ROUTES AND SITE ACCESS**

- A. Confine construction traffic to designated haul routes.
- B. Provide traffic control at critical areas of haul routes to regulate traffic and to minimize interference with public traffic.

### **3.04 TRAFFIC SIGNS AND SIGNALS**

- A. Install traffic signs and operate traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operation.
- B. Contact the respective Agency for any traffic signal operational needs during construction.
- C. Relocate as the Work progresses to maintain effective traffic control.

### **3.05 REMOVAL**

- A. Remove equipment and devices when no longer required. Repair damage caused by installation. Remove post settings.
- B. Removal of existing traffic control signs shall conform to the provisions of Section 15 "Existing Facilities" of the Standard Specifications.
- C. The traffic control signs that are designed on the construction plans to be removed and salvaged shall remain the property of the respective jurisdictional agency, and shall be delivered to the location directed by the engineer.
- D. The removed sign posts, mounting hardware, concrete and associated materials shall become the property of the contractor and disposed of by the Contractor outside of the public right of way.



- E. Full compensation for removal of traffic control system, including all necessary excavation, backfill, and transportation, as specified in the Standard Specifications and these Specifications, shall be considered as included in the contract lump sum price paid for "Traffic Control" and no additional compensation shall be allowed therefore.

**END OF SECTION**

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## SECTION 01620

### PROTECTION OF MATERIALS AND EQUIPMENT

#### PART 1 - GENERAL

##### 1.01 GENERAL

- A. Materials and equipment shall be shipped, handled, stored, and installed by methods which will prevent damage to the items. Damaged items will not be permitted as part of the work except in cases of minor damage that have been satisfactorily repaired and are acceptable to the Engineer.

##### 1.02 PIPE

- A. Pipe and appurtenances shall be handled, stored, and installed as recommended by the manufacturer. Pipes with soft coatings, such as coal tar enamel or the like, or pipes of materials which are subject to deterioration by sunlight or heat shall be stored to protect the coating or pipe from physical damage or other deterioration and shall only be handled with padded, wide slings. Pipes shipped with interior bracing shall have the bracing removed only when recommended by the pipe manufacturer.

##### 1.03 CIPP LINER

- A. CIPP liners and associated materials and facilities shall be handled, stored, and installed as recommended by the manufacturer. Materials which are subject to deterioration by sunlight or heat shall be stored to protect from physical damage or other deterioration and shall be handled as approved by the manufacturer instructions.

##### 1.04 EQUIPMENT

- A. Definition: For the purpose of this section, equipment means any mechanical, electrical, or instrumentation devices, or other items with one or more moving parts requiring an electrical, pneumatic, electronic or hydraulic connection.
- B. Packing and Marking: All equipment shall be adequately and effectively protected against damage from moisture, dust, handling, or other cause during transport from manufacturer's premises to site. Each item or package shall be clearly marked with the number unique to the specification reference covering the item. Each separate portion of pump station shall receive, as far as practicable, a fitting or distinguishing mark which shall be shown on the packing lists.

The bearings of motors shall be relieved of load during transport by means of jacks or some other method to prevent Brinelling.

Stiffeners shall be used where necessary to maintain shapes and to give rigidity. Parts of equipment shall be delivered in assembled or sub-assembled units where possible.

- C. Identification of Equipment: All equipment items and valves with an assigned equipment number shall have affixed to them, in a prominent location, a label or tag displaying the assigned equipment number. Equipment item and valves lacking a number shall have a similar tag providing a unique description of the item. Markers shall be of stainless steel or aluminum,

affixed to the item in question with stainless steel fasteners or as otherwise approved by the Engineer. Plastic tape labels will not be acceptable.

- D. Storage of Equipment: During the interval between delivery and installation, all equipment to be incorporated into the project shall be stored to prevent damage or deterioration. Environmental controls such as heaters or protective encapsulation shall be provided to ensure against condensation and moisture damage. In the event prolonged (more than 90 days) storage is required for any item of equipment, the Contractor shall institute a preventive maintenance program which shall include all procedures recommended by the manufacturer. The Contractor shall maintain adequate records to demonstrate full compliance with these requirements. All equipment shall be available for inspection by the Engineer.

To insure adequate protection of all electrical and instrumentation equipment and panels and electric motors, all such equipment shall be stored in a suitable enclosure designed to protect the equipment from dust and moisture. The Contractor shall be responsible for maintaining the storage facilities and equipment stored therein and shall make provision for all utilities required. Continuous access shall be provided to the Engineer for all equipment so stored.

- E. Protection of Equipment After Installation: After installation, all equipment shall be protected from damage, including but not limited to, dust, abrasive particles, debris and dirt generated by the placement, chipping, sandblasting, cutting, finishing and grinding of new or existing concrete, terrazzo and metal; and the fumes, particulate matter, and splatter from welding, brazing, and painting of new or existing piping and equipment. The Contractor is advised that as a minimum, vacuum cleaning, blowers with filters, protective shielding, and other dust suppression methods will be required at all times to adequately protect all equipment. During concreting, including finishing, all equipment that may be affected by cement dust must be completely covered. During painting operations, all grease fittings and similar openings shall be covered to prevent the entry of paint. Electrical switchgear, unit substation, and motor load centers shall not be installed until after all concrete work and sandblasting in those areas have been completed and accepted.

#### **1.05 DELIVERY OF MATERIAL OR EQUIPMENT**

- A. The Owner's personnel or representatives of the Owner will not accept materials or equipment deliveries for the Contractor.

#### **PART 2 - MATERIALS (NOT APPLICABLE)**

#### **PART 3 - EXECUTION (NOT APPLICABLE)**

#### **END OF SECTION**

## SECTION 01700

### PROJECT CLOSEOUT

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Contract closeout is the process that commences as the Work nears Substantial Completion. It continues through Substantial Completion, and Final Acceptance of the Work.
- B. This specification section defines the overall change over process from construction (by the Contractor) to plant operations (by the Owner). The section defines the terms in this process, and outlines the responsibilities of the Contractor, the Engineer, and the Owner.

##### 1.02 CONTRACT CLOSEOUT SEQUENCE OF EVENTS

- A. The sequence of events and their description listed below represent the suggested order of activities as the Contract proceeds from construction, through checkout, testing, Substantial Completion, and the Notice of Completion. Not all work will proceed in this exact order. Adjustments may be made, after approval by the Engineer, for the mutual benefit of the Contractor and the Owner, if the situation so warrants. Any adjustments made in the sequence of events, to accommodate the Contractor, shall be at no additional cost to the Owner.
- B. Closeout Sequence of Events and Description:
  - 1. Contract Closeout Deliverables: The Contractor shall provide the following:
    - a. Final Record Drawings, in accordance with Section 01720.
    - b. Written guarantees, where required.
    - c. Certificates of inspection and acceptance by local governing agencies having jurisdiction.
  - 2. Pre-Final Inspection and Discrepancy List: The Engineer will conduct a pre-final inspection of the Work prior to substantial completion. The Engineer will prepare a discrepancy list (punchlist). The discrepancy list includes items of work which do not conform to the Contract Documents, plus any additional items found to be missing, incomplete, damaged, incorrect, or constructed in an un-workmanlike manner. The Contractor shall correct all items on the discrepancy list.
  - 3. Substantial Completion: Following correction of items on the discrepancy list, and successful completion of the operation demonstration, the Contractor shall notify the Engineer that the Work is substantially complete. Refer to the contract documents for other requirements for Substantial Completion.
  - 4. Final Inspection: Following written notice from the Contractor that the entire Work is complete, the Engineer, the Owner, the Contractor, and the Design Consultant will conduct a final inspection to verify that the Work is complete. The Engineer will prepare a final punchlist of all outstanding items.
  - 5. Final Payment: After the Contractor has completed all final punchlist items, and completed all other requirements, the Contractor shall submit a final application for payment to the Engineer. The final payment application will include all necessary

documentation, in addition to waivers or releases of all liens filed in connection with the Work. The Contractor shall specifically release the Owner from any claims not specifically renewed on the final application for payment. After acceptance by the Engineer and the Owner, the Owner will make final payment to the Contractor after deducting all amounts to be retained under the provisions of the Contract Documents.

6. Notice of Completion: The Owner will file a Notice of Completion with the County Recorder to begin the 30-day stop notice filing period.
7. Release of Retention: Not more than 35 days after filing the Notice of Completion, the Owner will release to the Contractor all retainage, less any deductions to cover pending third party claims against the Owner.

### **1.03 PRE-FINAL AND FINAL INSPECTIONS**

- A. Pre-final and final inspections are surveys of the Contractor's work by the Engineer, the Owner, and the Design Consultant in order to create the list of incomplete or unsatisfactory items of work.
- B. Prior to the pre-final and final inspections, the Contractor must complete the following:
  1. Perform final cleanup pursuant to Section 01710 Final Cleanup.
  2. The Contractor has provided and completed the following items as approved by the Engineer.
    - a. Contract Closeout Deliverables.
    - b. Special Manufacturer's or Supplier's Warranties.
- C. The discrepancy list(s) and punchlist will include all items of work found to be unsatisfactory, missing, incomplete, damaged, incorrect, or improperly installed or constructed. Prior to Final Acceptance the Contractor shall correct the punchlist items by re-work, modification, or replacement, at the option of the Engineer and at no additional cost to the Owner. The Engineer will re-inspect punchlist items upon notice by the Contractor that they are complete.

## **PART 2 - PRODUCTS (NOT APPLICABLE)**

## **PART 3 - EXECUTION**

### **3.01 CLEANUP**

- A. The Contractor shall promptly remove from the vicinity of the completed work, all rubbish, unused materials, concrete forms, construction equipment, and temporary structures and facilities used during construction. Final acceptance of the Work by the Owner will be withheld until the Contractor has satisfactorily complied with the forgoing requirements for final cleanup of the project site. Refer to Section 01710 Final Cleanup

### **3.02 MAINTENANCE AND GUARANTEE**

- A. The Contractor shall comply with the maintenance and guarantee requirements contained in the contract documents.

- B. Replacement of earth fill or backfill, where it has settled below the required finish elevations, shall be considered as a part of such required repair work, and any repair or resurfacing which becomes necessary by reason of such settlement shall likewise be considered as a part of such required repair work unless the Contractor shall have obtained a statement in writing from the affected private owner or public agency releasing the Owner from further responsibility in connection with such repair of resurfacing.
- C. The Contractor shall make all repairs and replacements promptly upon receipt of written order from the Owner. If the Contractor fails to make such repairs or replacements promptly, the Owner reserves the right to do the work and the Contractor and his surety shall be liable to the Owner for the cost thereof.

### **3.03 BOND**

- A. The Contractor shall provide a bond to guarantee performance of the provisions contained in Paragraph "Maintenance and Guarantee" above, and in the Contract Documents.

### **END OF SECTION**

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## **SECTION 01710**

### **FINAL CLEANUP**

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

##### **1.01 REQUIREMENTS**

- A. As a condition precedent to final acceptance or release of a project for use by the Owner, the Contractor shall thoroughly clean all maintenance access structures, pipelines and other facilities to leave same in first-class condition.
- B. All pits and sumps shall be cleared of silt, sand, debris and construction materials. All grounds shall be cleared of all debris.
- C. At the completion of the project, the Contractor shall perform the following:
  - 1. Remove and dispose of all excess or waste materials, debris, rubbish, and temporary facilities from the site, structures and all facilities.
  - 2. Repair pavement, roads, sod, and all other areas affected by construction operations and restore them to original condition or to minimum condition specified.
  - 3. Remove spatter, grease, stains, fingerprints, dust, labels, tags, packing materials and other foreign items or substances from interior and exterior surfaces, equipment, signs and lettering.
  - 4. Repair, patch and touch up chipped, scratched, dented or otherwise marred surfaces to match specified finish.
  - 5. Remove paint, clean and restore all equipment and material nameplates, labels and other identification markings.
  - 6. Wash and shine glazing and polished surfaces.
  - 7. Clean all floors, slabs, pavements, and ground surfaces.
  - 8. Maintain cleaning until acceptance and occupation by the Owner.

#### **PART 2 - PRODUCTS (NOT APPLICABLE)**

#### **PART 3 - EXECUTION (NOT APPLICABLE)**

**END OF SECTION**

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**SECTION 01720**  
**RECORD DRAWINGS**

**PART 1 - GENERAL**

**1.01 REQUIREMENTS**

- A. During the course of the work, the Contractor shall keep accurate, neatly and legibly marked contract drawings showing the final location of piping, equipment, electrical conduits, outlet boxes and cables, and other components of the work, including any changes made to the work. The changes may be dictated by field conditions, unknown obstructions, or other circumstances determined to be in the best interest of the Owner. Marking of the drawings shall be kept current and shall be done at the time the material and equipment are installed. The Construction Manager shall verify that all changes have been included. All revisions will be incorporated. These drawings shall be available to the Engineer. Final payment shall not be made until the marked up record drawings are delivered to and approved by the Engineer.

**1.02 MAINTENANCE OF DOCUMENTS**

- A. The Contractor shall maintain a blue- or black-line copy of the Drawings at all time updated with record information. The blue- or black- line copy shall be up-to-date and its completeness shall be a pre-condition of the next month's partial payment request approval.
- B. The following shall be maintained in the Contractor's field office in clean, dry, legible condition: Contract Drawings, Specifications, Addenda, approved Shop Drawings, Samples, photographs, Change Orders, other Modifications of Contract, test records, survey data, Field Orders, and all other documents pertinent to Contractor's Work.
- C. Documents shall be available at all times for inspection by the Engineer and the Owner.
- D. Record documents shall not be used for any other purpose and shall not be removed from the office without Engineer's approval.
- E. The Contractor may submit additional 24 x 36 sheets detailing record work as approved by the Engineer.
- F. The Contractor shall not conceal any work until the required record drawing information has been recorded. The Engineer may direct the Contractor to expose concealed work if work was not recorded on the Record Drawings.

**PART 2 - PRODUCTS**

**2.01 DOCUMENTS**

- A. At the end of the project, the Contractor shall provide the Construction Manager with two sets of prints, with all changes marked/recorded. The Construction Manager will send one of the sets to the Engineer, who will incorporate the changes onto the original contract drawings, prior to accepting them as final record drawings of the work.

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

**END OF SECTION**

## SECTION 01900

### PERMITS

#### PART 1 - GENERAL

##### 1.01 GENERAL

- A. The Contractor shall secure all necessary permits and permissions required for construction of the brineline project as indicated in the Construction Documents. The permitting information provided in this Section is intended to assist the Contractor in securing construction permits. The requirements of this Section are not intended to be exclusive and shall not be interpreted as limiting the Contractor's responsibility for execution of the work. Environmental permitting is addressed elsewhere in the Contract Documents.
- B. The Owner has initiated permitting process with submittal of permit applications and, when possible, obtained Permit numbers as described in Part 3. The Owner's efforts pertaining to construction permits for the project are summarized in this Section. Draft permit applications, coordinated with the permitting agencies prior to bid are included in Appendix A of these Specifications. The Contractor is responsible for verifying all information on the application forms, completing applications, and submitting complete application package to the respective agencies to secure all necessary permits.
- C. The Contractor shall confirm all fees and costs associated with the project permitting and include applicable costs in the bid proposal. By submitting a bid proposal, the Contractor is confirming that he/she has reviewed the project permitting requirements, verified the applicable costs including fees, and has included all costs in the bid proposal.
- D. The Contractor shall be responsible for payment of permit application fees, inspection fees, bonds, and other project costs associated with completion of the work in conformance to the permit requirements.
- E. The Contractor shall provide the notification, insurance and special requirements of all applicable permitting agencies.
- F. The Contractor shall name permitting agencies as additionally insured as required by the agencies.
- G. Permit Fees: A specific line item is included on the bid form to provide an allowance for permit and inspection fees required to perform the Work. The allowance will pay for permit fees of the permitting agencies. These costs will be paid based on actual costs incurred by the Contractor as documented by actual outlays. The allowance budget is stated in the bid schedule and is based on fees estimated by the respective agencies.

The Contractor will be responsible for securing all necessary permissions and permits prior to execution of the work. The actual costs of permit fees will be paid out of this allowance in accordance with the following provisions:

- 1. Payment out of this line item shall be paid with the Contractor's monthly progress payment.
- 2. The Contractor shall provide proof of expenditure for each requested payment.

3. Payment shall be for actual permit cost; no mark-up will be allowed.
4. Unused balance of deposits made by the Contractor to the permitting agencies shall be credited back to the allowance line item at the end of the project. The Owner reserves the right to deduct unused balances from final payment on the project.
5. The Owner will not be responsible for additional or unanticipated permit fees arising out of unapproved extension of construction duration. Fees assessed for permit work while the Contractor is beyond the contracted completion date shall be borne by the Contractor.

## **PART 2 - PRODUCTS (NOT APPLICABLE)**

## **PART 3 - EXECUTION**

### **3.01 CITY OF CORONA**

- A. Type of Permits:
  1. Encroachment Permit
- B. Estimated Permit Fee:
  1. To Be Added by Addendum
- C. Application Number:
  1. Encroachment Permit: To Be Added by Addendum
- D. Contact Information:
  1. Encroachment Permit: Vikki Li (951).817.5708; John Contrado (951).279.3512
- E. Special Requirements:
  1. As included in Contract Documents

### **3.02 COUNTY OF RIVERSIDE**

- A. Type of Permits:
  1. Encroachment Permit
- B. Estimated Permit Fee:
  1. To Be Added by Addendum
- C. Application Number
  1. Encroachment Permit: To Be Added by Addendum
- D. Contact Information:
  1. Encroachment Permit: Kevin Gillette (951).955.6793
- E. Special Requirements:
  1. As included in Contract Documents.

### 3.03 CALTRANS

California Department of Transportation (Caltrans). The Owner has obtained an encroachment permit from the California Department of Transportation for work within Caltrans' right-of-way. Contractor shall obtain a duplicate encroachment permit, submitting all required information to the California Department of Transportation. Said information shall include, but not be limited to, trench shoring plans, survey control plan, Storm Water Pollution Prevention Plan, traffic control plans, annual Cal-OSHA Excavation Permit, copy of insurance certificates, and copy of performance and payment bonds. Contractor shall perform his work in accordance with said permits and in accordance with these specifications and drawings. Contractor shall maintain at least one copy of said permits on the job site. Scheduling work within Caltrans' right-of-way will be contingent on the Contractor receiving his encroachment permit.

Contractor shall schedule and attend a preconstruction meeting at the Caltrans office (permit office) in San Bernardino prior to commencing any work associated with the boring and jacking of the casing within Caltrans' right-of-way.

- A. Type of Permit: Encroachment Permit
  - 1. Estimated Processing/Inspection Permit Fee: To Be Added by Addendum
- B. Permit Number: 08-14-N-UJ-0603
- C. Contact Information: Reza Moslemi (909).383.5955
- D. Special Requirements: Encroachment Permit: Refer to Caltrans published Standard Specifications and stated practices and procedures.

**END OF SECTION**

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## SECTION 02223

### TRENCHING, BACKFILL, AND COMPACTION

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

The work of this Section includes all labor, machinery, construction equipment, and appliances to perform in a good worker-like manner all trench excavation and backfill work shown on the Construction Documents and herein specified.

##### 1.02 GENERAL REQUIREMENTS

Requirements of the Standard Specifications for Public Works Construction (SSPWC, Greenbook), current edition, apply to this Section.

##### 1.03 SAFETY

The Contractor shall familiarize himself with, and shall at all times conform to all applicable regulations of the "General Construction Safety Orders" and "Trench Construction Safety Orders" of the State of California, Department of Industrial Relations, Division of Occupational Health and Safety.

##### 1.04 INSPECTION AND CONTROL

The Contractor will engage a qualified materials testing firm to perform inspection and testing of soils work. The Contractor's Approved Soils Testing Firm will perform inspection of the removal and replacement of unsuitable materials and the placement and compaction of fills and backfill within the limits of earthwork on this project. All work shall be done in accordance with these Specifications and as directed and approved by the Engineer. The Contractor-retained Approved Soil Testing Firm, as directed by the Engineer, shall conduct all such testing. The cost of all initial tests shall be paid for by the Owner, but the cost of re-testing required due to failed tests shall be borne by the Contractor.

##### 1.05 REQUIREMENTS

###### A. General.

1. The work performed under this Specification shall be constructed to the lines, grades, elevations, slopes and cross sections indicated on the Drawings, and/or directed by the Engineer in writing. Slopes, graded surfaces, and drainage features shall present a neat, uniform appearance upon completion of the Work.
2. It shall be the Contractor's responsibility (1) to maintain adequate safety measures and working conditions; and (2) to take all measures necessary during the performance of the Work to protect the entire project area and adjacent properties which would be affected by this work from storm damage, flood hazard, caving of trenches and embankments, and sloughing of material, until final acceptance by the Owner. It shall be the Contractor's responsibility to maintain completed areas until the entire project area is in satisfactory compliance with the Contract Documents.

3. Contractor shall be responsible for the excavation and disposition of unsuitable or surplus material by approved means of conveyance away from the working area, and shall conform with applicable requirements for disposition as specified in the Greenbook.

**B. Utility Protection.**

1. Utility lines and structures indicated on the Drawings which are to remain in -service shall be protected by the Contractor from any damage as a result of his operations. Where utility lines or structures not shown on the Drawings are encountered, the Contractor shall report them to the Owner before proceeding with the Work. The Contractor shall bear the cost of repair or replacement of any utility lines or structures which are broken or damaged by his operations.
2. Above and below ground utility lines and structures may not be shown on the Approved Plans. The Contractor shall take all necessary actions and precautions to avoid and protect in place all above and below ground utility lines and structures.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Material in Pipe Bedding Zone. For bedding in the Pipe Bedding Zone, as shown on the Drawings, the Contractor shall use crushed rock, ½-inch maximum size, for pipelines 16-inches in diameter or less and ¾-inch maximum size for pipelines greater than 16-inches in diameter. All testing shall conform to the standard, construction and other notes, as shown on the Drawings.
- B. Materials in Pipe Zone. The Pipe Zone is defined as the zone from the established trench bottom to 12-inches above the crown of the pipe as shown on the Drawings. In the Pipe Zone backfill materials shall be crushed rock, ½-inch maximum size, for pipelines 16-inches in diameter or less and ¾-inch maximum size for pipelines greater than 16-inches in diameter, from the trench bottom up to 12 inches above the top of pipe.
- C. Firm Trench Bottom. In areas where subgrade, as determined by the Engineer, is unsuitable for placement of pipe due to loose, soft, or deleterious materials exposed at pipeline invert elevation during excavation, those materials shall be removed by the Contractor to their full depth, or to two feet below the pipe invert, whichever is less. The overexcavation shall be filled with crushed rock, one inch (1") maximum size and ½-inch minimum size, or a gradation and quality approved by the Engineer may be allowed as an alternate.
- D. Trench Zone Backfill. From 12 inches above the top of pipe to the top of the trench, backfill material may consist of the excavated native material, provided it is free from unsuitable material such as large lumps of clay, organic material, asphalt, cobbles, boulders, or construction debris. Backfill shall not contain rocks greater than 4-inches in maximum dimension. In streets, rocks greater than 2-1/2 inches in maximum dimension shall not be allowed within 12-inches of pavement subgrade. All testing shall conform to the standard, construction, or other notes, as shown on the Drawings.
- E. Controlled Low Strength Material. Where called for on the Drawings, the Contractor shall furnish and install Controlled Low Strength Material (CLSM) per 201-6 of the Greenbook.
  1. Contractor shall submit proposed CLSM mix with compressive strength test results for the proposed material. Mix design shall provide unit weight of material in accordance with ASTM C138.

## PART 3 - TRENCH EXCAVATION

### 3.01 TRENCH EXCAVATION

- A. Excavation for Trenches. Excavation of trenches shall include the removal of all material of any nature for the installation of the pipe or facility and shall include the construction of trench shoring and stabilization measures, timbering and all necessary installations for dewatering.
- B. Width of Trench. The minimum width of the pipe zone shall not be less than 12-inches greater than the exterior diameter of the installed pipe. The minimum width shall be exclusive of all trench supports. The maximum width shall be inclusive of all trench supports. If the maximum trench width is exceeded, the Contractor shall provide additional bedding, another type of bedding, or a higher strength of pipe, as approved by the Engineer, at no cost to the Owner.
- C. Maximum Length of Open Trench. Except by special permission by the Engineer, only the amount of pipe construction, including excavation, construction of pipeline, and backfill in any one location, will be permitted which can be completed in one (1) day. Under no circumstances shall the maximum length of open trench exceed 400 feet except with the permission of the Owner and the respective permitting agency. This length includes open excavation, pipe laying and appurtenant construction and backfill, which has not been temporarily resurfaced. Additionally, all trenches shall be backfilled and temporarily paved or adequately plated at the end of each workday.
- D. Trench Side Slopes.
1. Temporary trench excavations shall at all times conform to the safety requirements herein before specified in Paragraph entitled "Safety".
  2. Loose cobbles or boulders shall be removed from the sides of the trenches before allowing workers into the excavation, or the trench slopes must be protected with screening or other methods. Trench side slopes shall be kept moist during construction to prevent local sloughing and raveling.
  3. The Contractor shall submit, in accordance with Section 01300, copies of Shoring Plan prepared and signed by a Civil Engineer duly registered in the State of California before commencing excavation.
- E. Excess Trench Excavation. If any trench, through the neglect of the Contractor, is excavated below the bottom grade required, it shall be refilled to the bottom grade, at the Contractor's expense for all labor and material, with specified crushed rock compacted to a firm stable foundation.
- F. Excavation in Rock. For the purposes of identifying solid rock, the definition of solid rock shall be at locations where trench excavation utilizing equipment such as a Caterpillar 320 Backhoe with a single shank or equivalent, as determined by the Engineer, encounters refusal due to a massive rock structure. Boulders encountered during excavation shall normally be removed by the Contractor. If the aforementioned equipment cannot remove the boulder, in the opinion of the Engineer, the section of the boulder intersected by the trench will be classified as solid rock. The Engineer's determination concerning the classification of material as solid rock or otherwise will be final.

When solid rock is encountered in the excavation, the Contractor shall advise the Engineer, and the Engineer shall inspect the excavation before removal of the solid rock commences. Prior to excavation, the Engineer and Contractor will assess the volume of solid rock to be excavated.

When the excavation has been completed and prior to any bedding materials being placed, the Engineer will inspect the excavation for the purpose of assessing the volume of solid rock to which the additional rate applies. Excavation depth in solid rock shall be six inches below bells or couplings, or as directed by the Engineer. The dimensions on which the solid volume of rock will be paid by the Owner shall be:

Length -	The length along the centerline of the pipeline.
Width -	Nominal pipe diameter plus 18 inches (no extra payment will be made for over excavation).
Depth -	The average height from the bottom surface to the top surface of the solid rock across the trench width. The bottom surface shall be deemed to be not below six inches below the bells or couplings unless the additional depth is ordered by the Engineer. The Engineer will determine the heights of rock at such spacing along the excavation as he considers necessary to compute the solid volume of rock with reasonable accuracy.

The Contractor will allow a minimum of seven (7) calendar days for Owner soils representative to review each rock instance and to present findings to the Engineer.

### **3.02 BRACING TRENCHES**

The sides of the trenches shall be supported with method in such a manner as to prevent caving of the sides of the trench. Space left by withdrawal of sheeting or shoring shall be filled and compacted completely with granular material. All trenches deeper than 5-feet shall be shored in accordance with the approved Shoring Plan, unless cut to the angle of repose of the excavated soils. Shoring shall be designed to resist active earth pressure with the affects of surcharge loads superimposed. Refer to Section 02350, Sheeting, Shoring, Bracing & Safety.

Excavations shall be so braced, sheeted, and supported that the ground alongside the excavation will not slide or settle, and all existing improvements of any kind, either on public or private property, will be fully protected from damage. Damage to adjacent property or to the Work occurring through settlements, water or earth pressures, slides, caves or other causes due to failure of lack of sheeting or bracing or improper bracing, or through negligence or fault of the Contractor in any other manner, shall be repaired by the Contractor at his own expense.

### **3.03 PIPE BEDDING**

- A. The Contractor shall excavate below the pipe invert for the full width of the trench and shall place crushed rock bedding upon which the pipe is to be laid. Approved pipe bedding material shall be placed and compacted throughout the Pipe Bedding Zone.
- B. At pipe subgrade, if foundation soil in trench is soft, wet, spongy, unstable or does not afford solid foundation for pipe, the Contractor shall excavate as directed by Engineer, to their full depth, or to two-feet below the pipe invert, whichever is less, and provide a stable rock backfill in accordance with paragraph 2.01A of this section for placement of pipe bedding. Such unsuitable material shall be disposed of at the Contractor's expense.
- C. Where rock is encountered in the trench, the Contractor shall excavate to a minimum of six (6) inches below the pipe invert or as directed by the Engineer, and shall construct a base by placing six (6) inches of crushed rock backfill for bedding upon which a subgrade can be prepared.

- D. Before any pipe is lowered in place, the trench bottom shall be prepared so that the pipe will have a firm and uniform bearing over the entire length of the barrel and a width equal to 12-inches beyond the outside diameter of the pipe. All adjustments in line and grade shall be made by scraping away or filling and tamping under the barrel of the pipe. Wedging or blocking are not permitted.

### **3.04 BACKFILLING PIPE TRENCHES**

- A. Pipe and Bedding Zones. Selected backfill material for the pipe zone shall consist of crushed rock, ½-inch maximum size, for pipelines 16-inches in diameter or less and ¾-inch maximum size for pipelines greater than 16-inches in diameter. Place material in the trench simultaneously on each side of the pipe for the full width of the trench and over the Pipe Backfill Zone, as shown on the Drawings, in layers not greater than eight (8) inches in loose depth. Each layer shall be thoroughly compacted by tamping. Jetting or ponding for compaction is not allowed. Bedding shall be brought up uniformly on both sides of the pipe.

Particular attention shall be given to the underside of the pipe and fittings to provide a firm support along the full length of the pipe. The Pipe Zone shall be considered to extend to 12-inches above the top of the pipe, and shall be compacted in the trench such that there will be obtained a relative compaction of not less than 90 percent as hereinafter specified.

Engineer shall approve use of materials other than those specified prior to use. The Contractor shall bear all cost of removal of rejected material, its hauling to an authorized disposal site, and cost of providing required material to complete the bedding and backfilling.

- B. Backfilling Pipe Trench. After the pipe has been laid in the trench and has been inspected and approved, and backfilling in the pipe zone is complete and compacted, the remainder of the trench may be backfilled. The backfill material shall be suitable material as herein before specified.
- C. Compaction Testing. The maximum dry density and optimum moisture content of each soil type used in the controlled compacted fill will be determined by ASTM D1557-07 compaction method, and field density tests will be performed in accordance with ASTM D 1557-00. The Owner will determine the number, frequency and location of tests to be performed.
- D. Placement and Compaction of Trench Backfill. The placement and compaction of all trench backfill shall conform to the following method subject to the qualifications specified therein. Water densification of backfill is not allowed.
1. Mechanically Compacted Backfill. With approval of Engineer, backfill shall be mechanically compacted by means of sheepsfoot rollers, or other mechanical tampers approved by the Engineer to 90 percent relative compaction except that the upper 12 inches below all pavement subgrade shall be compacted to 95% relative compaction. All such equipment shall be of size and type approved by the Engineer. Impact-type pavement breakers (stompers) will not be permitted over any pipe. Permission to use specific compaction equipment shall not be construed as guaranteeing or implying that the use of such equipment will not result in damage to adjacent ground, existing improvements, or improvements installed under the Contract. The Contractor shall be solely responsible for costs to repair damage caused by his earthwork methods. Mechanically compacted backfill shall be placed in horizontal layers not exceeding six inches in thickness. Each layer shall be evenly spread, the moisture content brought to within two percentage points of optimum moisture content, and then tamped or rolled until the specific relative compaction has been attained.

- E. Controlled Low Strength Material. The Contractor shall provide anchor straps, sandbags, or other means to prevent flotation of the pipe. The CLSM shall be placed in lifts to allow pipe grade check as the encasement is placed. The Contractor shall install temporary bulkheads at each end of the limits of CLSM, as shown on the Drawings, to prevent migration of the CLSM.

### **3.05 GENERAL PIPELINE INSTALLATION REQUIREMENTS**

- A. Depth of Pipe. Pipelines shall be installed at the depths (elevations) shown on the Drawings.
- B. Changes in Line and Grade. In the event obstructions not shown on the Drawings are encountered during the progress of the Work which will require alterations to the Drawings, the Engineer shall have the authority to change the Drawings and order the necessary deviation from the line or grade. The Contractor shall not make any deviation from the specified line and grade without prior approval by the Engineer. Should any deviations in line and grade be permitted by the Engineer in order to reduce the amount of rock excavation or for other similar convenience to the Contractor, any additional costs for thrust blocks, valves, extra pipe footage, concrete, or other additional costs shall be per unit prices listed in the bid breakdown.
- C. Installing Pipe. Contractor shall after excavating the trench and preparing the proper bedding for the pipe furnish all necessary facilities for properly lowering and placing sections of the pipe in the trench without damage and shall properly install the pipe. The section of pipe shall be fitted together correctly and shall be laid true to line and grade in accordance with stakes established by the Contractor's Surveyors. The full length of the barrel of the pipe shall have a uniform bearing upon the bedding material. The requirement for closely fitting the bottom of the pipe to the bedding material for the width stated in this section will be strictly enforced.
1. Any pipe which is not in true alignment, both vertical and horizontal, or shows any undue settlement after laying shall be replaced when so ordered by the Owner's Inspector. No pipe shall be laid which is damaged, cracked, checked or has any other defect deemed by the Owner's Inspector to make it unacceptable, and all such sections shall be permanently removed from the Work.
  2. At all times when the work of installing pipe is not in progress, all openings into the ends of the pipelines shall be kept tightly closed with suitable plywood or sheet metal bulkheads to prevent the entrance of animals and foreign materials and to prevent water from entering the pipe.
  3. Keep the pipe trench free from water at all times and take all necessary precautions to prevent the pipe from floating due to water entering the trench from any source. Any damage is the Contractor's full responsibility. Restore and replace the pipe to its specified condition and grade if it is displaced due to floating.
  4. All pipeline adjoining concrete structures shall have a joint (flexible) within 18-inches from the face of such concrete structures.

### **3.06 CLEANUP**

Immediately upon completion of work of this Section, all rubbish and debris shall be removed from the job site. All construction equipment and implements of service shall be removed and the entire area involved shall be left in a neat, clean and acceptable condition.

### **3.07 EXISTING IMPROVEMENTS**

The Contractor's attention is directed to the possible existence of pipe and other underground improvements which may or may not be shown on the Plans. The Contractor shall preserve and protect

any such improvements whether shown on the Plans or not. Where it is necessary to remove and replace or to relocate such improvements in order to prosecute the Work, they shall be removed, maintained, and permanently replaced by the Contractor at his expense, except as otherwise provided in the Contract Documents.

### **3.08 DRAINAGE CONTROL**

- A. Control of Surface Drainage: The Contractor shall control grading in a manner to prevent water running into excavations. Obstruction of surface drainage shall be avoided and means shall be provided whereby storm and wastewater can flow uninterrupted in existing gutters, other surface drains or temporary drains.
- B. Preservation of Existing Drainage: Except as shown on the Plans, existing drainage patterns shall be preserved. Where construction methods cause a temporary obstruction of drainage patterns temporary facilities adequate for expected flows and a means of emergency removal of the obstruction shall be provided.

### **3.09 DEWATERING**

The Contractor shall provide and maintain ample means and devices and shall promptly remove and properly dispose of all water from any source entering the excavation or other parts of the Work. Dewatering shall be accomplished by methods which will ensure the preservation of the final lines and grades of the bottoms of excavations. Said methods may include well points, sump points, suitable rock or gravel placed below the required bedding for drainage and pumping purposes, temporary pipelines, and other means that will not be detrimental to the proposed construction. The Contractor is responsible for obtaining all water discharge permits that are required.

Dewatering for the structures and pipelines shall commence when groundwater is first encountered and shall be continued until such times as water can be allowed to rise in accordance with the provision of this section.

The Contractor shall dispose of the water from the Work in a suitable manner without damage to adjacent property. No water shall be drained into Work built or under construction without prior consent of the Engineer. Water shall be disposed of in such a manner as not to be a menace to the public health.

### **3.10 CORRECTION OF FAULTY GRADES**

Where excavation is inadvertently carried below pipe or concrete structure subgrade, it shall be rectified for a pipe by backfilling with approved sand or gravel compacted to 90% of maximum density, or, for a structure, with concrete containing four 94-pound sacks of cement per cubic yard, all at the expense of the Contractor.

### **3.11 SURPLUS EXCAVATED MATERIAL**

The Contractor shall make the necessary arrangements for and shall remove and dispose of all surplus excavated material, unless provided for in the Contract Documents. All costs for the disposal of surplus waste material shall be borne by the Contractor.

It is the intent of the Contract Documents that all surplus material not required for backfill or fill shall be disposed of by the Contractor outside the limits of the public rights-of-way and/or easements at no cost or liability to the Owner.

No excavated material shall be deposited on private property unless written permission from the property Owner thereof is secured by the Contractor. Before the Owner will accept the Work as being completed, the Contractor shall file a written release signed by all property owners, districts or jurisdictional agencies with whom he has entered into agreements for disposal of surplus excavated material, absolving the Owner from any liability connected therewith.

### **3.12 IMPORTED BACKFILL MATERIAL**

Whenever the excavated material is not suitable for backfill, the Contractor shall at his own expense arrange for and furnish suitable imported backfill material which is capable of attaining the required relative density.

### **3.13 COMPACTION TESTS**

Compaction and other materials testing shall be completed by the Contractor's materials testing or geotechnical subcontractor. The number of tests, as well as the location and depth of each test, shall be completed as directed and approved by the Construction Manager. The Contractor shall make all necessary excavations for compaction tests as directed by the Construction Manager, and shall refill and re-compact all excavations to the densities as specified herein or as directed by the Construction Manager. Compaction shall be tested in accordance with the latest revision of ASTM D-1557. The Contractor shall pay for the cost of all compaction or other materials testing required for proper construction of the Work, or as required by the Contract Documents. All work in connection with compaction and other materials testing by the Contractor shall be included in the contract bid item for such work and no additional allowance will be made therefore. Compaction testing shall be completed at the same interval as the maximum lift for material placement and compaction, as stated or otherwise required by these specifications, the Approved Plans, or other standard specification. All compaction or other materials testing shall be completed to the satisfaction of the Construction Manager, and the Construction Manager shall determine acceptance of each test at his/her sole discretion.

### **END OF SECTION**



**SECTION 02225**  
**UTILITY CROSSINGS**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

Where utilities cross the pipeline trench but do not conflict with the permanent Work to be constructed, the Contractor shall follow the procedures given below and as indicated on the Plans and in the Specifications. In the event that a utility crossings is not shown on the Plans, follow the General Conditions and the instructions of the Engineer.

**1.02 RELATED WORK DESCRIBED ELSEWHERE**

The Contractor shall refer to the following Specification section(s) for additional requirements:

A. Trenching, Backfilling, and Compaction: 02223

**1.03 SUBMITTALS (SEE SECTION 01300)**

**1.04 PAYMENT**

Payment for the Work in this section shall be included as part of the lump-sum or unit-price bid amount for which such Work is appurtenant thereto.

**PART 2 - MATERIALS**

**2.01 REPLACEMENT IN KIND**

Except as indicated below or as specifically authorized by the Engineer, the Contractor shall reconstruct utilities with new material of the same size, type, and quality as that removed.

**PART 3 - EXECUTION**

**3.01 NOTIFICATION**

The Contractor shall notify the utility owner forty-eight (48) hours in advance of the crossing construction and shall coordinate the construction schedule with the utility service requirements.

**3.02 EXPOSING UTILITIES IN ADVANCE**

It shall be the Contractor's responsibility to determine the true location and depth of all utilities and service connections which may be affected by or affect the Work. The Contractor shall also determine the type, material, and conditions of these utilities. To provide sufficient lead time to resolve unforeseen conflicts, order materials, and take over appropriate measures to ensure that there is no delay in the Work, the Contractor shall expose all utilities 1,000-feet in advance of the pipeline construction. All costs incurred in exposing utilities shall be borne by the Contractor.

### **3.03 PROTECT IN PLACE**

- A. The Contractor shall protect all utilities in place and shall maintain the utility in service, unless otherwise specified on the Plans or in the Specifications. Contractor shall identify all potential utilities and notify the respective entity and or agency of any potential conflicts. The Contractor shall provide means and methods necessary for protection of the utility to the satisfaction of the utility owner. The contractor shall utilize, but not be limited to the following protection methods:
1. Suspended utilities within pipe trench shall be protected to the satisfaction of the utility owner or as determined by site conditions. Utilities may be protected from above or below, utilizing wood or steel beams at surface level and strapping the suspended utility to the beam or from underneath using necessary supports or jacks. Contractor shall provide a submittal of the proposed support system stamped and signed by a Registered Civil Engineer licensed in the State of California.

### **3.04 CUT AND PLUG ENDS**

The Contractor shall, at the direction of the Engineer, cut abandoned utility lines and plug the ends with brick and mortar, unless otherwise specified on the Plans or in the Specifications. The pipe shall be disposed of as unsuitable material by the Contractor. The Contractor shall consult the Engineer prior to disturbing any utility found to be abandoned.

### **3.05 REMOVE AND RECONSTRUCT**

Where so indicated on the Plans or in the Specifications or as required by the Engineer, the Contractor shall remove the utility and after passage, reconstruct it with new materials. The Contractor shall take appropriate measures to provide temporary service for the disconnected utility. All reconstruction work shall be in accordance with the applicable specifications.

### **3.06 COMPACTION**

- A. Utilities Protected in Place: Contractor shall take special precautions to compact under and around the utility to ensure that no voids are left.
- B. Utilities Reconstructed: Prior to replacement of the utility, the trench shall be backfilled and compacted by approved means to an elevation one foot above the top of the ends of the utility. A cross trench of the proper width shall be excavated for the utility and it shall be laid, backfilled, and compacted as specified herein or as required by the Engineer.
- C. Alternate Construction – Controlled Low Strength Material (CLSM): When approved by the Engineer or indicated on the Plans, CLSM may be substituted for other backfill materials to aid in reducing compaction difficulties. Installation shall be in accordance with the Plans and with Section 02223.

**END OF SECTION**

## SECTION 02350

### SHEETING, SHORING, BRACING AND SAFETY

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. This section provides specifications for sheeting, shoring, bracing, or other excavation supports.

##### 1.02 REFERENCES

- A. This section references the following documents. They are part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the most stringent requirement shall prevail.

OSHA	Occupation Safety and Health Act, US Department of Health
CAL OSHA	State of California Construction Safety Orders - California State Labor Code

##### 1.03 QUALITY ASSURANCE

- A. Design Requirements:

1. Protection and Trench Safety: Pursuant to Section 6705 of the State Labor Code, all open excavations greater than five (5) feet in depth shall be constructed with bracing, sheeting, shoring, or other equivalent method designed for the protection of life and limb. The trench excavation and support system shall comply in all respects with the requirements of Article 6, of the Construction Safety Orders of the Division of Industrial Safety. The Contractor's attention is directed to the provisions of Sub article 1540 (4), Article 6 of the California Construction Safety Orders for alternative shoring and sloping system. It shall be the Contractor's responsibility to provide the additional strength required to support the sides of the excavation against loads which may exceed those employed to derive the criteria set forth in the Industrial Safety Orders. The Contractor shall submit to the Engineer a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. If such plan varies from the shoring system standards, the plan shall be prepared by a registered civil or structural engineer.

It shall be understood that the above stipulated requirements are to be considered to be the minimum to be provided. The Contractor shall be solely responsible for any and all liabilities which may arise from his failure to provide adequate shoring, bracing or sheeting as necessary to support the excavation under any or all of the conditions of loading which may exist, or which may arise during the construction of the project.

2. Excavation for Structures: All excavations shall be properly shored, sheeted and braced or cut back to the proper slope to furnish safe working conditions, to prevent shifting of material, to prevent damage to structures or other work, and to avoid delay to the work, all in accordance with applicable safety and health regulations. Before starting excavation for structures, the Contractor shall submit for record purposes complete design calculations and working drawings of proposed sheeting and bracing arrangements which have been prepared, signed and sealed by a registered civil or structural engineer. Bracing

shall be arranged so as not to place any strain on portions of completed work until the general construction has proceeded far enough to provide ample strength. If the Engineer is of the opinion that, at any point, the sheeting or supports are inadequate or unsuited for the purpose, he may order the Contractor to resubmit design calculations and working drawings for that point, taking into consideration the observed field conditions. If the new calculations show the need for additional sheeting and bracing, the Contractor shall immediately install it. The sole responsibility for the design, methods of installation, and adequacy of the sheeting and supports shall be and shall remain that of the Contractor. The working drawings for shoring, sheeting and bracing will not be checked by the Engineer.

3. Sequencing: The Contractor shall not start excavation until the trench support drawing has been returned to the Contractor. When the construction sequence of structures requires the transfer of bracing to the completed portions of any structure, the Contractor shall secure the written acceptance of the Engineer prior to the installation of such bracing.

B. Submittals:

1. Trench Support Drawings: In accordance with the requirements of Section 6705 of the Labor Code of the State of California, the Contractor shall submit detailed drawings to the Engineer before excavation, showing the design of shoring, bracing, sloping or other provisions to be made for worker protection from the hazard of caving ground during the excavation of any trench or trenches 5 feet or more in depth. The design shall be signed by a registered engineer. The drawings will not be checked by the Engineer.
2. Certification: The minimum required protection will be that described in the Construction Safety Orders of the Division of Industrial Safety. If the Contractor presents excavation plans which vary from the shoring system standards established by the Construction Safety Orders, the Plans shall be prepared and signed by a registered civil engineer.

## **PART 2 - PRODUCTS (NOT APPLICABLE)**

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. The design, planning, installation and removal of all lagging, sheeting, shoring, sheet piling, and bracing shall be accomplished in such a manner as to maintain the undisturbed state of the soils adjacent to the trench and at and below the excavation bottom.
- B. The use of horizontal strutting below the barrel of a pipe or the use of a pipe as a support will not be permitted.
- C. Sheet piling and timbers in trench excavations shall be withdrawn in a manner so as to prevent subsequent settlement of the pipe or additional backfill loading which might overload the pipe. Trench sheeting below the top of the pipe shall be left in place.

### **END OF SECTION**

## **SECTION 02510**

### **ASPHALTIC CONCRETE PAVEMENT**

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

##### **1.01 DESCRIPTION**

The Contractor shall construct asphaltic concrete pavements for trench resurfacing, roads, parking areas, aprons, sidewalks, and other Work involving asphaltic concrete, all as shown on the Plans. Asphaltic concrete shall conform to all requirements of the City of Corona and County of Riverside, which ever has jurisdiction over the portion of pavement being replaced or paved. As a minimum, the Contractor shall conform to the requirements of the latest revision of the Standard Specifications for Public Works Construction (SSPWC, Greenbook), latest edition, as shown on the Plans and specified herein.

##### **1.02 ASPHALT CONCRETE PAVEMENT**

- A. Materials and workmanship for asphalt concrete shall conform to the applicable provisions of the jurisdictional agency requirements, project permits, and Section 203-6 of the Standard Specifications for Public Works Construction. Refer also to details on the plans for material specifications, removal and replacement.
  - 1. County of Riverside, Transportation Department – Road Improvement Standards and Specifications (Ordinance 461) - [http://www.rctlma.org/trans/land\\_dev\\_ord\\_461.html](http://www.rctlma.org/trans/land_dev_ord_461.html).
  - 2. City of Corona - Standard Plans – <http://www.discovercorona.com/City-Departments/Public-Works/Development-and-Permits/Standard-Plans.aspx>.

#### **PART 2 - EXECUTION**

##### **2.01 AGGREGATE BASE COURSE**

Base material shall be furnished, placed and compacted for asphalt concrete pavements as shown on the Plans and specified herein. The spreading and compacting shall conform to Section 301-2 of the SSPWC and local jurisdictional agency requirements.

##### **2.02 ASPHALTIC CONCRETE PAVEMENT**

Contractor shall confirm to the requirements as shown on the Plans or as defined in construction permits by local jurisdictional agencies.

Asphaltic concrete pavement shall be spread in one course by means of a Barber-Greene paving machine, or approved equal. It shall be spread to a depth to achieve a compacted thickness as shown on the Plans. The completed surface shall be thoroughly compacted, smooth and true to grade and cross-section, and free from ruts, humps, depressions and irregularities.

When a straight edge is laid on the finished surface and parallel to the centerline, the surface shall not vary more than 1/8-inch in 10-feet.

## **2.03 ADJUST VALVE BOX RINGS AND COVERS**

The Contractor shall adjust all valve box rings and covers to grade within thirty (30) days after final paving of each street or roadway in which the Work is completed.

## **2.04 PAVEMENT REMOVAL**

Pavement removal shall be per jurisdictional agency requirements, or by the Greenbook if no jurisdictional requirements. After grinding, Contractor shall remove excess pavement grindings and place temporary asphalt concrete pavement (2" minimum thickness) in all trenches not excavated for pipeline installation the same day as the grinding is performed.

If Contractor sawcuts and removes existing pavement, Contractor shall place temporary asphalt concrete pavement (2" minimum thickness) in all trenches. Contractor shall be responsible for all pavement removal and replacement throughout the project. No additional payment will be made for pavement removal or replacement.

## **2.05 PAVEMENT RESORATION**

All work sites shall be restored to pre-job conditions and shall meet the requirements of the Owner, jurisdictional agencies, and property owner(s). The Contractor shall repair or replace damaged improvements as directed by the Owner.

Contractor shall protect in place, or remove and replace, all existing utilities and public and private improvements including, but not limited to, berms, curbs, gutters, concrete pavement, rubberized asphalt concrete, asphalt concrete pavement, cross gutters, spandrels, medians, and driveways. If said facilities are undermined or disturbed as determined by the Owner, said facilities shall be removed and replaced. Contractor shall correct or replace any damaged improvements as part of the contract work at no additional cost.

For each appurtenance crossing beneath curb and gutter, Contractor shall remove and replace existing curb and gutter. During replacement of curb and gutter, Contractor shall replace sections of curb and gutter between existing construction joints.

Where appurtenances will be installed in existing concrete, rubberized asphalt concrete or asphalt concrete pavement areas, Contractor shall remove and replace sections of sidewalks, rubberized asphalt concrete or asphalt concrete pavement areas as required to accommodate said appurtenances. Areas shall be sawcut and sidewalks shall be removed in complete panels at existing joints. If colored or textured pavement or sidewalk is removed, Contractor shall replace with colored and/or textured pavement or sidewalk to match existing.

Where pipelines or appurtenances are constructed underneath existing concrete spandrels or cross gutters, Contractor shall remove and replace said spandrels or cross gutters. Spandrels or cross gutters shall be sawcut at existing construction joints and removed unless directed otherwise by Owner.

A. Daily Restoration: Contractor shall, as a minimum, have accomplished by the end of each work day, the following:

1. Remove all debris, construction materials, and equipment from public and private streets, and private property.
2. Fill all excavations with compacted backfill compacted to 90% relative compaction minimum. However, if approved by Owner and jurisdictional agency, Contractor may use traffic plates to cover portions of the trench each day. Traffic plates shall be recessed

flush with existing surface, tack welded together, pinned, reinforced as required to support traffic, and be covered with a nonskid surface.

3. Place 2" minimum thickness temporary asphalt concrete pavement on all trenches where existing asphalt concrete pavement was removed, compacted and rolled smooth and flush with adjacent pavement sufficient to support traffic. Said pavement may be placed cold provided it is placed smooth and flush with adjacent existing pavement and rolled with a steel-wheeled pavement roller and properly maintained. Compaction of pavement by other equipment including, but not limited to, backhoes, loaders, or trucks will not be allowed.

Alternatively, Contractor may base pave flush each day in accordance with the permanent pavement installation requirements set forth below.

4. Clean all work areas including, but not limited to, washing and sweeping all streets, driveways, gutters, sidewalks, bikeways, and trailways, and removing all trash. Contractor shall sweep work areas more than once a day if requested by Owner or jurisdictional agency.
5. Place temporary traffic striping.
6. Remove all traffic control except for traffic control required for safety, and open all streets to traffic.

In addition, Contractor shall inspect entire job site at the end of each workday and frequently on Saturdays, Sundays, and holidays and correct any traffic, pavement (temporary or permanent pavement) or backfill deficiencies. Contractor shall maintain streets, including backfilled trenches, in good repair.

If Owner receives complaints from individuals or agencies affected by the project, Contractor shall take immediate action to correct the situation as directed by the Owner. If Contractor receives complaints directly, Contractor shall report same immediately to Owner. Thereafter, Contractor shall take immediate action to correct the situation as directed by Owner.

Contractor shall respond immediately to all requests by Owner for remedial work. Contractor shall have a crew available to respond to said requests at all times. If Contractor does not correct situation within one working day, the Owner will take any and all action to correct the situation at Contractor's expense. Costs incurred by the Owner associated with street clean-up or restoration will be subtracted from the following month's partial payment request.

**B. Permanent Asphalt Concrete Pavement:**

1. Preparation: At the end of each week, Contractor shall remove all temporary asphalt concrete pavement, dispose of it at an authorized disposal site, backfill trench as required, compact subgrade as specified, and then place permanent base pavement.

Contractor shall saw cut pavement edges to straight, neat, vertical edges, either perpendicular to or parallel with the trench. If existing pavement adjacent to the trench is scarred, broken, or removed (as determined by Owner or jurisdictional agency), Contractor shall remove said broken or scarred pavement and replace same with hot placed asphalt concrete pavement in accordance with the requirements below. Prior to placing asphalt concrete pavement, Contractor shall excavate underlying subgrade to proper grade and compact it to 95% relative compaction minimum and have the restoration work approved by Permitting Agency's Inspector.

2. Restoration Requirements:

- a. General: Pavement shall consist of trench pavement and a pavement overlay.

Trench pavement shall be placed flush with adjacent pavement (i.e. initial base thickness shall be final base thickness plus cap thickness). Contractor shall not place permanent asphalt concrete pavement overlay until all pipelines and appurtenances have been tested, disinfected, and approved by the Owner. All pavement overlays shall be placed with a self-propelled paving machine, Barber Greene or equal.

- b. Trench Pavement within City of Corona: Trench pavement shall be replaced in kind and in accordance with City requirements

- c. Trench Pavement within County of Riverside: Trench pavement shall be replaced in kind and in accordance with County requirements.

- C. Adjust to Grade. After asphalt concrete pavement overlay work is complete, Contractor shall adjust all manholes, vaults, and valve boxes to grade.

- D. Traffic Signing and Striping. Contractor shall protect in place or remove and replace all existing traffic signs and traffic striping.

All traffic striping and markings including but not limited to, centerlines, lane lines, stop bars, and crosswalks destroyed or damaged during construction shall be replaced with temporary striping or markings by method approved by the permitting agency. Said temporary striping shall be placed at the end of each work day, prior to reopening street to traffic. Within three days of placement of final pavement overlay, all traffic striping and pavement markings shall be permanently restored or replaced with thermo plastic traffic striping and pavement markings per Section 02600.

Not all traffic signs and traffic striping and markings are shown on the Construction Drawings. Contractor shall review project site to determine extent of same and base his bid accordingly.

- E. Traffic Loops. Any traffic loops, detectors, or conduits damaged or destroyed during construction shall be immediately replaced by a traffic signal Contractor. Temporary repair of said traffic loops, detectors, and conduits is acceptable until placement of final pavement overlay. Final replacement of traffic loops, detectors, and conduits shall be completed within 72 hours of placement of final pavement overlay. All work shall be performed by a traffic signal contractor acceptable to the agency of jurisdiction.

Not all traffic loops, detectors, or conduits are shown on the Construction Drawings. Contractor shall review project site to determine extent of same and base his bid accordingly.

**END OF SECTION**



## **SECTION 02600**

### **PAVEMENT STRIPING AND MARKING**

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

##### **1.01 DESCRIPTION**

Contractor shall furnish materials, labor, and equipment to install pavement striping and marking in kind and to the satisfaction of the respective jurisdictional agency, except where explicitly noted otherwise. Contractor shall perform pre-construction video and prepare plans of existing pavement markings prior to removal.

##### **1.02 REFERENCES**

- A. Removal, salvaging, painting, installation, and materials of permanent traffic striping pavement markings, roadway signing, pavement markers and delineators shall conform to, in the order of primacy, the specific conditions of permits issued for construction by the respective jurisdictional agencies, these specifications, the provisions in the Caltrans Standard Specifications and Standard Plans, (Current Edition), the MUTCD (Current Edition), the MUTCD 2003 California Supplement.

##### **1.03 SUBMITTALS**

- A. Contractor shall submit plans of existing pavement markings to the Owner for record prior to removal of any surface markings.
- B. Contractor shall submit paint material specification sheets and pavement markers proposed for use on the project.

#### **PART 2 - MATERIALS**

##### **2.01 PAINT**

- A. Contractor shall furnish and install traffic striping and paint on roadways per City of Corona and Riverside County requirements.
- B. All traffic striping and pavement markings shall be two coats of paint with glass beads unless otherwise approved by the permit inspector. A minimum of 7 days and maximum of 14 days shall be provided between application of the first and second coats of paint. All paint products shall meet California air pollution requirements. All paints shall be lead-free.
- C. City of Corona requires all traffic striping, pavement legends and raised pavement markers be installed in accordance with the latest version of the California (MUTCD) Manual and Caltrans Standard Plans and Standard Specifications Sections 84 and 85, May 2006. All striping and pavement markings shall be thermoplastic per City Standard Specifications. Skip lines shall be applied by extrusion method only.

Contractor shall reflectorize all traffic stripes, pavement legends and pavement markings. Pavement legends and markings shall match City Stencils. All details refer to Caltrans Standard Plans A20-A through A-20D and A24A through A24-E.

- D. The paint material for traffic striping and marking shall be as follows, or an approved equal:
  - 1. White: Pervo Paint Company #6000
  - 2. Black: Pervo Paint Company #6002
  - 3. Yellow: Pervo Paint Company #6003
- E. The paint material for striping and marking on concrete surfaces shall be as follows, or an approved equal:
  - 1. Red: Pervo Paint Company #7104
  - 2. Green: Pervo Paint Company #7105
  - 3. Blue: Pervo Paint Company #7106
- F. Glass beads shall conform to State Specification 8010-210-22 (Type II)

## **2.02 PAVEMENT MARKERS**

- A. Contractor shall furnish and install reflectorized markers along shoulder of road and centerline striping per City of Corona and Riverside County requirements.
- B. Reflective pavement markers shall as required by the permitting agency, to include Stimsonite-Low Profile No. 953A (yellow) or No. 953 (clear White), 3M brand Series 290, Avery-Dennison Brand model 953, or approved equal.
- C. Adhesive pavement markers shall conform to Section 95-2.04, "Rapid set epoxy adhesive for pavement markers," of the State Standard Specifications.
- D. Blue raised reflective pavement markers indicating location of fire hydrants shall be placed as indicated by local standards.

## **2.03 FLEXIBLE POSTS**

- A. Flexible posts shall be made from a flexible white plastic which shall be resistant to impact, ultraviolet light, ozone and hydrocarbons. Flexible posts shall resist stiffening with age and shall be free of burns, discoloration, contamination, and other objectionable marks or defects which affect appearance or serviceability.

## **2.04 SIGNS**

- A. All roadway signs shall have retro-reflective sheeting. Unless specified otherwise, the retro-reflectivity for all roadway signs, both temporary and permanent installations shall meet or exceed ASTM Standard D4956 Type III. Provide 3M Company High Intensity Grade or approved equal.
- B. The retro-reflectivity for R1-1, "STOP" signs and W3-1 "STOP AHEAD" signs shall meet ASTM Standard D4956 Type IX. Provide 3M Company Diamond Grade or approved equal.
- C. Sign installations shall be installed in accordance with local standards and specifications.

## **PART 3 - EXECUTION**

### **3.01 PAINT AND MARKING REMOVAL**

- A. When required, existing conflicting pavement markers and striping shall be removed prior to placement of permanent markings or striping. The removal of existing markings and striping shall be accomplished by one of the following methods.
1. Wet Sandblasting: Where blast cleaning is used for the removal of painted traffic stripes and pavement markings or for the removal of objectionable material, provisions shall be made to immediately sequester sandblasting residue via a vacuum attachment operating concurrently with the blast cleaning operation. Contractor is responsible for clean-up and for any damage caused by escaped residue or blasting material.
  2. Grinding: A minimum of three passes with the grinder is required. Removal shall be to a maximum depth of 1/10-inch unless additional depth is required to effectively remove paint and only with the approval of the Engineer. Asphalt emulsion slurry shall be applied to the areas where stripes or pavement markings have been removed.
- B. Existing roadside signs shall be removed and relocated as shown on the plans, or as required to complete the indicated work. Existing roadside signs shall not be removed until replacement signs (temporary or permanent) have been installed or until the existing signs are no longer needed as directed by the Engineer.

### **3.02 LAYOUT AND CONTROL**

Contractor shall furnish the necessary control points for all striping and markings and shall be responsible for the completeness and accuracy thereof to the satisfaction of the Engineer and the Permit Inspector. The Contractor shall perform all layout, alignment, and spotting for traffic stripes and markings. Traffic striping shall not vary by more than 1/2 inch in 50-feet from the alignment laid out. Spotting with Cat Tracks or Dribble lines shall be performed prior to the removal of existing stripes. Cat Tracks shall consist of spots of paint not more than 3-inches in width and not more than 5 feet apart along the alignment of the stripe. Paint for the cat tracks shall be the same as that intended for the permanent stripe. Paint for the Dribble Lines shall be neutral color obtained by mixing approximately two parts white paint with one part black paint. Spotting shall be completed prior to removal of any existing stripes or markings.

### **3.03 TRAFFIC CONTROL**

Contractor is responsible for all temporary traffic control and safety measures, required during the surface restoration. Existing stripes and markings shall be removed prior to painting new ones. In no case shall any section of street be left without the proper striping for more than 24 hours or over weekends or holidays.

**END OF SECTION**

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## SECTION 02999

### TEMPORARY HANDLING OF BRINE FLOW

#### PART 1 - GENERAL

##### 1.01 WORK DESCRIPTION

- A. The Contractor is responsible for the temporary handling of brine throughout the construction of the Project. This includes design, installation and operation of a temporary bypass system and Spill Prevention, Control and Countermeasure Plan to facilitate rehabilitation of the Inland Empire Brineline Reach V.
1. Comply with the general arrangement and all the requirements for the bypass system detailed on the Drawings.
  2. Contractor shall complete the bypass work in a manner as to limit the total flow shutdown time to a maximum of three (3) calendar days, from shutdown to reinstatement of flow. Failure to complete all work required for a complete and operable bypass system within the available shutdown period shall necessitate re-establishment of brine line connectivity and reinstatement of brine line flows.
  3. The bypass will convey flows from the upstream side of the new upstream maintenance access structure (MAS) to the downstream side of the downstream MAS per the Contract Drawings. The system shall be installed and tested prior to reinstatement of brineline flows.
  4. A single above-ground HDPE bypass pipeline and system shall be provided with shallow plated trenches at driveway and road crossings as detailed on the Drawings. The Contractor may provide alternative driveway and road crossing methods for review and approval by Owner.
  5. The main line bypass shall consist of an above ground DR17 HDPE pipeline equal or larger than nominal 14-inch and less than nominal 16-inch in diameter.
  6. Bypass system shall be capable of running 24 hours per day for up to 75 continuous days, or as required to complete the work.
  7. Contractor shall be responsible for all aspects of the mobilization, set up, operation, management, 24-hour trained personnel for monitoring and operation, pressure testing, spill containment at all points of suction, discharge, and bypass crossing connections, spill management including clean up, replacement of damaged property and fines.
  8. The Contractor shall be responsible for traffic barricades and temporary chain link fencing around bypass system, if required. Bypass system shall be tamper resistant.
  9. The Contractor shall submit proposed bypass procedure to Owner for approval, prior to setup.
- B. The Contractor shall comply with the Regional Water Quality Control Board, Health Department, and SAWPA standards, Air Quality Management District permits, and regulations. The Contractor shall cooperate with SAWPA staff and other regulators and environmental agencies.

## **1.02 RELATED WORK SPECIFIED ELSEWHERE**

- A. Section 01556 Temporary Traffic Control
- B. Section 15051 Piping, General Piping Stipulations
- C. Section 15061 High Density Polyethylene Pipe (HDPE)

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

- A. Comply with the reference Specifications of the General Requirements.
- B. Commercial Standards, including American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), Federal Specifications (FS), International Standards Organization (ISO), and manufacturer's printed recommendations.

## **1.04 CONTRACTOR LIABILITY**

- A. The Contractor shall be responsible for completion of the bypass work in a manner as to limit the total flow shutdown time to a maximum of three (3) calendar days, from shutdown to reinstatement of flow. Failure to complete all work required for a complete and operable bypass system within the available shutdown period shall necessitate re-establishment of brine line connectivity and reinstatement of brine line flows
- B. The Contractor shall be responsible for continuity of brineline service to each facility connected to the brineline during the execution of the Work to be performed under this Contract. In the event that brine backup occurs and enters dwellings or other structures due to in any part to a failure of the bypass piping system or to non-compliance with the Contract Documents, the Contractor shall be responsible for cleanup, repair, property damage costs, fines imposed by jurisdictional authorities, and all claims arising there from. All spills shall be contained and returned to the brineline system.
- C. In the event the Regional Water Quality Control Board levies a fine on SAWPA because of a brine spill caused by the Contractor (directly or indirectly) due to Contractor lack of attention to procedures or other negligence, the Contractor shall be held responsible and liable for reimbursing SAWPA for the entire amount of any fine imposed.

## **1.05 CONTRACTOR SUBMITTALS**

- A. Contractor shall not utilize above ground brine by-pass systems in the public right-of-way without written approval from SAWPA, the County of Riverside and the City of Corona. The Contractor shall prepare and submit to SAWPA at its own cost a complete plan demonstrating how the bypass system will be operated with mitigation of impacts to traffic.
- B. Unless otherwise indicated, the following shall be submitted to the Engineer within 15 days after receiving the Notice to Proceed, in compliance with the General Conditions, and as specified herein.
  - 1. Plans and procedures, clearly indicating any proposed changes from the Contract Documents, for the temporary handling of brineline flow, routing and protection of bypass lines, containment areas, equipment location, schematic of set-up and discharge, and proposed sequencing.

2. Shop drawings for the brine bypass pipe material and fittings, valves, air valves, pipe repair kits and procedures, spill recovery mats, and video camera.
3. Spill Prevention, Control, and Countermeasure Plan as described in Part 3 (Execution) of this Specification.

## **PART 2 - PRODUCTS**

### **2.01 BYPASS PIPING**

- A. The bypass piping shall consist of one temporary above-ground DR17 HDPE pipeline no less than nominal 14-inch Ductile Iron Pipe Size (DIPS) and not greater than nominal 16-inch in diameter (DIPS).

### **2.02 BYPASS VALVES**

- A. All valves used on the bypass system shall be open port gate, plug or ball valves. Size of valve shall be minimum 14-inch nominal diameter.

### **2.03 TEMPORARY PLUGGING OF BRINELINE**

- A. Plugs shall be appropriate for the application. Unless otherwise indicated, plugs shall be a heavy-duty inflatable type with a steel rod through plug centerline, a retaining plate and an eye-lift on both ends. Plugs shall be new, made of natural rubber and shall show no cracks or signs of damage. The plugs shall have a flexible sealing design to compensate for any irregular interior surface of the pipe. The plug length shall be suitable for the specific application. Plugs shall be equipped with continuous pressure monitoring and an audible alarm when the pressure drops below the minimum pressure recommended by the manufacturer. The installed pressure shall be as recommended by the manufacturer for the application. The eye-lifts shall be secured to a 5/8-inch diameter stainless steel pulling cable accessible for removal without entry. Inflatable plugs should be installed immediately upstream from the dry manhole to aid emergency removal of the plug. A double block and bleed may be required to protect workers per OSHA.

### **2.04 MANHOLE LEVEL SENSORS WITH ALARM**

- A. Each bypass suction wet well or manhole shall be fitted with a liquid level sensor connected to an audible alarm and light. Level shall be set to indicate a pumping failure as early as possible.

### **2.05 RUBBER MATTING FOR BLOCKING OF STORM DRAIN INLETS**

- A. Rubber matting shall be premium grade neoprene sheet 1/8-inch thick minimum by 48-inches wide. 60 to 70 durometer. ASTM D2000 5BC A14 B14 E034

## **PART 3 - EXECUTION**

### **3.01 TEMPORARY HANDLING OF BRINE**

- A. Contractor is not permitted to utilize brine by-pass systems in the public right-of-way without written approval from SAWPA, the County of Riverside and the City of Corona. Design of bypass system cannot be changed without written approval from SAWPA, County of Riverside and the City of Corona.

- B. The Contractor shall construct, operate, maintain, and remove, without damage to existing structures, all temporary brine handling facilities. SAWPA forces will not assist the Contractor with flow handling during the Work. The Contractor shall submit details of proposed equipment for temporary handling of brine flow as specified. Requirements for operating the bypass system shall be as indicated herein and as shown on the Plans. The system shall operate as specified to insure that neither the upstream nor downstream systems are threatened with brine overload or spill.

Under no circumstances shall brine or solids be deposited onto the ground surface, streets, or into ditches, catch basins or storm drains or natural drainage ways. Brine shall be handled in a manner so as not to create a public nuisance or health hazard.

Contractor shall propose a system test procedure for review and approval as part of the Shop Drawing review. Work on the project requiring no flow in the brineline shall not commence until after the bypass system is proven adequate in accordance with the approved test procedure.

### **3.02 SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN**

- A. The Contractor shall submit a Spill Prevention, Control and Countermeasure Plan for approval by the Owner prior to beginning work.
- B. Contractor shall provide reservation of two vacuum capable tanker trucks and personnel. Such equipment shall be available to the project for on-site response within 30 minutes notice over 24 hours per day for the duration of the field work.
- C. The Contractor may submit equivalent materials and methods for consideration.
1. Sand bags
  2. Rubber matting
- D. The Contractor shall protect storm drains during construction. Storm drain inlets shall be blocked with rubber matting and sand bags. Rubber matting shall overlap storm drain inlets by a minimum of 24-inches on all sides. For inlets located in traffic areas, the grating may be removed, wrapped with rubber sheeting and reinstalled to provide a barrier to the inlet.
- E. The Contractor shall have a minimum of one 48-inch wide x 36-foot long roll of rubber matting and 30 sandbags in addition to the materials required to cover storm drain inlets. Spare rubber matting and sandbags shall be located for quick deployment in the staging area for the project site
- F. The Contractor shall submit for acceptance, all duty and emergency equipment for containment, cleanup, and repair of any spill. Specifics for each bypass installation shall include as applicable, but are not limited to:
1. Pipe repair kits
  2. Spare inflatable pipe plugs
  3. Spare pipe sections, and other relevant equipment
  4. Spare valves
  5. Spare vehicle ramps
  6. Standby pumping truck(s)
- G. The Contractor shall maintain standby and emergency equipment on site.



- H. The Contractor shall provide the names, phone numbers, and hourly working schedules of at least three (3) people who can be contacted 24 hours per day by phone and that may be brought on-site at any time to address on-site emergencies. The Contractor shall provide notification of any substitution in writing at least two days in advance. When bypassing flows, Contractor shall have at least one bypass pumping factory-trained and certified person on site 24 hours per day to monitor and maintain the bypass and implement the emergency procedures in case of an emergency.
1. The Contractor shall identify those responsible for each activity, present a training plan for acceptance, and perform the accepted training.
  2. The Contractor shall coordinate the plan with the construction storm water management requirements to protect water quality and respond to spills of brine, sewage, groundwater, or fuels, ensuring there are no conflicts with implementing each of the respective programs. The Contractor shall implement all indicated spill prevention measures (e.g. monitoring of upstream manholes, monitoring in the trench).
- I. The following spill procedures shall be followed by the Contractor.
1. If a spill is detected or a catastrophic pipe failure occurs, the immediate priority of the Contractor shall be to prevent any brine from reaching storm drains and ultimately surface waters. A storm drain may be used for containment of a large spill if adequate preparations are made as indicated in the Plans. The Contractor shall protect vulnerable drains using rubber mats or sand bags continuously during bypass.
  2. The Contractor shall anticipate the following bypass system failure modes in the plan and be prepared to act accordingly.
    - a. If the bypass system fails, begin using standby equipment immediately.
    - b. In the event the bypass pipe is ruptured in a traffic accident or otherwise, the Contractor shall immediately, start redundant standby system, install containment as indicated in the plan, and notify SAWPA (951-324-8680). Inform the Control Center what emergency diversion, if any, is indicated in the plan. Make repairs to the bypass pipe and restart the system. Begin cleanup. Notify the Control Center when the system is back in service.
  3. In event of any spill, the Contractor shall immediately and in parallel with above activities, notify SAWPA and request SAWPA's staff to be dispatched. The Contractor should attempt to give the best indication to the SAWPA staff of the approximate size of the spill (<1,000 gallons is small; 1,000 gallons to 10,000 gallons is medium; and >10,000 gallons is large) along with the approximate amount, if any, of brine discharged to a storm drain or channel so the appropriate response can be dispatched.
  4. SAWPA staff will respond to monitor the Contractor's clean-up-related activities to ensure the spill is cleaned in accordance with this Plan. It is the Contractor's responsibility to provide the primary means for pipe repair and spill recovery and clean-up including mobilizing any necessary equipment to be onsite within an hour of a spill. Clean up may require a sweeper truck, Vactor truck, water truck, and/or other equipment. All SAWPA time and material and special equipment for spill cleaning will be deducted from the Contractor's progress payment
  5. The Contractor shall attempt to pond the water in an area away from storm drains that can be easily and fully recovered for discharge to SAWPA's brineline system. This ponding activity should not impact any environmentally sensitive areas.

6. The Contractor and Engineer with the assistance of SAWPA staff shall coordinate the most efficient and appropriate response, repair, and cleanup of a spill as soon as possible. The Contractor will cooperate with SAWPA staff to the fullest extent possible in order to minimize the impacts and volume of the spill in the most efficient manner possible.
7. Disinfection of a spill is not allowed. All wash water and brine-contaminated wash water must be contained and recovered in the same manner as the brine.
8. The Contractor shall have cameras on hand and shall document the spill, its cause, and the response activities as these occur with a video camera and photographs. The Contractor is required to attend a debriefing at the jobsite immediately after the spill is contained and cleaned up.

**END OF SECTION**

## **SECTION 03460**

### **PRECAST CONCRETE MAINTENANCE HOLES**

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

##### **1.01 DESCRIPTION**

- A. Precast concrete Maintenance Holes shall be constructed in accordance with the design, size and details and at the locations shown on the Plans. Specifications for related work are as follows:
  - 1. ASTM C478, Concrete; ASTM A48, Gray-Iron Castings; California Construction Safety Orders Article 4, Section 1532, Confined Spaces.

##### **1.02 RELATED WORK DESCRIBED ELSEWHERE**

- A. The Contractor shall refer to the following Specification section(s) for additional requirements:
  - 1. Submittals: 01300
  - 2. Trenching, Backfill and Compaction: 02223
  - 3. Concrete Construction: SSPWC, Section 303, latest edition

##### **1.03 SUBMITTALS**

- A. Contractor shall furnish submittals in accordance with the requirements of Section 01300, Shop Drawing Submittals. The following submittals are required:
  - 1. Shop Drawings of the precast Maintenance Hole.
  - 2. Maintenance Hole Couplings.
  - 3. Tnemec 46H-413, 16 Mil DFT, Xypex admix C-1000 with a minimum 4,000 psi concrete Type V cement or Approved Equal
  - 4. Butyl Rubber Joint Sealant

##### **1.04 PAYMENT**

- A. Payment for the Work in this section shall be included as part of the lump-sum or unit-price bid amount for which such Work is appurtenant thereto.

#### **PART 2 - MATERIALS**

##### **2.01 PRECAST MAINTENANCE HOLES**

- A. Precast reinforced concrete Maintenance Hole riser and tops shall be constructed of Class A concrete and shall conform to the Specifications of ASTM C478, except as herein modified. The minimum allowable steel shall be hoops of No. 4 wire, to be cast into each unit at adequate places as a precautionary measure for handling. Maintenance Hole components shall be designed for H-20 highway loads and site soil conditions.

- B. The minimum nominal shell thickness for formed and vibrated sections shall be 1/8 of the internal diameter of the riser or largest cone diameter. Maintenance Holes shall be fabricated only from eccentric taper sections and standard cylinder units of the proper internal diameter. Maintenance Hole sections shall be cast without galvanized steel ladder rungs unless otherwise shown on the Plans.
- C. Precast concrete Maintenance Holes shall be manufactured by Associated Concrete Products, Ameron, Southwest Concrete Products, Inland Concrete Products, or approved equal.

## **2.02 DROP MAINTENANCE HOLES**

- A. Not Used.

## **2.03 MAINTENANCE HOLE FRAMES AND COVERS**

- A. Castings for frame and cover sets shall conform to the requirements for gray iron castings in ASTM A48 for Class 30 castings. Frames and covers shall be designed for H-20 loading. Before leaving the foundry, all castings shall be thoroughly cleaned and subjected to a hammer inspection, after which they shall be dipped twice in a preparation of asphalt or coal tar and oil applied at a temperature of not less than 290° F nor more than 310° F and in such a manner as to form a firm and tenacious coating. Each cover shall be ground or otherwise finished so that it will fit in its frame without rocking, and frames and covers shall be match-marked in sets before shipping to the site. Covers shall be cast with service designation "SAWPA" and "SEWER" for the brineline facilities. No other lettering on the top side will be permitted.
- B. All iron or steel products used must be manufactured (includes application of coatings) within the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap, and the materials being applied as a coating are not included.
- C. All manhole covers shall be locking type covers. Contractor shall submit the locking manhole covers to the Owner for approval prior to installation.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. Maintenance Hole locations are fixed and cannot be moved to accommodate pipe manufacturing or laying. If necessary, special lengths will be provided to meet Maintenance Hole location requirements.

### **3.02 EXCAVATION**

- A. The Contractor shall prepare an excavation large enough to accommodate the structure and permit grouting of openings and backfilling operations. Earthwork shall conform to the SSPWC Section 300, Earthwork, latest edition, except as herein modified.

### **3.03 MAINTENANCE HOLE BASE**

- A. The Maintenance Hole base shall be poured in place against a 4-inch thick Polystyrene Pad. The various sized inlets and outlets to the Maintenance Hole shall be located as indicated on the Plans. The Maintenance Hole base shall extend as shown on the Plans.
- B. Maintenance Holes
- C. Each Maintenance Hole section shall be set in a bed of mortar and butyl rubber rope to make a watertight joint, shall be neatly banded on the inside and out, and shall be set perfectly plumb. Sections of various height grade rings shall be used in order to bring the top of the Maintenance Hole ring and cover to the elevation established on the Plans, but limited to maximum of 18-inches of grade ring unless otherwise instructed by the Owner's Representative. The precast concrete Maintenance Hole rings shall be jointed with a minimum thickness of ½-inch of portland cement mortar.
- D. Mortar shall be composed of one part portland cement to two parts of clean well-graded sand of such size that all pass a No. 8 sieve. Cement, aggregate, and water for mortar shall conform to the applicable provisions of the SSPWC, Section 303, Concrete Construction, latest edition. Preformed, cold-applied, ready-to-use plastic joint sealing compound may be substituted for mortar between units and must be used when groundwater is encountered.
- E. The finished elevations at which Maintenance Hole frames and covers are to be set shall conform to the requirements set forth on the Plans, but in all cases shall be governed by the Construction Manager in the field. Where the frame and cover are in existing pavement or in the traveled way of the existing road shoulder, it is to be placed flush with the existing surface. Where the structure is outside the limits of the traveled shoulder but not in the roadside ditch, it should be placed 1/10-foot above the existing ground surface. Where the Maintenance Hole cover falls in the existing roadside ditch or easement right-of-way "offsite," it is to be placed approximately 18-inches above the existing ground surface or as directed by the Construction Manager. Maintenance Hole frames shall be set at the required grade and shall be securely attached to the top precast Maintenance Hole shaft unit with a cement-mortar bed and fillet as shown on the Plans. After the frames are securely set in the place provided herein, covers shall be installed and all necessary cleaning and scraping of foreign materials from the frames and covers shall be accomplished to ensure a fine satisfactory fit.

### **3.04 MAINTENANCE HOLE STUBS AND STOPPERS**

- A. Appropriate pipe shall be furnished and installed in Maintenance Holes at the locations and in conformance with the Plans. All stubs shall be plugged as shown on the Plans for various sizes of pipe. Where new construction is started at the stub of an existing Maintenance Hole, the Contractor shall brick the opening into the Maintenance Hole before he removes the plug or stopper from the stub. Said bricked opening shall remain in place until the Contractor has tested and completed the Work.

### **3.05 WATERPROOFING**

- A. Damp-proofing material shall be applied to the exterior surfaces of Maintenance Holes in accordance with the manufacturer's recommendations. The material shall be applied to all exterior surfaces below a point one foot above the water table or indications of seepage or moisture as directed by the Engineer. In addition, either Tnemec 46H-413, 16 mil DFT; or Xypex admix C-1000 with a minimum 4,000 psi, type V concrete and maximum w/c ratio of 0.45 or approved equal shall be installed to cover or completely mixed into the entire exterior surface below grade.

Each joint in the Maintenance Hole shaft shall include the installation of a butyl rubber sealant rope.

**3.06 BACKFILL**

- A. Select backfill material consisting of clean sand shall be used around all Maintenance Holes. It shall be consolidated by water jetting or compacted by pneumatic tampers to obtain a relative density of 95% unless otherwise specified on the Plans.

**3.07 CONCRETE RING**

- A. A Class B concrete ring shall be cast around Maintenance Hole frames that are flush with the surface as shown on the Plans. The ring shall be placed after final grading or paving together with final cleanup.

**3.08 CONNECTIONS TO EXISTING MAINTENANCE HOLES**

- A. New connections to existing Maintenance Holes wherein stubs have not been provided shall be made by core drilling through the walls and base as directed by the Owner's Representative.

**END OF SECTION**

## **SECTION 03485**

### **PRECAST UTILITY VAULTS**

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

##### **1.01 WORK OF THIS SECTION**

- A. The Work of this Section includes providing precast utility vaults and manholes as shown on the Drawings.

##### **1.02 SPECIFICATIONS AND STANDARDS**

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

AASHTO HS-20	Standard Specifications for Highway Bridges with revisions
SS-S-00210A	Federal Specification (GSA-FSS) for cold applied performing sealing compound
ASTM C33/C33M	Specification for Concrete Aggregates
ASTM C150	Specification for Portland Cement, Type V
ASTM C330	Specification for Lightweight Aggregates
ASTM C858	Specification for Underground Precast Concrete Utility Structures
ASTM A615/A615M	Specification for Deformed Reinforcing Bars

##### **1.03 SHOP DRAWINGS AND SAMPLES**

- A. The following shall be submitted in compliance with Section 01300:
1. Design calculations and detailed drawings of utility vault and manhole component sections. Design calculations and drawings submitted by the Contractor shall be signed and stamped by a Professional Civil Engineer licensed in the State of California.

##### **1.04 INSPECTION**

- A. After installation, the Contractor shall demonstrate to the District's Representative that all utility vaults and manholes have been properly installed, level, with tight joints, and at the correct elevations.

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

##### **2.01 DESIGN LOADS**

- A. Design loads shall consist of dead load, live load, impact, and in addition, loads due to water table, and any other loads which may be imposed upon the structure.

- B. Live loads shall be HS-20 per AASHTO Standard Specifications. Design wheel load shall be 16 kips. The live load shall be that loading which produces the maximum shears and bending moments in the structure.

## **2.02 FORMS**

- A. All forms used in placing concrete shall be of metal and sufficiently designed and braced to maintain alignment under pressure of the concrete during placing.

## **2.03 CONCRETE**

- A. Aggregate: All aggregates fine and coarse, other than lightweight aggregate shall conform to specifications outlined by ASTM C-33. Aggregates shall be free of deleterious substances causing reactivity with oxidized hydrogen sulfide. Both types of aggregate shall be graded in a manner so as to produce a homogeneous concrete mix. All materials are to be accurately weighed at a central batching facility for mixing.
- B. Cement: All cement shall be Portland cement conforming to ASTM C-150-07, Type V. Cement content shall be sufficient to produce minimum strength 4,500 psi or other design strengths required.
- C. Placing: All concrete shall be handled from the mixer or transport vehicle to the place of final deposit in a continuous manner, as rapidly as practicable, and without segregations or loss of ingredients, until the approved unit operation is completed. Concrete shall be placed in layer not over two (2) feet deep. Each layer shall be compacted by mechanical internal or external vibrating equipment. Duration of the vibration cycle shall be limited to the time necessary to produce satisfactory consolidation without causing objectionable segregation.
- D. Curing: For purposes of early reuse of forms, the concrete may be steam cured after initial set has taken place. The steam temperature shall not exceed 160 degrees, and the temperature shall be raised from normal ambient temperatures at a rate not to exceed 40 degrees per hour.

The steam cured unit shall not be removed from the forms until sufficient strength is obtained from the unit to withstand any structural strain that may be subjected during the form stripping operations. After the stripping of forms further curing by means of water spraying or a membrane curing compound may be used, and shall be of a clear or white, conforming to ASTM C-309.

## **2.04 HATCHES, FRAMES AND COVERS**

- A. Covers or lids shall be of the size and type shown on the Contract Drawings.
- B. Hatches within roadways shall be manufactured by Bilco or approved equal. Hatch shall be galvanized steel, suitable for continuous H20 loading.
- C. Frames and covers for manholes shall conform to Section 206-3 of the Standard Specifications for Public Works Construction (latest edition).
- D. All iron or steel products used must be manufactured (includes application of coatings) within the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source



material. However, raw materials such as iron ore, limestone and iron and steel scrap, and the materials being applied as a coating are not included.

## **2.05 MANUFACTURERS**

- A. Products shall be manufactured by one of the following (or equal):
  - 1. Associated Concrete Products
  - 2. Brooks Products, Inc.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

- A. Precast concrete vaults and manholes shall be installed in strict conformance with the manufacturer's written instructions, on a well-compacted foundation.
- B. Openings or knockouts in precast concrete vaults shall be located as shown on the Contract Drawings and shall be sized sufficiently to permit passage of the largest dimension of pipe and/or coupling flange. Upon completion of installation all voids or openings in the vault wall around pipes shall be filled with epoxy mortar.
- C. After structure and all appurtenances are in place and approved by the Engineer, backfill shall be placed to the finished groundline.
- D. All joints shall be made watertight. The sealing compound shall be installed according to the manufacturer's recommendations to provide a watertight joint which remains impermeable throughout the design life of the structure.
- E. Frames and covers shall be installed with grade rings, as shown on the Contract Drawings, so the cover is flush with the surrounding surface, unless otherwise specified on the drawings or by the Engineer. The Contractor is responsible for placing the cover at the proper elevation where paving is to be installed and he shall make all necessary adjustments so that the cover meets these requirements.

### **3.02 INSPECTION**

- A. Upon request, the Contractor shall provide the District's Representative, a workman with ladder or other safe and adequate means for inspection access.

## **END OF SECTION**

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## **SECTION 09900**

### **PAINTING AND COATING SYSTEMS**

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

##### **1.01 DESCRIPTION**

**A. Scope:**

1. The Contractor shall furnish all labor, materials, equipment and incidentals required to provide painting as shown and specified herein.
2. The extent of painting work shall be as shown on the Drawings and as specified herein.
3. The work includes the painting and finishing of all interior and exterior items and surfaces throughout the Project except as otherwise shown or specified. Surface preparation, priming and number of coats of paint specified are in addition to shop priming and surface treatment specified under other sections of the work.
4. The term "paint" as used herein means all coating systems materials, which includes pretreatments, primers, emulsions, epoxies, enamels, varnish, stain, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.
5. The Contractor shall paint all exposed surfaces whether or not colors are designated in any schedule, except where the natural finish of the material is specifically noted as a surface not to be painted. The term "exposed" as used herein means all items not covered with concrete, plaster, fireproofing or similar material. Where items or surfaces are not specifically mentioned, the contractor shall paint these the same as adjacent similar materials or areas.
6. Structural and miscellaneous metals covered with concrete, plaster, or similar material shall only receive a primer compatible with the covering material.
7. Pipe markers shall be as specified in Section 15051.
8. Shop drawings and samples shall be submitted for review within 90 days from the Notice to Proceed and at least 30-days prior to any painting or coating application.

**B. Coordination:**

1. The Contractor shall review installation procedures under other Sections and coordinate the installation of items that must be field painted in this Section.
2. The Contractor shall coordinate the painting of areas that will be inaccessible once equipment has been installed.
3. The Contractor shall provide finish coats that are compatible with the prime paints used. Contractor shall review other Sections of these Specifications in which prime paints are to be provided to ensure compatibility of the total coatings system for the various substrates. Contractor shall be responsible for the compatibility of all shop primed and field painted items in this Contract. Contractor shall furnish information on the characteristics of the finish materials proposed for use, to ensure that compatible prime coats are used. Barrier coats shall be provided over incompatible primers or primers shall be removed and re-primed as required. The Owner Representative shall be notified in writing of anticipated problems using the coating systems as specified with substrates primed by others. Such notification shall be included with the equipment submittals.

C. The following categories of work are not part of the field-applied finish work:

1. Shop Priming: Unless otherwise specified, shop priming of structural metal, miscellaneous metal fabrications, other metal items and such fabricated components as shop-fabricated or factory-built heating and ventilating, and electrical equipment or accessories shall conform to applicable requirements of Section 09900. Contractor shall meet the requirements of other appropriate Sections of this Specification.
2. Pre-Finished Items: Unless otherwise shown or specified, painting shall not be included when factory finishing such as baked-on enamel, porcelain, polyvinylidene fluoride or other similar finish is specified for such items including, but not limited to, acoustic materials, finished mechanical and electrical equipment such as light fixtures and distribution cabinets. Contractor shall be required to touch up factory finished items with paint supplied by the item manufacturer. Contractor shall field paint damaged pre-finished items as directed by the Owner Representative. Where a factory finished coating is applied to an item that is not specified to receive a factory finish coat, acceptance of the factory finish coat shall be at the discretion of the Owner Representative. The color shall be noted with the equipment submittals.
3. Concealed Surfaces:
  - a. Unless otherwise shown or specified, painting is not required on nonmetallic wall or ceiling surfaces concealed from view areas and in generally inaccessible areas, such as furred areas, pipe spaces, duct shafts and elevator shafts, as applicable to this project.
  - b. All piping, equipment, and other such items within these areas that are not galvanized or coated with another corrosion resistant coating as specified shall be painted according to this Specification.
4. Concrete floors covered with tile, concrete topping or similar products and exposed concrete floors and exterior walkways/slabs shall not be painted.
5. Finished Metal Surfaces: Metal surfaces of stainless steel, chromium plate, and similar finished materials will not require finish painting, unless shown or specified.
6. Operating Parts and Labels:
  - a. Moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts do not require finish painting unless otherwise specified.
  - b. The Contractor shall not paint over any code-required labels, such as UL and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.
  - c. All paint, coating or splatter inadvertently placed on these surfaces shall be removed.

## 1.02 QUALITY ASSURANCE

A. Manufacturer: Products manufactured by one of the following shall be provided:

1. Carboline Company, Incorporated.
2. Tnemec Company, Incorporated.
3. ICI DeVoe Coatings, Incorporated

- B. **Applicator Qualifications:**
1. The name and experience record of the painting applicator shall be supplied. A list of utility or industrial installations painted, responsible officials, architects, or engineers concerned with the project and the approximate contract price shall be included. Applicator shall have a minimum of ten utilities or industrial installation of a similar size or larger, all in Southern California within the last five years.
  2. Painting applicators whose submissions indicate that they have not had the experience required to perform the Work will not be approved.
- C. **Job Mockup:** On actual wall surfaces and other exterior and interior building components as selected by the Owner Representative, the Contractor shall duplicate painted finishes of the selected samples. On a test area no less than 20 square feet, required sheen, color, and texture shall be obtained; finished lighting conditions shall be simulated for review of in-place work. After finishes are accepted these surfaces and components will be used for comparison in evaluation of other painting and finishing of a similar nature.
- D. All paint and coating products for a specified coating system shall be supplied by the same manufacturer unless otherwise approved. Coating Manufacturer shall be primary source of information for all coating supplied.
- E. **Reference Standards:** Applicable provisions and recommendations of the following shall be complied with, except where otherwise shown or specified:
1. ANSI A13.1, Scheme for the Identification of Piping Systems.
  2. Great Lakes - Upper Mississippi River Board of State Sanitary Engineers (Ten States Standards), Recommended Standards for Waste Treatment Works - Latest Edition, Recommended Color Scheme for Piping.
  3. OSHA 1910.144 Safety Color Code for Marking Physical Hazards.
  4. SSPC Volume 2, Systems and Specification, Surface Preparation Guide and Paint Application Specifications.
  5. ANSI/AWWA C105 Polyethylene Encasement for Ductile Iron Piping for Water and Other Liquids.
  6. Published standards of The National Association of Corrosion Engineers.
  7. All paints to be applied in the field shall conform to VOC requirements of regulations of the State of California. Reference SDAPCD regulations, Rule 67.0 Architectural Coatings. VOC limits for Industrial Maintenance coatings are set at 250 grams/liter.

### **1.03 SUBMITTALS**

The information to be submitted by the Contractor in accordance with 01300 shall include, but not be limited to, the following items:

- A. **Samples:** The following shall be submitted for approval:
1. Paint samples for the Owner's review of color and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor. A listing of the material and application for each coat of each finish sample shall be supplied.

- a. On 12-inch by 12-inch hardboard, samples of each color and material shall be provided, with texture to simulate actual conditions. Each sample shall be resubmitted as requested until acceptable sheen, color, and texture is achieved.
    - b. On concrete masonry, 4-inch square samples of masonry for each type of finish and color, defining filler, prime and finish coats shall be provided.
  2. Pipe Markers: Each type of marker specified.
- B. Shop Drawings: The following shall be submitted for approval:
1. Copies of manufacturer's technical information, including paint label analysis and application instructions for each material proposed for use.
  2. Each material shall be listed and cross-referenced to the specific paint and finish system and application, and shall be identified by manufacturer's catalog number and general classification.
  3. Copies of manufacturer's complete color charts for each coating system.
  4. Certifications from manufacturers shall be provided, verifying that the factory applied prime coats are compatible with specified finish coatings.
  5. Pipe Markers: Copies of manufacturer's technical brochure, including color chart. Pipe Markers shall conform to requirements of Section 15051 of these Specifications.
  6. Maintenance Manual: Upon completion of the Work, copies of a detailed maintenance manual including the following information shall be furnished:
    - a. Product name and number.
    - b. Name, address and telephone number of manufacturer and local distributor.
    - c. Detailed procedures for routine maintenance and cleaning.
    - d. Detailed procedures for light repairs such as dents, scratches and staining.
- C. The Contractor shall submit to the Owner Representative an itemized schedule of the surfaces to be painted. After approval of submittals and prior to beginning work, Owner Representative will note on the schedule the selected color to be furnished.
- D. All systems specified herein have undergone substantial research by the Engineer and are deemed appropriate for this Work. If the Contractor proposes a coating system other than those specified herein, the manufacturer shall submit reference documentation for a minimum of five (5) similar installations, which have been in service for more than five (5) years in the United States of America. Reference documentation shall include installation location/details, installation date, current owner contact information, and contractor/applicator contact information.

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

- A. Delivery of Materials: All materials shall be delivered to the job site in original, new and unopened packages and containers bearing manufacturer's name and label, and the following information.
1. Name or title of material.
  2. Manufacturer's stock number and date of manufacture.
  3. Manufacturer's name.
  4. Contents by volume, for major pigment and vehicle constituents.

5. Thinning instructions where recommended.
6. Application instructions.
7. Color name and number.

**B. Storage of Materials:**

1. Only acceptable project materials shall be stored on project site.
2. The Contractor shall store coating products in a suitable location approved by the Owner Representative. Area shall be kept clean and accessible.
3. Storage shall be restricted to paint materials and related equipment.
4. Health and fire regulations shall be complied with, including the Occupational Safety and Health Act.
5. Coatings and painting materials shall be stored according to manufacturer's recommendations including, but not limited to, product shelf life and recommended storage temperature.

**1.05 JOB CONDITIONS**

**A. Existing Conditions:**

1. Before painting is started in any area, it shall be broom cleaned and excessive dust shall be removed.
2. After painting operations begin in a given area, broom cleaning will not be allowed; cleaning shall then be done only with commercial vacuum cleaning equipment.
3. Contractor shall adequately protect all existing structures from new painting splatters and overspray. Contractor shall thoroughly clean all accidental spills, splatters, and overspray. Any damage stains to finishes, equipment, or concrete shall be restored to original condition to Engineer's and Owner Representative's satisfaction.

**B. Environmental Requirements:**

1. Water-base paints shall be applied only when the temperature of surfaces to be painted and the surrounding air temperatures are between 55 °F and 90 °F unless otherwise permitted by the paint manufacturer's printed instructions.
2. Other paints shall be applied only when the temperature of the surfaces to be painted and the surrounding air temperatures are between 65 °F and 95 °F, unless otherwise permitted by the paint manufacturer's printed instructions.
3. Paint shall not be applied in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or to damp or wet surfaces unless specifically permitted by the manufacturer's printed instructions.
4. Painting may be continued during inclement weather only if the areas and surfaces to be painted are enclosed and heated within the temperature limits specified by the paint manufacturer during application and drying periods, and there is no danger of condensation on the surfaces being painted.
5. Adequate illumination and ventilation shall be provided in all areas where painting operations are in progress.

6. Final piping markers shall be installed only after all painting and finish Work has been completed to the Owner Representative's satisfaction.
- C. Protection: Finished Work of other trades and surfaces not being painted concurrently or not to be painted shall be covered or otherwise protected.

## **PART 2 - PRODUCTS**

### **2.01 MATERIAL QUALITY**

- A. The best grade of the various types of coating suitable for use in waste water treatment plants, water treatment plants, pumping stations and resource recovery plants as regularly manufactured by acceptable paint material manufacturers shall be provided. Material not displaying the manufacturer's identification as a standard, best-grade product will not be acceptable.
- B. Primers produced by the same manufacturer as the finish coats shall be provided. Use only thinners recommended by the paint manufacturer, and use only to recommended limits. The Owner Representative's approval shall be obtained prior to thinning any material.
- C. Paints and pipe markers of durable and washable quality shall be provided. Materials that will withstand normal washing as required for removing grease, oil, chemicals, etc., without showing discoloration, loss of gloss, staining, or other damage shall be used.
- D. The Contractor shall only use coating materials suitable for the intended use and recommended by the manufacturer for the intended service.

### **2.02 SUBSTITUTIONS**

- A. No substitutions shall be allowed that decrease the film thickness, the number of coats, the surface preparation or the generic type of coating specified. Approved manufacturers must furnish the same color selection as the manufacturers specified, including accent color in all coating systems.

### **2.03 COLORS AND FINISHES**

- A. Surface treatments, and finishes, are shown under "Painting Systems" below. All substrates scheduled under "Painting Systems" shall be painted whether or not shown on the Drawings, or in Schedules, unless an item is specifically scheduled as not requiring the painting system scheduled below.
- B. Color Selection:
  1. A maximum of 5 different colors shall be selected for the project, in addition to color coding of all piping and ducts.
  2. The Owner reserves the right to select non-standard colors for all paint systems specified within the ability of the manufacturer to produce such non-standard colors. Selection of non-standard colors shall not be cause for the Contractor rejecting Owner's color selections and the Contractor shall supply such colors at no additional expense to the Owner.
- C. Schedule Submittal: The Contractor shall submit to the Owner Representative an itemized schedule of the surfaces to be painted. After approval of submittals and prior to beginning work, Owner Representative will note on the schedule the selected color to be furnished.



- D. Color Coding: In general, all color coding of piping, ducts and equipment shall comply with applicable standards of ANSI A13.1 and OSHA 1910.144.
- E. Piping Color Code: To be selected by the Owner Representative.
- F. Sample Colors: Representative color shall be used when preparing samples for Owner Representative's review. Final acceptance of colors will be from samples applied on the job.
- G. Color Pigments: Pure, non-fading, applicable types to suit the substrates and service indicated.
  - 1. Lead: Lead content shall not exceed amount permitted by federal, state and local government laws and regulations.
  - 2. Paints specified for application on submerged concrete or metal in contact with potable water shall be approved by the California State Department of Health Services.
- H. All painting systems specified are based on brush application. Other mechanical techniques shall be submitted to the Engineer for approval before these application techniques may be reflected in any paint schedules submitted by the Contractor. Submit proof of acceptability, of technique proposed, by the paint manufacturer selected.

## **2.04 PAINTING SYSTEMS**

- A. Concrete Block Walls - Clear Finish:
  - 1. Tnemec/Chemprobe Series 633 Prime-A-Pell H<sub>2</sub>O or Okon W-2 water based sealer distributed by Dunn-Edwards Corporation shall be applied in strict accordance with manufacturer's recommendations.
  - 2. Contractor shall perform a test application to determine proper application rate. Number of coats necessary shall be determined in field by Owner Representative, based on results of test application.
- B. Ferrous Metals including Structural Steel, Miscellaneous Metals and Ferrous Piping (including piping to be insulated) Interior, Non-Immersed, including exposed piping:
  - 1. Shop Surface Preparation: SSPC-SP 6 Commercial Blast as specified in Paragraph 3.02.D.
  - 2. Field Surface Preparation: Sandblasting of field welds and other imperfections. Owner Representative may require all areas to be blasted at his discretion, SSPC-SP 6, commercial blast as specified in Paragraph 3.02.D.
  - 3. Product and Manufacturer: One of the following shall be provided:
    - a. Carboline:
      - (1) Primer: Carboguard 893 -- 2 coats, 3.0 to 5.0 dry mils per coat.
      - (2) Field Touchup: Carboguard 893 -- 1 coat, 3.0 to 5.0 dry mils.
      - (3) Intermediate: Carboguard 890 -- 1 coat 4.0 to 6.0 dry mils.
      - (4) Finish: Carboguard 890 -- 1 coat, 4.0 to 6.0 dry mils.
    - b. Tnemec:
      - (1) Primer: Series V69, Epoxoline II -- 1 coat, 3.0 to 5.0 dry mils per coat.
      - (2) Field Touch up: Series V69, Epoxoline II -- 1 coat, 3.0 to 5.0 dry mils.
      - (3) Intermediate: Series V69, Epoxoline II -- 1 coat, 4.0 to 6.0 dry mils.
      - (4) Finish: Series V69, Epoxoline II - 1 coat, 4.0 to 6.0 dry mils.

- c. DeVoe:
    - (1) Primer: Devran 224HS – 2 coats, 3.0 to 5.0 dry mils per coat.
    - (2) Field Touchup: Devran 224HS – 1 coat, 3.0 to 5.0 dry mils.
    - (3) Intermediate: Devran 224HS – 1 coat, 4.0 to 6.0 dry mils.
    - (4) Finish: Devran 224HS – 1 coat, 4.0 to 6.0 dry mils.
  4. This system shall be used for all exposed interior ferrous metal and walls as shown or scheduled, including, but not limited to, interior exposed ductile iron pipe. Exposed ductile iron pipe, interior and exterior, shall be shipped to the site without the standard asphaltic coating, but with a primer coat suitable for use with this coating system.
- C. Ferrous Metals, Exterior: (Non-immersed), including exposed ferrous piping:
1. Shop Surface Preparation: SSPC-SP 6 Commercial Blast as specified in Paragraph 3.02.D.
  2. Field Surface Preparation: Sandblasting of field welds and other imperfections. Owner Representative may require all areas to be blasted at his discretion, SSPC-SP 6, commercial blast as specified in Paragraph 3.02.D.
  3. Products and Manufacturer: One of the following shall be provided:
    - a. Carboline:
      - (1) Primer: Carboguard 893 -- 2 coats, 3.0 to 5.0 dry mils per coat.
      - (2) Field Touch-up: Carboguard 893 – 1 coat, 3.0 to 5.0 dry mils.
      - (3) Intermediate: Carboguard 890 -- 1 coat, 4.0 to 6.0 dry mils.
      - (4) Finish: Carbothane 134 HG -- 1 coat, 3.0 to 5.0 dry mils.
    - b. Tnemec:
      - (1) Primer: Series V69, Epoxoline II - 1 coat, 3.0 to 5.0 dry mils per coat.
      - (2) Field Touch up: Series V69, Epoxoline II – 1 coat, 3.0 to 5.0 dry mils.
      - (3) Intermediate: Series V69, Epoxoline II - 1 coat, 4.0 to 6.0 dry mils.
      - (4) Finish: Series 1075, Endurashield II -- 1 coat, 3.0 to 5.0 dry mils.
    - c. DeVoe:
      - (1) Primer: Devran 224HS – 2 coats, 3.0 to 5.0 dry mils per coat.
      - (2) Field Touch-up: Devran 224HS – 1 coat, 3.0 to 5.0 dry mils.
      - (3) Intermediate: Devran 224HS – 1 coat, 4.0 to 6.0 dry mils.
      - (4) Finish: Devthane 379H (gloss enamel) – 1 coat, 3.0 to 5.0 dry mils.
  4. This system shall be used for all exposed exterior ferrous metal and walls as shown or scheduled, including, but not limited to, exterior exposed ductile iron pipe. Exposed ductile iron pipe, interior and exterior, shall be shipped to the site without the standard asphaltic coating, but with a primer coat suitable for use with this coating system.
- D. Galvanized Metal and Non-Ferrous Metal, Exterior and Interior Non-Immersed:
1. Surface Preparation: Solvent Cleaning, SSPC-SP 1 as specified in Paragraphs 3.02.C and 3.02.E.
  2. Product and Manufacturer: One of the following shall be provided:
    - a. Carboline:
      - (1) Primer: Rust-Bond -- 1 coat, 4.0 to 6.0 dry mils.
      - (2) Intermediate: Carboguard 890 -- 1 coat, 4.0 to 6.0 dry mils.

- (3) Finish: Carbothane 134VOC -- 1 coat, 3.0 to 5.0 dry mils.
  - b. Tnemec:
    - (1) Primer: Series 135 Chembuild -- 1 coat, 3.0 to 4.0 dry mils.
    - (2) Finish: Series 1075 Endura-Shield II -- 1 coat, 2.0 to 3.0 dry mils.
  - c. DeVoe:
    - (1) Primer: Devran 203 – 1 coat, 4.0 to 6.0 dry mils.
    - (2) Intermediate: Devran 224HS – 1 coat, 4.0 to 6.0 dry mils
    - (3) Finish: Devthane 379H (gloss enamel) – 1 coat, 3.0 to 5.0 dry mils.
- E. Ferrous Metals Encased in Concrete (including pipe) and Similar Materials:
  - 1. Surface Preparation: SSPC SP 6, Commercial Blast Cleaning, as specified in Paragraph 3.02.D.
  - 2. Product and Manufacturer: One of the following shall be provided:
    - a. Carboline:
      - (1) Shop Primer: Carboguard 893 -- 1 coat, 3.0 to 5.0 dry mils.
      - (2) Field Touchup: Carboguard 893 -- 1 coat, 3.0 to 5.0 dry mils.
    - b. Tnemec:
      - (1) Shop Primer: Series V69, Epoxoline II -- 1 coat, 3.0 to 5.0 dry mils.
      - (2) Field Touchup: Series V69, Epoxoline II – 1coat, 3.0 to 5.0 dry mils.
    - c. DeVoe:
      - (1) Shop primer: Devran 224HS – 1 coat, 3.0 to 5.0 dry mils.
      - (2) Field Touchup: Devran 224HS – 1 coat, 3.0 to 5.0 dry mils.
- F. Immersed or Intermittently Immersed Ferrous Metals, Including Pipe:
  - 1. Surface Preparation: SSPC-SP 10 Near-White Blast Cleaning as specified in Paragraph 3.02D.
  - 2. Product and Manufacturer: One of the following shall be provided:
    - a. Carboline:
      - (1) Primer: Carboguard 891 -- 1 coat, 4.0 to 6.0 dry mils.
      - (2) Finish: Carboguard 891 -- 2 coats, 6.0 to 8.0 dry mils per coat.
    - b. Tnemec:
      - (1) Primer: Series V69, Epoxoline II – 1 coat, 4.0 - 6.0 dry mils.
      - (2) Finish: Series V69, Epoxoline II -- 2 coats, 6.0 - 8.0 dry mils per coat.
    - c. DeVoe:
      - (1) Primer: Bar-Rust 233H– 1 coat, 4.0 to 6.0 dry mils.
      - (2) Finish: Bar-Rust 233H – 2 coats, 6.0 to 8.0 dry mils per coat.
  - 3. Immersed or intermittently immersed ferrous metal pipe shall be shipped to the site without any asphaltic coatings but with a primer coat suitable for use with this coating system.

G. Immersed or Intermittently Immersed Galvanized Ferrous Metal; Interior and Exterior:

1. Surface Preparation: SSPC-SP 7 with 1 mil profile minimum as specified in Paragraph 3.02.C.
2. Product and Manufacturer: One of the following shall be provided:
  - a. Carboline:
    - (1) Primer: Carboguard 891 -- 1 coat, 4.0 - 6.0 dry mils.
    - (2) Finish: Carboguard 891 -- 1 coat, 5.0 - 7.0 dry mils.
  - b. Tnemec:
    - (1) Primer: Series V69, Epoxoline II -- 1 coat, 4.0 - 5.0 dry mils.
    - (2) Finish: Series V69, Epoxoline II -- 1 coat, 5.0 - 6.0 dry mils.
  - c. DeVoe:
    - (1) Primer: Bar-Rust 233H -- 1 coat, 4.0 to 6.0 dry mils per coat.
    - (2) Finish: Bar-Rust 233H -- 1 coat, 5.0 to 7.0 dry mils per coat.

H. All Aluminum in Contact with Dissimilar Materials:

1. Surface Preparation: Remove all foreign matter.
2. Product and Manufacturer: One of the following shall be provided:
  - a. Carboline:
    - (1) Primer: Rust-Bond -- 1 coat, 2.0 to 4.0 dry mils.
    - (2) Finish (Interior): Carboguard 891 -- 1 coat, 2.0 to 4.0 dry mils.  
(Exterior): Carbothane 134VOC -- 1 coat, 2.0 to 4.0 dry mils.
  - b. Tnemec:
    - (1) Primer: Series V69, Epoxoline II -- 1 coat, 2.0 to 4.0 dry mils.
    - (2) Finish (Interior): V69, Epoxoline II -- 1 coat, 2.0 to 4.0 dry mils  
(Exterior): 1075 Endurashield II -- 1 coat, 2.0 to 4.0 dry mils.
  - c. DeVoe:
    - (1) Primer: Devran 203 -- 1 coat, 2.0 to 4.0 dry mils per coat
    - (2) Finish (Interior) Devran 224HS -- 1 coat, 2.0 to 4.0 dry mils.  
(Exterior) Devthane 379H (gloss enamel) -- 1 coat, 2.0-4.0 dry mils

I. All Mill Coated Pipe: Substrate preparation, and painting system, shall be provided in accordance with intended application and material as specified herein. Mill coatings shall not be approved as substrate for painting Work.

J. Ferrous Metals, Buried:

1. Surface Preparation: SSPC-SP 10, Near White Blast, as specified in Paragraph 3.02.D.
2. Product and Manufacturer: One of the following shall be provided:
  - a. Carboline:
    - (1) Primer: Carboguard 893 -- 1 coat, 3.0 to 5.0 dry mils.
    - (2) Field Touchup: Carboguard 893 -- 1 coat, 3.0 to 5.0 dry mils.
    - (3) Finish: Bitumastic No. 300-M -- 2 coats, 8.0 to 10.0 dry mils per coat.

- b. Tnemec:
  - (1) Shop Primer: Series V69, Epoxoline II -- 1 coat, 3.0 to 5.0 dry mils.
  - (2) Field Touchup: Series V69, Epoxoline II – 1 coat, 3.0 to 5.0 dry mils.
  - (3) Finish: 46H-413 Tnemec -Tar -- 2 coats, 8.0 to 10.0 dry mils per coat.
- c. DeVoe:
  - (1) Primer: Bar-Rust 236 – 1 coat, 4.0 to 8.0 dry mils.
  - (2) Field Touchup: Bar-Rust 236 – 1 coat, 4.0 to 8.0 dry mils.
  - (3) Finish: Devtar 5-A-HS – 2 coats, 8.0 to 10.0 dry mils per coat.

- K. Unless otherwise shown or specified, lining for ferrous metal pipe and fittings shall be Protecto 401 ceramic epoxy lining as manufactured by Induron [Birmingham, Alabama (205) 324-9524] with a nominal 40 mil dry film thickness, or Engineer Approved Equal.

## **PART 3 - EXECUTION**

### **3.01 INSPECTION**

- A. The Contractor and his applicator shall examine the areas and conditions under which painting work is to be performed and notify the Owner Representative in writing of conditions detrimental to the proper and timely completion of the Work. The Contractor shall not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Owner Representative.
- B. The Contractor shall not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to the formation of a durable paint film.
- C. Records: The Contractor shall maintain an accurate written record of the coatings used each day. A copy of this record shall be furnished to the Owner Representative at the close of each working day. This record shall list: coating manufacturer's product number, amount of each coating in gallons used in the day, component ratio of mixed paints and any approved thinning procedures, and amount of excess mixed paint left over at the end of each day.

### **3.02 SURFACE PREPARATION**

- A. General:
  - 1. All preparation and cleaning procedures shall be performed as specified herein and in strict accordance with the paint manufacturer's instructions for each particular substrate and atmospheric condition.
  - 2. All hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish painted shall be removed or provided surface applied protection prior to surface preparation and painting operations. The Contractor shall remove, if necessary, for the complete painting of the items and adjacent surfaces. Following completion of painting of each space or area, the removed items shall be reinstalled by workpersons skilled in the trades involved.
  - 3. Surfaces to be painted shall be cleaned before applying paint or surface treatments. Oil and grease shall be removed with clean cloths and cleaning solvents prior to mechanical cleaning. The cleaning and painting shall be programmed so that dust and other contaminants from the cleaning process will not fall in wet, newly painted surfaces.

4. All surfaces which were not shop painted or which were improperly shop painted, and all abraded or rusted shop painted surfaces, which are to be painted, as determined by the Owner Representative, shall be prepared as specified below.

B. Concrete and Masonry Surfaces:

1. Surfaces of concrete, precast-concrete, and concrete block to be painted and sealed with clear finish shall be prepared by removing all efflorescence, chalk, dust, dirt, grease and oils with soap and water.
2. The alkalinity and moisture content of the surfaces to be painted shall be determined by performing appropriate tests. If the surfaces are found to be sufficiently alkaline to cause blistering and burning of the finish paint, this condition shall be corrected before application of paint. The Contractor shall carry out alkalinity and moisture tests of all surfaces to be painted prior to paint application. Alkalinity and moisture test results shall be submitted to the Owner Representative as specified in Section 01300 and herein.
3. The Contractor shall not paint over surfaces where the moisture content exceeds 8 percent, unless otherwise permitted in the manufacturer's printed directions.
4. Concrete and concrete block surfaces that cannot be adequately cleaned by soap and water shall be acid etched. Exceedingly dense concrete may require a second etching, to be determined by the Owner Representative.
5. Brush blast clean shall be equivalent to SSPC-SP 7, to open "bug" holes, provide texture similar to medium grit sandpaper and remove all non-adhering concrete. All areas so prepared shall be thoroughly cleaned before beginning coating work.
6. Prior to the application of coating systems, bug holes, imperfections and voids shall be patched and filled with cementitious epoxy mortar compound. The patching compound shall be Series 218 MortarClad, as manufactured by Tnemec, or approved equal. Provide epoxy modified concrete with 100% solids.
7. The entire surface of the coating shall be checked for pinholes or holidays with a non-destructive holiday detector of less than 100 volts, such as Tinker and Rasor Model M-1, or approved equal. Spark testers are not permitted. The surface shall be thoroughly wetted just prior to testing as directed by the Owner Engineer.
8. Holidays or pinholes found in the protective coating shall be repaired as recommended by the manufacturer and to the satisfaction of the Owner Representative. At a minimum, the surface shall be cleaned as recommended by the coating manufacturer and additional epoxy coating applied so that the holiday receives a coating of thickness specified herein.
9. Penetrations through protective coatings at fasteners or other items installed after the coating system is complete shall be thoroughly sealed with a one component polyurethane sealant conforming to Federal Specification TIS-00230. The sealant shall be Sikaflex-1A polyurethane sealant, as manufactured by Sika Chemical Corporation, or approved equal.

C. Galvanized Surfaces:

1. Prepare galvanized steel nonferrous metal surfaces in accordance with manufacturer's instructions.
2. Ensure surfaces are dry.
3. Remove Rust From Galvanized Steel:
  - a. Remove white rust from galvanized steel by hand or power brushing.

- b. Remove rust from old galvanized steel in accordance with SSPC-SP 2 or SP 3.
  - c. Do not damage or remove galvanizing.
4. For interior and exterior moderate to severe exposure, galvanized surfaces shall be prepared by abrasive blast and/or chemical cleaning.
- a. Remove visible oil, grease, dirt, dust, protective mill coatings, and other soluble contaminants in accordance with SSPC-SP 1 or manufacturer's instructions as specified for coating system. Follow initial cleaning with one of the following Methods:
    - (1) Surface Preparation Method A (Preferred): Thoroughly roughen the entire surface to be coated using compressed air brush off blast cleaning with a fine abrasive to achieve a uniform anchor profile of 1-2 mils. Reference ASTM D 6386-99 (2005) Section 5.4.1. When this method is used, system DFT shall not exceed 10 mils.
    - (2) Surface Preparation Method B (Alternate method when Method A is not feasible): Chemically treat with one of the following products to etch the galvanized surface to be coated: Henkel Galvaprep 5 or Clean & Etch by Great Lakes Laboratory. Reference ASTM D 6386-99 (2005) Section 5.4.2. When this method is used, system DFT shall not exceed 6 mils.

NOTE: It is imperative to follow the above Manufacturer's recommendations in order to provide an effectual preparation.
5. Submerged or intermittently submerged galvanized ferrous metal shall be cleaned per Section 3.02 C. 4. a. 1. (SURFACE PREPARATION A)

D. Ferrous Metals:

- 1. Non-Immersed ferrous surfaces, including structural steel and miscellaneous metal to be shop primed, shall be cleaned of all oil, grease, dirt, mill scale and other foreign matter by commercial blast cleaning complying with SSPC-SP 6.
- 2. Immersed ferrous surfaces, including structural steel and miscellaneous metal to be shop primed, shall be cleaned of all oil, grease, dirt, mill scale and other foreign matter by near-white blasting complying with SSPC-SP 10.
- 3. Buried ferrous metals shall first be cleaned of visible deposits of oil, grease, and other organic contaminants by using a solvent wash complying with SSPC SP1, followed by near-white blasting complying with SSPC SP10. The temperature of the substrate shall be 50°F above the dew point temperature.
- 4. Non-Immersed, ferrous surfaces that have not been shop-coated shall be cleaned of all oil, grease, dirt, loose mill scale and other foreign substances by commercial blasting, complying with SSPC-SP 6.
- 5. Immersed ferrous surfaces that have not been shop-coated or that, in the opinion of the Owner Representative, have been improperly shop-coated, shall be cleaned of all oil, grease, dirt, mill scale and other foreign matter by near-white blasting complying with SSPC-SP 10.
- 6. Bare and blasted or pickled clean metal shall be treated with metal treatment wash coat, prior to priming only if recommended by the paint manufacturer.
- 7. Shop applied prime coats which have damaged or bare areas shall be touched-up with primer recommended by the coating manufacturer after commercial blasting complying with SSPC-SP 6.

- E. Non-Ferrous Metal Surfaces: Non-ferrous metal surfaces shall be cleaned in accordance with the coating system manufacturer's instructions for the type of service, metal substrate, and application required. Surface preparation shall comply with SSPC-SP1.
- F. Factory applied primers shall be conditioned per the field coating manufacturers recommendations. Factory priming date shall be included with the delivery ticket. If recoat or cover time has expired, primer shall be removed and reapplied in the field per manufacturer recommendations.

### **3.03 MATERIALS PREPARATION**

#### **A. General:**

1. Painting materials shall be mixed and prepared in strict accordance with the manufacturer's written directions.
2. Coating materials produced by different manufacturers shall not be mixed, unless otherwise permitted by the manufacturer's instructions.
3. Materials not in actual use shall be stored in tightly covered containers. Containers used in storage, mixing, and application of paint shall be maintained in a clean condition, free of foreign materials and residue.
4. All materials shall be stirred before application to produce a mixture of uniform density, and as required during the application of the materials. Any film that may form on the surface shall not be stirred into the material. The film shall be removed and, if necessary, the material shall be strained before using.

- B. Tinting: Each undercoat shall be tinted a lighter shade to facilitate identification of each coat where multiple coats of the same material are to be applied. Undercoats shall be tinted to match the color of the finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat. A code number shall be provided to identify material tinted by the manufacturer.

#### **C. Mixing:**

1. The Contractor shall mix only in mixing pails placed in a suitably sized non-ferrous or oxide resistant metal pans to protect concrete floor from splashes or spills which could stain exposed concrete or react with subsequent finish floor material. Contractor shall thoroughly clean all accidental spills and any damage to finish or concrete shall be restored to original condition to Owner Representative's satisfaction.
2. Paint shall be mixed and applied only in containers bearing accurate product name of material being mixed or applied.

### **3.04 APPLICATION**

#### **A. General:**

1. Paint shall be applied by brush. Other mechanical application techniques such as roller, air spray, or airless spray in accordance with the manufacturer's directions and recommendations of Paint Application Specifications No. 1 in SSPC Vol. 2, where applicable, shall be used only as approved by the Owner Representative. Brushes best suited for the type of material being applied shall be used. Where approved by the Owner Representative, rollers of carpet, velvet back, or high pile sheep's wool shall be used, as recommended by the paint manufacturer for material and texture required.



2. The number of coats and paint film thickness required is the same regardless of the application method. Succeeding coats shall not be applied until the previous coat has completely dried per Manufacturer's recommendation.
  3. Additional coats shall be applied when undercoats, stains, or other conditions show through the final coat of paint, until the paint film is of uniform finish, color and appearance. This is of particular importance regarding intense primary accent colors. The Contractor shall insure that all surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a film thickness equivalent to that of flat surfaces.
  4. Surfaces not exposed to view do not require color coding but require the same coating systems specified for exposed surfaces. "Exposed to view surfaces" is defined as those areas visible when permanent or built-in fixture, convector covers, covers for finned tube radiation, grilles, etc., are in place in areas scheduled to be painted.
  5. The backs of access panels and removable or hinged covers shall be painted to match the exposed surfaces.
  6. Exterior doors on tops, bottoms, and side edges shall be finished the same as the exterior faces.
  7. Aluminum parts in contact with dissimilar materials shall be painted as specified with appropriate finish.
- B. Heating, Ventilating, Air Conditioning and Electrical Work:
1. Heating, ventilating, and air conditioning items to be painted include, but are not limited to, the following:
    - a. Piping, pipe hangers, and supports.
    - b. Ductwork and insulation.
    - c. Motors, mechanical equipment, and supports.
    - d. Accessory items
  2. Electrical items to be painted include, but are not limited to, the following:
    - a. Conduit and fittings.
    - b. Switchgear, panels, junction boxes, motor control centers, motors and accessories.
- C. Minimum Coating Thickness: The Contractor shall apply each material at not less than the manufacturer's recommended spreading rate, and provide total dry film thickness as specified. Extra coat shall be applied if required to obtain specified total dry film thickness.
- D. Scheduling Painting:
1. The first-coat material shall be applied to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
  2. Sufficient time between successive coatings shall be allowed to permit proper drying. The Contractor shall not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

- E. Prime Coats: Primed and sealed walls and ceilings shall be recoated where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects caused by insufficient sealing.
- F. Pigmented (Opaque) Finished: The Contractor shall completely cover to provide an opaque, smooth surface of uniform finish, color, appearance, and coverage.
- G. Brush Application:
1. All brush coats shall be brushed-out and worked onto the surfaces in an even film. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable. All glass and color break lines shall be neatly drawn.
  2. All primer or first coats shall be brush applied, unless otherwise permitted to use mechanical applicators.
- H. Mechanical Applicators:
1. Mechanical methods shall be used for paint application when permitted by governing ordinances, paint manufacturer, and approved by Owner Representative. If permitted, it shall be limited to only those surfaces impracticable for brush applications.
  2. Roller applications, if approved by the Owner Representative, shall be limited to interior wall and ceiling finishes for second and third coats. Each roller coat shall be applied to provide the equivalent hiding as brush-applied coats.
  3. Spray application shall be confined to metal framework, siding, decking, wire mesh and similar surfaces where hand brush work would be inferior and to other surfaces specifically recommended by paint manufacturer.
  4. Wherever spray application is used, each coat shall be applied to provide the equivalent hiding of brush-applied coats. Do not double back with spray equipment for the purpose of building up film thickness of 2 coats in one pass.
- I. Completed Work: The Contractor shall match approved samples for color, texture and coverage. Work not in compliance with specified requirements shall be removed, refinished or repainted, as required by the Owner Representative.
- J. Piping Markers: Piping markers shall be applied in accordance with the manufacturer's written instructions at locations specified in Section 15051, General Piping Stipulations.

### **3.05 FIELD QUALITY CONTROL**

- A. Surface Preparation: Surface preparation will be based upon comparison with "Visual Standard for Abrasive Blast Cleaned Steel," SSPC-Vis 1- 89.
- B. No coating or paint shall be applied to wet or damp surfaces, in rain, snow, fog, or mist, when the substrate temperature or surrounding air temperature is less than 5 degrees above the dew point, nor in conditions not recommended by the manufacturer.
- If such conditions are prevalent, coating or painting shall be delayed or postponed until conditions are favorable. The day's coating or painting shall be completed in time to permit the film sufficient drying time prior to damage by atmospheric conditions.
- C. Dehumidification: In confined spaces, the Contractor shall provide dehumidification of the space during the entire time when surface preparation and coating application is performed. The Contractor

shall use a dehumidifier capable of 2 complete air changes per hour minimum and capable of maintaining a relative humidity better than 35% or as required by the coating manufacturer; whichever is dryer.

- D. Thickness and Holiday Checking: Thickness of coatings and paint shall be checked with a non-destructive, magnetic type thickness gauge. Coating integrity of all coated surfaces shall be tested with an approved holiday detection device. Non-destructive holiday detectors shall not exceed 100 volts nor shall destructive holiday detectors exceed the voltage recommended by the manufacturer of the coating system. For thicknesses between 10 and 20 mils (0.25 mm and 0.50 mm) a non-sudsing type wetting agent such as Kodak Photo-Flo, shall be added to the water prior to wetting the detector sponge. All pinholes shall be marked, repaired in accordance with the manufacturer's printed recommendations and re-tested. Non pinholes or other irregularities will be permitted in the final coating. Holiday detection device shall be operated in the presence of the Owner Representative.

In cases of dispute concerning film thickness, measurements made with instruments shown to be in calibration with the National Bureau of Standards calibration plates shall predominate.

- E. Inspection: Contractor shall grant full and unencumbered access to work areas for the purpose of coating inspection by the Owner Representative. Until final acceptance of coating and painting, the Contractor shall furnish and make available to the Owner Representative, inspection devices in good working condition for detection of holidays and measurement of dry film thickness of coating and paint. The Contractor shall also maintain at the jobsite, U.S. Department of Commerce, National Bureau of Standards certified thickness calibration plates to test accuracy of dry-film thickness gauge. All inspection devices shall be in good working order.
- F. Acceptable Devices: Acceptable devices include, but are not limited to K-D "Bird Dog" non-destructive holiday detector and Tinker-Razor Model M-1 for coating to 20 mils (0.50mm) dry film thickness; Tinker-Razor Model AP and AP-W holiday detectors for coatings in excess of 20 mils (0.50mm) dry film thickness; and "Inspector" units, or equal, for dry film thickness gauging. Inspection devices shall be operated in accordance with the manufacturer's instructions.
- G. Warranty Inspection: The Owner shall conduct the warranty inspection during the eleventh month following completion or placement into service of all coating and painting work required by this section. All defective work shall be repaired in accordance with the manufacturer's recommendation and the satisfaction of the Owner in order to bring the defective areas up to the quality level of the original work required by this specification.

### **3.06 FIELD QUALITY ASSURANCE**

- A. The right is reserved by the Owner Representative to invoke the following material testing procedure at any time, and any number of times during the period of field painting:
1. Engage the service of an independent testing laboratory to sample any of the paint being used. Samples of materials delivered to the project site will be taken, identified and sealed, and certified in the presence of the Contractor.
  2. The testing laboratory will perform appropriate tests for any or all of the following characteristics: Abrasion resistance, apparent reflectivity, flexibility, washability, absorption, accelerated weathering, dry opacity, accelerated yellowness, recoating, skinning, color retention, alkali resistance and quantitative material analysis.
  3. If the test results show that the material being used does not comply with the specified requirements, the Contractor may be directed to stop the painting Work, and remove the non-complying paint; pay for testing; repaint surfaces coated with the rejected paint; remove

rejected paint from previously painted surfaces if, upon repainting with the specified paint, the two coatings are non-compatible.

- B. Prior to initial coat and after completion of each successive coat of paint, the Contractor shall notify the Owner Representative. After inspection, checking of film thickness and approval by the Owner Representative, proceed with the succeeding coat. Contractor shall supply the Owner Representative for his use a Gardner dry-film thickness gage.

### **3.07 PROTECTION**

- A. Work of other trades shall be protected, whether to be painted or not, against damage by the painting and finishing work. All such work shall be left undamaged. All damage shall be corrected by cleaning, repairing or replacing, and repainting, as acceptable to the Owner Representative.
- B. "Wet Paint" signs shall be provided as required to protect newly painted finishes. All temporary protective wrapping provided for protection of this Contract shall be removed after completion of painting operations.

### **3.08 CLEAN-UP**

- A. During the progress of the Work, all discarded paint materials, rubbish, cans and rags shall be removed from the site at the end of each work day.
- B. Upon completion of painting work, all paint-spattered surfaces shall be cleaned. Spattered paint shall be removed by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.
- C. At the completion of work of other trades, all damaged or defaced painted surfaces shall be touched-up and restored, as determined by the Owner Representative.

### **END OF SECTION**

## SECTION 09902

### PETROLATUM WAX TAPE COATING

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. This section covers the work necessary to furnish and install petrolatum wax tape coating on certain buried features as specified herein.
- B. The following buried features shall be wax tape coated:
1. Ferrous items (other than buried ductile iron piping) that are not otherwise corrosion protected (exclusive of a minimal factory coating); e.g., buried valves.
  2. The EBAA-Iron Mega-Coupling restrained coupling devices for buried pipe and fittings.
  3. Buried ductile iron pipe flanges and bolting.
  4. Buried steel pipe, steel flanges, bolting and appurtenances.
  5. Ductile iron pipe, valves and fittings that are exposed inside the wet well.

##### 1.02 SUBMITTALS DURING CONSTRUCTION

- A. Submit manufacturer's technical product data, details, installation instructions and general product recommendations in accordance with the requirements of Section 01300.

##### 1.03 PRODUCT IDENTIFICATION

- A. The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired only. Products of other manufacturers will be considered in accordance with the Contract Documents.

#### PART 2 - MATERIALS

##### 2.01 GENERAL

- A. Wrap all exposed surfaces of items designated in Paragraph 1.01B above, with petrolatum wax tape.

##### 2.02 PRIMER

- A. Exposed surfaces shall be prime coated with a blend of petrolatum, plasticizer, and corrosion inhibitor having a paste-like consistency. The material shall have the following properties:

Pour Point	400-100° F
Flash Point	350° F minimum
Approximate Coverage	1 gal/100 square feet
Color	Brown

- B. The primer shall be Trenton Wax-Tape Primer or equivalent.

## 2.03 WAX TAPE

- A. Two types of petrolatum wax tape shall be available from the manufacturer: one type for buried installations and another type for above-ground installations.

1. Buried Installations: The covering material shall be a plastic-fiber felt tape, saturated with a blend of petrolatum, plasticizers, and corrosion inhibitors that is easily formable over irregular surfaces. The tape shall have the following properties:

Color:	Brown
Saturant Pour Point	115° - 125°F
Thickness	70-90 mils
Dielectric Strength	170 volts/mil
Tape Width	6 inches

Wax tape shall be Wax-Tape #1 as manufactured by The Trenton Corporation (Ann Arbor, Michigan), or approved equal.

2. Above-Ground Installations: The covering material shall be a plastic-fiber felt tape, saturated with a blend of petrolatum, plasticizers, and corrosion inhibitors that is easily formable over irregular surfaces. The tape shall have the following properties:

	#2 Wax-Tape	#2A Wax-Tape
Color:	Brown	Aluminum
Saturant Pour Point	125° - 135°F	125° - 135°F
Thickness	70-90 mils	70-90 mils
Dielectric Strength	100 volts/mil	100 volts/mil
Tape Width	6 inches	6 inches

Wax tape shall be Wax-Tape #2 as manufactured by The Trenton Corporation (Ann Arbor, Michigan) or approved equal.

## 2.04 OUTER COVERING

- A. The primed and wax-tape wrapped surface shall be wrapped with a plastic tape covering consisting of three (3) layers of 50 gauge, clear, polyvinylidene chloride, high cling membranes wound together as a single sheet. The material shall have the following properties:

Width	6 inches
Thickness	1.5 mils
Dielectric Strength	2000 volts/mil
Water Absorption	Negligible
Color	Clear

- B. The outer covering shall be Trenton Poly-Ply or approved equal.

## **2.05 OTHER PETROLATUM WAX TAPE SYSTEM COMPONENTS**

- A. Any components not listed above, but required for a complete petrolatum wax tape coating system as recommended for this application by the manufacturer shall be provided at no additional cost to Owner.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. The petrolatum wax tape system shall be installed in conformance with the manufacturer's recommendations and as shown or specified by these Contract Documents.

**END OF SECTION**

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## SECTION 13320

### AUGER BORING (STEEL CASING)

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. The Contractor shall perform all Work to provide buried piping, specials, and appurtenances shown, specified and required for the construction of complete and operable pipelines using the auger boring method of installation.
- B. The Work of this Section shall include the construction of pipelines by a typical two-pass pipe jacking method using a normally unguided pipe jacking method, and auger boring. Auger boring installs a steel casing pipe directly and a carrier pipe is inserted after the casing is installed.
- C. This Specification is intended to define in general terms the Work to be accomplished. The Contractor shall have sole responsibility for the means and methods utilized to install the pipeline to the lines and grades shown and for preventing settlement or heave, all within the tolerances specified herein and subject to review by the Owner. In such case, the Contractor shall demonstrate to the Owner that the proposed means and methods shall complete the Work in accordance with the Specifications, this Section, Applicable Codes, and the Construction Schedule.
- D. The Contractor shall provide all items required to complete the Work by auger boring including, but not limited to, the auger boring/jacking system, spoil transportation, hoisting, lifting, safety, and control equipment.
- E. Jacking and receiving pits have been sited and sized on the Plans considering overhead and underground utility conflicts, driveway access, traffic impacts, and relationship to the geologic contact line. Alternate pit construction locations may be allowed as specified.

##### 1.02 DEFINITIONS

- A. Annular Space: The open volume created by the difference in the radial distances as measured from the outside radius of the steel casing to the excavated hole along the entire pipeline. The distance includes the cutterhead over cut.
- B. Auger Boring: A trenchless construction method that utilizes a cutterhead mounted on the end of helical wound auger flights rotating in a casing pipe used to excavate a tunnel. The auger is used to simultaneously rotate the cutterhead and remove the spoils from the cutterhead to the jacking pit. Auger boring is a pipe jacking method.
- C. Carrier Pipe: A pipe, installed in casing, which conveys a fluid.
- D. Casing (pipe): A pipe, typically made of steel, used to support a tunnel in which the product or carrier pipe is later inserted. The casing pipe transfers the forward force of the hydraulic jacks to the cutterhead, propelling the casing pipe forward into the excavation.
- E. Cutterhead: Any rotating tool or system of tools on a common support which excavates at the face of a bore.

- F. Geologic Contact Line: An interface between two geological strata.
- G. Guide Rails: Structural components that are set to a predetermined alignment and then later used to install other components to the same alignment.
- H. Jacking Frame: Structural component that houses the hydraulic cylinders used to propel the auger boring machine and pipeline. The jacking frame is located in the jacking pit.
- I. Jacking/Access Pit: Excavation from which trenchless technology equipment is launched and driven.
- J. Laser: An optical system projecting a beam onto a target to provide guidance reference for the excavation.
- K. Lubrication: A fluid, normally bentonite and/or polymers, used to reduce jacking loads on the steel casing and fill the annular space.
- L. Maximum Allowable Jacking Force: The calculated maximum force before the steel casing fails divided by the Factor of Safety for the steel casing.
- M. Maximum Installed Jacking Capacity: The mathematical addition of all jacking forces (Main jacks located in the jacking pit) that can be exerted on the steel casing.
- N. Maximum Anticipated Jacking Forces: The mathematical prediction of the jacking forces required to install the casing pipe per plan.
- O. Obstruction: An object that lies either fully or partially in the direct path of the auger bore and prevents its progress. An object whose principal dimension is greater than 9.0 inches and has an unconfined compressive strength (UCS) greater than 10,000 psi.
- P. Overcut: The radial distance between the excavated hole and the outside radius of the steel casing.
- Q. Pit: A vertical excavation which is shored utilizing pre-engineered shoring, e.g. trench box or guide rail system.
- R. Principal Dimension: The largest of the three dimensions of an object.
- S. Receiving/Exit Pit: Excavation into which the trenchless technology equipment is driven towards and recovered from.
- T. Spoil: Earth, rock, and other materials removed during boring.
- U. Surface Settlement Points: Survey Control Points to be established at the ground surface, below the ground surface, or on manmade structures along the pipe alignment used for monitoring surface settlement due to subsurface excavation.
- V. Thrust Block: An engineered structure located between the jacking frame and the pit wall intended to spread the jacking force developed by the hydraulic cylinders over a larger surface area.

- W. Thrust Ring: A fabricated ring that is mounted on the face of the jacking frame. It is intended to transfer the jacking load from the jacking frame to the thrust bearing area of the pipe section being jacked.
- X. Trenchless Technology Equipment: Equipment used to install the product pipe without the use of a trench cut from the point of origin to the destination. The equipment includes, but is not limited to, tunneling and drilling.
- Y. Tunnel: A horizontal covered subterranean passageway through or under an obstruction.

### **1.03 QUALITY ASSURANCE: EXPERIENCE REQUIREMENTS**

- A. Auger Boring Contractor: The auger boring contractor shall have a California Contractor's license and a minimum of three (3) years experience in the installation of pipelines using auger boring as the method of installation. The Contractor shall have constructed and completed a minimum of five (5) pipeline projects, each with a minimum of 250 L.F. of installed casing pipe between 18 and 36 inches in diameter using auger boring as the method of installation. The five (5) referenced projects shall have the following characteristics:
1. One of the referenced projects shall have been in similar ground conditions to those anticipated in this Work including, but not limited to, soil type, soil strength as measured by "N" values, and hydrostatic head.
  2. One of the Contractor's referenced projects shall be a successfully completed auger bore of a length at least 80% of the longest drive length required on this Work utilizing a casing between 18 and 30 inches.
- B. Project Superintendent: The auger boring contractor's project superintendent shall have at least three (3) years of auger boring experience and shall have managed at least five (5) auger boring projects in similar ground conditions with similar equipment and with drive lengths exceeding 300 feet. Project Superintendent is to be on site before excavation commences and during excavation.
- C. Auger Bore Operator: The auger boring contractor's operator(s) shall have at least five (5) years experience in the installation of pipelines using auger boring as the method of installation. The operator shall have successfully completed a minimum of five (5) pipeline projects each with a minimum of 250 L.F. of installed casing pipe with an internal diameter between 18 and 30 inches in diameter using auger boring as the method of installation. Operator qualifications shall also include:
1. One of the operator's referenced projects shall be a successfully completed auger bore in similar ground conditions to those anticipated in this Work including, but not limited to, soil type, soil strength as measured by "N" values, and hydrostatic head.
  2. One of the operator's referenced projects shall be a successfully completed auger bore of a length at least 80% of the longest drive length required on this Work utilizing a casing between 18 and 30 inches.
- D. Experience Listing Requirements: For the above items, the experience record shall include a listing that indicates the most recent three (two for the Project Superintendent) auger boring projects, including all auger boring projects completed for this Owner, and all projects demonstrating the required experience. The experience record shall include name of project, Agency, name of contact including all contact information, soil conditions, longest drive planned and completed, and total footage planned and completed. If the auger boring work was performed

as a subcontractor, the record shall include name of general contractor, name of contact and all contact information.

#### **1.04 ALLOWABLE SETTLEMENT HEAVE**

- A. Allowable Settlement / Heave: Per Caltrans Encroachment Permit Requirements.

#### **1.05 SURVEYS**

- A. A professional surveyor licensed by the State of California and employed by the Contractor shall conduct all surveys.

#### **1.06 REFERENCE CODES AND STANDARDS**

- A. Cal/OSHA, California Code of Regulations, Title 8, Industrial Relations, Chapter 4, Division of Industrial Safety, Subchapter 4, Construction Safety Orders; and Subchapter 20, Tunnel Safety Orders.
- B. Occupational Safety and Health Administration (OSHA) Regulations and Standards for Underground Construction (29 CFR Part 1926, Subpart Section 1926.800, final rule dated June 9, 1989).

#### **1.07 SUBMITTALS**

The Contractor shall submit the following in accordance with SSPWC 2-5.3.2:

- A. Construction Method and Sequence of Operations: Contractor shall provide a description of the proposed method of construction and the sequence of operations to be performed during construction. This submittal shall include the following:
1. A general description and schedule of the auger boring procedure including, but not limited to, pit construction, set-up of auger boring equipment, method of spoil removal, spoil disposal location, methods of protection and maintenance of project site, and dewatering methods.
  2. Preprinted machine specifications or a letter from the auger boring machine manufacturer demonstrating that the selected machine(s) is capable of progressing through the anticipated soil conditions including, but not limited to, similar soil type, soil strength as measured by "N" values, and hydrostatic head.
- B. Working Drawings/Work Plan:
1. Layout of jacking and receiving pits, jacking equipment within the pit, and above ground equipment at each pit location. Orientation of the manhole within the pit shall be included.
  2. Shop drawings of auger boring machine, including configuration of cutter head and overcut tolerances. Cutterhead drawing shall confirm that the machine is capable of ingesting the principal dimension as defined by an obstruction.
  3. Pit ventilation system details.
  4. Electrical system, lighting system, and onsite power generation.
  5. Grade and alignment control method including set-up of jacking frame.

- C. Guidance System: Investigate all sites for possibility of having to manage groundwater problems that may occur due to seasonal changes or natural conditions.
1. When ground water level must be controlled, use a system and equipment that is compatible with the properties, characteristics, and behavior of the soils as indicated by the soil investigation report.
  2. An indication of where the leading edge of the casing is located with respect to line and grade and the intervals for checking line and grade. Indication may be provided by using a water gauge (Dutch level) or electronic transmitting and receiving devices. Other methods must have prior approval. Maintain a record of the progress at the job site.
  3. Water to be injected inside the casing to facilitate spoil removal shall only be allowed with approval of the system by the Engineer and is subject to rules and allowable procedures prescribed by Caltrans. If allowed, the point of injection shall be no closer than two (2) feet from the leading edge of the casing and the system shall be designed such that the pressure does not cause soil outside of the casing to be liquefied.
- D. Jacking system details including method of operation, Maximum Installed Jacking Capacity, and method of control to prevent the maximum allowable jacking force from being exceeded.
- E. Description of lubrication mix equipment and procedure for lubricating the pipe during jacking operations, including estimated volume for the anticipated soils.
1. Submit Material Safety Data Sheet (MSDS) for lubricant additives.
  2. Use NSF 060 or equal, Clean Water-approved materials only.
- F. Maximum Allowable Jacking Capacity calculations shall be prepared and submitted. Contractor shall determine the maximum anticipated construction loads, including jacking forces, and ensure that the anticipated loads are implemented in the manufacturer's design of the pipe, subject to Owner's review. The pipe manufacturer's Maximum Allowable Jacking Capacity calculations submittal shall be signed and stamped by a PE. The PE signing and stamping for the pipe manufacturer shall be registered in the US. The submittal shall include calculations showing maximum allowable jacking force including Factor of Safety.
- G. Maximum Anticipated Jacking Force calculations shall be prepared and submitted.
1. Maximum Anticipated Jacking Force calculations provided to the Owner shall be stamped and signed by a licensed California professional engineer (PE).
  2. Contractor shall determine the maximum anticipated construction loads, including Maximum Anticipated Jacking Force, and ensure that the anticipated loads are implemented in the manufacturer's design of the pipe, subject to Owner's review. The submittal shall include calculations showing Maximum Allowable Jacking Capacity including Factor of Safety.
  3. Intermediate Jacking Stations (IJS) are not permitted.
  4. The Maximum Installed Jacking Capacity must exceed the Maximum Anticipated Jacking Force and the Maximum Allowable Jacking Capacity by at least twenty percent (20%).
- H. A proposed contingency plan for potential situations that may occur during auger boring operations shall be provided for the following scenarios.
1. The auger boring equipment hits an obstruction or "freezes" along the jacking alignment. In particular, the contingency plan shall allow for situations under Caltrans right-of-way.

2. The jacking pressures start to move up rapidly and reasonable concern exists for completing jacking operations to the reception pit.
  3. Auger boring operations cause the ground above the alignment to settle or heave beyond the maximum allowable tolerance per Caltrans Encroachment Permit Requirements.
  4. Ground Water Control: Investigate all sites for possibility of having to manage groundwater problems that may occur due to seasonal changes or natural conditions.
    - a. When ground water level must be controlled, use a system and equipment that is compatible with the properties, characteristics, and behavior of the soils as indicated by the soil investigation report.
    - b. An indication of where the leading edge of the casing is located with respect to line and grade and the intervals for checking line and grade. Indication may be provided by using a water gauge (Dutch level) or electronic transmitting and receiving devices. Other methods must have prior approval. Maintain a record of the progress at the job site.
    - c. Water to be injected inside the casing to facilitate spoil removal. The point of injection shall be no closer than two (2) feet from the leading edge of the casing.
- I. A safety plan for personnel conducting the auger boring operations and appurtenance installation
- J. Survey plans including, but not limited to, the following:
1. Settlement Surveying and Monitoring Plan.
  2. Building and Structures Assessment Plan.
  3. Tunnel alignment plan.
  4. Instrument locations.
  5. Initial Survey.
  6. Final Survey.
- K. Jacking Operations Log: The Contractor shall adhere to the following requirements:
1. Provide a sample of logging reports and daily reports prior to beginning auger boring.
  2. Transcribe to paper and submit to the Owner at the end of each shift the jacking operations log, which shall include, as a minimum, the following
    - a. Number of each casing pipe installed and length of pipe.
    - b. Maximum jacking forces exerted on the pipe at each section.
    - c. Starting and finish times for each crew shift each day.
    - d. Torque of cutter head.
    - e. Hydraulic pressure.
    - f. Observations of settlement or heaving.
- L. Contractor's Qualifications: The qualifications shall be in accordance with Section 13320 provided herein.
- M. Review of Contractor's Submittals: The Owner's review shall not relieve the Contractor of any assigned responsibilities. Submittal review period shall conform to Green Book requirements.

- N. Right-of-way Submittals: Work to be performed within the State of California Department of Transportation (Caltrans) right-of-way requires encroachment permit approval – reference Section 01900.

## **1.08 PROJECT CONDITIONS**

- A. Subsurface Information: Owner has provided subsurface investigation information (not a part of the Bid Documents) for reference purposes only, in accordance with Section 7.2 of the Instructions to Bidders.
- B. The Contractor shall provide adequate ventilation at all times. Air quality shall be tested in the pit immediately prior to each change in shift as well as prior to personnel entry, and periodically thereafter as required by law.
- C. The Contractor shall provide adequate lighting in the pit and around equipment being utilized and shall thoroughly insulate any separate power and lighting circuits.

## **1.09 SAFETY**

- A. If required, the Owner has obtained from the State of California, Department of Industrial Relations, Division of Occupational Safety and Health Administration (Cal/OSHA) an underground classification for these tunnels. The Contractor shall conform to the Cal/OSHA Permit requirements and perform Work in conformance with all applicable laws and regulations.
- B. The Contractor shall submit the safety plan for the Owner's information only. The Contractor is solely responsible for safety on the project site; therefore, the submitted plan shall not be subject to approval by the Owner. At a minimum, the plan shall include:
1. Safety plan for pit access and exit, including ladders, stairs, walkways, and hoists.
  2. Protection against improper electrical, mechanical, and hydraulic equipment operations.
  3. Protection against improper and unsafe lifting and hoisting equipment, practices, and operation.
  4. Ventilation and lighting details.
  5. Monitoring for hazardous gases.
  6. Protection against flooding and means for emergency evacuation.
  7. Protection of pit including traffic barriers, accidental or unauthorized entry, and falling objects.
  8. Safety supervision responsibilities.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Steel Casing: Non-Pressure Steel casing shall be specifically designed for auger boring and conform to appropriate specifications:
1. Steel Pipe: ASTM A139 Grade B.
  2. Welding: API 2B.

- B. Carrier Pipe: Shall be in accordance with the details on the plans.
- C. Casing Spacers: Shall be in accordance with the details on the plans.

## **2.02 EQUIPMENT**

The Contractor shall be responsible for compliance with the following requirements.

- A. General: The auger boring system selected shall be specifically designed for excavating and transporting the soil materials that routinely could be encountered or expected along the alignment of the proposed alignment.
- B. Auger Boring Machine: Use equipment that is capable of handling the various anticipated ground conditions. In addition, the equipment shall:
  - 1. Be capable of maintaining the tunnel face and preventing loss of ground through the machine. The cutterhead must provide satisfactory support of the excavated face at all time.
  - 2. Restrain the cutterhead from advancing in front of the leading edge of the casing.
  - 3. Provide protection to the electric and hydraulic motors and operating controls against water damage.
  - 4. Be capable of being monitored for the volume of excavated material removed at the tunnel face and coordinating the machine advance rate to avoid over-excavation.
- C. Pipe Jacking Equipment: Provide an operation that includes a pipe jacking system with the following features:
  - 1. Main Jacking Frame located in the jacking pit used to push the cutterhead and casing pipe through the ground towards a receiving pit.
  - 2. Sufficient jacking capacity to push the casing pipe string between the pit locations identified on the Shop Drawings.
  - 3. Utilizing guide rails that are set to line and grade and holding the casing pipe to line and grade before the auger boring operation commences.
  - 4. Uniform distribution of jacking forces on the end of the casing pipe.
- D. Safety Equipment: Provide all appropriate safety equipment as necessary for the Contractor's method and operation of construction and as required by all applicable Laws and Regulations.

## **PART 3 - EXECUTION**

### **3.01 JACKING AND RECEIVING PITS**

- A. The Contractor shall be responsible for constructing jacking and receiving pits for auger boring in accordance with the requirements.

### **3.02 EXISTING UTILITIES**

- A. Utilities found to be in or adjacent to auger boring pits shall be protected in place. Contractor shall identify all potential at risk utilities and notify the respective entity and or agency of any potential conflicts. The Contractor shall provide means and methods necessary for protection of



the utility to the satisfaction of the utility owner. The contractor shall utilize, but not be limited to the following protection methods:

1. Provide a reinforced concrete cap to protect the existing utility when found to be within two feet of the bottom of the jacking pit.
2. Installation of steel trench plates in the bottom of auger boring pits to distribute loads away from the existing utilities.
3. Suspended utilities within auger pits shall be protected to the satisfaction of the utility owner or as determined by site conditions. Utilities may be protected from above or below, utilizing wood or steel beams at surface level and strapping the suspended utility to the beam or from underneath using necessary supports or jacks .

**B. Submittals**

1. Contractor shall provide a submittal of the proposed support system stamped and signed by a Registered Civil Engineer licensed in the State of California.

**3.03 WORK AREA PREPARATION AND MAINTENANCE**

**A. The Contractor shall be responsible for the following conditions:**

1. Means and methods of auger boring operations and safety of the Work, the Contractor's employees, public, and adjacent property, whether public or private.
2. Clean working conditions inside the jacking operation area, including removal of spoil, debris, equipment, and other material not required for operations. Contractor shall not store pipe on any City streets unless the Owner grants permission in writing. Contractor shall see that streets are cleaned each day with a water truck or street sweeper.
3. Organization of auger boring surface equipment for each drive in such a manner as to enable proper operation at all times, to minimize impacts to property Owners, and to maintain traffic control patterns as specified in the Traffic Control Plan.
4. Power generation equipment and any other equipment operating on or with fuel or lubrication oils shall be provided with suitable oil and gas containment basins made of plastic lining and sand bags to ensure no loss of oil to drains or water courses or to contaminate the ground.

**3.04 INSTALLATION**

**A. Alignment Establishment: The Contractor shall be responsible for adherence to the following requirements and conditions:**

1. Retain a Professional Surveyor licensed in the state of California to survey the control points identified in the Contract Documents, exclusive of Owner provided control points indicated on the drawings. Surveyor shall check baseline and benchmarks at the beginning of the Work and report any errors or discrepancies to the Owner.
2. Use the baseline and benchmarks shown on the Plans to furnish and maintain reference control lines and grades for the brine pipe construction. Use these lines and grades to establish the exact location of the pipeline excavation, and structures.
3. Establish and be responsible for accuracy of control for the construction of the entire Work, including pit locations, structures, excavation, casing pipe alignment, and grade.
4. Establish control points sufficiently far from the auger boring operation not to be affected by ground movement.

5. Check the primary control for the auger boring system against an aboveground undisturbed reference at least once each week or not greater than 100-foot intervals of casing pipeline constructed.
- B. Tolerances: The Contractor shall adhere to the following requirement and conditions:
1. Pipe installation shall not vary by more than four (4.0) inches in horizontal alignment or two (2.0) inches in vertical elevation from any design point between pits.
  2. Record the exact position of the auger bore cutterhead at 100-foot intervals or a minimum of once per week to ensure the alignment is within the specified tolerances.
  3. When the excavation is off line or grade, return to the design line and/or grade over the remaining portion of the drive and at a rate of not more than 1-inch per 25 feet.
  4. If allowable tolerances are exceeded, Contractor shall pay all costs for correction (redesign, reconstruction, re-inspection). If redesign is required, the Contractor shall obtain the services of a Professional Engineer registered in the State of California for the redesign. The installed pipe must be capable of meeting the design flow shown on the Plans. Plans showing the changes shall be submitted to the Owner for review.
  5. Perform a verification survey with a transit or total station of the installed casing pipe from pit to pit after removal of the auger. Document measured conformance to design line and grade of the pipe together with locations and deviation (distance and direction) of any out-of-tolerance locations.
- C. Auger Boring and Jacking of Casing Pipe: The Contractor shall adhere to the following requirements and conditions:
1. Conduct operations in accordance with applicable safety rules and regulations and use methods that include due regard for safety of workers, and protection for adjacent structures, utilities, and the public.
  2. Keep casing pipe excavation within the rights-of-way indicated on the Contract Drawings, within the tolerances of Section 13320 Auger Boring (Steel Casing).
  3. Locate equipment powered by combustible fuels at suitable distances from pits and protect equipment to prevent the possibility of explosion and fire in pits.
  4. Monitor the rate of advance with the rate of spoil removed to avoid over-excavating.
  5. Make the excavation of a minimum sufficient size to permit carrier pipe installation with in the casing pipe. The annular space between the casing and carrier's largest outside radius shall be sufficient to install the carrier without damaging the carrier pipe and shall not be less than two (2.0) inches.
  6. The annular space outside of the casing pipe shall not exceed one-half (0.5) inches. Wing cutters, when used shall not add more than one (1.0) inch to the outside diameter of the casing pipe. Voids in excess of this specification shall be grouted in accordance with Caltrans Encroachment Permit Manual, Appendix E, latest edition.
  7. Monitor and record the mixing and use of the lubrication.
  8. Contractor shall not employ water jetting of the ground to advance the pipe.
  9. If the pipe "freezes" and the casing is unable to be moved, a recovery access pit may be permitted with the location subject to review by the Owner. The bid price shall include all costs associated with recovery of the auger boring equipment, including but not limited to permits, pit construction, demolition and replacement, and utility relocation. Recovery pit construction shall be performed in accordance with the requirements.

10. In the event a section of pipe should be damaged during the jacking operation or joint failure occurs, as evidenced by visible ground inflow or other observations, use one of the following procedures to correct the damage, as directed by the Owner, and at no additional cost to the Owner:
  - a. Slightly damaged pipe that passes leakage test and maintains pipe barrel and joint structural integrity, may, if access is possible, be repaired in place with a method approved by the pipe supplier and if the proposed technique is accepted by the Owner.
  - b. Severely damaged pipe, or pipe where joint failure is evident, shall be removed from the excavation by surface excavation, except as noted above, or by jacking it through the excavation and removing it at the receiving pit. The removed pipe, after inspection and found to be without defect, may be jacked a second time by being placed into the same pipe string at the jacking pit.

D. Obstructions During Auger Boring: The Contractor shall be responsible for meeting the following conditions:

1. Remove, clear or otherwise make it possible for the auger boring system and pipe to progress past or through objects in accordance with the Contractor's submitted contingency plan.
2. No additional compensation for removing, clearing, or otherwise making it possible for the auger bore to progress past objects that are not obstructions will be paid.
3. Payment for obstruction removal pits, which includes the removal of the obstruction, shall be paid if the object meets the definition of an obstruction, and subject to the following requirements:
  - a. Notify the Owner immediately upon encountering an object that stops the forward progress of the Work.
  - b. Upon written authorization by the Owner, proceed with removal of the object by means of obstruction removal procedures in accordance with the Contractor's approved submittals.
  - c. Shall not carryout excavation within 5 feet of the front of the cutterhead head without the Owner's knowledge.
4. The proposal of alternative methods for removing, clearing or otherwise making it possible for the auger boring system to progress past objects that does not allow for the visual observation and measurement of the nature of the object to be made shall not be considered for additional payment.
5. Boring Failure: If an obstruction is encountered which prevents completion of the installation in accordance with the design location and specifications; the casing pipe may be taken out of service and left in place at the discretion of the Engineer. Immediately fill the casing pipe left in place with cellular concrete fill in accordance with Caltrans Encroachment Permit Requirements. Submit a new installation procedure and revised plans to the Engineer for approval before resuming work at another location.

### 3.05 NOISE MONITORING AND ABATEMENT

- A. Implement measures necessary to mitigate noise impacts caused by the Work. The following noise monitoring and abatement requirements are specific to the auger boring operation when the Contractor's power generation are operating. Pit construction shall be exempt from the following requirements:

1. Monitor the ambient noise at the property line of the occupied building closest to the generator.
2. Provide equipment with enclosures or construct portable sound barriers to minimize noise impact.
  - a. Provide a generator with a "residential" silencer and acoustic enclosure.
  - b. Provide equipment with equipment mufflers, as needed, to mitigate the noise produced from construction.
  - c. Contractor may be required to rearrange equipment to minimize noise impact.

### **3.06 DISPOSAL OF SPOIL AND EXCESS MATERIAL**

- A. Remove spoils and other materials from the project site in accordance with the requirements of Green Book Section "Construction and Final Cleaning," as well as Section 01710 – Final Cleanup.
- B. Locate and acquire a site for the legal disposal of spoil and other material and dispose of same in accordance with all applicable Laws and Regulations. Defend, indemnify, hold harmless the Owner for all claims, demands, penalties, fines, damage, loss, causes of action, proceedings, liability, costs and expense including attorney's fees for failure to dispose of same in accordance with all applicable Laws and Regulations.

### **3.07 SITE CLEANUP**

- A. Unless otherwise shown or specified, Contractor shall restore to their original condition all existing surface improvements damaged or removed as a result of auger boring operations, and as required by Section 01710 – Final Cleanup.

### **3.08 QUALITY CONTROL**

- A. Perform a CCTV inspection of the completed pipeline, per SSPWC.
- B. Complete an as-built survey with at least two (2) survey points in each joint of casing pipe. (Typically these survey points would be within two feet of opposite ends of each piece of pipe).
- C. Boring Path Report: Furnish a Bore Path Report to the Engineer within fourteen (14) days of the completion of each bore path. Include the following information in the report:
  1. Location of project and financial project number including the Permit Number when assigned.
  2. Name of person collecting data, including title, position, and company name.
  3. Investigation site location (Contract plans station number or reference to a permanent structure within the project right-of-way).
  4. Spoils removal and disposal log.
- D. As-Built Plans: Provide the Engineer with a complete set of As-Built Plans showing all bores (successful and failed) within thirty (30) calendar days of completion of the work. Plans must be dimensionally correct copies of the Contract plans. Include notes on the plans stating the final bore path diameter, facility diameter, drilling fluid composition, composition of any other materials used to fill the annular void between the bore path and the facility or facility placed out

of service. If the facility is a casing, note this, as well as the size and type of carrier pipes to be placed within the casing as part of the Contract work. Produce the plans as follows:

1. On the Contract plan view, show the centerline location of each facility, installed or installed and placed out of service to an accuracy within one (1) inch at the ends and other points physically observed. Show the remainder of the horizontal alignment of the centerline of each facility installed or installed and placed out of service and note the accuracy with which the installation was monitored.
2. As directed by the Engineer, provide either a profile plan for each bore path, or a cross-section of the roadway at a station specified by the Engineer, or a roadway centerline profile. Also show the ground or pavement surface and the crown elevation of each facility installed, or installed and placed out of service, accurately to within one (1) inch at the ends and other points physically observed. Show the remainder of the vertical alignment of the crown of each facility installed, or installed and placed out of service and note the accuracy with which the installation was monitored. On profile plans for bore paths crossing the roadway, show the contract plans stationing. If the profile plan for the bore path is not made on a copy of one of the contract profile or cross-section sheets, use a 10 to 1 (10:1) vertical exaggeration.
3. If a bore path is not completed, show on the plans the failed bore path along with the name of the utility Owner and the final bore path. Note the failed bore path as "Failed Bore Path." Also show the location and length of the cutting head and any product not removed from the bore path.
4. Show the crown elevation, diameter and material type of all utilities encountered and physically observed during the subsoil investigation. For all other obstructions encountered during subsoil investigation or the installation, show the type of material, horizontal and vertical location, top elevation and lowest elevation observed, and note if the obstruction continues below the lowest point observed.

### **3.09 METHOD OF MEASUREMENT**

- A. The method of measurement will be the actual horizontal length of the installation complete and accepted. No additions or deductions will be made for deviations in either the vertical or horizontal direction required to complete the installation.

### **3.10 BASIS OF PAYMENT**

- A. Payment will be full compensation for all work specified in this Section, including all installations, from plan point of beginning to plan point of ending (i.e. pull box) at plan depth, removal of excavated materials and spoils, removal and disposal of drilling fluids, backfilling, and complete restoration of the site. The installation of tracking conductors (wire or tape) will be included in the cost of the bore and will not be paid for separately. No payment will be made for failed bore paths, injection of excavatable flowable fill, products taken out of service or incomplete installations. No payment will be made for auger bore until a Bore Path Report has been delivered to the Engineer. After the Engineer's acceptance of the Bore Path Report, payment will be made in the amount of 70% of the unit price bid, for Auger Bore & Jacking. The remaining thirty percent (30%) of the unit price bid will be made after submittal of As-Built Plans.

**END OF SECTION**

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## SECTION 15045

### PIPE CLEANING AND INSPECTION

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. The Contractor shall be responsible for cleaning and inspecting the entire length of the brineline located within the project boundary. Inspection shall include cleaning, high definition CCTV inspection and laser profiling / digital scanning to measure any deflection of the pipeline. This specification shall supplement the Standard Specifications for Public Works Construction (SSPWC or Greenbook), latest edition.
1. Digital 360 pipeline inspection is a means of scanning a pipeline in a continuous, non-stop run between start and end points. The scanner shall utilize two (2) high definition cameras with a minimum of 185-degree field of view for each camera with one camera located at the forward position of the scanner and one camera at the aft position of the scanner. Digital 360 scanning systems shall be designed to travel at a rate of 70 feet per minute.
  2. The raw data collected within the scan may be coded by either the Contractor, or by a Contractor provided third party consultant provided the coding shall be performed by a NASSCO certified technician.
  3. The data collection system and software reader shall be capable of scanning in three (3) dimensional objects and producing three dimensional images. Scanning systems and software that convert captured images/graphics to a two-dimensional plate and then graphically re-wrap into a tubular form to provide a three-dimensional impression shall not be allowed.
  4. Images and software shall be capable of capturing all features, including hairline cracks and producing accurate locations of defects and features as specified by the Owner.

##### 1.02 PIPELINE INSPECTION

- A. Pipeline inspections shall be conducted by the Contractor in accordance with the Owner's safety procedures and manufacturer's recommendations. Pipeline inspection by the Contractor shall be conducted by personnel certified by NASSCO for pipeline inspection and OSHA certified for confined space entry.

##### 1.03 SUBMITTALS

- A. General: Information to be furnished shall include product data and material information per Section 01300. This specification applies to items specified in the detailed pipe specification sections.
- B. Project list showing the accumulation of a minimum of 100-miles of pipeline inspection utilizing the system described herein in full accordance with all specifications herein.
- C. Minimum of three (3) references in which the contractor has performed inspection services with the system described herein in full accordance with all specifications herein.

- D. Manufacturer's certification for Contractor utilizing the system described herein, indicating a minimum of two (2) years' experience.
- E. Example deliverable in full accordance with all specifications herein performed by the Contractor on a previous project.

#### **1.04 GUARANTEE AND WARRANTY**

- A. Contractor shall provide one year warranty (Warranty Period) on all work from the date of Final Acceptance by SAWPA as specified in the General Conditions.
- B. Contractor shall be solely responsible for all materials, labor, and equipment costs associated with correcting defective work during the Warranty Period.

#### **1.05 RELATED WORK**

- A. Section 02999 – Temporary Handling of Sewage Flow

#### **1.06 CONTRACTOR QUALIFICATIONS**

- A. Contractor shall demonstrate a minimum of 100-miles past experience in pipeline inspection utilizing the system described herein and in full accordance with all specifications herein.
- B. Contractor shall have a minimum two years' experience in pipeline inspection utilizing the system described herein and in full accordance with all specifications herein.

### **PART 2 - EQUIPMENT**

#### **2.01 CLEANING EQUIPMENT**

- A. Pipelines and structures shall be cleaned using a high velocity jet cleaner. The equipment shall be truck mounted for ease of operation. The equipment shall have a minimum of one thousand (1,000) continuous feet of high pressure hose with a selection of high velocity nozzles to ensure that the line segment can be cleaned per the Contract Requirements. Nozzles shall be capable of producing a scouring action from 15 degrees to 45 degrees in all designated line sizes. The equipment shall carry its own water tank capable of holding corrosive or caustic cleaning or sanitizing chemicals, auxiliary engines and pumps, and hydraulically driven hose reel. All controls shall be located so that the equipment can be operated above ground. Equipment shall include a high-velocity gun for washing and scouring manhole walls and floor. The gun shall be capable of producing flows from a fine spray to a solid stream.

#### **2.02 CCTV INSPECTION EQUIPMENT**

- A. The Contractor shall furnish all equipment and materials required for inspection. Equipment shall be in accordance with Greenbook, Section 500 and as noted below:
  - 1. The CCTV equipment utilized shall be specifically designed and constructed to be operative in one hundred percent (100%) humidity conditions. Lighting for the camera shall minimize reflective glare. Lighting and camera quality shall be suitable to provide a clear, continuously in-focus picture of the entire inside periphery of the pipe for a minimum distance of six feet for all conditions encountered during the inspection. A



reflector in front of the camera may be required to enhance lighting in large diameter pipe.

2. CCTV equipment shall include a multi-angle television camera capable of spanning 360-degrees circumference and 270-degrees on horizontal axis to televise pipelines 6-inch diameter or larger; the purpose of the rotating head camera is to view all connections, upstream and downstream structures, and to locate all defects, as well as questionable problem areas; focal distance shall be adjustable through a range of one (1) inch to infinity. The television camera shall be color format and specifically designed and constructed for operation in connection with sewer inspection.
3. Other required equipment are television monitor, cables, power sources, lights, and other equipment necessary to do the work.
4. CCTV inspections shall be recorded onto digital media.

### **2.03 DIGITAL SCANNING EQUIPMENT**

- A. Inspection equipment shall be 100% digital and utilize a fiber optic cable for transmission of binary data.
- B. The inspection camera system must have two independently or simultaneously controlled digital cameras, one facing in the forward camera and one facing in the rear direction. Each camera must have a minimum of 185 degree field of view.
- C. The inspection camera system must illuminate the interior of the pipeline using either xenon strobe light or strobing LED lights. The lights shall be positioned 360 degrees around the camera lends to distribute the light evenly into the pipe walls. The lighting must be able to illuminate pipeline from 6" to 48" in diameter without the need of any auxiliary lighting. Any systems not using strobe light technology will be deemed unacceptable due to motion blur during imaging recording.
- D. The inspection system shall produce individual images or frames with no more than 0.001 inches of tractor movement during image or frame exposure to produce crisp, clear images.
- E. The inspection camera system must provide a minimum of 3000 line of vertical resolution in the side view and a minimum of 500 lines in the perspective view.
- F. Inspection speeds must be no more than 70 feet per minute and no less than 35 feet per minute to ensure maximum production per day with each inspection system and to minimize the time at each location to reduce the chance of backups from plugging, maintain traffic flow, and reduce safety concerns of contractor's employees.
- G. The inspection robot shall have a remotely controlled camera elevating device o center the camera in pipeline from 8" to 42" in diameter.
- H. The inspection system must be able to collect all necessary data in either the forward or reverse tractor direction. Systems collecting data only in a single direction will be deemed unacceptable.

## **PART 3 - EXECUTION**

### **3.01 CLEANING REQUIREMENTS**

- A. Roots shall be removed in the designated sections where root intrusion is a problem. Roots shall not be a reason for reverse set-ups. Special attention should be used during the cleaning operation to ensure complete removal of roots from the joints for 33"-diameter and smaller pipes and to ensure 90-95% removal of roots from the joints for 36"-diameter and larger pipes. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines and winches using root cutters and porcupines, and equipment such as high-velocity jet cleaners.
- B. Calcium or other build-up on the surface of the pipeline shall be removed in the designated sections where cleaning is required. Special attention should be used during the cleaning operation to ensure complete removal of calcium or other build-up from the interior of the pipeline. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines and winches, and equipment such as high-velocity jet cleaners. Care shall be taken not to damage the interior of the host pipe in removing these build-ups. Proposed cleaning methods shall be submitted to the Owner for review and approval prior to their use.
- C. The pipeline shall be swabbed after cleaning to remove all water from the pipeline.
- D. The material resulting from the cleaning operation shall be removed at the downstream maintenance access structure of the reaches being cleaned, through the use of a filtering device. The material collected at the downstream maintenance access structure shall become the property of the Contractor. It shall be removed from the site by the Contractor in a closed container and disposed of in a legal manner. It shall not be dumped into streets, ditches, catch basins, or storm sewers. Flushing of the access structure from reach to reach is unacceptable.
- E. Acceptance of the brineline cleaning shall be made upon the successful completion of the CCTV inspection and shall be to the satisfaction of the Engineer. If CCTV inspection shows the cleaning to be unsatisfactory, the Contractor shall be required to re-clean and re-inspect the brineline at no additional cost to SAWPA.

### **3.02 CCTV INSPECTION REQUIREMENTS**

- A. General: Procedures for CCTV inspections shall be in accordance with the Greenbook, Section 500.
- B. The camera shall be moved through the pipeline in either direction at a uniform rate, stopping when necessary to ensure proper documentation of the brineline's condition. In no case shall the television camera be pulled or propelled at a speed greater than thirty (30) feet per minute. The camera height shall be adjusted such that the camera lens is always centered in the pipe being inspected. The equipment shall have an accurate footage counter, which shall display on the monitor the exact distance of the camera from the centerline of the starting access structure. Unless otherwise approved by the Engineer, footage measurements shall begin at the centerline of the upstream access structure.
- C. The camera operator shall slow or stop the camera at potential or actual imperfections in the new main to obtain a high-quality CCTV image. Each location where a potential obstruction or structural deficiency exists shall be identified with accurate distance measurements above ground from the manhole or access structure.

- D. For CCTV inspections, the Contractor shall examine the brineline to insure the passage of the camera through all valves and fittings prior to any televising. Mains with fittings that would obstruct the camera, such as butterfly valves, shall be televised either prior to the installation of those fittings or from access holes immediately adjacent to the obstructing fitting, if available.
- E. Structural cracking, excessively deflected joints, protruding joint sealing material, corrosion, evidence of reverse slope by ponding of water or low spots in pipe grades and any other defect revealed by the CCTV inspection shall be noted by the Contractor.
- F. Documentation: Documentation of CCTV inspections shall be in accordance with the Greenbook, Section 500, except as otherwise modified herein.
  - 1. If voice recording is used on the digital media, the recording shall have brief informative comments on unusual conditions, type and size of connections and fittings, collapsed sections, the presence of scale or corrosion, the location and description of each defect and any other unusual or significant conditions noted.
  - 2. The date, identification of brineline reach(es) by upstream and downstream access structure numbers, and access structure to access structure footage shall be displayed on the CCTV data view at all times. Each recording shall be permanently labeled with the Contractor's name, date televised, project name, street name(s), identification of the reach(es) inspected, and run number.
  - 3. The Contractor shall prepare an inspection report which shall be a complete typed, written log of pipe conditions, indexed to the footage counter. The Contractor shall provide a minimum of two (2) copies of the inspection report, together with digital media, to the Engineer at the completion of the inspection.
  - 4. If the recordings are of such poor quality that the Engineer is unable to evaluate the condition of the line or verify cleaning, the Contractor shall re-televiser the line and provide a new recording of good quality at no cost to the Owner. No payment will be made for recordings that do not meet the requirements of these specifications.

### **3.03 DIGITAL SCANNING REQUIREMENTS**

- A. The Contractor is responsible for reviewing collected data, coding observations, and completing a full PACP evaluation of each inspected pipeline. The Owner must have the ability to view the digital film file in the way that the Contractor can view them, including full control of the virtual pan and tilt. The Owner may designate a certified operator or consultant to provide the full PACP evaluation, however in that event, the Contractor still shall have the capability of performing the full evaluation as specified herein.
- B. The digital film files must include an unfolded view of the pipeline with a minimum of 3000 lines of vertical resolution.
- C. The digital film files must include an unfolded view overview of the entire pipeline to view entire pipe segments at one time.
- D. The digital film files must include a distortion-free virtual pan and tilt allowing the review and the Owner to view 100% of the pipe wall from any perspective. The virtual pan and tilt must be able to view 360 degrees in any direction while maintaining an always-upright image. The virtual pan and tilt must consist of views from the front and rear camera, any virtual pan and tilts that artificially create this view from a single camera will be deemed unacceptable due to distorted images on the direct side viewing and inability to view into laterals and other observations.

- E. The virtual pan and tilt and forward/reverse direction of the images must be able to be controlled from a computer mouse.
- F. The virtual pan and tilt and unfolded views must be able to be viewable by the Owner without the need of purchasing additional software. Film files must be able to be integrated into Owner's other databases.
- G. The Contractor must use digital panoramic compatible software with PACP or other owner-specified templates for feature and defect coding. The panoramic module must also be used to ensure that film files are properly reviewed with the highest accuracy possible. The Contractor must review the files using PACP certified personnel.
- H. The Contractor must supply the Owner with single or dual layer DVD's, a removable hard drive, or other pre-approved media supporting panoramic film files and displaying the panoramic module. The Owner must have access and the ability to control the unfolded view, the front or rear view of the cameras, an overview of the entire pipeline, and distortion free virtual pan and tilt.

### **3.04 SEQUENCING**

- A. Cleaning shall be completed as to allow the proper CIPP lining of the pipeline in accordance with manufacturer's recommendations.
- B. The Contractor shall clean the pipeline and swab the pipeline to removal all water to final CCTV inspection.
- C. The Contractor shall CCTV and laser profile the pipeline following cleaning to verify the pipeline is properly prepared for CIPP liner installation.
- D. Upon Owner approval of the post-cleaning CCTV inspection, the Contractor, with Owner approval, will be allowed to proceed with liner installation.

### **END OF SECTION**

## SECTION 15051

### GENERAL PIPING STIPULATIONS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

These General Piping Stipulations apply in general to all piping. They shall supplement the detailed piping section and the Standard Specifications for Public Works Construction (SSPWC), latest edition.

##### 1.02 SUBMITTALS

- A. General: Information to be furnished shall include product data and material information per Section 01300. This specification applies to items specified in the detailed pipe specification sections.
- B. Typical Piping Installation:
  - 1. Any major relocations of piping from what is detailed in the construction documents.
  - 2. Any change of materials, jointing methods, or supports from what is detailed in the construction documents.
  - 3. Complete descriptive information regarding proposed thrust restraint methods, materials, and design calculations as required.
  - 4. Complete list of piping identification label titles and color schemes.
  - 5. Pipe support drawings, details, and calculations where required.
  - 6. Manufacturer's cutsheets showing dimensions, materials, size, and weight.
  - 7. Manufacturer's standard installation and operation instructions.
  - 8. Manufacturer's certification that products comply with the indicated requirements.
  - 9. Manufacturer's maintenance procedures.

##### 1.03 GUARANTEE AND WARRANTY

- A. Contractor shall provide one year warranty (Warranty Period) on all work from the date of Final Acceptance by the Owner as specified in the General Conditions.
- B. Contractor shall obtain from the manufacturer a warranty for all material and appurtenances for one year from the date of Final Acceptance.
- C. Contractor shall be solely responsible for all materials, labor, and equipment costs associated with correcting defective work during the Warranty Period.

##### 1.04 RELATED WORK

- A. Section 15061 – High Density Polyethylene (HDPE) Pipe, Fittings, and Appurtenances
- B. Section 15062 – Ductile Iron Pipe and Fittings.

- C. Section 15100 – Valves and Appurtenances
- D. Section 15121 – Fiberglass Reinforced CIPP
- E. Section 15165 – Mechanical Pipe Couplings
- F. Galvanizing: Galvanizing shall conform to the applicable requirements of Section 210-3 "Galvanizing" of the SSPWC, latest edition.

## **PART 2 - EQUIPMENT (NOT APPLICABLE)**

### **2.01 PIPE IDENTIFICATION**

- A. Brine Line Pipeline Materials (not HDPE fittings):
  - 1. HDPE pipe used for brineline piping shall be of gray manufacture with a green stripe to indicate the pipeline is carrying brine-laden water. All HDPE pipe shall conform to the requirements of Section 15061 of these Specifications.
- B. All Other Piping:
  - 1. Identification of piping other than potable water piping shall conform to ANSI A13.1. All unburied pipe including tubing, galvanized pipe and polyvinyl chloride pipe shall be coated in accordance with Division 9 of these Special Provisions.
  - 2. Stenciled and painted labels identifying the specific nature of the pipe contents shall be affixed on the pipe to complete the pipe identification. The Contractor shall submit to the Owner for review a complete listing of all piping label titles and label color schemes. Labels shall be of the self-sticking type with letter sizes in accordance with ANSI A13.1. Straight pipelines shall be identified at intervals of 20 feet, and at least once in each area. Piping shall also be identified within two (2) feet of all turns, valves and branches. On all exposed piping, black arrows of the appropriate size shall be applied adjacent to the nameplate to indicate the flow direction. Labels shall be as manufactured by W.H. Brady Co., or equal.
  - 3. Safety Signs: The Contractor shall furnish and install safety signs at all non-potable hose connection points. Safety signs "DO NOT DRINK" shall be as manufactured by The W.H. Brady Co., or equal.

### **2.02 TRACER WIRE SYSTEM**

- A. A minimum of 12-gauge copper clad steel wire composed of a steel core with a uniform and continuous copper cladding thoroughly bonded to the steel throughout. Wire must conform with ASTM B910/B910M. The steel and copper interface must have a metallurgical bond achieved through a high heat and pressure bonding process. The steel shall be high strength with 0.54 carbon or greater. The tracer wire shall have a High Density Polyethylene coating, minimum 30 mil, and have a minimum breaking load of 380 pounds. Tracer wire shall be Copperhead 12-gauge, 30 mil HDPE jacket or approved equal.
- B. Except at approved spliced-in connections, tracer wire shall be continuous and without splices from access box to access box. Access boxes shall be placed as shown on the Plans and shall have HS-20 load rating. Access boxes shall contain a magnet for ease in location; have an exterior direct connection point and a tamper proof cover. Loop 18-24 inches of tracer wire in each access box.

- C. Tracer wire shall be installed, as shown on the Plans, on the top centerline of the pipe longitudinally and shall be continuous in its coverage on the piping and shall be laid flat and fastened to each pipe length by plastic tape no more than ten (10) feet apart. Other satisfactory means of securing the tape during backfill of the trench may be used if suitable for the work, as determined by the Owner. The wire shall be protected from damage during the execution of the works. No breaks or cuts in the tracer wire or tracer wire insulation shall be permitted.
- D. The trace wire shall be securely bonded together at all wire joints with an approved watertight connector, Copperhead AQUA #SCB-01 or approved equal, to provide electrical continuity.
- E. The trace wire shall terminate at access boxes at all transitions from HDPE to Ductile Iron Pipe.
- F. At all auguring and directional drilling locations, only Copperhead Extra High Strength (EHS), 12-gauge, 45 mil HDPE jacket with a minimum 1150 pound break load shall be used.
- G. Contractor shall perform a continuity test on all trace wire in the presence of the Engineer or the Engineers' representative. If the trace wire is found to be not continuous after testing, Contractor shall repair or replace the failed segment of the wire.
- H. There is no separate payment for the supply and installation of tracer wire. The Contractor shall consider the supply and installation of the tracer wire system incidental to installation of the pipe and shall include all associated costs for materials, labor, equipment in his bid.

## 2.03 METALLIC LOCATING TAPE:

- A. All brineline piping shall be marked by the use of metallic locating tape. Polyethylene plastic and metallic core or metallic-faced, acid-resistant, polyethylene plastic warning tape shall be manufactured specifically for warning and identification of buried utility lines. Provide tape on rolls, three-inch (3") minimum width, color coded for the intended utility with a warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED <service as indicated in schedule below> LINE BELOW" or similar wording shall be printed on the tape in 1.5 inch high black letters continuously repeated every 21 inches the entire length of the tape. Color and printing is to be permanent, unaffected by moisture or soil. Minimum thickness of the tape shall be 0.004 inches. Tape shall be manufactured with integral wires, foil backing, or other means of enabling detection by a metal detector when the tape is buried. The tape shall be placed at a maximum depth of three (3) feet. Encase the metallic element of the tape in a protective jacket or provide with other means of corrosion protection.

Pipe Service Identification Schedule		
Service	Title	Color
Brine Waste	Brineline	Green
Sewer	Sewer	Green
Potable Water	Potable Water	Blue
Recycled Water	Recycled Water	Purple

- B. Manufacturer shall be:
  - 1. Thor Enterprises, Inc. or equivalent.

## 2.04 PIPE SUPPORTS

### A. General:

1. All pipe and appurtenances connected to equipment shall be supported in such a manner as to prevent any strain being imposed on the equipment.
2. All pipe and tubing shall be supported as required to prevent significant stresses in the pipe or tubing material, valves, and fittings and to support and secure the pipe in the intended position and alignment. All supports shall be designed to adequately secure the pipe against excessive dislocation due to thermal expansion and contraction, internal flow forces, and all probable external forces such as equipment, pipe, and personnel contact. All pipe supports shall be submitted for review prior to installation.
3. Hangers and supports shall be spaced in accordance with ANSI B31.1.0, unless noted otherwise on the Contract Drawings, or specified herein.
4. Metal piping shall be supported at intervals of not more than 11-foot, 6-inches (11'-6" with a minimum of one (1) support per pipe section at pipe fittings, valves and flowmeters. There shall be no noticeable sagging of piping between supports.
5. Piping shall be rigidly anchored to walls and ceilings by means of suitable pipe hangers or wall brackets. Concrete inserts shall be used for the support of piping hangers wherever practicable. Where it is necessary to install hangers or supports after the concrete has been poured or other masonry work is finished, galvanized bolts in concrete anchors shall be used unless noted otherwise on the Contract Drawings. Unless otherwise shown or specified, hangers shall be of adjustable split-ring swivel type, Elcen Figure 92, Fee & Mason Figure 199, or Grinnell Figure 104. Strap hangers will not be acceptable.
6. All miscellaneous piping, including valves and devices therein, shall be supported approximately 1-1/2 inches from walls and ceilings on suitable brackets.
7. All uninsulated PVC or fiberglass piping shall be protected from local stress concentrations at each support point. Protection shall be provided by galvanized steel protection shields or other method as approved by the Owner. Where pipes are bottom supported 180 degrees, arc shields shall be furnished. Where 360 degrees of support is required, such as U bolts, protection shields shall be provided for the entire pipe circumference. Protection shield have an 18 gauge minimum thickness, not be less than 12 inches in length and be securely fastened to pipe with stainless steel or galvanized metal straps not less than 1/2 inch wide.
8. Where pipe hangers and supports come in contact with copper piping, provide protection from galvanic corrosion by; wrapping pipe with 1/16-inch thick neoprene sheet material and galvanized protection shield; isolators similar to Elcen Figure No. 228; or copper plated or PVC coated hangers and supports.
9. Any required pipe supports for which the supports specified in this Section are not applicable shall be fabricated or constructed, as part of the work of this section, from standard structural steel shapes, concrete, and anchor hardware similar to items previously specified herein and shall be subject to the approval of the Owner.
10. Expansion bolts shall be equal to Kwik-Bolt as manufactured by the McCulloch Industries, Minneapolis, Minnesota or Wej-it manufactured by Wej-it Expansion Products, Inc., Bloomfield, Colorado. Unless shown otherwise all expansion bolts shall be of Type 316 stainless steel and shall be double expansion shields. Unless otherwise directed by the Owner, the length of expansion bolts shall be sufficient to place the wedge portion of the bolts a minimum of 1-inch behind the steel reinforcement.



11. All supports and hangers shall be crated, delivered and uncrated so as to protect against any damage.
12. All parts shall be properly protected so that no damage or deterioration shall occur during a prolonged delay from the time of shipment until installation is completed.
13. Finished iron or steel surfaces not galvanized or painted shall be properly protected to prevent rust and corrosion.
14. Unless otherwise specified herein, pipe hangers and supports shall be as manufactured by Anvil International, Portsmouth NH, Grinnell Co., Inc., Providence, RI, Carpenter and Paterson, Inc., Woburn, MA, and Elcen Metal Products Co., Franklin Park, IL, or equal. Any reference to a specific figure number of a specific manufacturer is for the purpose of establishing a type and quality of product and shall not be considered as proprietary. Any item comparable in type, style, quality and performance shall be considered as equal.
15. All iron or steel products used must be manufactured (includes application of coatings) within the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap, and the materials being applied as a coating are not included.

B. Design:

1. All supports and parts shall conform to the latest requirements of the ANSI Code for Pressure Piping B31.1.0, and MSS Standard Practice SP-58, SP-69 and SP-89, and shall be sized for a Zone 4 Seismic area, except as supplemented or modified by the requirements of this specification.
2. "C" type beam clamps will not be allowed.
3. Designs generally accepted as exemplifying good engineering practice, using stock or production parts, shall be utilized wherever possible.
4. All pipes, horizontal and vertical, requiring rigid support shall be supported by the Contractor by methods as described herein. Supports shall be provided at changes in direction and elsewhere as shown on the Plans or specified herein.
5. No piping shall be supported from metal stairs, ladders and walkways unless specifically directed or authorized by the Owner.
6. All pipe supports shall have liberal strength and stiffness to support the respective pipes under the maximum combination of peak loading conditions, to include pipe weight, liquid weight, liquid movement, and pressure forces, thermal expansion and contraction, vibrations, and all probable externally applied forces.
7. Accurate weight balance calculations shall be made by the Contractor to determine the required supporting force at each hanger location and the pipe weight load at each equipment connection.
8. Pipe hangers shall be capable of supporting the pipe in all conditions of operation. They shall allow free expansion and contraction of the piping, and prevent excessive stress resulting from transferred weight being induced into the pipe or connected equipment. The minimum working factor of safety for all supporting equipment, with the exception of springs, shall be five times the ultimate tensile strength of the material, assuming 10 feet of fluid filled pipe being supported.

9. Wherever possible, pipe attachments for horizontal piping shall be pipe clamps. Wherever possible, structural attachments shall be beam clamps.
10. All rigid hangers shall provide a means of vertical adjustment after erection.
11. Where the piping system is subject to shock loads, such as seismic disturbances or thrusts imposed by the actuation of safety valves, hanger design shall include provision of shock absorbing devices of approved design, such as ITT Grinnell Fig. 200 shock and sway suppressor, or equal.
12. If vibration is encountered after the piping system is in operation, appropriate vibration control equipment will be installed at the direction of the Engineer at no additional cost to the Owner.
13. Hanger rods shall be subject to tensile loading only. At hanger locations where lateral or axial movement is anticipated, suitable linkage shall be provided to permit swing.
14. Where horizontal piping movements are greater than 1/2 inch, or where the hanger rod angularity from the vertical is greater than four degrees (4°) from the cold to hot position of the pipe, the hanger pipe and structural attachments shall be offset in such manner that the rod is vertical in the hot position.
15. Hangers shall be designed so that they cannot become disengaged by movements of the supported pipe.
16. Cast iron and ductile iron piping shall be supported at a maximum spacing of ten (10) feet with a minimum of one support per pipe section at pipe fittings, valves and flow meters unless shown otherwise on the Plans.
17. Steel and stainless steel piping 2-1/2 inch or larger diameter shall be supported at a maximum spacing of ten (10) feet with a minimum of one support per pipe section at pipe fittings, valves and flow meters unless shown otherwise on the Plans.
18. Support spacing for steel and stainless steel piping two-inch (2") diameter and smaller and copper tubing shall not exceed 5 feet unless shown otherwise on the Plans.
19. Supports for multiple PVC plastic piping shall be continuous wherever possible. Individually supported PVC pipes shall be supported as recommended by the manufacturer except that support-spacing shall not exceed three (3) feet. Multiple, suspended, horizontal plastic PVC pipe runs, where possible, shall be supported by ladder type cable trays such as the Electray Ladder by Husky-Burndy, the Globetrax by the Metal Products Division of United States Gypsum, or equal. Ladder shall be of mild steel construction. Rung spacing shall be 12-inch. Tray width shall be approximately 6-inch for single runs and 12-inch for double runs. Ladder type cable trays shall be furnished complete with all hanger rods, rod couplings, concrete inserts, hanger clips, etc., required for a complete support system. Individual plastic pipes shall be secured to the rungs of the cable tray by strap clamps or fasteners equal to Globe Model M-CAC, Husky-Burndy Model SCR, or equal. Spacing between clamps shall not exceed 9 feet. The cable trays shall provide continuous support along the length of the pipe. Individual clamps, hangers, and supports in contact with PVC pipe shall provide firm support but not so firm as to prevent longitudinal movement due to thermal expansion and contraction.
20. All vertical pipes shall be supported at each floor or at intervals of not more than twelve (12) feet by approved pipe collars, clamps, brackets, or wall rests, and at all points necessary to insure rigid construction.

21. Supports shall be provided at changes in direction and elsewhere as shown in the Plans or specified herein. No piping shall be supported from other piping or from metal stairs, ladders, and walkways, unless specifically directed or authorized by the Owner.

## **2.05 WALL PIPE MECHANICAL SEALS**

### **A. General:**

1. All wall pipes shown on the Plans shall be installed with a mechanical seal. Wall openings sizes and types provided by the Contractor shall be selected according to the proposed mechanical seal manufacturer's recommendations.
2. Sufficient quantity and type of mechanical seal shall be supplied to effectively provide a hydrostatic seal.
3. Each seal shall be conspicuously and permanently identified with the name of the manufacturer and the model number.
4. Wall pipe mechanical seals shall be installed according to the Manufacturer's written instructions and recommendations.

### **B. Design:**

1. All mechanical seals shall be modular type consisting of inter-locking synthetic rubber links shaped to continuously fill the annular space between the pipe and the wall opening. The elastomeric element shall be sized and selected per manufacturer's recommendations and have properties as designated by ASTM. Provide Nitrile elastomer. Provide green coloration throughout elastomer for positive field inspection.
2. Mechanical seal pressure plates shall be molded of glass reinforced nylon. Mechanical seal hardware shall be sized according to the manufacturer's technical data. Provide all 316 stainless steel hardware.

### **C. Manufacturer:**

1. Provide one of the following mechanical seal systems:
  - a. "Link-Seal Modular Seal" assembly as manufactured by PSI/Thunderline/Link-Seal.
  - b. Or Engineer Approved Equal

## **PART 3 - EXECUTION**

### **3.01 GENERAL REQUIREMENTS**

- A. Suitable caps or blind flanges shall be furnished on all pipes or branches that are to be left unconnected.
- B. Piping runs materials and installation details shown on the Plans and specified herein shall be followed. If piping modifications and/or relocations are deemed necessary by the Contractor, complete layout drawings and material lists shall be submitted to the Engineer for review.
- C. Where piping passes through the walls of tanks or channels below water surface or where detailed on the plans to have a wall collar, the wall pipe shall be cast directly into the concrete, and sleeves or blockouts will not be acceptable unless specifically noted otherwise on the Plans or

approved by the Owner. Above the water surface or through dry walls either a sleeve, blackout or a link-seal may be used unless specifically noted otherwise on the Plans.

### **3.02 TOLERANCES**

- A. General: The pipe shall be installed to the lines and grades shown on the Drawings and within the tolerances specified herein.
- B. Horizontal Tolerance: The pipe shall be installed to the horizontal alignment shown on the Drawings, or as directed by the Engineer, to within 0.30 feet.
- C. Vertical Tolerance: The pipe shall be installed to the vertical profile shown on the Drawings, or as directed by the Engineer to within 0.30 feet.
- D. Appurtenances: Appurtenances, including, but not limited to valves, maintenance holes, and drain connections, shall be installed at the horizontal locations shown on the Drawings, or as directed by the Engineer. Exact locations will be determined in the field by the Owner's construction management team. Reasonable adjustments to appurtenance locations will not be considered changes to the contract and no additional compensation will be provided for field-directed adjustments to the appurtenance locations.

### **3.03 TRENCH CONSTRUCTION**

- A. General: The following shall be in addition to requirements of Section 306-1 of the Standard Specifications and the requirements of Section 02223 of these Construction Documents.
- B. Access: The Contractor shall protect each trench at all times, including Saturdays, Sundays, and Holidays. Unless approved otherwise by permitting agency and the Owner, all trenches shall be backfilled by the end of the work day. The Contractor shall provide continuous temporary public accessways in areas where trenching interrupts public access. In areas of public roadways, trenching and temporary paving shall conform to the Plans.
- C. Minimum Cover: For new pipe installations, where pipe grades or elevations are not definitely fixed by the Contract Drawings, trenches shall be excavated to a depth sufficient to provide a minimum depth of backfill cover over the top of the pipe of sixty inches (60") in all locations exclusive of pavement, treated, untreated or stabilized base covers. Greater pipe cover depths may be necessary on vertical curves or to provide necessary clearance beneath other pipes, conduits, drains, drainage structures, or other obstructions encountered at normal pipe grades. Measurement of pipe cover depth shall be made vertically from the outside top of pipe. For replacement of pipe sections, depth of pipe and cover shall match existing.
- D. Limiting Trench Widths:
  - 1. Trenches shall be excavated to a width which will provide adequate working space and pipe clearances for proper pipe installation, jointing, and embedment. However, limiting trench widths below an elevation 12 inches above the top of installed pipe shall be a maximum width equal to the outside diameter of pipe plus 24 inches.
  - 2. Where necessary to reduce the earth load on trench banks to prevent sliding and caving, the banks may be cut back on slopes which shall not extend lower than one foot above the top of the pipe.
- E. Pipe Bedding and Trench Backfill: Refer to Section 02223 Construction Documents and the detail(s) shown on the Plans.

F. Trench Resurfacing:

1. Trench resurfacing shall be as specified in the Standard Specifications. Section 306-1.5.2, the typical trench detail shown on the Plans and Division 2 of these Specifications.
2. The untreated base material depth or thickness shall match the existing base material but shall not be less than 4 inches minimum.

**3.04 THRUST RESTRAINT**

The Contractor shall furnish and install concrete thrust walls, blocks, restraining glands, or other approved thrust restraint systems, at all buried valves, fittings, joints or any other components of all piping systems subject to pressurized flow. The thrust restraint method used shall be designed to withstand the maximum internal line pressures created during testing of each particular line. The Contractor shall assume sole responsibility for sizing and providing adequate thrust restraint for all buried pipelines. Where thrust blocks are required, the Contractor shall install as required by the Engineer.

**3.05 HANDLING**

- A. Pipe, fittings, valves, and accessories shall be handled in a manner that will insure installation in sound, undamaged condition. Equipment, tools, and methods used in unloading, reloading, hauling, and laying pipe and fittings shall be such that they are not damaged. Hooks inserted in ends of pipe shall have broad, well padded contact surfaces.
- B. Pipe and fittings in which the lining has been broken or loosened shall be replaced by and at the expense of the Contractor. Where the damaged areas are small and readily accessible, the Contractor may be permitted to repair the lining, subject to the review by the Owner.
- C. All pipe coating which has been damaged shall be repaired by the Contractor before installing the pipe.

**3.06 CLEANING**

- A. The interior of all pipe and fittings shall be thoroughly cleaned of all foreign matter before being installed, and shall be kept clean until the work has been accepted. All lumps, blisters, and excess coating shall be removed from exterior spigot and interior bell surfaces. Such surfaces shall be wire brushed and wiped clean and dry and free from oil and grease before placing the spigot in the bell. All joint contact surfaces shall be kept clean until the jointing is completed.
- B. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being installed. No debris, tools, clothing, or other materials shall be placed in the pipe.
- C. Prior to installation of piping, valves and fittings in structures, all sacking and concrete preparation shall be completed and the work area shall be maintained in a broom clean condition during the pipe installation.

**3.07 CUTTING**

Cutting shall be done in a neat manner without damage to the pipe or lining. Pipe cuts shall be smooth, straight, and at right angles to the pipe axis. All cutting of pipe shall be done with mechanical pipe cutters designed for the specific work required. All cut ends shall be, if applicable, reamed to full bore before assembling.

### **3.08 CONNECTIONS WITH EXISTING PIPELINES**

- A. Where tie-ins to existing piping are required, the Contractor shall provide all materials, equipment, and labor including all temporary piping, pumping, or other equipment required to dewater existing piping or structures and all fittings and transition pieces required to connect new piping with existing. Materials of existing piping indicated on the Plans and the locations and dimensions indicated on the Plans are approximations only. The Contractor shall field verify all dimensions, locations, and materials of construction of existing piping and shall make all modifications required including furnishing and installing all transition pieces and fittings required for a complete and operable system. The Contractor shall report all field verified deviations to the Owner as described in these Specifications. Each connection with an existing pipe shall be made at a time and under conditions which will least interfere with operations affected thereby, and as authorized by the Owner. Facilities shall be provided by the Contractor for proper dewatering and for disposal of all water removed from the dewatered lines and excavations without damage to adjacent property.
- B. Special care shall be taken to prevent contamination when dewatering, cutting into, and making connections with existing pipe. No trench water, mud, or other contaminating substances shall be permitted to get into the lines.
- C. Where modifications or tie-ins to gas piping is required the Contractor shall isolate the area as required with blind flanges or blanks and shall not assume that valves are 100% gas tight. All work shall be performed in accordance with all applicable federal, state and local codes and regulations regarding work within and around explosive areas. The Contractor shall be responsible for providing and monitoring all gas detection, monitoring and ventilation equipment required.

### **3.09 HYDROSTATIC PRESSURE TESTING**

- A. General:
  - 1. Piping to be tested to pressures greater than 3psi shall be tested utilizing a hydrostatic (liquid test media). Hydrostatic test procedure shall be as specified herein.
  - 2. All piping, valves, fire hydrants, services, and related appurtenances shall be installed prior to testing.
  - 3. All concrete anchor blocks and thrust blocks shall be allowed to cure a sufficient time to develop a minimum strength of 2,000 psi before testing.
  - 4. Hydrostatic testing of pipelines shall be performed prior to the disinfection operations performed in accordance with the Contract Documents.
  - 5. The Contractor shall notify the Owner a minimum of 48 hours prior to the requested date and time for hydrostatic tests.
  - 6. The Contractor shall furnish all labor, materials, tools, and equipment for testing. Contractor shall purchase test water from the Owner and be responsible for conveyance, transport, and disposal of test water.
  - 7. Temporary blocking during the tests will be permitted only at temporary plugs, caps or where otherwise directed by the Owner.
  - 8. All mainline valves and appurtenances shall be operated during the test period. The test shall be conducted with valves in the open position.

9. At the onset of testing, all valves, air vacuum assemblies, blowoffs, drains, and services shall be monitored for possible leakage and repairs made, if necessary, before the test proceeds. The appurtenances shall be monitored through the duration of the testing.
10. For pipe with porous lining, such as cement mortar, the pipe shall be filled with water and placed under a slight pressure for a minimum of forty-eight (48) hours prior to the actual hydrostatic test.

B. Test Water:

1. Recycled water (or potable water) shall be used for hydrostatic testing of recycled water mains and brineline facility.
2. Test water shall be supplied by a Owner-approved source. Make-up water for testing shall be potable or recycled water.
3. A chlorinated water solution, in accordance with the Contract Documents, shall be used to charge the line and for make-up water when hydrostatic testing and disinfection operations are combined.
4. Well water shall not be used for hydrostatic testing or any other purposes in new or existing pipelines without the Owner's approval.
5. Testing water shall be supplied through a metered connection equipped with a backflow prevention device at the point of connection to the water source used. The Contractor shall provide any temporary piping needed to deliver test water to the piping that is to be tested.

C. Field Hydrostatic Pressure Test Procedure:

1. Test pressures shall be as indicated on the plans and the field hydrostatic pressure test procedures shall comply with the following:
2. For ductile iron pipe (DIP), polyvinyl chloride pipe (PVC), and steel pipe, the test procedure shall be as described in Section 306-1.4.5 of the Greenbook.
3. For high density polyethylene (HDPE) pipe, the test procedure shall be as described in ASTM F2164, except as modified herein. Refer to General Notes No. 6 on Drawing G-3, "Testing – Contractor Responsibility", for proper testing pressures. Where the stated hydrostatic test procedure on the Contract Drawings conflicts with ASTM-F2164, the Contract Drawings shall take precedence. See also, Detail 5 Drawing D-2 for pressure test bulkhead locations to facilitate a logical strategy for pipeline testing.
4. HDPE pipe sections shall be tested separately from sections of different pipe materials. Where this is impractical, as determined by the Contractor and approved by the Engineer, the test section shall include only a minimum amount of any other pipe material. If possible, the pipe joints of materials other than HDPE shall be left exposed during the pressure test for visual leakage observation. All transition connections shall be pressure tested as part of the HDPE pipeline.
5. Test Duration (Modifies ASTM F2164, Paragraph 8.5.1): Maximum duration for the test, including the initial phase and final phase, shall not exceed 8 hours. If the test is not complete in this period, due to leakage, equipment failure or other reasons, the test section shall be depressurized and allowed to "relax" for at least 8 hours before re-pressurizing the test section.
6. Initial Phase of Testing (Modifies ASTM F2164, Paragraph 9.6 – Pressurizing): All air shall be removed from the test section. Air shall be released through services, fire hydrants, air release valves, or other approved locations. The test shall be performed after

the line is backfilled. Initially, the pressure within the test section shall be raised to 110% of the specified test pressure and then allowed to idle (no additional water/pressure shall be applied) for 4 hours. During this 4-hour period, the test section shall be allowed to stabilize and come to equilibrium. No additional water/pressure shall be applied to the test section unless the line pressure drops below 90% of the specified test pressure. In this case, water/pressure shall only be applied to the test section to maintain a minimum of 110% of the specified test pressure during the 4-hour stabilization period. If the test pressure cannot be achieved or if it takes an unreasonable time to reach test pressure, there may be faults in the system such as excessive leakage, entrapped air, open valving or the test equipment may be unsuitable. If such faults exist, discontinue the initial pressurizing phase and correct them before continuing.

7. Final Phase of Testing (Modifies ASTM F2164, Paragraph 9.7 – Test Phase): After the initial phase of testing is accomplished, the Contractor shall reduce the test pressure to achieve the required test pressure specified on the plans. The test section shall then be allowed to idle (no water/pressure shall be applied) for a period of one (1) hour. If the leakage is identified, the leak points shall be located and repaired as required by the Owner. All defective pipe, fittings, valves and other appurtenances discovered shall be removed and replaced with new material. Additional disinfection shall be performed as necessary per the Contract Documents. The hydrostatic test shall be repeated until the pressure test is successfully accomplished.
8. Test Acceptance (Modifies ASTM F2164, Paragraph 9.8): After the 1-hour test period, if no visual leakage is observed and pressure during the test phase does not change within 5% of the test pressure during the 1-hour test phase period, the test segment shall be considered passing.
9. Test Records (Modifies ASTM F2164, Paragraph 10): The Contractor shall prepare and submit test records per ASTM F2164 in a form acceptable to the Owner. The test records shall detail the pipe segment being tested with reference to the applicable Drawing Number(s) and Stations indicated on the plans. The test documentation shall include names of all parties involved in conducting the test and names of Owner personnel witnessing the successful completion of the test.

### **3.10 PNEUMATIC PRESSURE TESTING**

#### **A. General:**

1. Piping to be tested to pressures less than 3psi may be tested utilizing a pneumatic (air test media). Pneumatic test procedure shall be as specified herein.
2. All piping appurtenances shall be installed prior to testing.
3. All concrete anchor blocks shall be allowed to cure a sufficient time to develop a minimum strength of 2,000 psi before testing.
4. The Contractor shall provide the Owner with a minimum of 48 hours' notice prior to the requested date and time for hydrostatic tests.
5. The Contractor shall furnish all labor, materials, tools, and equipment for testing. Low-pressure air test equipment and gauges shall be pre-approved by the Owner. At the start of each day of testing, the Contractor shall perform a demonstration test on a 10-foot segment of pipe to verify to the Owner that the equipment is functioning and is calibrated. The demonstration test procedure shall incorporate a second pressure gauge on the plug side of the demonstration pipe segment to verify calibration.
6. All pipe lengths to be tested shall be completely backfilled and restrained prior to testing.



**B. Field Air Pressure Test Procedure:**

1. The test procedure shall be as described in Section 306-1.4.4 of the Greenbook, except as modified herein.
2. Contractor shall pre-check all pipe lengths prior to notifying Owner to witness test for acceptance.
3. The allowable pressure drop for fusion welded high density polyethylene (HDPE) pipe and segments with flanged connections shall be zero over a 5 minute test time.
4. The allowable pressure drop for HPDE pipe test segments with gasketed joints shall be as indicated in Table 306-1.4.4 (A) in the Greenbook.

**3.11 AS-BUILT DRAWINGS**

- A. The Contractor shall prepare and submit two complete sets of as-built pipe drawings. They shall be separate, clean blue prints reserved for the purpose of showing a complete picture of the piping and valve work actually installed. These drawings shall be kept current on a weekly basis with the construction.
- B. Upon completion of the work, these record drawings shall be signed by the Contractor, dated, and returned to the Owner for review. As-Built Record Drawing submittal and review are conditions for final acceptance.

**3.12 PIPE REQUIREMENTS AT EXPANSION JOINT CROSSINGS**

- A. Above Grade Piping: The Contractor shall furnish and install expansion fittings on all pipelines as required to accommodate structural expansion considerations.
- B. Below Grade Concrete Encased Piping: Where it is required that below grade piping be concrete encased, the Contractor shall coordinate the location of pipeline mechanical joints or mechanical couplings with the locations of encasement expansion joints

**3.13 PIPE SUPPORTS - INSTALLATION**

- A. All pipes, horizontal and vertical, shall be rigidly supported from the building structure by approved supports. Supports shall be provided at changes in direction and elsewhere as shown on the Plans or specified herein. No piping shall be supported from other piping or from metal stairs, ladders, and walkways, unless specifically directed or authorized by the Owner.
- B. Pipe supports shall be provided to minimize lateral forces through valves, both sides of split type couplings, and sleeve type couplings and to minimize all pipe forces on pump housings. Pump housings shall not be utilized to support connecting pipes.
- C. All vertical pipes shall be supported at each floor or at intervals of at least 15 ft. by approved pipe collars, clamps, brackets, or wall rests, and at all points necessary to insure rigid construction.
- D. Pipe supports shall not result in point loadings but shall distribute pipe loads evenly along the pipe circumference.
- E. Effects of thermal expansion and contraction of the pipe shall be accounted for in pipe support selection and installation.

- F. Inserts for pipe hangers and supports shall be installed on existing concrete walls and ceilings. Before setting these items, all Plans and figures which have a direct bearing on the pipe location shall be checked.
- G. Continuous metal inserts shall be embedded flush with the concrete surface.

### **3.14 PAINTING**

- A. Ferrous surfaces, except those designated elsewhere in these specifications or on the Plans as galvanized or stainless steel shall be shop primed. Before priming all sharp edges, burrs, welded joints, projections, shall be ground smooth and all edges and corners rounded.
- B. Surfaces of valves, operators, etc. which will be inaccessible after assembly shall be painted or otherwise protected before assembly by a method which provides protection for the life of the equipment. The contractor shall furnish brand new equipment to replace any equipment which the Owner determines to be damaged -beyond repair by rust or mishandling, etc., while in storage or during installation by the contractor. Name plates shall not be painted.
- C. Electric motors, drives, and other equipment that would be damaged by sandblasting shall be cleaned per the requirements of Section 310-2.2, "Hand Cleaning", or Section 310-2.4, "Power Tool Cleaning" of the Standard Specifications. Following cleaning, the components shall be shop primed with a rust inhibitive primer and finish coated with a high quality industrial alkyd enamel. The equipment supplier shall certify, by letter included with the equipment/materials submittal that the Painting Subcontractor was consulted and confirmed that the proposed primer and finish coating described above is compatible with the approved Division 9 painting scheme, as applicable. After delivery to the jobsite, the surfaces shall be inspected and evaluated. The Painting Subcontractor shall prepare and apply a final coat of paint to the equipment in the field.
- D. Machined, polished, and other ferrous and non-ferrous surfaces which are not to be painted shall be coated with rust preventative compound, Dearborn Chemical "NO-Ox-Id", Houghton "Rust Veto 344", Rust-oleum "R9", or approved equal. Should rust occur during shipment and/or storage, the contractor shall be responsible for correction as determined by the Owner.
- E. Copper, bronze, chromium plate, nickel, stainless steel, aluminum, monel metal, lead, lead coated copper, brass and plastic are not to be painted or finished unless called for in other parts of Division 15 or on the Plans or as recommended by the manufacturer.
- F. Galvanizing, where called for in this section, Division 15 or on the plans shall be hot dip process conforming to ASTM A-123 and the appropriate American Hot Dip Galvanizers Association, Inc., Specifications. Galvanize in the largest practical units after fabrication. All galvanizing shall be done using a hot dipping process. Electroplating will not be accepted. After installation, scratched or ungalvanized surfaces shall be galvanized as directed by the Owner.
- G. Unless otherwise specified in this section, Division 15 all above ground ferrous metal valves, fittings, piping, etc. shall be shop primed for protection during delivery and storage. The shop applied primer shall be removed by the Painting Subcontractor in the field and rated per Division 9, as applicable.
- H. Buried ferrous metal valves, fittings, piping, etc shall be coated by the manufacturer to meet the requirements specified elsewhere in the Division 15 specifications.

- I. Submerged ferrous metal valves, fittings, piping, etc shall be primed by the manufacturer as described for above ground components and shall be sandblasted and recoated in the field by the Painting Subcontractor.

**END OF SECTION**

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## SECTION 15061

### HIGH DENSITY POLYETHYLENE (HDPE) PIPE, FITTINGS, AND APPURTENANCES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Scope: This section provides specifications for high density polyethylene (HDPE) pressure pipe (4-inch diameter and larger), HDPE Manholes, HDPE pipe accessories, including fittings, and piping appurtenances. Contractor shall furnish all materials, labor, and equipment to install HDPE pipe as shown on the drawings and specified herein. See Section 15051 for General Piping Stipulations.
- B. Type: HDPE pressure pipe shall comply fully with AWWA C906 and ASTM D3350. HDPE pipe shall have Ductile Iron Pipe Size (DIPS) nominal diameter, unless noted otherwise. HDPE pipe joints shall be fused, except where explicitly detailed otherwise on the plans.

##### 1.02 QUALITY ASSURANCE

- A. HDPE pressure pipe shall comply with the requirements of the latest editions of the following standards:
- |            |   |
|------------|---|
| AWWA C906  | Polyethylene (PE) Pressure Pipe and Fittings, 4 in. Through 63 in. For Water Distribution                           |
| ASTM D2774 | Standard Practice for Underground Installation of Thermoplastic Pressure Piping                                     |
| ASTM D2321 | Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications |
| ASTM D3261 | Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing                   |
| ASTM D3350 | Standard Specification for Polyethylene Plastics Pipe and Fittings Materials  |
| ASTM F714  | Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter                        |
| ASTM F1759 | Standard Practice for Design of High-Density Polyethylene (HDPE) Manholes for Subsurface Applications               |
- B. All requirements, tests and inspections called for therein shall apply, together with additional requirements specified herein. The Resident Engineer reserves the right to witness all factory tests.
- C. HDPE Fusion Technician Qualifications:
1. The Technician performing fusion bonding of HDPE pipe joints shall be employed or trained by the fusion equipment supplier.
  2. The Technician shall have the following minimum experience:
    - a. Performed fusion bonding on at least three previous projects

- b. Performed fusion bonding on at least 20,000 feet of 12-inch (or larger) HDPE pipe.

D. HDPE Fusion Measurements:

1. Fusion machine heater plate surface temperature and hydraulic cylinder interface pressures shall be recorded during butt-fusion joining operations. Measurements shall be permanently recorded utilizing a McElroy Datalogger or approved equal.
2. Recorded fusion data shall be submitted within two (2) days following the completion of any joint. Failure to submit this information may be cause for rejection of the joint.

E. HDPE Fabricated Fittings:

1. The fitting fabricator shall have at least three (3) years experience in the fabrication of pressure-rated HDPE fittings of similar size and complexity as this project.
2. The Fabrication Shop Supervisor must have at least one (1) year experience of shop supervision and three (3) years of experience fabricating HDPE fittings.
3. The technician fabricating the HDPE fabricated fittings shall have the following minimum experience:
  - a. Two (2) years experience fabricating HDPE fittings.
  - b. Fabricated at least forty (40) fittings that are DR17 or thicker and 24-inch diameter or larger.

**1.03 SUBMITTALS**

- A. Submittals shall be in accordance with Section 01300. Submittals shall include, as a minimum, the following information:
1. Pipe material indicating manufacturer, pressure rating and compliance with AWWA C906.
  2. Pipe manufacturers' joint assembly procedure including cool down time and datalogger equipment.
  3. Cutsheet for proposed joint fusion machine(s).
  4. HDPE Fusion Technician's experience and qualifications demonstrating conformance with Quality Assurance requirements specified in Paragraph 1.02.
  5. Written certification from the HDPE pipe fusion equipment supplier that the fusion technician has received training in the proper use of the fusion equipment and the manufacturer's recommended fusion equipment.
  6. Fusion Data (heater plate temperature, hydraulic cylinder interface pressures, time/duration, etc.) shall be submitted to the Engineer within two days following the completion of any joint.
  7. Shop drawings and cutsheets providing information on HDPE Maintenance Holes, including dimensions and certification of compliance with standards.
  8. Shop drawings and cutsheets providing information on fittings, including dimensions, certification of compliance with standards and pressure rating.
  9. Information on pipe accessories, including but not limited to special adaptors for connections to ductile iron fittings.

10. HDPE pressure pipe manufacturer shall furnish an affidavit of compliance that all delivered materials comply with the requirements of these specifications.
11. Specifications and data sheets for flange and mechanical joint adapters, including hardware and backer rings. Information shall include manufacturer's written installation directions including alignment and bolt tightening recommendations.
12. Laying schedules

## **PART 2 - MATERIALS**

### **2.01 GENERAL**

- A. Material: Materials used manufacturing of polyethylene pipe and fittings shall be PE 4710 High Density Polyethylene (HDPE), meeting the ASTM D3350 cell classification of 445574C (black pipe) or 445574E (grey pipe). Material shall have a minimum Hydrostatic Design Basis (HDB) of 1600 psi at 73 degrees (F) when tested in accordance with ASTM D2837 and shall be listed in PPI TR-4 by name of the pipe and fitting manufacturer.
- B. Pipe Size: HDPE pressure pipe shall have a nominal diameter indicated on the plans with outside dimension (OD) correlating to standard ductile iron pipe size (DIPS) as specified in AWWA C906. Minimum pipe class shall be DR17 having a Working Pressure Rating of 125 psi.
- C. Color and Identification: Pipe, fittings, and appurtenances shall be provided in accordance with the following color schedule:

<b>Designation (Service)</b>	<b>Pipe Wall Color</b>	<b>Pipe Identification</b>
Brineline (Wastewater)	Grey	Green Stripe
Fittings	Black	Not striped

### **2.02 JOINTS**

- A. General
  1. HDPE pipe joints shall be butt-fused, except where otherwise indicated on the plans or specified herein.
  2. Electro-fusion joints may be used, with District approval, to join HDPE pipe to HDPE pipe within open trenches where butt fusion cannot be practically performed.
  3. Friction or pressure couplings are not acceptable and will not be allowed except where specifically detailed on the plans.
  4. Flange adapter fittings shall be used to connect HDPE pipe to Ductile Iron Pipe, as shown on the plans.
- B. Butt Fusion Joints:
  1. Butt fusion techniques shall meet all requirements of ASTM D2657 and D3261.

C. Flanged Joints:

1. Flanged joints shall consist of HDPE flange adapters and flange backing ring, unless otherwise shown on the Drawings.
2. Full face flat ring gaskets of 1/8-inch black reinforced rubber conforming to ANSI B-16.21 shall be installed between the flange adapter and opposing flange. Gaskets shall be full-faced with bolt holes and be held in position by the through-bolts.
3. Flanged backing rings (flanges) shall be ductile iron with polypropylene coating. Fusion bonded epoxy coating will also be acceptable.
4. Flange backing rings shall be compatible with AWWA C110 flanges with ANSI B-16.1, class 125 flange bolting.
5. Flanged backing rings pressure ratings shall meet or exceed the pressure class of the pipe.
6. Flanged Joints shall have a type 316 stainless steel bolt sets (bolt, nut, and washers) or Tripac 2000 Blue coated bolts and nuts. Diameter, number and length of the bolts shall be as determined by the flange adapter manufacturer. Stainless steel hardware shall be installed with ant-seize lubricant.

D. Electro-fusion Joints:

1. Electro-fusion joints shall not be allowed on this project.

**2.03 HDPE ELECTROFUSION SADDLE**

- A. HDPE Service Saddles shall not be allowed on this project.

**2.04 FITTINGS**

- A. HDPE Fittings: Polyethylene (HDPE) fittings shall be made from material meeting the same requirements as the pipe. Polyethylene fittings shall be molded, turned or otherwise fabricated by the manufacturer of the pipe. All fittings shall be marked with size, dimension ratio (DR), and appropriate ASTM specification number.
1. All fittings shall be pressure tested to the full working pressure of the pipe for five seconds or alternative back-bend test as provided for in AWWA C906.
- B. Fabricated Fittings: Fabricated Fittings shall meet the requirements of AWWA C906 and ASTM F2206.
1. All fittings shall have taper bored ends to meet adjoining pipe wall thickness.
  2. Due to pressure de-rating of fabricated fittings per AWWA C906 (75% of the pressure rating of the pipe the fitting is fabricated from), all fabricated fittings shall be fabricated from DR11 pipe.
  3. Field fabricated fittings do not comply with AWWA C906 or ASTM F2206 and are not permissible for this project.
- C. Molded Fittings: Molded fittings shall be socket fusion type for fittings under 4-inches, manufactured in accordance with ASTM D2683. Molded fittings shall be butt-fusion type for fitting 4-inches and larger, manufactured in accordance with ASTM D3261.
- D. Flange Adapters: Polyethylene flange adapters shall be made with sufficient through-bore length to be clamped in a butt-fusion machine without the use of a stub-end holder. The sealing surface



of the flange adapter shall be machined with a series of small v-shaped grooves to provide gasket-less sealing to prevent gasket blow-out.

- E. Milled Fittings: Where required by the Details on the Construction Documents, the Contractor shall furnish and install milled fittings to the dimensions indicated. Milled fittings may include, but are not limited to, eccentric reducers and integral "bolt-through" flanges. Milled fittings shall be manufactured from extruded pipe material of sufficient wall thickness to produce the desired fitting dimensions. Milled fittings shall be detailed on the shop drawings.
- F. Maintenance Holes: Where required on the Drawings, the Contractor shall furnish and install Maintenance Holes at the locations shown and to the dimensions indicated. The tee, flange adapter, and eccentric reducer fittings, shown on Sheet D-3 Detail 2, represent the complete assembly of the Maintenance Hole that shall comply with the fabricated fitting requirements of this section. The complete assembly shall be fabricated and factory tested in accordance with AWWA C906, except that the Manufacturer shall pressure test one maintenance hole to a pressure of 100 psi. The Manufacturer shall submit the results of this factory test and certification of all Maintenance Holes supplied with the product submittal, for approval by the Engineer. Maintenance Holes are intended to be pressure tested "inline" with the pipeline as indicated on the Drawings and specified in Section 15051.

## **2.05 MANUFACTURERS**

- A. HDPE pressure pipe shall be the product of one of the following manufacturers:
  - 1. JM Eagle
  - 2. Performance Pipe
  - 3. Or Engineer Approved Equal
- B. HDPE fittings shall be the product of one of the following manufacturers:
  - 1. ISCO Industries
  - 2. IPF
  - 3. Or Engineer Approved Equal
- C. HDPE Transition Manholes shall be the product of one of the following manufacturers:
  - 1. IPF
  - 2. Or Engineer Approved Equal

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. General: HDPE pipe shall be installed in conformance with the manufacturer's recommendations, and shall comply with the alignment and profile indicated by the design drawings.
- B. Shipping and Storage: HDPE pressure pipe shall be shipped and stored by supporting the pipe uniformly. Pipe shall be covered to protect it from sunlight, while permitting adequate air circulation above and around the pipe. Pipe shall be stored in the unit packages provided by the manufacturer.

- C. Installation Manual: The manufacturer shall supply an installation manual to the Engineer which outlines guidelines for handling, joining, installing, embedding and testing of polyethylene pipeline. These guidelines shall be used as reference material for the Engineer in his determination of the required procedures.

### **3.02 INSTALLATION OF HDPE PIPE**

- A. Joints: Joints between plain ends of polyethylene pipe shall be made by butt fusion when possible. The pipe manufacturer's fusion procedures shall be followed at all times as well as the recommendations of the fusion machine manufacturer. The wall thicknesses of the adjoining pipes and fittings shall have the same DR at the point of fusion.
- B. Fusion Beads: Butt-fused welds will result in a weld bead on the inside and outside surface of the fused joint. Contractor shall be responsible for removing the weld bead on the inside of the pipe. Removal shall take place immediately after welding is complete. Contractor shall exercise caution to avoid damage to the joint and pipe while removing the bead and shall be responsible for repairs and/or replacement of any damaged joint or pipe.
- C. Mechanical Fittings: If mechanical fittings (which are designed for or tested and found acceptable for use with polyethylene pipe) are utilized for transitions between pipe materials, repairs, joining pipe sections, saddle connections, or at other locations; the recommendations of the mechanical fitting manufacturer must be followed. These procedures may differ from other pipe materials.
- D. Butt Fused Joints: At the beginning of each week that butt fusions are to be made, the Contractor shall perform a "bend-back test" in accordance with AWWA M55. The first fusion of the week shall be a trial fusion. The trial fusion shall be allowed to cool completely, then fusion test straps shall be cut out. The test strap shall be 12-inches or 30 times the wall thickness in length (minimum) and one inch, or 1.5 times the wall thickness in width (minimum). Bend the test strap until the ends of the strap touch. If the fusion fails at the joint, a new trial fusion shall be made, cooled completely and tested. Butt fusion of pipe to be installed shall not commence until a trial fusion has passed the bent strap test.
- E. Pipe Laying: The coefficient of thermal expansion for HDPE can cause significant expansion/contraction over the range of temperatures anticipated for the project. The Contractor shall take necessary precautions to control expansion/contraction effects during pipe installation. The Contractor shall, at a minimum, adhere to the following procedures:
1. The pipe shall be wetted prior to pulling into trench and shall be immediately shaded with pipe zone backfill material when laid in the trench.
  2. Before joining pipe segments in the trench or fusing any fittings or appurtenances, the Contractor shall measure the pipe temperature at the point of connection and at any adjacent exposed pipe segments. The pipe temperature shall not be greater than 85-degrees Fahrenheit when performing fusions in the trench.
  3. When mechanically joining pipe (flanges, mechanical joints, couplings, etc.) and at pipe material transitions, the Contractor shall demonstrate that HDPE material within 500 feet of the joint is less than 85-degrees so as to avoid thermal contraction during cooling that could leave the joint in tension.
- F. HDPE Fittings and Appurtenances: To avoid field damage and to ensure accurate orientation, fabricated HDPE fittings and appurtenances including elbows, tees, wyes, crosses, and maintenance holes shall not be joined to more than one pipe segment before placement in the trench. The remaining connections shall be made after placement in the trench with electrofusion

couplings, or with mechanical couplings with the prior-approval of the Engineer. Fittings damaged during installation shall be removed and replaced with new material as directed by the Engineer.

### **3.03 FIELD WELDING QUALITY CONTROL**

- A. General: Contractor shall be responsible for employing a rigorous quality control procedure for field welding quality control and documentation. All field-welding shall be accomplished with Engineer-Approved Equipment. Documentation of each field weld shall be submitted to the Engineer for record within two days of weld completion.
- B. Data Collector and Recording Device: Contractor shall utilize data collection and recording equipment to verify proper fusion procedures have been followed prior to installation. The Data collector shall consist of a rugged computer to record and report key weld parameters including the heater temperature and fusion pressure profile over time. Data Collector and Recording Devices shall be Datalogger <sup>TM</sup> as manufactured by McElroy, or Engineer-Approved Equal.
- C. Weld Quality Control Documentation: Contractor shall produce and submit field weld reports within two days of welding activity. Report shall provide the following information, at a minimum:
  - 1. Date, time, and ambient temperature
  - 2. Joint Number that correlates to Project pipeline stationing
  - 3. Employee Identification that is unique to Project-approved HDPE Fusion Technician
  - 4. Equipment Identification and specifications including piston area
  - 5. Pipe Data including material, size, Dimension Ratio
  - 6. Interfacial Pressures in pounds per square inch (psi) including Heat, Soak, Fuse, and Cool
  - 7. Recommended Gauge Pressures in pounds per square inch (psi) including Heat Soak, Fuse, and Cool
  - 8. Recorded Data including Drag pressure, weld temperature
  - 9. Graphs of pressure and temperature over time. Provide one graph for the first five minutes of weld procedure and a summary plot of the entire weld and cooldown process.

### **3.04 DAMAGED PIPE**

- A. Pipe sections with gouges or cuts deeper than ten percent (10%) of the wall thickness shall be cut out, removed and replaced by the Contractor at no additional cost to the District. Undamaged pipe portions may be rejoined using butt-fusion joining methods

### **3.05 FLANGE AND MJ ADAPTER INSTALLATION**

- A. Flanges/MJ adapters shall be attached to pipe and fittings using butt fusion. The flanges/MJ adapters shall be aligned and centered relative to the pipe. Flanges/MJ adapters should be square with the valve or other flange before tightening of bolts. Bolts should not be used to draw flanges into alignment. Bolt threads shall be lubricated, and flat washers shall be used under flange nuts. Bolts shall be tightened using a "star tightening pattern". See manufacturer's recommendations. Twenty-four hours after first tightening the flange bolts, they must be re-tightened using the same "star tightening pattern" used above. The final tightening torque shall be as indicated by the manufacturer.

### **3.06 INSTALLATION OF LOCATING TAPE AND TRACER WIRE**

- A. Locating tape and tracer wire system shall be installed in accordance with Section 15051.

### **3.07 PRESSURE TESTING AND FLUSHING OF HDPE PRESSURE PIPE**

- A. See Section 15051 for Pressure Testing specifications.

### **3.08 INSTALLATION OF HDPE MANHOLES**

- A. Unloading: Manholes can be unloaded from the truck by using a boom and sling arrangement. Manholes shall be handled per the Manufacturer's written recommendations. The Manufacturer will provide lifting lugs to assist with handling unless otherwise agreed to by the Manufacturer and Purchaser.
- B. Installation: Achieve stable and permanent support under and around the manhole. Install the manhole in a dry trench. Place sufficient crushed stone or other Class I material to provide a stable foundation. The thickness of the foundation layer shall be a minimum of 8 inches. Compact the foundation material to 95% Standard Proctor density. Alternatively, the manhole can be set on a properly designed reinforced concrete slab on a stable foundation. Anchoring of the manhole to the concrete slab to prevent movement during backfill shall be in accordance with the Manhole manufacturer's recommendations.
- C. Backfilling: The embedment surrounding the manhole shall extend to at least 3.5 feet or to the trench wall, whichever is the greater distance, for manholes placed in stable insitu soils. In unstable soil, the embedment shall extend to a distance equal to at least one manhole diameter (but not less than 3.5 feet) or to the trench wall, whichever is the greater distance. Embedment shall be placed from the invert to the top of the manhole. The embedment shall consist of Class I or II material compacted to at least 90% Standard Proctor density in 6-inch lifts. Place backfill evenly around the manhole to prevent moving the manhole out of alignment.
- D. Concrete Anchors: Where required to prevent flotation, concrete anchors shall be constructed as shown in the Engineer's design drawings.
- E. Concrete Tops: When vehicular loads are present, a concrete top shall be constructed as shown in the Engineer's design drawings.
- F. Manhole Entry: Manholes present confined space and fall hazards. All entrants shall follow applicable OSHA confined space entry procedures and use a fall protection device for all entries.
- G. Manhole Bottoms: All HDPE manholes shall have a closed bottom as shown on the plans with a minimum six-inch lip outside the perimeter of the manhole body. The HDPE bottom shall be continuous across the bottom of the manhole, forming a continuous flat bottom.

**END OF SECTION**

## SECTION 15062

### DUCTILE IRON PIPE AND FITTINGS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Work Included. Ductile iron piping shall be furnished and installed complete with fittings, jointing materials and accessories, pipe supports, anchors, blocking and other appurtenances which are shown on the drawings or are required for proper installation and functioning of the piping.
- B. General Piping Stipulations. The General Piping Stipulations shall apply to piping furnished under this section, as shown in Section 15051 of these Specifications.
- C. Painting. Painting shall be as required in Division 09900 of these Specifications.

##### 1.02 REFERENCES

- A. This section references the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

ANSI B2.1	Pipe Threads (Except Dryseal)
ANSI B16.1	Cast Iron Pipe Flanges and Flanged Fittings
ANSI B18.2.1	Square and Hex Bolts and Screws
ANSI B31.1	Power Piping
ASTM A716	Pipe Spec. for Ductile Iron Culvert
AWWA C110 (ANSI A21.10)	Standard for Gray Iron and Ductile Iron Fittings, 3 Inch Through 48 Inch, for Water and other Liquids
AWWA C111 (ANSI C21.11)	Standard for Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings
AWWA C105 (ANSI A21.5)	Standard for Polyethylene Encasement for Ductile Iron Piping for Water and Other Liquid
AWWA C115 (ANSI A21.15)	Standard for Ductile Iron Pipe with Threaded Flanges
AWWA C150 (ANSI 21.50)	Thickness Design of Ductile-Iron Pipe
AWWA C151 (ANSI 21.51)	Ductile Iron Pipe, Centrifugally Cast

##### 1.03 SUBMITTALS

- A. The Contractor shall provide the following submittals in accordance with Section 01300:
  - 1. Shop drawings

2. Alignment drawings
3. Certification that such length of pipe has been tested physically for ductility and has satisfactorily passed such tests.
4. Certifications as specified in the following documents:
  - a. AWWA C151, paragraph 51-5
  - b. ANSI 21.52, paragraph 52-4.2
  - c. ASTM A716, paragraph 4.2
  - d. AWWA C110, paragraph 10-6
  - e. AWWA C111, paragraph 11-7
  - f. AWWA C115, paragraph 15-4

## **PART 2 - PRODUCTS**

### **2.01 GENERAL**

- A. Ductile iron pipe, ductile and cast iron fittings and appurtenances shall conform to the applicable requirements of Section 207-9 "Iron Pipe and Fittings" of the Standard Specifications for Public Work Construction, latest edition and this specification.
- B. Pipe design, materials and manufacture shall comply with the following documents:

<b>Item</b>	<b>Document</b>
Thickness Design	AWWA C150, working pressure as shown on the drawings. Class 250 minimum for diameter 12-inch and larger. Class 350 minimum for diameters less than 12-inches.
<b>Manufacturing Requirements</b>	
Water Or Other Liquid	AWWA C151
Rubber Gasket	AWWA C111
Threaded Flange	AWWA C115
Fittings	AWWA C153
Polyethylene Encasement	AWWA C105
Cement Mortar Lining	AWWA C104
Grooved Couplings	AWWA C606

- C. All iron or steel products used must be manufactured (includes application of coatings) within the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap, and the materials being applied as a coating are not included.

### **2.02 GASKETS**

- A. Gasket stock shall be a synthetic rubber compound in which the elastomer is neoprene. The compound shall contain not less than fifty percent (50%) by volume neoprene and shall be free

from defects, reclaimed rubber and other deleterious substances. Gaskets shall be full-faced and 1/8-inch thick.

## **2.03 JOINTS**

- A. General. Buried ductile iron piping shall be mechanical joint, except where otherwise shown. In flange fittings and pipe, holes shall straddle the horizontal and vertical centerlines.

Field jointing of ductile iron pipe shall be in accordance with ANSI/AWWA C-600.

- B. Flanged Joints. Where steel flanges are bolted to ductile or cast iron flanges, flat faced flanges shall be used. Contractor shall install a flange insulator kit as shown on the drawings at these locations.
- C. Threaded Connections. Threaded connections shall be NPT according to ANSI B2.1. A boss or tapping saddle shall be provided whenever wall thickness at the tapped connection is less than the minimum length of thread  $L_1$ , as defined in Table 2 ANSI B2.1. Service saddles shall have two stainless steel straps, a stainless steel body, and a neoprene gasket seal.
- D. Push-On and Mechanical Joints: The plain ends of push-on pipe and mechanical joint pipe shall be marked with paint to show the required depth of penetration for making the joint. Push-on and mechanical joints shall conform to applicable dimensions and weights of AWWA C111.
- E. Restrained Joints: Restrained joints on pipe shall be of the field lock gasket type as manufactured by U.S. Pipe or approved equal. Restraint on pipe joints will be required where shown on the Design Drawings.
- F. Grooved Joints: Factory groove the ductile iron pipe to provide area for coupling to engage around the full circumference of the pipe. Provide synthetic rubber gasket to fully enclose the ductile iron housings with coupling sections seamed by bolts. Provide joints and couplings by Victaulic, or Engineer-Approved Equal.

## **2.04 FITTINGS**

- A. General. Ductile iron fittings shall be furnished as indicated on the plans and shall be rated at the pressure rating of the piping system on which they are installed. Gray cast iron fittings may not be substituted for ductile iron fittings. Fittings that are not adjacent to valves shall be restrained mechanical joints unless shown otherwise on the approved drawings. Fittings adjacent to valves shall be flanged.
- B. Design Standards. Conform to the following design standards:
1. Flanged:
    - a. 3" to 36": ANSI/AWWA C110/A21.10; Ductile Iron; ANSI B16.1.
  2. Mechanical Joint:
    - a. 3" to 24": ANSI/AWWA C153/A21.53; Ductile Iron.
  3. Grooved Ductile Iron Fittings:
    - a. 3" to 12": ANSI/AWWA C110/A21.10 for center to end dimensions and ANSI/AWWA C153/A21.53 for wall thickness. Rated for 350 PSI working pressure. Grooved Ductile iron pipe fittings shall be factory-grooved prior to shipment.

- C. Flanges. Flanges shall be ductile iron and shall be assembled by the ductile iron pipe manufacturer prior to shipment to the job site. Flanges shall have Class 125 drill and face per ANSI B16.1.

## **2.05 HARDWARE**

A. Mechanical Joint:

1. Above Ground: 316 stainless steel
2. Below Ground: ANSI/AWWA C111/A21.11-4.3.5, high strength, low-alloy steel.

B. Flange:

1. Above Ground: 316 stainless steel
2. Below Ground: ASTM A193, Grade 88M (Type 316 stainless steel); ANSI B18.21 heavy hex pattern head; ANSI B1.1 coarse thread series, Class 2A fit.

- C. Grooved (Above Ground): 316 stainless steel

## **2.06 POLYETHYLENE TUBE**

- A. Polyethylene encasement shall be used on all buried ductile iron pipe and fittings. Installation of polyethylene shall be as specified in ANSI A21.5, Section 5-4.2.1 and shall meet the requirements of AWWA C105. Pipe, fittings, valves and couplings shall be wrapped. Fittings that require concrete thrust blocks shall be wrapped prior to placing the concrete.
- B. The polyethylene tube seams and overlaps shall be wrapped and held in place by means of a 2-inch wide plastic backed adhesive tape. Provide two feet overlap at all polyethylene tube joints. The tape shall be Polyken No. 900 (polyethylene), Scotchwrap No. 50 (polyvinyl), or equal. The tape shall be such that the adhesive shall bond securely to both metal surfaces and polyethylene film.

## **2.07 COATING**

- A. Exterior Surfaces, Above Grade. Exterior surfaces of pipe, fittings, couplings, supports and accessories not underground shall be painted as specified in Section 09900. Exposed ductile iron pipe shall be shipped to site with factory primer and without any asphaltic coating.
- B. Exterior Surfaces, Buried. Exterior surfaces of pipe and fittings to be installed below grade shall be furnished with standard asphaltic coating.

## **2.08 LINING**

- A. Brineline: Unless otherwise shown or specified, lining for ductile iron pipe and fittings shall be Protecto 401 ceramic epoxy lining as manufactured by Induron [Birmingham, Alabama (205) 324-9524] with a nominal 40 mil dry film thickness, or Engineer Approved Equal.

## **2.09 IDENTIFICATION**

- A. General: Pipe shall be identified in conformance with requirements in Section 15051.
- B. Brineline: Ductile iron pipe and fittings for brine conveyance shall be identified with green-colored coating, green polyethylene sleeves, identification labels or signs.



## **2.10 MANUFACTURERS**

- A. Provide ductile iron pipe and fittings as shown on the Drawings and specified herein. Ductile iron pipe shall be manufactured by one of the following:
  - 1. American Pipe
  - 2. U.S. Pipe
  - 3. Griffin Pipe
  - 4. Or Engineer Approved Equal.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. Piping alignments as shown on the drawings shall be followed as closely as possible. Proposed deviations shall be submitted in accordance with Section 01300.
- B. Pipe shall be installed in accordance with AWWA C600.

### **3.02 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery, storage, and handling of ductile-iron pipe and fittings shall follow the recommendations of AWWA C600 and as specified herein:
  - 1. Handling of pipe shall be performed with lifts, cranes, or other suitable equipment and devices. Slings, hooks, or pipe tongs shall be padded and used in such a manner as to prevent damage to the pipe, linings, and coatings. The pipes shall not be dropped or dragged.
  - 2. During transport, the pipe shall be supported and secured against movement using padded devices in such a manner to prevent damage.
  - 3. Stored pipe shall be protected from damage and kept free from dirt and foreign materials by closing the ends of the pipe. Other pipeline materials shall be protected by appropriate packaging or wrapping. Gaskets shall be stored in a cool location out of direct sunlight. Bolts, nuts, and washers shall be handled and stored in a dry location in a manner that will ensure proper use with respect to types and sizes.
  - 4. Pipe laid out for installation shall be placed on earth berms or timber cradles adjacent to the trench in the numerical order of installation.
  - 5. Maintain plastic end caps on all pipe and fittings in good condition until the pipe is ready to be installed in the trench. Periodically open the plastic end caps and spray clean potable water inside the pipe for moisture control.
  - 6. Under no circumstances shall ropes or other devices be attached through the fitting's interior for handling.

### **3.03 INSULATING SECTIONS**

- A. Where a metallic nonferrous pipe or appurtenance is connected to ferrous pipe or appurtenance, an insulating flange gasket kit shall be provided. Each insulating gasket shall have a pressure rating equal to or exceeding the connecting pipes.

### **3.04 ACCEPTANCE TESTING**

- A. Hydrostatic pressure tests shall be conducted and acceptability determined in accordance with Section 15051 of these Specifications.

**END OF SECTION**

## **SECTION 15100**

### **VALVES AND APPURTENANCES**

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

##### **1.01 DESCRIPTION**

The Contractor shall furnish and install all valves complete with manual operators and specialty items, as shown on the Drawings and specified herein.

##### **1.02 SUBMITTALS**

- A. Complete specifications, data and detailed drawings covering all valves on the Drawings and all items furnished under this Specification shall be submitted for review in accordance with the procedure set forth in Section 01300. Calculations shall demonstrate L/r ratio for stem extensions conforming with this Specification. Extension stem guide support systems shall be submitted as specified herein.
- B. Drawings and data submitted shall include piping layouts with factory performance test reports in accordance with AWWA standards.
- C. All valve submittals shall include a schedule explicitly identifying the installation location of the valves included in the submittal. The schedule shall identify valve features demonstrating conformance with this specification. The schedule shall also indicate operator orientation.
- D. Submit detailed drawings describing all materials of construction and dimensions for all appurtenances specified herein.

##### **1.03 QUALITY ASSURANCE**

All equipment shall be new and of current manufacture. The valve manufacturer shall be the primary source of information on all valves and appurtenances that they furnish for the job.

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

- A. Deliver materials to the site to insure uninterrupted progress of the work. Deliver anchor bolts and anchorage devices which are to be embedded in cast-in-place concrete in ample time not to delay that work.
- B. Packaging shall be as required to prevent damage during shipment and unloading. Contractor shall inspect all deliveries upon arrival at the site. Contractor shall immediately notify Owner of any loss or damage to equipment or components. Replace losses and repair damage to new condition, in accordance with manufacturer's instructions.
- C. Handle all equipment and materials very carefully. Damaged equipment and materials will not be acceptable. Protect all bolt threads, etc. from damage and corrosion. Protect all factory applied coatings from damage during shipment, unloading, storage and installation.

- D. All material and equipment shall be covered or stored in a manner which will prevent entry of deleterious matter.
- E. During the interval between delivery and installation, all equipment to be incorporated into the project shall be stored to prevent damage or deterioration. In the event prolonged (more than 90 days) storage is required for any item of rotative equipment, the Contractor shall institute a preventive maintenance program which shall include grease protection of bare metal surfaces, periodic indexing of rotating parts, renewal of grease in bearings and any procedures recommended by the manufacturer.

## **1.05 GUARANTEE AND WARRANTY**

- A. The Contractor shall obtain from the manufacturer a warranty for all material, valves, and appurtenances for one year from the date of substantial completion.
- B. During the warranty period, the Contractor shall provide the services of a trained manufacturer's to make all adjustments, repairs and replace all defective material, valves, and appurtenances at no cost to the Owner.
- C. The Contractor shall include all costs incurred by the manufacturer, including travel and expenses, under the terms of the warranty.

## **PART 2 - PRODUCTS**

### **2.01 GENERAL**

- A. Sizing of Valves: Valves shall be the same size as the line in which they are installed unless otherwise noted on the Drawings or otherwise specified herein. All valves shall be full ported, as applicable.
- B. Valve Ends: Valve ends shall be compatible with the piping system in which they are being installed, and shall be in accordance with the Drawings or as otherwise directed by the Engineer.
- C. Valve Testing: Valves shall be hydrostatically tested and valve coatings shall be holiday detected prior to shipment to the field.
- D. Not all valves listed herein may be required under this contract. Refer to the Contract Drawings for valve call-outs and locations. Valves shall be of the type shown on the Drawings. All valves of the same type shall be of the same make unless otherwise directed by the Engineer. Equals may be substituted for manufacturers listed with approval by the Engineer. Valves shall be inline size except as shown otherwise on the Drawings. Ratings specified are minimum, and are water working pressure unless noted otherwise.
- E. All iron or steel products used must be manufactured (includes application of coatings) within the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap, and the materials being applied as a coating are not included.

## **2.02 MANUAL OPERATORS**

- A. General: Unless otherwise noted on the Drawings or specified herein, the direction of rotation of the wheel, wrench nut, or lever to open each valve shall be to the left (counterclockwise). Each valve body or operator shall have cast thereon the word OPEN and an arrow indicating the direction to open.
- B. Gearing: Unless otherwise shown or specified, six-inch (6") and larger plug, butterfly, and ball valves shall be provided with a weatherproof, enclosed worm gear operator. All buried gate, plug, ball, or butterfly valves shall be worm gear operated. All operators shall comply with AWWA standards.
- C. Wrench Nuts: Wrench nuts shall be provided on all buried valves, on all valves which are to be operated through floor grating and where shown on the Drawings. Unless otherwise directed by the Engineer, all wrench nuts shall comply with AWWA standards. Not less than two operating keys shall be furnished for operation of the wrench nut operated valves.
- D. Handwheel: Unless noted otherwise or specified, all valves shall be provided with a manual operator of the handwheel type. The maximum torque required on the handwheel under the most adverse conditions specified herein shall not exceed forty (40) ft-lbs, and the maximum force required on the rim of the handwheel shall not exceed forty (40) pounds.

## **2.03 BURIED VALVES**

- A. Each valve which is installed in direct contact with earth backfill shall be provided with a valve box or valve well of such type and design that surface loads, impact, or shock will not be transmitted through the box to the valve.
- B. Valve boxes shall consist of a cast or ductile iron frame and stay-put cover, and a steel pipe extension sleeve, suitable for the depth of cover required by the plans. Valve boxes shall be not less than eight inches in diameter, shall have a minimum thickness at any point of one-quarter inch (1/4"). Covers shall have cast thereon the designation of the service for which the valve is used. Contractor shall review the service designation callout with the District prior to fabrication of covers. Coat all valve box materials, interior and exterior, per Section 09900.
- C. Valve box frame and cover shall be Clow F-2450, Tyler 6850 series, U.S. Foundry 7500 Series or approved equal.
- D. Valves and valve boxes or wells shall be set plumb. Each valve box or well shall be placed directly over the valve it serves, with the top of the box or well brought flush with the finished grade. After being placed in proper position, earth shall be filled in around each valve box or well and thoroughly tamped for a distance on each side of the valve of four (4) feet at the top of the pipe and two (2) feet measured at the top of the trench.
- E. If the top of the operating nut is more than thirty (30) inches below the finished grade the Contractor shall provide an extension stem to place the operating wrench nut between eighteen (18) inches and thirty (30) inches of the finished grade. Each extension stem for buried valves shall be provided with spacers which will center the stem in the valve box and shall be equipped with a two-inch (2") AWWA square operating nut. All square nuts shall be the same size.
- F. All buried valves shall be coated per Section 09900. All buried valves shall be provided with Type 316 stainless steel nuts and bolts.

- G. All metallic buried valves shall be wax tape wrapped and polyethylene encased. Wax tape shall be as defined in Section 09902 of these Specifications or approved equal.

## **2.04 VALVE COATING**

- A. All valves furnished in this Section shall receive an exterior coating per Section 09900, unless stated otherwise herein. Provide factory primer compatible with painting systems specified in Section 09900.
- B. Unless otherwise specified, the exterior of all buried ductile iron or cast iron valves and appurtenances shall be coated per Section 09900.

## **2.05 VALVE LINING**

- A. Epoxy linings for valves shall be provided in accordance with AWWA C116 with the following modifications:
1. Epoxy lining of valve surfaces shall be performed by the manufacturer in a facility with qualified personnel, where the environment can be controlled. Epoxy lining of valves in the field is prohibited.
  2. Repairs made to manufacturer's applied coatings shall be performed in a facility with qualified personnel, where the environment can be controlled. The facility shall be approved by the valve manufacturer.
  3. Surface preparation shall be as detailed in SSPC-SP5, White-Metal Blast Cleaning.
  4. Epoxy lining materials shall be listed in the NSF Listing for Drinking Water Additives, Standard 61, certified for use in contact with potable water.
  5. The minimum dry film thickness for epoxy linings shall be 8 mils.
  6. Powder epoxy coating materials shall contain one hundred percent (100%) solids, in accordance with AWWA C213.

## **2.06 PLUG VALVES**

- A. General: Provide full (100%) ported plug valves for wastewater service. Valves shall be non-lubricated, eccentric type with resilient faced plugs and shall be furnished with end connections as shown on the plans.
- B. Size: 24-inch
- C. Connections: As indicated on the plans:
1. Flanged: Comply with ANSI B.16, class 125 flange drilling.
  2. Grooved End: Comply with AWWA C-606.
  3. Mechanical Joint: Comply with AWWA C111.
- D. Service: Brine Waste (Domestic Waste, Dissolved Solids up to 15,000 ppm)
- E. Pressure Rating, Class: 175 psi

F. Materials of Construction:

1. Body, Bonnet: Cast Iron, ASTM A126, Class B
2. Plug: Ductile Iron, ASTM A536, Grade 65-45-12 or Cast Iron; Resilient NBR Acrylonitrile-Butadiene or Buna-N facing
3. Bearings: Type 316 Stainless Steel
4. Hardware: Type 316 Stainless Steel
5. O-rings and Packing: Non-asbestos filler in Styrene-Butadiene Rubber binder (NBR)
6. Seat: Nickel

G. Coating: Interior and exterior surfaces shall be coated with fusion-bonded epoxy; 12-mils minimum thickness.

H. Manufacturer: DeZurik "PEF", Valmatic "Cam-Centric", or Owner-Approved Equal.

## **2.07 AIR VACUUM VALVES**

A. General: The large orifice shall allow large volumes of air to enter during pipeline drainage to break the vacuum. The body inlet shall be baffled to protect the lower float from direct forces of rushing air and water to prevent premature valve shut-off. The top large orifice plug or float must be protected in similar manner for the same purpose. The seat must be fastened to the valve cover, without distortion, for drop tight shut-off.

B. Connection: Flanged

C. Size: Four-inch; as indicated on plans.

D. Orifice Size: Minimum 12.6 in<sup>2</sup>

E. Service: Brine Waste (Domestic Waste, Dissolved Solids up to 15,000 ppm)

F. Pressure Rating, Class: 150 psi

G. Materials of Construction: Materials of construction shall be:

1. Body and Cover: Cast Iron
2. Disc: Cast Bronze
3. Seat: Cast Bronze/Buna-N

H. Manufacturer: Air vacuum valve shall be a Model VR41/M5 as manufactured by Crispin Valve, or approved equal. Low pressure (soft seat) Model VR41/M5 for pressures (2-40 psi) shall be used on for all air vacuum valve installations, except for those at approximate STA 622+05, STA 605+58, and STA 597+06..

## **2.08 GATE VALVES**

A. General: Provide resilient seated solid-wedge gate valves as shown on the contract drawings. Valves shall conform to AWWA C515 for ductile iron bodies. The sealing rubber shall be permanently bonded to the wedge to meet rubber-to-metal bond tests per ASTM D429.

- B. Connection: Flanged, Grooved, Mechanical Joint; as shown on the Drawings.
- C. Size: Four-inch to 14-inches; as indicated on Drawings.
- D. Service: Brine Waste (Domestic Waste, Dissolved Solids up to 15,000 ppm)
- E. Operator: Open Screw and Yoke (OS&Y) Stem with handwheel operator for valves not buried. Non Rising Stem (NRS) with two-inch AWWA square nut for buried valves.
- F. Pressure Rating, Class: 250 psi (Hydrostatic pressure test of two times working pressure per AWWA)
- G. Materials of Construction:
  - 1. Body: Ductile Iron
  - 2. Wedge: Ductile Iron, encapsulated with rubber per ASTM D-2000
  - 3. Open Screw and Yoke Stems: bronze
  - 4. Non-Rising Stem: cast bronze with integral collars in full compliance with AWWA. Stuffing box seals shall be serviceable with valve fully open and subjected to full rated working pressure.
  - 5. Hardware: Type 316 Stainless Steel
- H. Manufacturer: Clow, Mueller, American Flow Control, or Approved Equal.

## **2.09 BALL VALVES**

- A. Stainless Steel Ball Valves
  - 1. General: Provide full port ball valves as shown on the contract drawings.
  - 2. Connection: Flanged
  - 3. Size: Refer to drawings
  - 4. Service: Brine Waste (Domestic Waste, Dissolved Solids up to 15,000 ppm)
  - 5. Pressure Rating, Class: 150
  - 6. Materials of Construction:
    - a. Body and End Cap: 316 Stainless Steel, ASTM A351 CF8M
    - b. Ball: Stainless Steel, ASTM A276 Type 316
    - c. Seats, Thrust Washer, Packing: RPTFE
    - d. Stem, Gland: Stainless Steel, ASTM A276 Type 316
    - e. Handle, Nut: 316 Stainless Steel
  - 7. Manufacturer: Apollo Valves or equal



## **2.10 TAPPING SADDLES AND SLEEVES**

### **A. General:**

1. Contractor shall provide tapping saddles and sleeves as shown on the Plans and specified herein. Tap size shall be as shown on the Plans. Tap location and orientation shall be as shown on the Plans unless otherwise approved by the Engineer.
2. Tapping saddles and sleeve shall be installed according to the Manufacturer's written instructions and recommendations.

### **B. Design:**

1. Tapping saddles and sleeves shall employ a double strap design. Tapping saddles and sleeves shall be suitable for use on HDPE (DIPS) and Ductile Iron pipe conforming to AWWA standards. Provide NPT threads.
2. Tapping saddle and sleeve body shall be ASTM A395 ductile iron and shall be painted as specified in Section 09900 or as shown on the Plans. Tapping saddle and sleeve straps shall be Type 316 stainless steel with rolled strap threads. Provide Nitrile O-ring gasket. All hardware shall be Type 316 stainless steel.

### **C. Manufacturer:**

1. Provide tapping saddles and sleeves from one of the following:
  - a. Mueller Company, series DR2S.
  - b. JCM Industries, series 402.
  - c. Or approved equal.

## **PART 3 - EXECUTION**

### **3.01 DELIVERY AND STORAGE**

- A. Valves shall be delivered and stored in accordance with AWWA C550. The port openings shall be covered with plastic, cardboard or wood while in transit and during storage in the field. These covers shall remain in place until valves are ready to be installed. Valves shall not be stored in contact with bare ground. Valves shall not be stacked.
- B. Inspect valves before installation to ensure that all foreign substances have been removed from within the valve body. Open and close each valve to see that all parts are in working condition. Geared valves shall be inspected to see that all gears are properly lubricated.

### **3.02 INSTALLATION**

- A. Install all valves plumb and level.
- B. Install valves with the bolt holes straddling the vertical and horizontal centerlines of pipe, with the operating nut in the vertical position, unless otherwise noted on the Drawings.
- C. Valves shall be installed per the manufacturer's recommendation in accordance with the applicable specification for the piping material and joint type being used for the valve and the non-potable water pipeline.

- D. Gasket material shall be as shown in the valve schedule and piping schedules.
- E. Unless otherwise shown, all nuts and hardware shall be 316 stainless steel.

### **3.03 HYDROSTATIC TESTING**

- A. Valves shall be hydrostatically tested in conjunction with the pipeline in which it is connected in accordance with the contract documents and District standards.
- B. Pressure test all pressure reducing, relief, and pressure control valves in the presence of the District. Confirm adherence to recommended pressure settings.

**END OF SECTION**

## **SECTION 15121**

### **CURED-IN-PLACE PIPE (CIPP)**

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

##### **1.01 SUMMARY**

- A. The Contractor shall provide for rehabilitation of a fully deteriorated 24-inch polyvinyl chloride (PVC) pipe through installation of a Cured-In-Place Pipe (CIPP) using a vinyl ester or epoxy resin-impregnated fabric tube (henceforth referred to as CIPP throughout this specification), tightly formed to the original conduit. The tube shall be either fiberglass-reinforced or non-reinforced, where shown on the Approved Plans or required by these specification. Resin shall be cured using hot water under hydrostatic pressure within the tube between the points of access shown on the Approved Plans, as included as part of the Contract Documents. The CIPP shall be continuous and tight fitting. Internal mechanical end seals and retainer rings shall be installed at all tube terminations as shown on the Approved Plans.
- B. The Contractor shall furnish all materials for CIPP installation, in accordance with the provisions of the Contract Documents.
- C. Rehabilitation of the pipeline shall be completed through the installation of a resin-impregnated fabric tube, with or without fiberglass reinforcement as required for pressure, which, when cured, shall be continuous and tight-fitting throughout the entire length of the original pipe to be rehabilitated. The CIPP shall extend the full length of the original pipe and provide a structurally sound, jointless and water-tight new pipe within a host pipe. The Contractor shall be responsible for proper, accurate and complete installation of the CIPP using the system selected by the Contractor.
- D. Neither the CIPP system, nor its installation, shall cause adverse effects to any of the Owner's or its member agencies' processes or facilities. The use of the product shall not result in the formation or production of any detrimental compounds or by-products at any wastewater treatment plant. The Contractor shall notify the Owner and identify any by-products produced as a result of the installation operations, test and monitor the levels, and comply with any and all local waste discharge requirements. The Contractor shall cleanup, restore existing surface conditions and structures, and repair any of the CIPP system determined to be defective. The Contractor shall conduct installation operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to the operations of the Owner or its member agencies, as well as traffic, pedestrians, businesses, and property owners or tenants.
- E. The prices submitted by the Contractor, shall include all costs of permits, labor, equipment and materials for the various Bid items necessary for furnishing and installing, complete in place, CIPP in accordance with these Specifications. All items of Work not specifically mentioned herein which are required to make the product perform as intended and deliver the final product as specified herein shall be included in the respective lump sum and unit prices Bid.

##### **1.02 RELATED WORK DESCRIBED ELSEWHERE**

- A. Section 01300 Submittals
- B. Section 01570 Traffic Regulation

- C. Section 02999 Temporary Handling of Brine Flow
- D. Section 15045 Pipe Cleaning and Inspection
- E. SSPWC - Standard Specifications for Public Works Construction (“Greenbook”), latest edition.

### **1.03 DESCRIPTION OF WORK AND PRODUCT DELIVERY**

- A. These Specifications cover all Work necessary to furnish and install the CIPP liner. The Contractor shall provide all materials, labor, equipment, and services necessary for traffic control, bypass of brine line flows, cleaning and inspection of the pipe to be lined, liner installation, including end seals, retainer rings and pipe closures, all quality controls, provide samples for performance of required material tests, final television inspection, testing of lined pipe system and warranty Work, all as specified herein.
- B. The product furnished shall be a complete CIPP system including all materials, applicable equipment and installation procedures.
- C. The CIPP shall be continuous and jointless from access point to access point and shall be free of all defects that will affect the long-term life and operation of the CIPP and the pipe.
- D. The CIPP shall be designed as a full structural, stand-alone pipe-within-a-pipe. The installed CIPP shall be a structurally designed pipe within a pipe, shall meet or exceed all Contract specified physical properties, fitting tightly within the existing host pipe all within the tolerances specified. The installed CIPP shall withstand all applicable surcharge loads including soil overburden, live loads, external hydrostatic groundwater pressure to ground surface, whether groundwater is present or not, and internal pressure for each specific installation location. Contractor shall maintain the required minimum liner thickness as identified on the Approved Plans and these specifications.
- E. All materials furnished, as part of this Contract, shall be marked with detailed product information, stored in a manner specified by the manufacturer and tested to the requirement of this contract.
- F. Testing and inspections results shall be reviewed by the Owner. Any defects found shall be repaired or replaced by the Contractor at no additional cost to the Owner.
- G. The Contractor shall furnish all samples for product testing at the request of the Construction Manager. The Construction Manager shall take possession of the samples for testing and shall maintain the chain of custody, deliver the samples to an approved laboratory and pay for all material and product testing performed under this Contract.

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

- A. Regional Standard Specifications:
 

Greenbook	Standard Specifications for Public Works Construction, 2012 Edition, Part 5, System Rehabilitation Section 500 – Pipeline and other more general sections, as determined appropriate by SAWPA.
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B. American Society for Testing and Materials (ASTM):

ASTM - F1216	Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube
ASTM - D543	Standard Practice for Evaluating the Resistance of Plastics to Chemical Reagents
ASTM - D638	Standard Test Method for Tensile Properties of Plastics
ASTM - D790	Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
ASTM - D792	Standard Test Methods for Density and Specific Gravity of Plastics by displacement.
ASTM - 02122-98(2004)	Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
ASTM - D2990	Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics
ASTM - D3567-97(2002)	Standard Practice for Determining Dimensions of Fiberglass (Glass – Fiber - Reinforced Thermosetting Resin) Pipe and Fittings
ASTM - D3681	Standard Test Method for Chemical Resistance of "Fiberglass (Glass Fiber Reinforced Thermosetting Resin) Pipe in a Deflected Condition
ASTM – D5813	Standard Specification for Cured-in-Place Thermosetting Resin Sewer Pipe

**1.05 PERFORMANCE WORK STATEMENT (PWS) SUBMITTAL**

The Contractor shall submit to the Owner a Performance Work Statement (PWS) as a shop drawing in accordance with Section 01300. The PWS shall clearly define the CIPP product delivery in conformance with the requirements of these Contract Documents. Unless otherwise directed by the Owner, the PWS shall at a minimum contain the following:

- A. Clearly indicate that the CIPP will conform to the Project requirements, as outlined in the Description of Work and as delineated in these Specifications.
- B. A detailed installation plan describing all preparation Work, draining, cleaning and swabbing operations, pre-inspections, bypass systems, draining locations, traffic control, installation procedure, method of curing, reinstatement of air/vacuum valve and blow-off connections, quality control, testing to be performed, final CCTV inspection, warranties furnished and all else necessary and appropriate for a complete CIPP liner installation. A detailed installation schedule shall be prepared, submitted and conform to the requirements of this contract.
- C. Contractor's description of the proposed CIPP lining technology.
- D. A description of the CIPP materials to be furnished for the Project. Materials shall be fully detailed in the submittals and conform to these Specifications and/or shall conform to the pre-approved product submission.

- E. A statement of the Contractor's experience. The Contractor shall meet the experience required in the Bid Forms. The lead personnel, including the superintendent, the foreman and the lead crew personnel for the CCTV inspection, resin wet-out, the CIPP liner installation, and liner curing shall have a minimum of two (2) years of total experience with the CIPP technology proposed for this Contract and shall have demonstrated competency and experience to perform the scope of Work contained in this contract. The name and experience of each lead individual performing Work on this Contract shall be submitted with the PWS.
- F. Engineering design calculations, in accordance with the Appendix of ASTM F-1216 for the liner to be installed. These calculations shall be performed and certified by a qualified Professional Engineer registered in the State of California. All calculations shall include data that conforms to the requirements of these Specifications or has been pre-approved by the Owner.
- G. Proposed manufacturers technology data shall be submitted for all CIPP products and all associated technologies to be furnished.
- H. Submittals shall include information on the cured-in-place pipe intended for installation and all tools and equipment required for a complete installation. The PWS shall identify which tools and equipment will be redundant on the job site in the event of equipment breakdown. All equipment, to be furnished for the Project, including proposed back-up equipment, shall be clearly described. The Contractor shall outline the mitigation procedure to be implemented in the event of key equipment failure during the installation process.

#### **1.06 PRODUCT SUBMITTALS**

- A. Submit certification showing the Contractor is currently licensed by the submitted liner manufacturer to perform CIPP installation and has been certified continuously for a minimum of two (2) years. Certification shall be given to the Engineer before any materials are ordered.
- B. Submit proof that the Contractor Qualifications are met as required by these Bid Documents
- C. Comply with the experience and technical qualifications requirements of the Bid Documents and elsewhere, as required.
- D. Shop drawings detailing short- and long-term properties of the cured CIPP composite, including supporting test data of all component materials and composite materials. Submittal shall include 10,000-hour third party, 50-year Flexural and Tensile Creep test data. Contractor shall use the minimum retention values provided herein for all calculations, unless otherwise approved by the Owner.
- E. Liner design calculations based on the manufacturer's specifications. Physical properties differing from the minimum values provided herein shall be substantiated by independent lab testing and shall only be used with the approval of the Owner. Lab testing results shall be submitted with the calculations. Calculations shall include the volume of resin required per unit length to fill the volume of air voids in the tube plus the additional allowance for polymerization shrinkage and to meet the finished liner strength requirements.
- F. Infrared spectrum analysis chart for the resin to be supplied.
- G. Proof that the CIPP liner system conforms to the chemical resistance requirements of ASTM F1216 and/or Greenbook 211-2.

- H. Manufacturers' shipping, storage, and handling recommendations for all components of the CIPP System.
- I. All MSDS sheets for all materials to be furnished for the Project.
- J. Tube wet-out & cure method including:
  - 1. A complete description of the proposed wet-out procedure, including the local wet-out location, for the proposed technology.
  - 2. The Manufacturer's recommended cure schedule. The PWS shall contain a detailed curing procedure detailing the curing medium and the method of application.
  - 3. Manufacturer's data on the temperature sensor cable system to be used, including an output display sample. Submit a letter of acceptance from the liner manufacturer and installer indicating acceptance of the temperature sensor cable system for use on the Project.
- K. Repair or replacement procedures for potential defects that may occur in the installed CIPP, as recommended by the CIPP system manufacturer. Information shall include:
  - 1. Defects in the installed CIPP that will not affect the operation and long term life of the product shall be identified and defined.
  - 2. Repairable defects that may occur in the installed CIPP shall be specifically defined by the Contractor based on manufacturer's recommendations, including a detailed step-by-step repair procedure, resulting in a finished product meeting the requirements of these Contract Specifications.
  - 3. Un-repairable defects that may occur to the CIPP shall be clearly defined by the Contractor based on the manufacturer's recommendations, including a recommended procedure for the removal and replacement of the CIPP at no additional cost to the Owner.
- L. Manufacturer's data for mechanical end seals, retainer rings, and external closure couplings, including materials of construction, dimensional information, and recommended storage, handling, and installation procedures.
- M. CIPP system manufacturer's warranty information.
- N. After each impregnation of a tube for an installation, submit a process record that verifies that the resin impregnation yield matches the required quantity for the diameter and thickness.
- O. Locking / retaining ring installation at pipe closure locations.

## **1.07 WARRANTY**

- A. The materials used for the Project shall be certified by the manufacturer for the specified purpose. The manufacturer shall warrant the liner to be free from defects in raw materials for one (1) year from the date of acceptance by the Owner. The Contractor shall warrant the liner installation for a period of one (1) year. During the Contractor warranty period, any defect, including leakage in excess of that allowed by ASTM F1216, which, in the sole opinion of the Owner, may materially affect the integrity, strength, function and/or operation of the pipe, shall be repaired at the Contractor's expense in accordance with the CIPP Repair/Replacement procedures.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. All materials shipped to the Project site shall be accompanied by test reports certifying that the material conforms to the ASTM standards listed herein. Materials shall be shipped, stored, and handled in a manner consistent with written recommendations of the CIPP system manufacturer to avoid damage. Damage includes, but is not limited to, gouging, abrasion, flattening, cutting, puncturing, or ultra-violet (UV) degradation. On-site temporary storage locations shall be approved by the Owner. All damaged materials shall be promptly removed from the Project site at the Contractor's expense and disposed of in accordance with all current applicable Federal, State and Local regulations.
- B. The CIPP liner system furnished shall be tested in accordance with the chemical resistance and other requirements of ASTM F1216 and/or Greenbook 211-2.

### **2.02 FABRIC TUBE**

- A. The fabric tube shall consist of one or more layers of absorbent woven or non-woven felt fabric or a combination thereof formed into a tubular shape that meets the requirements of ASTM F1216. The tube shall include glass-fiber mat reinforcement materials, where required by the Approved Plans and Specifications for internal pressure conditions. The fabric tube shall be capable of absorbing and carrying resins, constructed to withstand installation pressures and curing temperatures, and have sufficient strength to bridge missing pipe segments, and stretch to fit irregular pipe sections.
- B. The wet-out fabric tube shall have a uniform thickness and excess resin distribution that when compressed at installation pressures will meet or exceed the design thickness after cure.
- C. The fabric tube shall be manufactured to a size and length that, when installed, will tightly fit the internal circumference, meeting applicable ASTM standards or better, of the original host pipe. Allowance shall be made for circumferential stretching during installation. The tube shall be properly sized to the diameter of the existing host pipe and the length to be rehabilitated and be able to stretch to fit irregular pipe sections and negotiate bends and fittings as shown on the Approved Plans. The Contractor shall determine the minimum tube length necessary to effectively span the designated run between access points. The Contractor shall verify the lengths in the field prior to ordering and prior to impregnation of the tube with resin, to ensure that the tube will have sufficient length to extend the entire length of the run.
- D. The outside and/or inside layer of the fabric tube (before inversion) shall be coated with an impermeable, flexible membrane that will contain the resin and facilitate, if applicable, vacuum impregnation and monitoring of the resin saturation during the resin impregnation (wetout) procedure.
- E. No material shall be included in the fabric tube that may cause de-lamination in the cured CIPP. No dry or unsaturated layers shall be acceptable upon visual inspection as evident by color contrast between the fabric tube and the activated resin containing a colorant.
- F. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made. The hue of the color shall be dark enough to distinguish a contrast between the fully resin saturated fabric and dry or resin lean areas.



- G. Seams in the fabric tube, if applicable, shall meet the requirements of ASTM D5813.
- H. The outside of the fabric tube shall be marked every 5-feet with the name of the manufacturer or CIPP system, manufacturing lot and production footage.
- I. The minimum length of the fabric tube shall be that deemed necessary by the installer to effectively span the distance from the starting access point to the terminating access point, plus that amount required to run-in and run-out for the installation process.
- J. The nominal fabric tube wall thickness shall be constructed, as a minimum, to the nearest 0.5 mm increment, rounded up from the design thickness. The quantity of resin used in the impregnation shall be sufficient to fill all of the felt voids for the nominal felt thickness.

### **2.03 RESIN**

- A. The resin shall be a corrosion resistant vinyl ester resin and catalyst system, or epoxy resin and hardener, that when properly installed and cured in locations as required on the Approved Plans and within the tube composite shall meet the requirements of ASTM F1216, the physical properties herein, and those, which are to be utilized in the design of the CIPP for this Project. The resin shall produce CIPP which will comply with or exceed the structural and chemical resistance requirements of this specification.

### **2.04 STRUCTURAL REQUIREMENTS**

- A. The Contractor shall be aware that the physical properties and characteristics of the finished liner are known to vary considerably, depending on the types and mixing proportions of the materials used, and the degree of cure executed. It shall be the responsibility of the Contractor to control these variables and to provide and install a CIPP system that meets or exceeds the minimum properties specified herein.
- B. The CIPP shall be designed as per ASTM F1216, Appendix X1, and other applicable standards. The CIPP design shall assume no bonding to the original host pipe wall.
- C. The CIPP shall, at a minimum, meet or exceed the structural properties, as listed below.

### **2.05 DESIGN PARAMETERS**

- A. The CIPP design shall be based on the following parameters unless otherwise specified and approved by the Owner:

<b>Parameter</b>	<b>Bypass Reach #1</b>	<b>Bypass Reaches #2 and #4</b>	<b>Bypass Reach #3</b>
Liner Type	Reinforced	Reinforced or Non-reinforced	Non-reinforced
Design Condition	Fully deteriorated host pipe	Fully deteriorated host pipe	Fully deteriorated host pipe
Design Safety Factor	2.0	2.0	2.0
Internal Pressure	60 psi	30 psi	0 psi
Ovality	7%	7%	7%
Groundwater Depth Above Pipe	-2 feet	-2 feet	-2 feet
Soil Depth Above Pipe Crown	18 feet	18 feet	18 feet

<b>Parameter</b>	<b>Bypass Reach #1</b>	<b>Bypass Reaches #2 and #4</b>	<b>Bypass Reach #3</b>
Live Load	H20 Highway	H20 Highway	H20 Highway
Soil Density	120 pounds per cubic foot	120 pounds per cubic foot	120 pounds per cubic foot
Soil Modulus	750 psi	750 psi	750 psi
Minimum CIPP Wall Thickness	13.5 mm	13.5 mm	13.5 mm
Retention Factor for Long-Term Flexural Modulus	50%	50%	50%
Retention Factor for Long-Term Tensile Strength	33%	33%	33%

- B. The required structural CIPP minimum wall thickness shall be as defined on the construction drawings, or 13.5 millimeters, as reviewed and approved by the Owner. The minimum physical properties of the cured composite shall be as follows:

<b>Property</b>	<b>Test Method</b>	<b>Cured Composite Without Reinforcement – Minimum Initial Per Test Method</b>	<b>Cured Composite With Reinforcement – Minimum Initial Per Test Method</b>
Flexural Modulus of Elasticity – Short Term	ASTM D790	250,000 psi	350,000 psi
Flexural Strength – Short Term	ASTM D790	4,500 psi	6,500 psi
Tensile Strength	ASTM D3039/3039M	3,000 psi	6,000psi

- C. End Seals and Locking/Retaining Rings – Mechanical end seals and locking/retaining rings shall be installed in all CIPP terminations as shown on the Approved Plans. The end seals shall be designed to seal the raw end of the CIPP liner to the interior surface of the PVC or stainless steel termination spool at all pipe closure locations and bridge the space from the interior of the CIPP to the interior of the PVC host pipe.
1. Locking/retaining rings shall be secured to the termination spool using an appropriate process and filler material as approved by the Owner. Contractor shall submit information on locking/retaining ring installation for review and approval by the Owner.
  2. To verify fit prior to installation, the actual internal diameter (ID) of the 24-inch termination spool, with the liner to be installed, shall be taken and compared to the range of suitable dimensions per the approved shop drawing for the end seals. Only end seals designed for the measured dimensions shall be allowed.
  3. The end seals shall be constructed of flexible rubber leak clamp that ensures a non-corrodible, bottle-tight seal around the full inside circumference of the joint area. The end seals shall be rated by the manufacturer for the operating pressure and shall be compatible with the piped fluid. The end seals shall accommodate normal pipe movement from ground shifting, thermal expansion or contraction, and vibration. The end seals shall incorporate a positive mechanical locking design to set the rubber seal in permanent position.
  4. The end seals shall be made of EPDM (Ethylene Propylene Diene Monomer) polymer and manufactured in conformance with ASTM D3900 and D3568. Retaining bands shall be made of Type 316 stainless steel and rolled to the radius of the pipe internal diameter.

5. End seals shall be WEKO-SEAL as manufactured by Miller Pipeline Corp., HydraTite as manufactured by HydraTech Engineered Products, or approved equal.

## **PART 3 - EXECUTION**

### **3.01 CONSTRUCTION REQUIREMENTS**

- A. Construction requirements include field measurements, preparation, cleaning, inspection, and flow bypassing.
- B. Temporary Flow Bypass. Work within the existing host pipe shall not begin until the Contractor has installed a complete and functional bypass system for the pipe section to be rehabilitated. Shutdown of the tributary flows to the pipeline for temporary flow bypass installation shall be in accordance with Section 02999.
- C. Cleaning of Pipeline. The Contractor shall remove all internal debris from the pipeline that interferes with the installation and the final product delivery of the CIPP as required in these Specifications. Cleaning shall be performed in accordance with Section 15045 and as follows.
  1. Contractor shall conduct light to heavy cleaning, as appropriate, in the existing host pipe prior to installation of the CIPP liner system and after the bypass is in operation. Contractor shall catch and remove cleaning operation water and debris at the downstream extent of each reach being cleaned. Captured solids shall be dewatered (as necessary), transported and delivered to an approved facility. Contractor shall provide Owner with weigh ticket or proof of disposal at an approved facility.
  2. Contractor shall conduct finish cleaning in the project host pipe after the bypass is in operation. All cleaning water and solids from the finish cleaning shall be captured and delivered to an approved facility. Contractor shall provide Owner with weigh ticket or proof of disposal at an approved facility. Residual water from dewatering of the collected wastes shall be transported to the brine line at Owner-approved MAS locations, or discharged to the bypass system, as reviewed and approved by the Owner.
  3. Precaution shall be taken by the Contractor in the use of cleaning equipment to avoid damage to the existing host pipe. The repair of any damage, caused by the cleaning equipment, shall be the sole responsibility of the Contractor.
  4. Any remaining standing water in existing sags or other locations in the line shall be removed by pulling a foam pig through the pipe, or by other means acceptable to the Owner, prior to CCTV and laser profile inspection and immediately prior to inversion of the CIPP.
- D. Contractor shall perform post-cleaning CCTV and laser profiling inspections of the existing host pipe in accordance with Section 15045. The Contractor shall provide the Owner a copy of the post-cleaning inspection results and suitable log in digital format for review prior to installation of the CIPP and for later reference by the Owner. All water shall be removed from the existing host pipe by swabbing or other approved method prior to post-cleaning operations to allow full view of the pipeline interior and to assure proper operation of the laser profiling equipment.

### **3.02 PIPELINE LINING CRITERIA**

- A. The locations of CIPP installation shown on the Approved Plans are provided for bidding purposes. The Contractor shall conduct CIPP liner installations based on Owner's review of the

CCTV and laser profiling inspection results for the existing host pipe. The Owner, upon receipt of the CCTV and laser profiling results, will confirm CIPP liner installation based on the following criteria, unless otherwise directed by the Owner:

1. Deflection less than or equal to five percent (5%): No CIPP will be installed.
  2. Deflection greater than five percent (5%) and less than or equal to ten percent (10%): CIPP liner will be installed.
  3. Deflection greater than ten percent (10%): CIPP liner installed at Owner's discretion.
  4. Presence of pipe defects, separated joints, or other anomalies: CIPP liner will be installed at Owner's discretion.
- B. The Contractor shall get Owner approval for all CIPP liner installations prior to wetting out the liner, or otherwise beginning CIPP work within each specific reach of the project. In the event that a given reach of the host pipe is determined not to be CIPP lined, the Contractor shall install the unused CIPP liner in a subsequent CIPP liner installation location. No additional compensation will be provided as a result of the Owner's decision to install or not install a CIPP liner within a specific reach of the host pipe. The Contractor shall schedule his overall CIPP installation process to account for the Owner's review time of CCTV and laser profiling data.

### **3.03 INSTALLATION OF LINER**

- A. CIPP installation shall be in accordance with the manufacturer's Specifications as described and submitted in the PWS. The PWS shall be in accordance with ASTM F1216, with the following modifications:
- B. Resin Impregnation: The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the loss of resin during installation through irregularities in the original pipe wall.
1. A vacuum impregnation process shall be used. The point of vacuum shall be no further than 25-feet from the point of initial resin introduction. After vacuum in the tube is established, a vacuum point shall be no further than 75-feet from the leading edge of the resin. The leading edge of the resin slug shall be as near to perpendicular to the longitudinal axis of the tube as possible. A roller system shall be used to uniformly distribute the resin throughout the tube.
  2. After each impregnation of a tube for an installation, submit a process record that verifies that the resin impregnation yield matches the required quantity for the diameter and thickness submitted during the shop drawing review stage.
- C. The wet-out tube shall be positioned in the pipeline using the method specified by the manufacturer. Care should be exercised not to damage the tube as a result of installation. The tube should be inverted through an approved access point and fully extend to the termination point. Inversion shall be performed by gravity with a scaffold tower constructed to provide 15 psi (plus or minus 0.5 psi) of water pressure for inversion and curing. Contractor shall provide calculations to the Owner showing the tower height required to attain 15 psi.

- D. Curing: Curing shall be accomplished by using hot water at a pressure of 15 psi plus or minus 0.5 psi. Steam curing shall not be allowed. The manufacturer's recommended cure schedule shall be used for each line segment installed, and the liner wall thickness and the existing ground conditions with regard to temperature, moisture level, and thermal conductivity of soil, per ASTM as applicable, shall be taken into account by the Contractor.
1. The entire cure cycle (heat-up/cool-down) shall be monitored by a temperature sensor cable placed in the bottom of the host pipe prior to or concurrent with CIPP liner inversion. The system shall be capable of providing instantaneous temperature data at a minimum of one degree increments over the entire potential temperature range during at intervals no greater than 18 inches apart along the pipe. The temperature monitoring system shall be as manufactured by ZIA Systems, VeriCure as manufactured by Pipe Renewal Technologies, or approved equal.
  2. Temperature data shall be transmitted in real time to a computer located at the inversion site. Data shall be displayed in a cascading format, as well as numerical format. The data shall be available for monitoring by the Owner and Engineer. The data shall also be recorded and submitted to the Owner and Engineer prior to or at the same time as the post-lining inspection video.
- E. Water Use: Potable or Title 22 recycled water shall be used for the CIPP lining and cleaning processes, at the Contractor's option. The use of brine water for these processes shall not be permitted. Potable water may be obtained from Lee Lake Water District or City of Corona and Title 22 recycled water may be obtained from Lee Lake Water District. The Contractor shall be responsible for obtaining all necessary permits and shall pay all costs associated with obtaining water for CIPP lining and cleaning operations, or any other operation requiring water for the project. The Contractor shall provide all piping, hoses, valves, or connections necessary to complete the work. The Contractor shall install a backflow device either on the hydrant or downstream of the meter, as directed by the jurisdictional agency providing the water. Access to fire hydrants for the purpose of fire protection shall be maintained at all times.

### **3.04 COOL DOWN**

- A. The Contractor shall cool the CIPP in accordance with the approved CIPP manufacturer's recommendations as described and outlined in the PWS.
- B. Temperatures and curing data shall be monitored and recorded, by the Contractor, throughout the installation process to ensure that each phase of the process is achieved as approved in accordance with the CIPP System manufacturer's recommendations.

### **3.05 FINISH**

- A. The installed CIPP shall be continuous over the entire length of the pipe section and be free from visual defects such as foreign inclusions, dry spots, pinholes, major wrinkles and de-lamination. The lining shall be impervious and free of all leakage from inside the CIPP liner to the surrounding ground or from the ground to inside the CIPP liner.
- B. Any defect that, in the sole opinion of the Owner, will or could affect the structural integrity or strength of the CIPP, shall be repaired at the Contractor's expense in accordance with the submitted CIPP Repair/Replacement procedures.
- C. The beginning and end of the CIPP shall be sealed with mechanical end seals and locking/retaining rings as shown on the Approved Plans. Mechanical seals and locking/retaining

rings shall be installed as recommended by the seal manufacturer and the manufacturer of the CIPP system.

- D. If the wall of the CIPP leaks, it shall be repaired or removed and replaced with a watertight pipe as recommended by the manufacturer of the CIPP system.

### **3.06 REINSTATEMENT OF EXISTING CONNECTIONS**

- A. Air/vacuum valve connections shall be reinstated as shown on the Approved Plans. Air valves shall be installed after the CIPP has been installed, fully cured, and cooled down, but prior to pressure testing to allow air to be expelled at pipeline high points during water filling. The air/vacuum valve connections shall be capped or blind flanged during the pressure test period to avoid pressure testing against the air-vac valve itself. Blow-off assembly connections shall be reinstated after pressure testing is complete.
- B. Reinstatements shall be performed using external full circumferential tapping sleeves that are size to fit the outside diameter of the CIPP liner, with appropriate connections for the air/vacuum valve or blow-off assembly as required. Reinstatement of connections from inside the CIPP liner using a robotic cutting tool shall not be permitted.

### **3.07 PRESSURE TESTING**

- A. Pressure testing for water-tightness shall be provided on all CIPP installations or as directed by the Owner in writing. The pressure testing procedure shall be as follows:
  - 1. The CIPP shall be cooled down to the original ambient ground temperature, which existed before CIPP installation, prior to proceeding with the pressure test.
  - 2. The test section shall be subjected to a hydrostatic pressure equal to the liner design pressure specified herein or a minimum of 20 psi, whichever is greater.
  - 3. The pipe section to be pressure tested shall extend between two installed maintenance access structures (MASs) and include completed pipe closures at intermediate access pits as shown on the Approved Plans. Backfilling of the intermediate access pit shall not commence until after an acceptable pressure test has been completed. If the entire length of host pipe between MASs is not lined, then the section to be tested shall extend between the adjacent MAS on one side and the CIPP access pit on the other. All pressure tests shall be conducted after end seals have been installed.
  - 4. The pipe section to be tested shall be isolated with blind flanges or other appropriate method rated for the required test pressure. Means for temperature measurement, air relief and filling the test section with water shall be provided. The CIPP segment tested shall be configured such that leakage from the ends can be visually monitored.
  - 5. The ends, termination points, elbows, and other components of the pipeline system that are removed shall be properly braced, blocked and supported for the duration of the pressure test. The test pressure shall not exceed the safe pressure of such fittings.
  - 6. The test shall be for a minimum of one hour in duration.
  - 7. The test section shall be filled slowly from an approved water source. All air shall be expelled from the pipeline during filling, recognizing that multiple air release points may exist. When filling the pipeline with water, all air release valves and the high elevation end of the pipeline shall be opened until a free flow of water is visible, to release all air from the pipe section to be tested. Contractor shall ensure the rate of filling does not significantly pressurize the pipeline prematurely.

8. If the above technique for expelling air is not sufficient, an alternate approach shall be recommended by the Contractor to successfully remove all air from inside the pressure test segment.
  9. Once the CIPP is filled with water, the specified test pressure, based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge, shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Owner. The test pressure shall be applied stepwise, in 10 psi intervals, until the required test pressure is reached. The pressure shall be held at the intermediate pressure steps for a minimum of 5 minutes.
  10. A minimum stabilization period of 2 to 3 hours (or more) is recommended, but not required, before starting the pressure test. During this time, the test pressure shall be maintained within close proximity of the required test pressure. During the stabilization period, CIPP expansion, trapped air in the pipe, fluctuation of the mean water temperature, and other conditions may cause erroneous readings if the pressure test is conducted during this period. Decreasing make-up water during the stabilization period indicates that's at least one of these effects is present and is gradually being counteracted.
  11. Contractor shall bleed off all air at the ends of the pressure test section prior to beginning the pressure test. The Contractor shall begin the test at the required test pressure. After the one-hour test period, the amount of make-up water needed to return to the required pressure shall be quantified.
  12. Test water shall be released in a manner reviewed and approved by the Owner during the shop drawing submittal phase.
- B. The pressure test for water-tightness shall be deemed acceptable if the make-up water during the pressure test is equal to or less than 20 gallons per inch-diameter, per mile of pipe, per 24 hour day (20 GIDMD). The quantified make-up water for the one-hour test shall be extrapolated to the 24-hour rate for comparison purposes. Any visible leakage at termination points shall be eliminated. If not feasible at the time of the test, the termination point leakage shall be kept to a minimum, collected, and deducted from the actual make-up water rate.
- C. If the lined pipe segment tested does not meet the requirements of the pressure test, the Contractor shall repair or replace the CIPP lined segment as required by the Owner and retest the lined pipe until it meets the requirements at no additional cost to the Owner.

### **3.08 SAMPLING AND LABORATORY TESTING**

- A. Quality control shall include provisions by the Contractor of an infrared spectrum analysis sample kit (Chemtron / NeoPoxie, or approved equal) to sample the uncured resin from the wet-out CIPP liner to verify that the submitted and approved resin is provided. Each sample, as determined by the Owner, shall be submitted to an independent laboratory for spectrum analysis comparison testing. This test result shall be compared against the infrared spectrum analysis chart, which shall be submitted by the Contractor as part shop drawing submittals prior to start of any field work. All costs for failed tests and all Contractor and Owner costs related to the removal and replacement of installed CIPP failing this testing shall be paid by the Contractor.
- B. The physical properties of the installed CIPP shall be verified through field sampling and laboratory testing. All materials for testing shall be furnished by the Contractor to the Owner for testing. All materials testing shall be performed at the Owner's expense, by an independent third party laboratory selected by the Owner as recommended by the CIPP manufacturer. All tests shall

be in accordance with applicable ASTM test methods to confirm compliance with the requirements specified in these Contract Documents.

- C. The Contractor shall provide samples for testing to the Owner from the actual installed CIPP liner. One restrained sample and one plate sample shall be provided for each inversion. All curing, cutting and identification of samples shall be performed by the Contractor and will be witnessed by the Owner. Samples will be transmitted by the Owner to the testing laboratory.
  - 1. The 2-foot long restrained sample shall be cut from a section of cured CIPP that has been inverted or pulled through a like diameter pipe provided by the Contractor which has been held in place by a suitable heat sink, such as sandbags.
  - 2. The plate sample shall be cured with the CIPP in an approved location.
  - 3. The Owner may, at its discretion, require that the Contractor remove a sample from each installed CIPP at a location designated by the Owner. The opening produced from the sample shall be repaired in accordance with the manufacturers recommended procedures.
- D. The laboratory results shall identify the test sample location as referenced to the nearest pipe station. Fifty percent of payment for installed linear footage of CIPP liner will be withheld pending receipt and approval of the test results. If properties tested do not meet minimum requirements, the CIPP shall be repaired or replaced by the Contractor, at no additional cost to the Owner.
- E. Chemical resistance - The CIPP system installed shall meet the chemical resistance requirements of Greenbook and the ASTM standards. CIPP samples tested shall be of fabric tube and the specific resin proposed for actual construction. It is required that CIPP samples without plastic coating meet these chemical testing requirements. Evidence of passing these chemical resistance tests shall be provided together with the shop drawings.
- F. The installed CIPP thickness shall be measured for each inversion. The minimum wall thickness shall be determined at a minimum of three locations on a cut section of the CIPP liner using a method of measurement accurate to the nearest 0.005 inch. A tolerance of plus or minus 0.5 mm will be allowed provided that the installed liner meets minimum calculated strength requirements. As an alternative, the Contractor may submit for the Owner's review and approval, industry proven non-destructive methods for confirming the thickness of the installed CIPP.
- G. At the discretion of the Engineer, in lieu of rejection, a deduction to the unit price will be applied for a CIPP liner that does not meet resin strength or minimum thickness with allowable tolerance as stated in the accepted Contractor submittal. The deduction will be directly proportional with the combined percentage of strength and thickness below the values stated in the accepted Contractor submittal, up to maximum of 10 percent variation from the required minimum values. A CIPP installation exceeding 10 percent variance from the required minimum values shall be repaired or replaced by the Contractor at no additional cost to the Owner and in accordance with the manufacturer recommendations.

### **3.09 FINAL ACCEPTANCE**

- A. All CIPP sample testing and repairs to the installed CIPP, as applicable, shall be completed, before Final Acceptance, meeting the requirements of these Specifications and documented in written form.
- B. The Contractor shall perform a detailed closed-circuit television inspection in accordance with ASTM standards, in the presence of the Owner immediately after installation of the CIPP liner. A



radial view (pan and tilt) TV camera shall be used. The camera shall be panned 360 degrees around the circumference of the pipe and along the wall of the finished pipe at 10 foot intervals. Unedited digital documentation of the inspection shall be provided to the Owner within two (2) Working days of the liner installation. The data shall note the inspection date, location of all reconnected air/vacuum valve and blow-off assemblies, debris, as well as any defects in the liner.

- C. The finished liner shall be continuous over the entire length of the installation and shall be free from visual defects such as dry spots, lifts, and delamination. The lining shall be impervious and free of leakage from the CIPP pipe to the surrounding ground or from the ground to the inside of the CIPP pipe. Defects that will impede flow or maintenance equipment, in the sole opinion of the Owner, shall not be permissible. Pinholes and leaking patches shall not be allowed. If found, CIPP imperfections shall be repaired, per the manufacturer's recommendations, at the Contractor's expense.
- D. Upon acceptance of the installation Work and testing, the Contractor shall restore the Project area affected by the operations to a condition at least equal to that existing prior to the Work at no additional expense to the Owner.

#### **END OF SECTION**

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## SECTION 15165

### MECHANICAL PIPE COUPLINGS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. This section provides specifications for mechanical pipe couplings. The following types of couplings are addressed by this specification:
1. Paragraph 2.02: Restrained Sleeve-Type couplings
  2. Paragraph 2.03: Flanged Coupling Adapter

##### 1.02 SUBMITTALS

- A. Information to be furnished shall include product data and material information per Section 01300.

#### PART 2 - PRODUCTS

##### 2.01 GENERAL REQUIREMENTS

- A. The interior of all couplings specified herein shall be shop coated with Scotchkote #134 as manufactured by 3M, Inc., or approved equal.
- B. All bolting (bolts, nuts and washers) shall be Type 316 stainless steel.
- C. Gaskets and seals shall be suitable for the intended service and pressure.
- D. The exterior of all couplings shall be painted per the requirements of Section 09900.
- E. All iron or steel products used must be manufactured (includes application of coatings) within the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap, and the materials being applied as a coating are not included.
- F. Contractor shall note that existing pipe may be deflected. Coupling shall allow for installation on deflected pipe. Pipe couplings used on deflected pipe shall be Romac or Owner-approved equal.

##### 2.02 RESTRAINED SLEEVE-TYPE COUPLINGS

- A. Self-restrained sleeve type couplings shall be used to join plain end ductile iron, cast iron or C905 PVC pipe of similar or different outside diameters. Sleeve type couplings shall meet AWWA C219 standards. The pipe stop shall be removed from the middle ring if present. Coupling sleeve shall be made of carbon steel, ductile iron, or stainless steel and coupling shall have a minimum working pressure of 150 psi.

- B. Self-restrained sleeve type couplings shall be EBAA Iron Series 3800 or approved equal.
- C. Sleeve type couplings shall be fusion bonded epoxy coated if not made of stainless steel, and have 316 stainless steel nuts and bolts. Fusion bonded epoxy coating shall comply with AWWA C213. EBAA Iron Mega-Bound restraint coating system is acceptable.
- D. Flanged Coupling Adapters shall be EBAA Iron, or approved equal.
- E. Flanged coupling adapters for use in joining plain end pipes to flanged pipe, valves, or fittings shall be Smith-Blair Type 913, Romac FCA501 or FC400, or approved equal. Bolt patterns shall be ANSI 125 or 150 drilling as specified in Section 15051 or shown in the Drawings. Where harnessing is shown or specified, provide anchor studs.
- F. Restrained flanged adapters shall be EBAA Iron Series 2100 Megaflange, or approved equal.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. Mechanical pipe couplings shall be employed where shown on the drawings, as makeup couplings on piping systems, to provide flexibility in buried piping systems at connections to structures (using sleeve couplings), and as a general pipe coupling where required or permitted by the Contract documents. Install in conformance with manufacturer's recommendations.
- B. Mechanical pipe couplings may be installed at locations not shown on the contract drawings only with the Owner's approval. Contractor shall clearly indicate proposed locations of proposed coupling locations on shop drawings to obtain Owner's review and acceptance. Additional couplings provided at Contractor's option shall be furnished and installed at no additional cost to Owner.

### **3.02 COATING**

- A. Unless otherwise specified, the exterior of buried mechanical pipe couplings shall be wax tape-coated in accordance with Section 09902.

## **END OF SECTION**

# **APPENDIX A**

## **Draft Permit Applications**

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## REQUIREMENTS FOR OBTAINING GRADING AND CONSTRUCTION PERMITS

Public Works Department

In order to obtain a grading or a construction permit, the contractor shall provide the following:

1. **State Contractor's License:** A copy of the appropriate license shall be submitted to the Public Works Department. (Not required for Grading Permits when owner-builder is grading their site)
2. **City Business License**
3. **Certificate of Insurance:** Proof of General Liability and Automotive Liability shall be submitted to the Public Works Department. The City of Corona shall be named as Certificate Holder and Additional Insured with Additional Insured Endorsement for General Liability (**See Sample 1**). Certificate of Insurance along with the Endorsement shall be provided directly from the Insurance Company.
4. **Underground Service Alert Permit/Ticket:** (1-800-227-2600 or 811) USA # required.
5. **CAL-OSHA Excavation Permit:** For trenches 5-feet in depth or greater. (909) 383-4321.
6. **Owner/Developer Authorization Letter:** Letter shall be signed by the owner/developer authorizing the contractor to obtain a permit for their project and listing their scope of work.
7. **Construction Company Authorization Letter:** Letter shall be prepared on the company's letterhead authorizing an individual(s) to pull a permit. (**See Sample 2**)
8. **Grading and/or Public Improvement Security**
  - Surety Bond
  - Cash Deposit
  - Irrevocable Letter of Credit

This shall accompany the improvement or grading agreement which must be entered into by City Council prior to permit issuance.
9. **State Storm Water Permit (NPDES):** For grading permits disturbing an area of one acre or more; or if the permit is part of a larger project that will disturb one or more acres cumulatively.
10. **Four Bond Copies of Approved Plans**
11. **Payment of All Applicable Permit Fees**

Permit Counter (951) 279-3524 – Fax (951) 279-3785

## Contractors State License Board (CSLB) Licensing Classifications

The license classifications below are taken from the CSLB website and provided for information purposes. Further information can be found on their website at the following link:

<http://www.cslb.ca.gov/>

### CSLB issues licenses for the following classifications:

#### **Class “A” — General Engineering Contractor**

The principal business is in connection with fixed works requiring specialized engineering knowledge and skill.

#### **Class “B” — General Building Contractor**

The principal business is in connection with any structure built, being built, or to be built, requiring in its construction the use of at least two unrelated building trades or crafts.

#### **Class “C” — Specialty Contractor**

There are 41 separate “C” license classifications for contractors whose construction work requires special skill and whose principal contracting business involves the use of specialized building trades or crafts.

#### List of Class “C” license classifications:

- C-2 - Insulation and Acoustical Contractor
- C-4 - Boiler, Hot Water Heating and Steam Fitting Contractor
- C-5 - Framing and Rough Carpentry Contractor
- C-6 - Cabinet, Millwork and Finish Carpentry Contractor
- C-7 - Low Voltage Systems Contractor
- C-8 - Concrete Contractor
- C-9 - Drywall Contractor
- C10 - Electrical Contractor
- C11 - Elevator Contractor
- C12 - Earthwork and Paving Contractors
- C13 - Fencing Contractor
- C14 - Metal Roofing Contractor **[repealed]**
- C15 - Flooring and Floor Covering Contractors
- C16 - Fire Protection Contractor
- C17 - Glazing Contractor
- C20 - Warm-Air Heating, Ventilating and Air-Conditioning Contractor
- C21 - Building Moving/Demolition Contractor
- C23 - Ornamental Metal Contractor
- C26 - Lathing Contractor **[repealed]**
- C27 - Landscaping Contractor
- C28 - Lock and Security Equipment Contractor
- C29 - Masonry Contractor
- C31 - Construction Zone Traffic Control Contractor
- C32 - Parking and Highway Improvement Contractor
- C33 - Painting and Decorating Contractor
- C34 - Pipeline Contractor
- C35 - Lathing and Plastering Contractor
- C36 - Plumbing Contractor
- C38 - Refrigeration Contractor
- C39 - Roofing Contractor
- C42 - Sanitation System Contractor
- C43 - Sheet Metal Contractor
- C45 - Electrical Sign Contractor



- C46 - Solar Contractor
- C47 - General Manufactured Housing Contractor
- C50 - Reinforcing Steel Contractor
- C51 - Structural Steel Contractor
- C53 - Swimming Pool Contractor
- C54 - Ceramic and Mosaic Tile Contractor
- C55 - Water Conditioning Contractor
- C57 - Water Well Drilling Contractor
- C60 - Welding Contractor
- C61 - Limited Specialty
- ASB - Asbestos Certification
- HAZ - Hazardous Substance Removal Certification
- HIC - Home Improvement Certification **[repealed]**

Policy Number: D269L00028

CG20 10 11 85

**THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY**

**ADDITIONAL INSURED – OWNER, LESSEES OR  
CONTRACTORS (FORM B)**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE FORM  
CONTRACTORS COMMERCIAL GENERAL LIABILITY COVERAGE FORM

**SCHEDULE**

Name of Person or Organization:

City of Corona

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

WHO IS AN INSURED (Section II) is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of the ongoing operations performed for that insured.

It is agreed that such insurance as is afforded by this policy for the benefit of the Additional Insured shown shall be primary and non-contributory insurance, but only as respects any claim, loss or liability arising out of the ongoing operations of the Named Insured on a scheduled project.

CGL 1544 01 98

COMPANY LETTERHEAD
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City of Corona  
Public Works Department  
400 S. Vicentia Avenue  
Corona, CA 92882

Gentlemen:

Only those persons listed below are duly authorized by this company to act as our agents to obtain permits from the City of Corona, Public Works Department. It is our understanding that only these designated persons may obtain permits in this firm's name and that this authorization will continue until the Public Works Department is notified in writing of any change.

1. _____ (Typed or Printed Name)  _____ (Signature)	3. _____ (Typed or Printed Name)  _____ (Signature)
2. _____ (Typed or Printed Name) Name)  _____ (Signature)	_____ (Typed or Printed Name)  _____ (Signature)

Cordially,

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Typed Name and Title

\_\_\_\_\_  
Signature

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# County of Riverside

Transportation Department  
State of California



Juan C. Perez, P.E., T.E.  
Director of Transportation

Tracking #: \_\_\_\_\_

Date: \_\_\_\_\_

## Application for Encroachment Permit

The undersigned hereby applies for a permit to excavate, construct and otherwise encroach on Riverside County road right of way as follows:

(Description of work and installation to be maintained – attach and refer to maps or other documents):

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Name(s) of road(s) and specific location: \_\_\_\_\_

(Applicant will state here, accurately, the location of work to be performed, giving County road, route, section, and engineer's stations, if possible.)

In consideration of the granting of this application, the applicant hereby agrees to:

1. Indemnify, defend and save the County, its authorized agents, officers, representatives and employees, harmless from and against any and all penalties, liabilities or loss resulting from claims or court action and arising out of any accident, loss or damage to persons or property happening or occurring as a proximate result of any work undertaken under the permit granted pursuant to this application.
2. Remove or relocate an encroachment installed or maintained under this permit, upon written notice from the Director of Transportation.
3. Notify the Director of Transportation in writing at least 48 hours in advance of the time when work will be started, and upon completion of the work, immediately notify the Director of Transportation in writing of such completion.
4. Comply with Ordinance No. 499, any amendments thereto, the terms and conditions of the permit, and all applicable rules and regulations of the County of Riverside and other public agencies having jurisdiction.
5. The permittee shall accept full responsibility for complying with Federal, State and County environmental laws receiving any necessary environmental clearances and/or permits, prior to commencing any work as authorized by this permit.

Name of Applicant: \_\_\_\_\_

Authorized Signature: \_\_\_\_\_

Mailing Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contact: \_\_\_\_\_

Phone #: \_\_\_\_\_

### FOR USE BY TRANSPORTATION DEPARTMENT:

Processing Fee \_\_\_\_\_

Inspection Fee \_\_\_\_\_

Total \_\_\_\_\_

Receipt Number \_\_\_\_\_

Security Deposit \_\_\_\_\_

Receipt Number \_\_\_\_\_

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**STANDARD ENCROACHMENT PERMIT APPLICATION**

TR-0100 (REV. 07/2007)

Permission is requested to encroach on the State Highway right-of-way as follows:  
 (Complete all **BOXES** [write **N/A** if not applicable] **Please print single sided**)  
 This application is not complete until all requirements have been approved.

<b>1. COUNTY</b>		<b>2. ROUTE</b>		<b>3. POSTMILE</b>	
<b>4. ADDRESS OR STREET NAME</b>				<b>5. CITY</b>	
<b>6. CROSS STREET</b> (Distance and direction from site)				<b>7. PORTION OF RIGHT-OF-WAY</b>	
<b>8. WORK TO BE PERFORMED BY</b> <input type="checkbox"/> OWN FORCES <input type="checkbox"/> CONTRACTOR				<b>9. EST. START DATE</b>	
<b>10. EST. COMPLETION DATE</b>					
<b>11. EXCAVATION</b>	MAX. DEPTH	AVG. DEPTH	AVG. WIDTH	LENGTH	SURFACE TYPE
<b>12. EST. COST IN STATE HIGHWAY RIGHT-OF-WAY</b>				<b>FUNDING SOURCE(S)</b> <input type="checkbox"/> FEDERAL <input type="checkbox"/> STATE <input type="checkbox"/> LOCAL <input type="checkbox"/> PRIVATE	
<b>13. PIPES</b>	PRODUCT TYPE	DIAMETER	VOLTAGE / PSIG		<b>14. CALTRANS' PROJECT CODE</b>

**15. ☐ Double Permit** Parent Permit Number \_\_\_\_\_

Applicant's Reference Number / Utility Work Order Number \_\_\_\_\_

**16. Have your plans been reviewed by another Caltrans branch?** ☐ NO ☐ YES (If "YES") Who? \_\_\_\_\_

**17. Completely describe work to be done within STATE highway right-of-way :**

Attach 6 complete sets of plans (folded to 8.5" x 11"), and any applicable specifications, calculations, maps, etc.  
 All dimensions shall be in U.S. Customary (English) Units.

**18. Is a city, county, or other agency involved in the approval of this project?**

☐ YES (If "YES", check type of project and attach environmental documentation and conditions of approval.)

☐ COMMERCIAL DEVELOPMENT ☐ BUILDING ☐ GRADING ☐ OTHER \_\_\_\_\_

☐ CATEGORICALLY EXEMPT ☐ NEGATIVE DECLARATION ☐ ENVIRONMENTAL IMPACT REPORT ☐ OTHER \_\_\_\_\_

☐ NO (If "NO", please check the category below which best describes the project, and complete page 4 of this application.)

☐ DRIVEWAY OR ROAD APPROACH, RECONSTRUCTION, MAINTENANCE, OR RESURFACING

☐ FENCE

☐ PUBLIC UTILITY MODIFICATIONS, EXTENSIONS, HOOKUPS

☐ MAILBOX

☐ FLAGS, SIGNS, BANNERS, DECORATIONS, PARADES AND CELEBRATIONS

☐ EROSION CONTROL

☐ OTHER \_\_\_\_\_

☐ LANDSCAPING

**19. Will this project cause a substantial change in the significance of a historical resource (45 years or older), or cultural resource?** ☐ YES ☐ NO  
 (If "YES", provide a description)

**20. Is this project on an existing highway or street where the activity involves removal of a scenic resource including a significant tree or stand of trees, a rock outcropping or a historic building?** ☐ YES ☐ NO (If "YES", provide a description)

**21. Is work being done on applicant's property?** ☐ YES ☐ NO (If "YES", attach site and grading plans.)

**ADA NOTICE:** For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 654-6410, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

**STANDARD ENCROACHMENT PERMIT APPLICATION**

TR-0100 (REV. 07/2007)

PERMIT NO. \_\_\_\_\_

22. Will this proposed project require the disturbance of soil?

☐ YES ☐ NOIf "YES", estimate the area within State Highway right-of-way in square feet AND acres: \_\_\_\_\_ (ft<sup>2</sup>) AND \_\_\_\_\_ (acres)estimate the area outside of State Highway right-of-way in square feet AND acres: \_\_\_\_\_ (ft<sup>2</sup>) AND \_\_\_\_\_ (acres)

23. Will this proposed project require dewatering?

☐ YES ☐ NO

If "YES", estimate total gallons AND gallons/month. \_\_\_\_\_ (gallons) AND \_\_\_\_\_ (gallons/month)

SOURCE\*: ☐ STORMWATER ☐ NON-STORMWATER(\*See Caltrans SWMP for definitions of non-storm water discharge: <http://www.dot.ca.gov/hq/env/stormwater/index.htm> )

24. How will any storm water or ground water be disposed of from within or near the limits of this proposed project?

☐ Storm Drain System ☐ Combined Sewer / Storm System ☐ Storm Water Retention Basin☐ Other (explain): \_\_\_\_\_**PLEASE READ THE FOLLOWING CLAUSES PRIOR TO SIGNING THIS ENCROACHMENT PERMIT APPLICATION.**

***The applicant, understands and herein agrees that an encroachment permit can be denied, and/or a bond required for non-payment of prior or present encroachment permit fees. Encroachment Permit fees may still be due when an application is withdrawn or denied, and that a denial may be appealed, in accordance with the California Streets and Highways Code, Section 671.5. All work shall be done in accordance with Caltrans rules and regulations subject to inspection and approval.***

***The applicant, understands and herein agrees to the general provisions, special provisions and conditions of the encroachment permit, and to indemnify and hold harmless the State, its officers, directors, agents, employees and each of them (Indemnitees) from and against any and all claims, demands, causes of action, damages, costs, expenses, actual attorneys' fees, judgments, losses and liabilities of every kind and nature whatsoever (Claims) arising out of or in connection with the issuance and/or use of this encroachment permit and the placement and subsequent operation and maintenance of said encroachment for: 1) bodily injury and/or death to persons including but not limited to the Applicant, the State and its officers, directors, agents and employees, the Indemnities, and the public; and 2) damage to property of anyone. Except as provided by law, the indemnification provisions stated above shall apply regardless of the existence or degree of fault of Indemnities. The Applicant, however, shall not be obligated to indemnify Indemnities for Claims arising from the sole negligence and willful misconduct of State, its officers, directors, agents or employees.***

***An encroachment permit is not a property right and does not transfer with the property to a new owner***

***DISCHARGES OF STORM WATER AND NON-STORM WATER: Work within State Highway right-of-way shall be conducted in compliance with all applicable requirements of the National Pollutant Discharge Elimination System (NPDES) permit issued to the Department of Transportation (Department), to govern the discharge of storm water and non-storm water from its properties. Work shall also be in compliance with all other applicable Federal, State and Local laws and regulations, and with the Department's Encroachment Permits Manual and encroachment permit. Compliance with the Departments NPDES permit requires amongst other things, the preparation and submission of a Storm Water Pollution Protection Plan (SWPPP), or a Water Pollution Control Program (WPCP), and the approval of same by the appropriate reviewing authority prior to the start of any work. Information on the requirements may also be reviewed on the Department's Construction Website at:***

***<http://www.dot.ca.gov/hq/construc/stormwater>***

25. NAME of APPLICANT or ORGANIZATION (Print or Type)

E-MAIL ADDRESS

ADDRESS of APPLICANT or ORGANIZATION WHERE PERMIT IS TO BE MAILED (Include City and Zip Code)

PHONE NUMBER

FAX NUMBER

26. NAME of AUTHORIZED AGENT / ENGINEER (Print or Type)

IS LETTER OF AUTHORIZATION ATTACHED?

E-MAIL ADDRESS

☐ YES ☐ NO

ADDRESS of AUTHORIZED AGENT / ENGINEER (Include City and Zip Code)

PHONE NUMBER

FAX NUMBER

27. SIGNATURE of APPLICANT or AUTHORIZED AGENT

28. PRINT OR TYPE NAME

29. TITLE

30. DATE



**STANDARD ENCROACHMENT PERMIT APPLICATION**

TR-0100 (REV. 07/2007)

PERMIT NO. \_\_\_\_\_

WORK ORDER/REFERENCE NUMBER \_\_\_\_\_

**FEE CALCULATION -- FOR CALTRANS USE**

☐ CASH    ☐ CREDITCARD    NAME ON CARD \_\_\_\_\_    PHONE NUMBER \_\_\_\_\_  
☐ CHECK    NUMBER \_\_\_\_\_    NAME ON CHECK \_\_\_\_\_    PHONE NUMBER \_\_\_\_\_  
☐ EXEMPT    ☐ PROJECT CODE \_\_\_\_\_    ☐ DEFERREDBILLING (Utility)

CALCULATED BY	(1)	(2)	
<b>REVIEW</b>	1. FEE / DEPOSIT	DATE	2. FEE / DEPOSIT
1. _____ HOURS @ \$ _____ *	\$ _____		\$ _____
2. _____ HOURS @ \$ _____ *			\$ _____
<b>INSPECTION</b>	1. FEE / DEPOSIT	DATE	2. FEE / DEPOSIT
1. _____ HOURS @ \$ _____ *	\$ _____		\$ _____
2. _____ HOURS @ \$ _____ *			\$ _____
<b>FIELDWORK</b>			
_____ HOURS @ \$ _____ *	\$ _____		\$ _____
<b>EQUIPMENT &amp; MATERIALS</b>	DEPOSIT	DATE	DEPOSIT
	\$ _____		\$ _____
<b>CASH DEPOSIT IN LIEU OF BOND</b>	\$ _____		\$ _____
<b>TOTAL COLLECTED</b>	\$ _____		\$ _____
<b>CASHIER'S INITIALS</b>	_____		\$ _____
* The Standard Hourly Rate is set annually by HQ Encroachment Permits. District Office staff do not have authority to modify this rate.			
<b>PERFORMANCE BOND</b>	<input type="checkbox"/>	DATE	AMOUNT
			\$
<b>PAYMENT BOND</b>	<input type="checkbox"/>	DATE	AMOUNT
			\$
<b>LIABILITY INSURANCE REQUIRED?</b>	<input type="checkbox"/> YES <input type="checkbox"/> NO		AMOUNT
			\$

**STANDARD ENCROACHMENT PERMIT APPLICATION**

TR-0100 (REV. 07/2007)

PERMIT NO.  

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**INSTRUCTIONS**  
for completing page 4

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This page needs to be completed when the proposed project DOES NOT involve a City, County or other public agency.

Your answers to these questions will assist departmental staff in identifying any physical, biological, social or economic resources that may be affected by your proposed project within the State highway right-of-way and to determine which type of environmental studies may be required to approve your application for an encroachment permit.

It is the applicant's responsibility for the production of all required environmental documentation and supporting studies and in some cases this may be costly and time-consuming. If possible, attach photographs of the location of the proposed project.

Please answer these questions to the best of your ability. Provide a description of any "YES" answers (type, name, number, etc.)

- 
1. Will any existing vegetation and/or landscaping within the highway right-of-way be disturbed?

---

  2. Are there waterways (e.g. river, creek, pond, natural pool or dry streambed) adjacent to or within the limits of the project or highway right-of-way?

---

  3. Is the proposed project located within five miles of the coast line?

---

  4. Will the proposed project generate construction noise levels greater than 86 dBA (e.g. jack-hammering, pile driving)?

---

  5. Will the proposed project incorporate land from a public park, recreation area or wildlife refuge open to the public?

---

  6. Are there any recreational trails or paths within the limits of the proposed project or highway right-of-way?

---

  7. Will the proposed project impact any structures, buildings, rail lines, or bridges within highway right-of-way?

---

  8. Will the proposed project impact access to any businesses or residences?

---

  9. Will the proposed project impact any existing public utilities or public services?

---

  10. Will the proposed project impact existing pedestrian facilities, such as sidewalks, crosswalks, or overcrossings?

---

  11. Will new lighting be constructed within or adjacent to highway right-of-way?

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# **APPENDIX B**

## **Project Sign Requirements**

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## **TEMPORARY CONSTRUCTION SIGN**

# **SANTA ANA WATERSHED PROJECT AUTHORITY INLAND EMPIRE BRINE LINE REACH V REHABILITATION AND IMPROVEMENT PROJECT**

**Project Title**

**Sponsor: Santa Ana Watershed Project Authority**

**Officials or Sponsor Address**

**Engineer: DUDEK**

(second line)

**Contractor**

(second line)



**Project funding provided in full or in part by the Clean Water State Revolving Fund through an agreement with the State Water Resources Control Board. California's Clean Water State Revolving Fund is capitalized through a variety of funding sources, including grants from the United States Environmental Protection Agency and state bond proceeds.**

**Sign Dimensions shall be 4-foot x 8-foot x 3/4" on Plywood Panel (APA Rated A-B Grade-Exterior)  
Black lettering on white background with full color logos as shown above.  
Contractor shall provide the number and location of signs as directed by the District.**

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# **APPENDIX C**

**EPA Forms 6100-2,  
6100-3, and 6100-4**

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

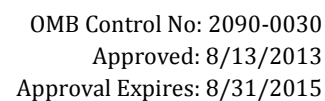
An EPA Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE<sup>1</sup> subcontractor<sup>2</sup> the opportunity to describe work received and/or report any concerns regarding the EPA-funded project (e.g., in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the EPA 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

<sup>1</sup> 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 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

<sup>2</sup> 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 EPA award of financial assistance.



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

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slight shadow on the right side, suggesting it's resting on a surface.

<b>Subcontractor Signature</b>	<b>Print Name</b>
<b>Title</b>	<b>Date</b>

The public reporting and recordkeeping 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. Include the OMB control number in any correspondence. Do not send the completed form to this address.

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

This form is intended to capture the DBE<sup>1</sup> subcontractor's<sup>2</sup> description of work to be performed and the price of the work submitted to the prime contractor. An EPA 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 contractors 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 to 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

<sup>1</sup> 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 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

<sup>2</sup> 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 EPA award of financial assistance.

**Disadvantaged Business Enterprise (DBE) Program  
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 of 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).

<b>Prime Contractor Signature</b>	<b>Print Name</b>
<b>Title</b>	<b>Date</b>

<b>Subcontractor Signature</b>	<b>Print Name</b>
<b>Title</b>	<b>Date</b>

The public reporting and recordkeeping 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. Include the OMB control number in any correspondence. Do not send the completed form to this address.

## 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 DBE<sup>1</sup> subcontractors<sup>2</sup> and the estimated dollar amount of each subcontract. An EPA 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:			
<b>Subcontractor Name/ Company Name</b>	<b>Company Address/ Phone/ Email</b>	<b>Est. Dollar Amt</b>	<b>Currently DBE Certified?</b>

Continue on back if needed

<sup>1</sup> 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 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

<sup>2</sup> 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 EPA award of financial assistance.

**Disadvantaged Business Enterprise (DBE) Program  
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 of 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).

<b>Prime Contractor Signature</b>	<b>Print Name</b>
<b>Title</b>	<b>Date</b>

The public reporting and recordkeeping 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. Include the OMB control number in any correspondence. Do not send the completed form to this address.

# **APPENDIX D**

## **CSWRCB DBE Requirements**

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**U.S. Environmental Protection Agency**  
**Office of Small Business Programs Disadvantaged Business Enterprise Program**  
**DBE Certification Process & Finding Certified Firms**

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The Disadvantaged Business Enterprise (DBE) Program is an outreach, education and goaling program designed to increase and encourage the utilization and participation of DBEs in procurements funded by EPA assistance agreements. The Office of Small Business Programs' (OSBP) Procurement Opportunities Support Team (POST) establishes policy and provides procedural guidance for the DBE Program. The DBE Program requirements apply to all procurements for equipment, supplies, construction and services under all EPA grants, cooperative agreements and Interagency Agreements (IAs).

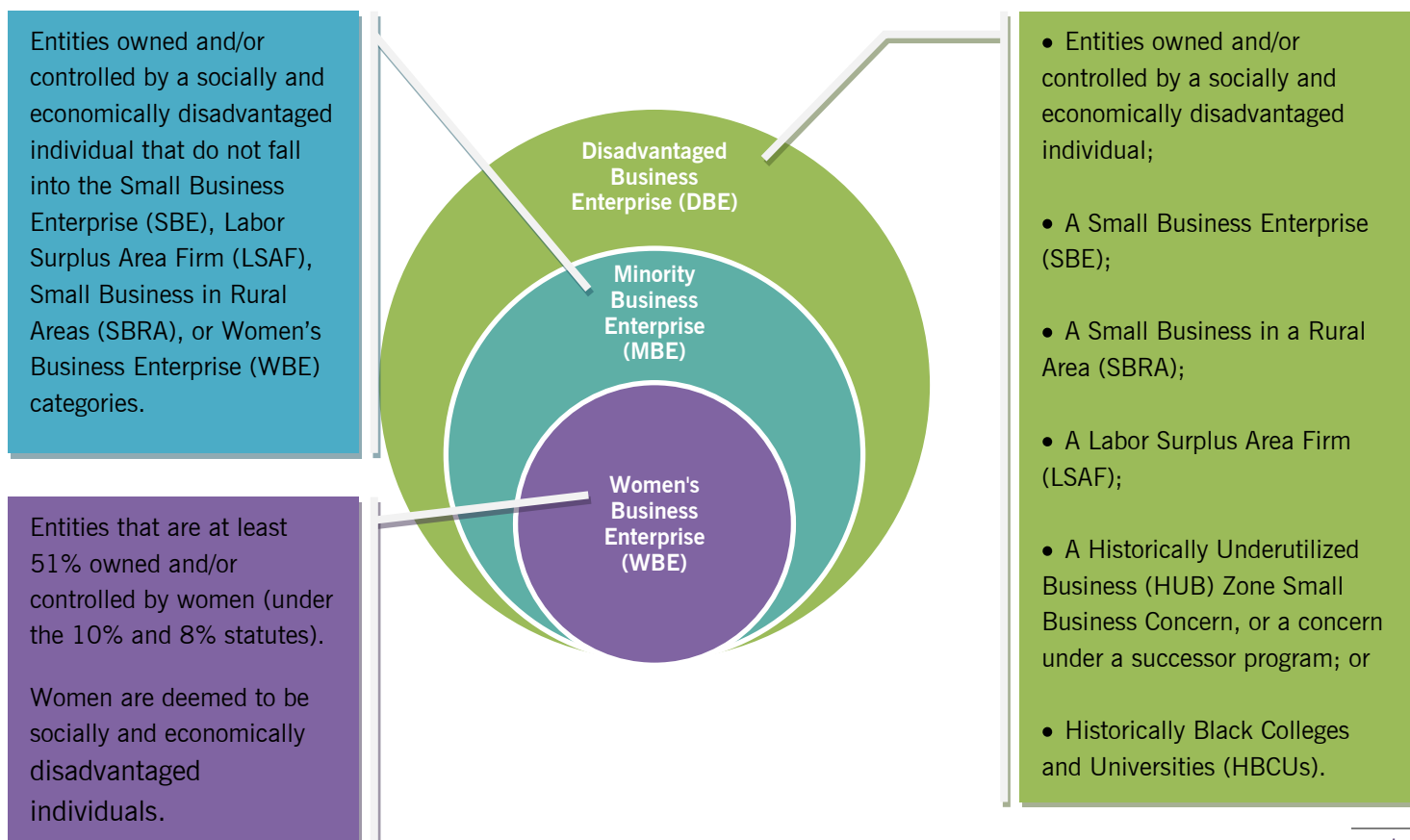
Recipients of EPA financial assistance agreements are required to seek, and encouraged to utilize small, minority and women-owned businesses for their procurement needs under the financial assistance agreement. This is done through the inclusion of terms and conditions in the financial assistance agreement. The key functional components of the DBE Program are as follows:

- Fair Share Objectives
- Six Good Faith Efforts and Contract Administration Requirements
- MBE/WBE Reporting
- DBE Certification

Pursuant to 40 CFR 33.201, in order for a prime contractor or subcontractor to be counted toward a financial assistance award recipient's MBE/WBE accomplishments, it must be certified.

### What are DBEs, MBEs and WBEs? (40 CFR 33.103, 33.202-33.203)

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### *Socially Disadvantaged (15 U.S.C. 637(a)(5))*

*Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias within American society because of their identities as members of groups and without regard to their individual qualities.*

### *Economically Disadvantaged (15 U.S.C. 637(a)(6))*

*Economically disadvantaged individuals are socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same or similar line of business who are not socially disadvantaged.*

## Getting EPA DBE Certified

---

EPA accepts certifications from the following entities:

- The Small Business Administration (SBA) (both SBA 8(a) Program certifications and SBA Small Disadvantaged Business (SDB) Program self-certifications);
- The Department of Transportation's (DOT) state implemented DBE Certification Program (with U.S. citizenship);
- Tribal, State and local governments, as long as their standards for certification meet or exceed our own; and
- Independent private organization certifications as long as their standards for certification meet or exceed our own.

If a firm holds a certification from one or more of the entities listed above, it is considered acceptable for establishing MBE or WBE status under EPA's DBE Program and an application for EPA certification is not needed.

EPA will **ONLY** consider certification applications from entities that **submit proof of an unsuccessful attempt to be certified** by SBA or DOT, or a Tribal, State, or local government, or by an independent private organization.

## Entities EPA will Consider Certifying

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1. Disabled American-owned firms;
2. Private and voluntary organizations controlled by individuals who are socially and economically disadvantaged;
3. Women-owned and minority owned-businesses who cannot get certified under DOT or SBA size criteria (EPA does not have size criteria) or by a state government, local government, Indian tribal government or independent private organization;
4. Businesses owned or controlled by socially and economically disadvantaged individuals (note—SBA and DOT require an entity to be owned and controlled by socially and economically disadvantaged individuals. However, the statutory authority for EPA's DBE Program requires ownership or control); and
5. Women-owned business enterprises.

## EPA Certification Requirements

---

1. An entity must first attempt to be certified by SBA or DOT, or a Tribal, State, or local government, or by an independent private organization, and be unsuccessful in that attempt.
2. An entity must establish that it is at least 51% owned and/or controlled by socially and economically disadvantaged individuals who are of good character and are citizens of the United States.
3. An individual claiming economic disadvantaged status must have an initial and continued personal net worth of less than \$750,000.

## MBE/WBE Reporting

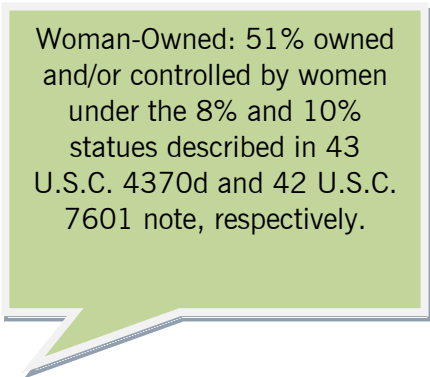
---

### *Firms That Count Toward EPA MBE Goals*

- ✓ SBA SDB
- ✓ DOT DBE (with U.S. citizenship)
- ✓ SBA 8(a)
- ✓ Firm certified by an entity that meets EPA requirements
- ✓ SBE with EPA accepted DBE certification
- ✓ HubZone firm with EPA accepted DBE certification
- ✓ SBRA with EPA accepted DBE certification
- ✓ LSAF with EPA accepted DBE certification

### *Firms That Count Toward EPA WBE Goals*

- ✓ Woman-Owned SBA SDB
- ✓ Woman-Owned DOT DBE (with U.S. citizenship)
- ✓ Woman-Owned SBA 8(a)
- ✓ SBA WOSB
- ✓ Woman-Owned firm certified by an entity that meets EPA requirements
- ✓ Woman-Owned SBE with EPA accepted DBE certification
- ✓ Woman-Owned HubZone firm with EPA accepted DBE certification
- ✓ Woman-Owned SBRA with EPA accepted DBE certification
- ✓ Woman-Owned LSAF with EPA accepted DBE certification



Woman-Owned: 51% owned and/or controlled by women under the 8% and 10% statutes described in 43 U.S.C. 4370d and 42 U.S.C. 7601 note, respectively.

## Finding Certified MBEs and WBEs

---

Although OSBP does not maintain a list of EPA certified firms, there are several resources available to the public to locate firms that are considered EPA DBE certified.

1. State DOT DBE Directories
2. Central Contractor Registration (CCR)
3. SBA Dynamic Small Business Search

## Using State DOT DBE Directories to Find Certified WBEs and MBEs

---

Each state DOT maintains its own list of certified DBE firms. Since the DOT DBE certification (with U.S. citizenship) is considered acceptable under the EPA DBE Program, firms found using the following search criteria can count toward EPA MBE/WBE fair share objectives as long as it is 51% owned and/or controlled by a U.S. Citizen.

1. Visit [www.osdbu.dot.gov/DBEProgram/StateDOTDBESites.cfm](http://www.osdbu.dot.gov/DBEProgram/StateDOTDBESites.cfm) to find the directory for the state in which you are searching for certified firms.
2. As each state directory is different, follow the directions to locate firms based on your criteria (i.e. firms that offer a specific product/service, woman-owned firms, etc).
3. Women owned firms in the state DOT directories can count toward EPA's WBE fair share objectives. All other firms can count toward EPA's MBE fair share objectives.
4. Confirm that the firm is 51% owned and/or controlled by a U.S. Citizen before counting it toward EPA MBE/WBE fair share objectives.

## Using CCR to Find Certified DBEs

---

CCR can be used to search for SBA SDBs. Since the SBA SDB certification is considered acceptable under the EPA DBE Program, firms found using the following search criteria can count toward EPA MBE/WBE fair share objectives.

1. Access the CCR search page at [www.bpn.gov/CCRSearch/Search.aspx](http://www.bpn.gov/CCRSearch/Search.aspx)
2. Enter a NAICS code to locate firms in a specific industry. If you do not know the NAICS code for the product or service for which you wish to acquire, visit the NAICS website at [www.census.gov/eos/www/naics/](http://www.census.gov/eos/www/naics/) to search for a specific code using keywords. It is not necessary to check the "small business (by NAICS code)" box.
3. Identify the State, City and/or Zip Code in which you wish to search.
  - a. To find certified DBEs, check the following socio-economic factor:
    - ✓ **"SBA Certified Small Disadvantaged Business"**
      - Checking this box will include SDB firms that were certified under the former SBA SDB program and firms self-certified under SBA's current SDB program
      - This search will result in both WBEs and MBEs
  - b. To find WBEs exclusively, check the following socio-economic factors:
    - ✓ **"SBA Certified Small Disadvantaged Business"**
    - ✓ **"Woman Owned Business"**
4. Make sure the radio button for **"List only active vendors"** is selected.
5. Press the **"Search"** button to generate results.

In order to identify MBEs exclusively, both searches (a) and (b) must be performed independently. The number of firms from search (b) can then be subtracted from search (a) to find the number of MBE firms that can count toward EPA fair share objectives.

$$(\text{Search (a) results}) - (\text{Search (b) results}) = \text{MBE Firms}$$

The SBA maintains a separate database that is limited to small business firms. This database can be useful in locating MBEs and WBEs.

Since the SBA SDB certification is considered acceptable under the EPA DBE Program, SDB firms found using the following search criteria can count toward EPA MBE/WBE fair share objectives.

1. Access the SBA database at [http://dsbs.sba.gov/dsbs/search/dsp\\_dsbs.cfm](http://dsbs.sba.gov/dsbs/search/dsp_dsbs.cfm)
2. Under the *Location Profile* heading, identify the state(s) in which you wish to search (hold down the CTRL button to make multiple selections).
  - a. To find SDBs, select the following radio button:
    - ✓ Small Disadvantaged Business “**Required (active certifications only)**” under the *Government Certifications* heading (since all 8a firms are SDBs, there is no need to check select the 8a certified radio button).
      - The results of this search will include firms that qualify as both MBEs and WBEs.
  - b. To find woman-owned SDBs exclusively, which count toward EPA’s WBE fair share objectives, select the following radio buttons:
    - ✓ Small Disadvantaged Business “**Required (active certifications only)**” under the *Government Certifications* heading (since all 8(a) firms are SDBs, there is no need to check select the 8a certified radio button).
    - ✓ “**Any Women-Owned Small Business**” under the *Ownership and Self-Certifications* heading.
3. Under the *Specific Nature of Business* heading, enter the NAICS code(s) to locate firms in a specific industry. If you do not know the NAICS code for the product or service for which you wish to acquire, visit the NAICS website at [www.census.gov/eos/www/naics/](http://www.census.gov/eos/www/naics/) to search for a specific code using keywords.
4. Press the “**Search Using These Criteria**” button to generate results.

In order to identify MBEs exclusively, both searches (a) and (b) must be performed independently. The number of firms from search (b) can then be subtracted from search (a) to find the number of MBE firms that can count toward EPA fair share objectives.

$$(\text{Search (a) results}) - (\text{Search (b) results}) = \text{MBE Firms}$$

SBA has a Women-Owned Small Business (WOSB) Program that meets EPA criteria. Firms certified under the SBA WOSB Program are considered WBEs and are acceptable under the EPA DBE Program to count toward WBE fair share objectives. Woman-owned firms DO NOT have to be both SBA SDB and WOSB certified to count as an EPA WBE.

To find woman-owned firms under the EPA WOSB Program, use the following search criteria:

1. Under the *Location Profile* heading, identify the state(s) in which you wish to search (hold down the CTRL button to make multiple selections).
2. Select the following radio button:

- ✓ **“Women-Owned Small Business under the Women-Owned Small Business Program”** under the *Ownership and Self-Certifications* heading.

3. Under the *Specific Nature of Business* heading, enter the NAICS code(s) to locate firms in a specific industry. If you do not know the NAICS code for the product or service for which you wish to acquire, visit the NAICS website at [www.census.gov/eos/www/naics/](http://www.census.gov/eos/www/naics/) to search for a specific code using keywords.
4. Press the **“Search Using These Criteria”** button to generate results.

Each EPA Region has a Small Business Coordinator well versed in the EPA DBE Program. For questions specific to your state, please contact the individual listed below. For general EPA DBE Program information, please visit [www.epa.gov/osbp](http://www.epa.gov/osbp) or contact Teree Henderson, DBE Program National Coordinator at 202-566-222 or [henderson.teree@epa.gov](mailto:henderson.teree@epa.gov).

Region (States)	Name	Phone Number	E-Mail Address
1 (CT, ME, RI, MA, NH, VT)	Larry Wells	(617) 918-1836	<a href="mailto:wells.larry@epa.gov">wells.larry@epa.gov</a>
2 (NJ, NY, PR, VI)	Michele Junker (grants)	(212) 637-3418*	<a href="mailto:junker.michele@epa.gov">junker.michele@epa.gov</a>
	Peggy DeLuca (direct procurement)	(212) 637-3369**	<a href="mailto:deluca.peggy@epa.gov">deluca.peggy@epa.gov</a>
3 (DE, VA, MD, PA, DC, WV)	Kinshasa “Shasa” Brown- Perry	(215) 814-5404	<a href="mailto:brown-perry.kinshasa@epa.gov">brown-perry.kinshasa@epa.gov</a>
4 (AL, FL, GA, KY, MS, NC, SC, TN)	Charles Hayes	(404) 562-8377	<a href="mailto:hayes.charles@epa.gov">hayes.charles@epa.gov</a>
5 (IL, IN, MI, MN, OH, WI)	Adrianne Callahan	(312) 353-5556	<a href="mailto:callahan.adrianne@epa.gov">callahan.adrianne@epa.gov</a>
6 (AR, LA, NM, OK, TX)	Debora Bradford	(214) 665-7406	<a href="mailto:bradford.debora@epa.gov">bradford.debora@epa.gov</a>
7 (MO, NE, IA, KS)	Chester Stovall	(913) 551-7549	<a href="mailto:stovall.chester@epa.gov">stovall.chester@epa.gov</a>
8 (CO, MT, WY, SD, ND, UT)	Marshall Pullman	(303) 312-6499	<a href="mailto:pullman.marshall@epa.gov">pullman.marshall@epa.gov</a>
9 (AZ, HI, CA, NV)	Joe Ochab	(415) 972-3761	<a href="mailto:ochab.joe@epa.gov">ochab.joe@epa.gov</a>
10 (AK, ID, OR, WA)	Greg Luchey	(206) 553-2967	<a href="mailto:luchey.greg@epa.gov">luchey.greg@epa.gov</a>
EPA Headquarters	Al Demarcki	(202) 564-5209	<a href="mailto:demarcki.al@epa.gov">demarcki.al@epa.gov</a>
Research Triangle Park, NC	Jerry Dodson	(919) 541-2249	<a href="mailto:dodson.jerry@epa.gov">dodson.jerry@epa.gov</a>
Cincinnati	Billy Oden	(513) 487-2126	<a href="mailto:oden.billy@epa.gov">oden.billy@epa.gov</a>

## Frequently Asked Questions

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**Q:** Can an individual that is not a member of the designated groups described in 13 CFR 124.103(b) be considered socially disadvantaged under the EPA DBE program?

**A:** Yes. An individual that is not a member of the designated groups described in 13 CFR 124.103(b) can be considered socially disadvantaged if he/she can establish individual social disadvantage by a preponderance of the evidence. Evidence of individual social disadvantage must include the elements described in 13 CFR 124.103(2).

**Q:** Can DBEs certified from any source count toward EPA MBE/ WBE goals?

**A:** No. Not all DBE certifications meet EPA's requirements. As a rule, DOT certified DBEs (with U.S. citizenship) always count toward EPA MBE/WBE goals. DOT DBE certified firms that are 51% owned and/or controlled by women count toward WBE goals. DOT DBE certified firms that are not 51% owned and/or controlled by women count toward MBE goals.

An entity that holds a non-DOT DBE certification can count toward EPA MBE/WBE goals if it meets the following criteria:

1. The entity must be owned and/or controlled by (1) a socially and economically disadvantaged individual as described in 15 U.S.C. 637(a)(5) and (6), 13 CFR 124.103 and 13 CFR 124.104 and (2) a citizen of the United States; and
2. The entity must be owned and/or controlled by an individual with an initial and continued personal net worth of less than \$750,000.

If the non-DOT DBE certification meets these criteria, the firm can count toward EPA's MBE/WBE goals. Certified firms that are 51% owned and/or controlled by women count toward WBE goals. Certified firms that are not 51% owned and/or controlled by women count toward MBE goals.

**Q:** Does EPA accept DOT's DBE certification (with U.S. citizenship) even if DOT's personal net worth criteria is greater than \$750,000?

**A:** Yes.

**Q:** Does EPA consider SBA's SDB and 8(a) certifications acceptable for establishing MBE/WBE status under EPA's DBE Program?

**A:** Yes.

## Frequently Asked Questions (cont.)

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**Q:** Is an HBCU considered an MBE/WBE under EPA's DBE Program?

**A:** Although an HBCU qualifies as an entity owned or controlled by socially and economically disadvantaged individuals (40 CFR 33.202), it can only be counted as a MBE/WBE under EPA's DBE Program if it also holds one of the following certifications:

- DOT DBE certification (with U.S. citizenship);
- SBA's SDB or 8(a) certification;
- SBA's Woman Owned Small Business Certification; or
- A DBE certification from a state, local, tribal, or private organization that meets EPA's certification criteria.

**Q:** Can a HUBZone firm be counted as a MBE/WBE under EPA's DBE Program?

**A:** Although a HUBZone firm is considered a DBE pursuant to 40 CFR 33.103, it can only be counted as a MBE/WBE under EPA's DBE Program if it also holds one of the following certifications:

- DOT DBE certification (with U.S. citizenship);
- SBA's SDB or 8(a) certification;
- SBA's Woman Owned Small Business Certification; or
- A DBE certification from a state, local, tribal, or private organization that meets EPA's certification criteria.



**California State Water Resources Control Board**  
**Division of Financial Assistance (Division)**  
**1001 I Street • Sacramento, California 95814 • (916) 341-5700 FAX (916) 341-5707**  
**Mailing Address: P. O. Box 944212 • Sacramento, California • 94244-2120**  
**Internet Address: <http://www.waterboards.ca.gov>**

**Guidelines for Meeting the Clean Water State Revolving Fund (CWSRF) Program**  
**Disadvantaged Business Enterprise (DBE) Requirements**  
**(Revised January 16, 2014)**

The DBE Program is an outreach, education, and objectives program designed to increase the participation of DBEs in the CWSRF Program.

**How to Achieve the Purpose of the Program**

Recipients of CWSRF financing are required to seek, and are encouraged to use, DBEs for their procurement needs. Financial assistance recipients should award a "fair share" of sub-agreements to DBEs. This applies to all sub-agreements for equipment, supplies, construction, and services.

The key functional components of the DBE Program are as follows.

- Fair Share Objectives
- DBE Certification
- Six Good Faith Efforts
- Contract Administration Requirements
- DBE Reporting

**Disadvantaged Business Enterprise's are:**

- entities owned and/or controlled by socially and economically disadvantaged individuals as described by Title X of the Clean Air Act Amendments of 1990 (42 U.S.C. 7601 note) (10% statute), and Public Law 102-389 (42 U.S.C. 4370d) (8% statute), respectively;
- a Minority Business Enterprise (MBE) are entities that are at least 51% owned and/or controlled by a socially and economically disadvantaged individual as described by Title X of the Clean Air Act Amendments of 1990 (42 U.S.C. 7601 note), and Public Law 102-389 (42 U.S.C. 4370d), respectively.
- a Women Business Enterprise (WBE) are entities that are at least 51% owned and/or controlled by women.
- a Small Business Enterprise (SBE);
- a Small Business in a Rural Area (SBRA);
- a Labor Surplus Area Firm (LSAF); or
- an Historically Underutilized Business (HUB) Zone Small Business Concern or a concern under a successor program.

**Certifying DBE Firms:**

Under the DBE Program, entities can no longer self-certify and contractors and sub-contractors must be certified at bid opening. Contractors and sub-contractors must provide to the CWSRF recipient proof of DBE certification. Certifications will be accepted from the following:

- The US Environmental Protection Agency (USEPA)
- The Small Business Administration(SBA);
- The Department of Transportation's State implemented DBE Certification Program (with U.S. citizenship);
- Tribal, State and Local governments;
- Independent private organization certifications.

If an entity holds one of these certifications, it is considered acceptable for establishing status under the DBE Program.

### **Six Good Faith Efforts (GFE)**

All CWSRF financing recipients are required to complete and ensure that the prime contractor complies with the GFE below to ensure that DBEs have the opportunity to compete for financial assistance dollars.

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practical through outreach and recruitment activities. For Tribal, State and Local Government Recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
2. Make information on forthcoming opportunities available to DBEs. Posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid opening date.
3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs.
4. Encourage contracting with a group of DBEs when a contract is too large for one firm to handle individually.
5. Use the services and assistance of the SBA and Minority Business Development Agency (MBDA) of the US Department of Commerce.
6. If the prime contractor awards subcontracts, require the prime contractor to take the above steps.

The forms listed in the table below and attached to these guidelines; must be completed and submitted with the GFE:

FORM NUMBER	FORM NAME	REQUIREMENT	PROVIDED BY	COMPLETED BY	SUBMITTED TO
EPA 6100-2	DBE Sub-Contractor Participation Form	As Needed to Report Issues	Recipient	Sub-Contractor	EPA DBE Coordinator
EPA 6100-3	DBE Sub-Contractor Performance Form	Include with Bid or Proposal Package	Prime Contractor	Sub-Contractor	SWRCB by Recipient
EPA 6100-4	DBE Sub-Contractor Utilization Form	Include with Bid or Proposal Package	Recipient	Prime Contractor	SWRCB by Recipient

**The completed forms must be submitted with each Bid or Proposal.** The recipient shall review the bidder's documents closely to determine that the GFE was performed **prior** to bid or proposal opening date. Failure to complete the GFE and to substantiate completion of the GFE before the bid opening date could jeopardize CWSRF financing for the project. The following situations and circumstances require action as indicated:

1. If the apparent successful low bidder was rejected, a complete explanation must be provided;
2. Failure of the apparent low bidder to **perform** the GFE **prior** to bid opening constitutes a non-responsive bid. The construction contract may then be awarded to the next low, responsive, and responsible bidder that meets the requirements or the Recipient may re-advertise the project.
3. If there is a bid dispute, all disputes shall be settled **prior** to submission of the Final Budget Approval Form.

### **Administration Requirements**

- A recipient of CWSRF financing must require entities receiving funds to create and maintain a Bidders List if the recipient of the financing agreement is subject to, or chooses to follow, competitive bidding requirements;
- The Bidders list must include all firms that bid or quote on prime contracts, or bid or quote on subcontracts, including both DBEs and non-DBEs.

- Information retained on the Bidder's List must include the following:
  1. Entity's name with point of contact;
  2. Entity's mailing address and telephone number;
  3. The project description on which the entity bid or quoted and when;
  4. Amount of bid/quote; and
  5. Entity's status as a DBE or non-DBE.
- The Bidders List must be kept until the recipient is no longer receiving funding under the agreement.
- The recipient shall include Bidders List as part of the Final Budget Approval Form.
- A recipient must require its prime contractor to pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the Recipient.
- A recipient must be notified in writing by its prime contractor prior to any termination of a DBE subcontractor by the prime contractor.
- If a DBE subcontractor fails to complete work under the subcontract for any reason, the recipient must require the prime contractor to employ the six GFEs if soliciting a replacement subcontractor.
- A recipient must require its prime contractor to employ the six GFEs even if the prime contractor has achieved its fair share objectives.

### **Reporting Requirements**

For the duration of the construction contract(s), the recipient is required to submit to the State Water Resources Control Board DBE reports semi-annually by April 10 and October 10 of each fiscal year on the attached Utilization Report form (UR-334). Failure to provide this information as stipulated in the financial agreement language may be cause for withholding disbursements.

### **CONTACT FOR MORE INFORMATION**

SWRCB – CWSRF Barbara August (916) 341-6952 [barbara.august@waterboards.ca.gov](mailto:barbara.august@waterboards.ca.gov)  
 SWRCB – CWSRF Susan Damian (916) 341-5494 [susan.damian@waterboards.ca.gov](mailto:susan.damian@waterboards.ca.gov).  
 US-EPA Region 9 – Joe Ochab (415) 972-3761 [ochab.joe@epa.gov](mailto:ochab.joe@epa.gov).

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

An EPA Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE<sup>1</sup> subcontractor<sup>2</sup> the opportunity to describe work received and/or report any concerns regarding the EPA-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 EPA 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

<sup>1</sup> 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 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

<sup>2</sup> 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 EPA award of financial assistance.

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

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

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

<b>Subcontractor Signature</b>	<b>Print Name</b>
<b>Title</b>	<b>Date</b>

The public reporting and recordkeeping 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. Include the OMB control number in any correspondence. Do not send the completed form to this address.

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

This form is intended to capture the DBE<sup>1</sup> subcontractor's<sup>2</sup> description of work to be performed and the price of the work submitted to the prime contractor. An EPA 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 contractors 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 to the Prime Contractor Involving Construction, Services , Equipment or Supplies	Price of Work Submitted to the Prime Contractor

DBE Certified By: <input type="radio"/> DOT <input type="radio"/> SBA <input type="radio"/> Other: _____	Meets/ exceeds EPA certification standards? <input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> Unknown
---	---

<sup>1</sup> 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 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

<sup>2</sup> 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 EPA award of financial assistance.

**Disadvantaged Business Enterprise (DBE) Program  
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 of 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).

<b>Prime Contractor Signature</b>	<b>Print Name</b>
<b>Title</b>	<b>Date</b>

<b>Subcontractor Signature</b>	<b>Print Name</b>
<b>Title</b>	<b>Date</b>

The public reporting and recordkeeping 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. Include the OMB control number in any correspondence. Do not send the completed form to this address.

## 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 DBE<sup>1</sup> subcontractors<sup>2</sup> and the estimated dollar amount of each subcontract. An EPA 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	<input type="radio"/> YES	<input checked="" type="radio"/> NO	
If yes, please complete the table below. If no, please explain:			
Subcontractor Name/ Company Name	Company Address/ Phone/ Email	Est. Dollar Amt	Currently DBE Certified?

Continue on back if needed

<sup>1</sup> 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 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

<sup>2</sup> 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 EPA award of financial assistance.



**Disadvantaged Business Enterprise (DBE) Program  
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 of 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).

<b>Prime Contractor Signature</b>	<b>Print Name</b>
<b>Title</b>	<b>Date</b>

The public reporting and recordkeeping 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. Include the OMB control number in any correspondence. Do not send the completed form to this address.

**STATE WATER RESOURCES CONTROL BOARD – DIVISION OF FINANCIAL ASSISTANCE  
DISADVANTAGED BUSINESS ENTERPRISE (DBE) UTILIZATION  
CLEAN WATER STATE REVOLVING FUND (CWSRF)  
FORM UR-334**

1. <b>Grant/Finance Agreement Number:</b>		2. <b>Semi-Annual Reporting Period</b> 04/10/___ through 09/30/___ 10/1/___ through 03/30/___		3. <b>Purchase Period of Financing Agreement:</b>	
4. <b>Total Payments Paid to Prime Contractor or Sub-Contractors During Current Reporting Period: \$</b>					
5. <b><u>Recipients Name and Address:</u></b>			6. <b><u>Recipient's Contact Person and Phone Number:</u></b>		
7. <b>List All DBE Payments Paid by Recipient or Prime Contractor During Current Reporting Period:</b>					
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. <b>Initial here if no DBE contractors or sub-contractors paid during current reporting period:</b>					
9. <b>Initial here if all procurements for this contract are completed:</b>					
10. <b>Comments:</b>					
11. <b>Signature and Title of Recipient's Authorized Representative</b>			12. <b>Date</b>		

**Return to:**  
Barbara August  
Division of Financial Assistance  
SWRCB  
PO Box 944212  
Sacramento, CA 94244-2120

[Barbara.August@waterboards.ca.gov](mailto: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

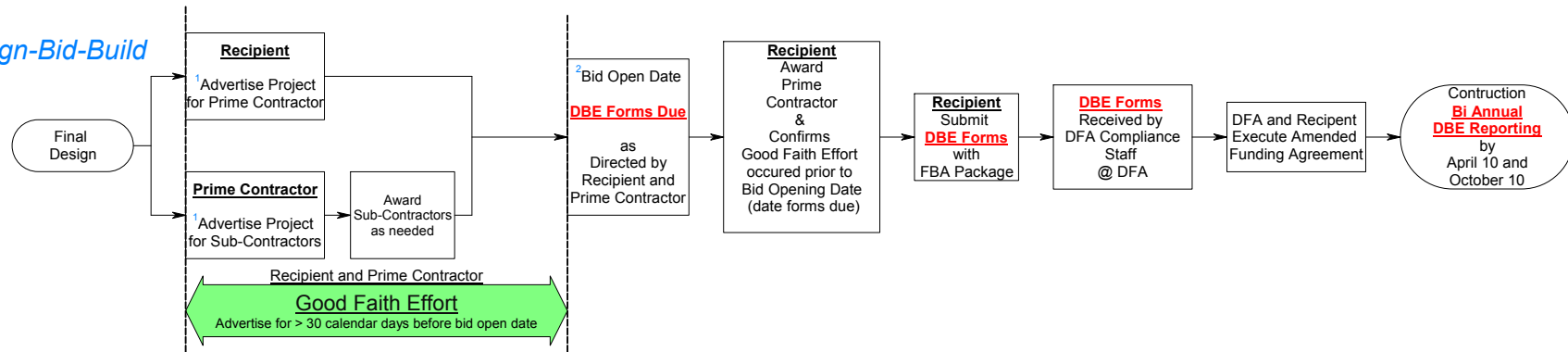
**STATE WATER RESOURCES CONTROL BOARD - DIVISION OF FINANCIAL ASSISTANCE  
DISADVANTAGED BUSINESS ENTERPRISE (DBE) UTILIZATION  
CLEAN WATER STATE REVOLVING FUND  
INSTRUCTIONS FOR COMPLETING FORM UR-334**

- Box 1** Grant or Financing Agreement Number.
- Box 2** Semi-annual reporting period. Choose one semi-annual period and enter the correct years.
- 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.

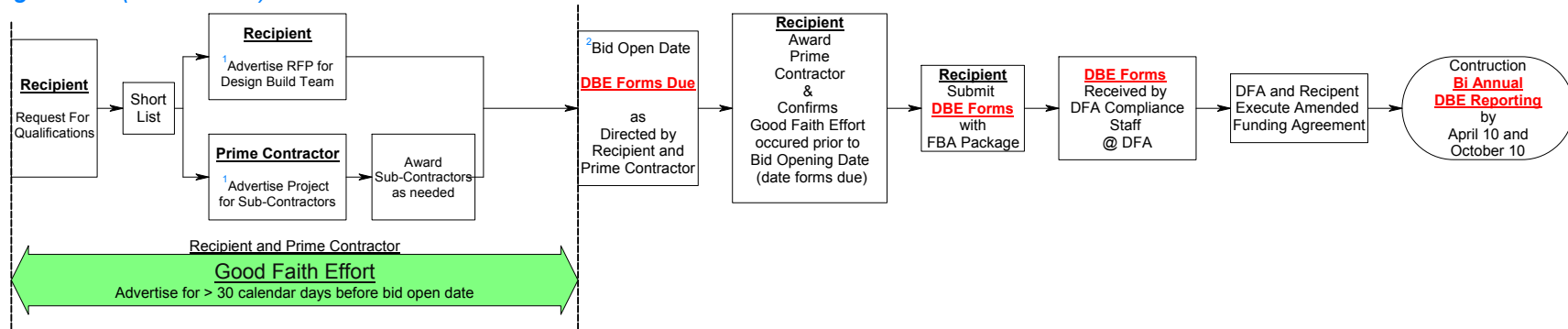
# Disadvantaged Business Enterprise (DBE) Requirements Flowchart

• Please select flowchart that best reflects your project delivery method.

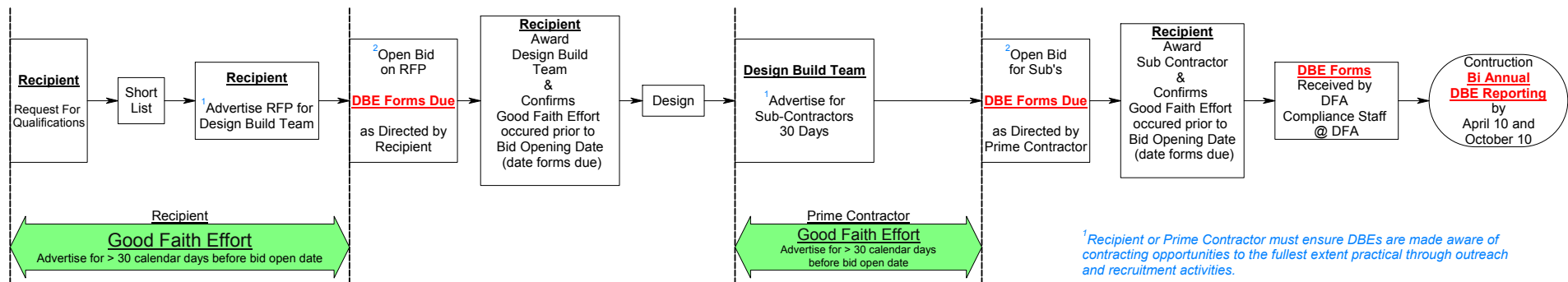
## Design-Bid-Build



## Design-Build (Scenario 1)



## Design-Build (Scenario 2)



<sup>1</sup>Recipient or Prime Contractor must ensure DBEs are made aware of contracting opportunities to the fullest extent practical through outreach and recruitment activities.

<sup>2</sup>Recipient or Prime Contractor Determines when DBE Forms are Due. Good Faith Effort must have taken place prior to Bid Open Date