



CITY of SAN PABLO
City of New Directions

**CONTRACT DOCUMENTS
FOR
RANDY LANE DRAINAGE IMPROVEMENT PROJECT
CIP PROJECT NO. RLN-DRN**

**Bid Opening Date: September 11, 2017
Bid Opening Time: 2:00 PM**

Location of Bid Submittal:

**City Clerk
San Pablo City Hall
13831 San Pablo Avenue
San Pablo, CA 94806**

Approved By:


Barbara Hawkins


Date

**City of San Pablo
Public Works Contract Documents**

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NOTICE INVITING BIDS

- 1. Bid Acceptance.** The City of San Pablo ("City"), will accept sealed bids for its Randy Lane Drainage Improvement Project ("Project"), by or before September 11, 2011, at 2:00 p.m., at the City Clerk's office, located at 13831 San Pablo Avenue, Building #1, San Pablo, California, 94806 at which time the bids will be publicly opened and read aloud.

- 2. Project Information.**

2.1 Location and Description. The Project is located at Giant Road and Randy Lane, San Pablo, CA, and is described as follows:

The Work covers the construction of approximately 542 LF of 16- to 24-inch Storm Drain pipeline; three (3) 48-inch diameter Storm Drain Manholes; one (1) Drainage Inlet; creating storm drain discharge through existing concrete canal wall penetration; connection of existing storm drain system; abandon existing storm drain system and discharge in San Pablo Creek and performing related required work, located as shown on these Drawings and Specifications.

2.2 Time for Completion. The planned timeframe for commencement and completion of construction of the Project is: 120 calendar days.

The stormdrain outfall construction work at the San Pablo creek bridge culvert shall be completed prior to continuous creek flow within the project footprint.

The Project cannot be awarded to the Contractor by the City Council until all regulatory agency permits are approved. See permit status under Special Conditions.

- 3. License and Registration Requirements.**

3.1 License. This Project requires a valid California contractor's license for the following classification(s): **Class A license**.

3.2 DIR Registration. City will not accept a Bid Proposal from or enter into the Contract with a bidder, without proof that the bidder and its Subcontractors are registered with the California Department of Industrial Relations ("DIR") to perform public work under Labor Code Section 1725.5, subject to limited legal exceptions.

- 4. Contract Documents.** The plans, specifications, bid and contract documents for the Project ("Contract Documents") may be obtained from **Blue Print Express (BPXpress)** Reprographics & Document Management (510-559-8299), located at 4903 Central Avenue, Richmond, CA, for a nonrefundable payment of \$45 for copies of the bid packet. Documents can be viewed, ordered and downloaded at www.blueprintexpress.com/sanpablo. The bidder must be on the planholder's list to submit a bid.

- 5. Bid Proposal and Security.**

To meet the deadline to finish construction of the new bridge culvert outfall, required insurance, bonds, business license and other paperwork shall be provided the day after the Council Awards the contract to the lowest bidder on September 18, 2017.

5.1 Bid Proposal Form. Each Bid must be submitted using the Bid Proposal form provided with the Contract Documents.

5.2 Bid Security. The Bid Proposal must be accompanied by bid security of ten percent of the maximum bid amount, in the form of a cashier's or certified check made payable to City, or a bid bond executed by a surety licensed to do business in the State of California on the Bid Bond form included with the Contract Documents. The bid security must guarantee that upon award of the bid, the bidder will execute the Contract and submit payment and performance bonds and insurance certificates as required by the Contract Documents within ten days after issuance of the Notice of Contract, which is typically issued after a determination of the low bidder and prior to City Council award.

6. Prevailing Wage Requirements.

6.1 General. This Project is subject to the prevailing wage requirements applicable to the locality in which the Work is to be performed for each craft, classification or type of worker needed to perform the Work, including employer payments for health and welfare, pension, vacation, apprenticeship and similar purposes.

6.2 Rates. These prevailing rates are available online at <http://www.dir.ca.gov/DLSR>. Each Contractor and Subcontractor must pay no less than the specified rates to all workers employed to work on the Project. The schedule of per diem wages is based upon a working day of eight hours. The rate for holiday and overtime work must be at least time and one-half.

6.3 Compliance. The Contract will be subject to compliance monitoring and enforcement by the California Department of Industrial Relations, under Labor Code Section 1771.4.

- 7. Performance and Payment Bonds.** The successful bidder will be required to provide performance and payment bonds for 100% of the Contract Price.
- 8. Substitution of Securities.** Substitution of appropriate securities in lieu of retention amounts from progress payments is permitted under Public Contract Code Section 22300.
- 9. Subcontractor List.** Each bidder must submit the name, location of the place of business, California contractor license number and DIR registration number for each Subcontractor who will perform work or service or fabricate or install work for the prime contractor in excess of one-half of 1% of the bid price, using the Subcontractor List form included with the Contract Documents.
- 10. Instructions to Bidders.** Additional and more detailed information is provided in the Instructions to Bidders, which should be carefully reviewed by all bidders before submitting a Bid Proposal.
- 11. Bidders' Conference (Pre-Bid Meeting).** A bidders' conference (pre-bid meeting) will be held on August 24, 2017 at 10:00 a.m., at the following location: Giant Rd. and San Pablo creek bridge culvert crossing for the purpose of acquainting all prospective bidders with the Contract Documents and the Worksite. The bidders' conference is not mandatory.
- 12. Estimated Cost.** The City Engineer has estimated the construction cost at: \$447,000

By: **Elizabeth Pabon-Alvadar**

Publication Dates: 1) **August 11, 2017** 2) **August 23, 2017**

END OF NOTICE INVITING BIDS

INSTRUCTIONS TO BIDDERS

Each Bid Proposal submitted to the City of San Pablo ("City") for its **Randy Lane Drainage Improvement** Project ("Project") must be submitted in accordance with the following instructions and requirements:

1. Bid Submission.

1.1 General. Each bid ("Bid Proposal") must be signed, sealed and submitted to the City, using the form provided in the Contract Documents, by or before the date and time set forth in the Notice Inviting Bids, or as amended by subsequent addendum. Faxed or emailed Bid Proposals will not be accepted, unless otherwise specified. Late submissions will be returned unopened. The City reserves the right to postpone the date and time for receiving or opening bids. Each bidder is solely responsible for all of its costs to prepare and submit its bid and by submitting a bid waives any right to recover those costs from the City. The bid price(s) must include all costs to perform the Work as specified, including all indirect costs such as applicable taxes, insurance and field offices.

1.2 Bid Envelope. The envelope containing the sealed Bid Proposal and required attachments must be clearly labeled as follows:

BID PROPOSAL:
Randy Lane Drainage Improvement Project
Project No. **RLN-DRN**
City of San Pablo
13831 San Pablo Avenue
San Pablo, California 94806
Attn: City Clerk

The envelope must also be clearly labeled, as follows, with the bidder's name, address, and its registration number with the California Department of Industrial Relations ("DIR") for bidding on public works contracts (Labor Code sections 1725.5 and 1771.1):

[Contractor company name]
[street address]
[city, state, zip code]
DIR Registration No: _____

Please note: If City is unable to confirm that the bidder's DIR registration is current, City must disqualify the bidder. (Labor Code section 1725.5).

2. Examination of Contract Documents and Project Site. Each bidder is solely responsible for diligent and thorough review of the Contract Documents (as defined in the General Conditions), examination of Project site, and reasonable and prudent inquiry concerning known and potential site conditions prior to submitting a Bid Proposal. However, bidders should not enter onto City's property or the Project site without prior written authorization from City. Bidders are responsible for reporting any errors or omissions in the Contract Documents to City prior to submitting a Bid Proposal, subject to the limitations of Public Contract Code Section 1104. City expressly disclaims responsibility for assumptions the bidder might draw from the presence or absence of information provided by City.

2.1 Soil and Subsurface Conditions. Soil and subsurface conditions vary widely throughout the City and may include groundwater just below grade, buried concrete foundations or structures, automotive parts, or industrial debris, to name a few. Soil types may include bedrock, rock, gravel, clay, silt, sand, loam, hardpack, Bay mud or other soil types, which may occur in varying combinations and proportions. Each bidder is solely responsible for taking reasonable steps to investigate and evaluate available information on soil and subsurface conditions at the Project site.

3. **Requests for Information.** Questions regarding the Project, the bid procedures or any of the Contract Documents must be submitted in writing to **Ms. Ronalyn Nonato** at RonalynN@sanpabloca.gov at least six City working days prior to the opening of bids. Questions submitted after such time may not receive a response.
4. **Addenda.** Any addenda issued prior to the bid opening shall constitute part of the Contract Documents. Subject to the limitations of Public Contract Code section 4104.5, City reserves the right to issue addenda prior to bid time. Bidders are responsible for maintaining and checking their email for notifications, addenda, or additional information from City or the City's bid service provider.
5. **Brand Designations and "Or Equal" Substitutions.** Any specification designating a material, product, thing, or service by specific brand or trade name, followed by the words "or equal," is intended only to indicate quality and type of item desired, and bidders may request use of any equal material, product, thing, or service. All data substantiating the proposed substitute as an "equal" item must be submitted with the written request for substitution. This provision does not apply to materials, products, things, or services that may lawfully be designated by a specific brand or trade name under Public Contract Code Section 3400(c).
 - 5.1 **Pre-Bid Requests.** Any request for substitution made before the Contract is awarded must be submitted to the City Engineer at least ten days before the opening of bids so that all interested bidders may be notified of any approved alternative.
 - 5.2 **Post-Award Requests.** After the Contract is awarded, Contractor may submit a substitution request within 14 days after the date of award of the Contract, or as specified in the Special Conditions.
6. **Bidders Interested in More Than One Bid.** No person, firm, or corporation may submit or be a party to more than one Bid Proposal unless alternate bids are specifically called for. However, a person, firm, or corporation that has submitted a subcontract proposal or quote to a bidder may submit subcontract proposals or quotes to other bidders, and may also submit a Bid Proposal as a prime contractor.
7. **Bid Proposal Form and Enclosures.** Each Bid Proposal must be completed in ink using the Bid Proposal form included in the Contract Documents. The Bid Proposal form should be fully completed without interlineations, alterations, or erasures. Any necessary corrections must be clear and legible, and must be initialed by the bidder's authorized representative. A Bid Proposal submitted with terms such as "negotiable," "will negotiate," or similar, will be considered non-responsive. Each Bid Proposal must be accompanied by bid security, as set forth in Section 9 below, and by the completed Subcontractor List, and Non-Collusion Declaration using the forms included in the Contract Documents.

7.1 Subcontractor List. If Contractor is using Subcontractors to perform Work, the Bid Proposal must include the Subcontractor List form included in the Contract Documents. No more than **20%** of the Work may be performed by Subcontractors.

- 8. Authorization and Execution.** Each Bid Proposal must be signed by the bidder's authorized representative. A Bid Proposal submitted by a partnership must be signed in the partnership name by a general partner with authority to bind the partnership. A Bid Proposal submitted by a corporation must be signed with the legal name of the corporation, followed by the signature and title of two officers of the corporation with full authority to bind the corporation to the terms of the Bid Proposal, under California Corporation Code section 313.
- 9. Bid Security.** Each Bid Proposal must be accompanied by bid security of ten percent of the maximum bid amount, in the form of a cashier's check, a certified check, or a bid bond, using the form included in the Contract Documents, executed by a surety licensed to do business in the State of California, made payable to City. The bid security must guarantee that upon award of the bid, the bidder will execute and submit the Contract on the form included in the Contract Documents, will submit payment and performance bonds for one hundred percent 100% of the maximum Contract Price, and will submit the insurance certificates and endorsements as required by the Contract Documents within ten days after issuance of the Notice of Contract.
- 10. Withdrawal of Bid Proposals.** A Bid Proposal may not be withdrawn for a period of 90 days after the bid opening without forfeiture of the bid security, except as authorized for material error under Public Contract Code Section 5100 et seq.
- 11. Bid Protest.** Any bid protest must be in writing and received by the City Clerk's office, 13831 San Pablo Avenue, Building #1, San Pablo, California 94806, Fax: 510-237-9604, or email at **LehnyC@sanpabloca.gov** before 5:00 p.m., no later than three working days following bid opening (the "Bid Protest Deadline") and must comply with the following requirements:

11.1 General. Only a bidder who has actually submitted a Bid Proposal is eligible to submit a bid protest against another bidder. Subcontractors are not eligible to submit bid protests. A bidder may not rely on the bid protest submitted by another bidder, but must timely pursue its own protest. If required by City, the protesting bidder must submit a non-refundable fee in the amount specified by City, based upon City's reasonable costs to administer the bid protest. Any such fee must be submitted to City no later than the Bid Protest Deadline, unless otherwise specified.

11.2 Protest Contents. The bid protest must contain a complete statement of the basis for the protest and all supporting documentation. Material submitted after the Bid Protest Deadline will not be considered. The protest must refer to the specific portion or portions of the Contract Documents upon which the protest is based. The protest must include the name, address, email address, and telephone number of the person representing the protesting bidder if different from the protesting bidder.

11.3 Copy to Protested Bidder. A copy of the protest and all supporting documents must be concurrently transmitted by fax or by email, by or before the Bid Protest Deadline, to the protested bidder and any other bidder who has a reasonable prospect of receiving an award depending upon the outcome of the protest.

11.4 Response to Protest. The protested bidder may submit a written response to the protest, provided the response is received by City before 5:00 p.m., within two working days after the Bid Protest Deadline or after actual receipt of the bid protest, whichever is sooner (the "Response Deadline"). The response must include all supporting documentation. Material submitted after the Response Deadline will not be considered. The response must include the name, address, email address, and telephone number of the person representing the protested bidder if different from the protested bidder.

11.5 Copy to Protesting Bidder. A copy of the response and all supporting documents must be concurrently transmitted by fax or by email, by or before the Response Deadline, to the protesting bidder and any other bidder who has a reasonable prospect of receiving an award depending upon the outcome of the protest.

11.6 Exclusive Remedy. The procedure and time limits set forth in this section are mandatory and are the bidder's sole and exclusive remedy in the event of bid protest. A bidder's failure to comply with these procedures will constitute a waiver of any right to further pursue a bid protest, including filing a Government Code Claim or initiation of legal proceedings.

11.7 Right to Award. The Project cannot be Awarded to the Contractor by the City Council until all regulatory agency permits are approved. City reserves the right to award the Contract to the bidder it has determined to be the responsible bidder submitting the lowest responsive bid, and to issue a notice to proceed with the Work notwithstanding any pending or continuing challenge to its determination.

12. Rejection of Bids; Award of Contract. City reserves the right, acting in its sole discretion, to waive immaterial bid irregularities, the right to accept or reject any and all bids, or to abandon the Project entirely. The Contract will be awarded, if at all, within 90 calendar days after opening of bids or as otherwise specified in the Special Conditions, to the responsible bidder that submitted the lowest responsive bid.

13. Bonds. The successful bidder is required to submit payment and performance bonds as specified in the Contract Documents using the bond forms included in the Contract Documents. All required bonds must be calculated on the maximum total Contract price as awarded, including additive alternates, if applicable.

14. Supplemental Information. In order to facilitate the City's due diligence, before recommending that Council award the Contract, City Staff may request additional information from one or more of the lowest bidders. Failure to timely comply with these requests may result in rejection of the bid as non responsive.

14.1 Bidder's Questionnaire. Within 48 hours following a request by City, a bidder must submit to the City a completed, signed Bidder's Questionnaire using the form provided with the Contract Documents and including all required attachments.

14.2. Insurance and Bonding Capacity. Within 48 hours following a request by City, a bidder must submit letters from a surety licensed to do business in California and an insurance underwriter, both of which must have a financial rating of A-7 or better. These letters must confirm that the surety has agreed to provide

Contractor with the performance and payment bonds required by the Contract, and that the insurer will provide Contractor with the coverage required by the Contract.

15. **License(s).** The successful bidder and its Subcontractor(s) must possess the California contractor's license(s) in the classification(s) required by law to perform the Work.
16. **Ineligible Subcontractor.** Any Subcontractor who is ineligible to perform work on a public works project under Labor Code Sections 1777.1 or 1777.7 is prohibited from performing work on this Project.
17. **DIR Registration.** City will not accept a Bid Proposal from or enter into the Contract with a bidder, without proof that the bidder and its Subcontractors are registered with the DIR to perform public work under Labor Code Section 1725.5, subject to limited legal exceptions.
18. **CALGreen's Construction and Demolition Requirements.** The Contractor must comply with CALGreen's Construction and Demolition Requirements (<http://www.calrecycle.ca.gov/LGCentral/Library/CandDMModel/Instruction/FAQ.htm>) and complete the City's Construction Waste Management Form (See Appendices).
19. **Bid Schedule.** Bidders are required to fully complete the Bid Schedule form accompanying the Bid Proposal form with unit prices as indicated, and to submit the completed Bid Schedule with their Bid Proposal.
 - 20.1 **Incorrect Totals.** In the event a computational error for any bid item (base bid or alternate) results in an incorrect extended total for that item (far right column), the submitted base bid or bid alternate total will be adjusted to reflect the corrected amount (estimated quantity X unit cost), unless the cumulative amount of corrections changes the total of the base bid or bid alternate by more than five percent. In the event of a discrepancy between the actual total of the itemized or unit prices shown on the Bid Schedule for the base bid, and the amount entered as the base bid on the Bid Proposal form, the actual total of the itemized or unit prices shown on the Bid Schedule for the base bid will be deemed the base bid price. Likewise, in the event of a discrepancy between the actual total of the itemized or unit prices shown on the Bid Schedule for any bid alternate, and the amount entered for the alternate on the Bid Proposal form, the actual total of the itemized prices shown on the Bid Schedule for that alternate will be deemed the alternate price. Nothing in this provision is intended to prevent a bidder from requesting to withdraw its bid for material error under Public Contract Code Section 5100 et seq.
 - 20.2 **Estimated Quantities.** The quantities shown on the Bid Schedule are estimated and the actual quantities required to perform the Work may be greater or less than the estimated amount. The Contract Price will be adjusted to reflect the actual quantities required for the Work based on the itemized or unit prices provided in the Bid Schedule, with no allowance for anticipated profit for quantities that are deleted or decreased.
20. **Safety Orders.** Each bid must include a bid item for adequate sheeting, shoring, and bracing, or equivalent method, for the protection of life or limb, which comply with safety orders as required by Labor Code Section 6707.

END OF INSTRUCTIONS TO BIDDERS

BID PROPOSAL

Randy Lane Drainage Improvement Project

_____ (“Bidder”) hereby submits this Bid Proposal to the City of San Pablo (“City”) for the above-referenced project (“Project”) in response to the Notice Inviting Bids and in accordance with the Contract Documents referenced therein.

- 1. **Base Bid.** Bidder proposes to perform and fully complete the Work for the Project as specified in the Contract Documents, within the time required for full completion of the Work, for the following price (“Base Bid”):

Base Bid \$ _____.

- 2. **Addenda.** Bidder acknowledges receipt of the following addenda:

Addendum:	Date Received:	Addendum:	Date Received:
#01	_____	#05	_____
#02	_____	#06	_____
#03	_____	#07	_____
#04	_____	#08	_____

- 3. **Bidder’s Warranties.** By signing and submitting this Bid Proposal, Bidder warrants the following:

- 3.1 **Examination of Contract Documents.** Bidder has thoroughly examined the Contract Documents, and represents that, to the best of Bidder’s knowledge there are no errors, omissions, or discrepancies in the Contract Documents subject to the limitations of Public Contract Code Section 1104.

- 3.2 **Examination of Worksite.** Bidder has had the opportunity to examine the Worksite and local conditions at the Project location.

- 3.3 **Bidder is Qualified.** Bidder is fully qualified to perform the Work.

- 3.4 **Responsibility for Bid.** Bidder has carefully reviewed this Bid Proposal and is solely responsible for any errors or omissions contained in its completed Bid.

- 4. **Award of Contract.** By signing and submitting this Bid Proposal, Bidder agrees that within ten days following written notice from City staff regarding intent to recommend the City Council award the Contract to Bidder, and attaching a copy of the Contract form based on Bidder’s Bid Proposal, Bidder will do all of the following:

- 4.1 **Execute Contract.** Execute and submit to City the Contract provided by City;

- 4.2 **Submit Required Bonds.** Submit to City a payment bond and a performance bond, each for 100% of the Contract Price, using the bond forms provided and in accordance with the requirements of the Contract Documents; and

- 4.3 **Insurance Requirements.** Submit to City the insurance certificate(s) and endorsement(s) as required by the Contract Documents.

- 5. **Bid Security.** As a guarantee that if awarded the Contract, it will perform its obligations under Section 4, above, Bidder is enclosing bid security in the amount of ten percent of its maximum bid amount in the following form:

_____ A cashier's check or certified check payable to City and issued by _____ Bank in the amount of \$_____.

_____ A bid bond, using the Bid Bond form included with the Contract Documents, payable to City and executed by a surety licensed to do business in the State of California.

This Bid Proposal is hereby submitted on _____, 20__ :

s/ _____ Name and Title [print]

s/ _____ Name and Title [print]

_____ License # and Classification

_____ DIR Registration #

_____ Address Phone

_____ City, State, Zip Fax

END OF BID PROPOSAL

BID SCHEDULE
Randy Lane Drainage Improvement
RLN-DRN

This Bid Schedule must be completed in ink and must be included with the sealed Bid Proposal. The unit cost for each item must be inclusive of all costs, whether direct or indirect, including profit and overhead. The sum of all amounts entered in the "Extended Total Amount" column must be identical to the Base Bid price entered in Section 1 of the Bid Proposal Form. See Instructions to Bidders for further information.

BID ITEM NO.	ITEM DESCRIPTION	EST. QUANT.	UNIT	UNIT COST	EXTENDED TOTAL AMOUNT
1	Mobilization/Demobilization	1	LS	\$	\$
2	Special Project Constraints, Potholing, Inspection & Permits	1	LS	\$	\$
3	Sheeting, Shoring & Bracing	1	LS	\$	\$
4	Traffic Control & Signage	1	LS	\$	\$
5	Trench Restoration – Public Road	2,150	SF	\$	\$
6A	Replace Curb and Gutter	102	LF	\$	\$
6B	Replace Sidewalk	500	SF	\$	\$
7	Remove & Repair Driveway	200	SF	\$	\$
8	Existing Utility Protection	7	EA	\$	\$
9A	14" Storm Drain Pipe	120	LF	\$	\$
9B	18" Storm Drain Pipe	345	LF	\$	\$
9C	24" Storm Drain Pipe	50	LF	\$	\$
10	48" Dia Storm Drain Manhole	3	EA	\$	\$
11	Type "A" Drainage Inlet	1	LS	\$	\$
12	Concrete Channel Outfall	1	LS	\$	\$
13	Abandon Existing Storm Drain System & Discharge	1	LS	\$	\$
14A	Monitor, Test & Detect Hazardous Materials	1	LS	\$	\$
14B	Haul-away Hazardous Materials	15	CY	\$	\$

TOTAL BASE BID: Items 1 through 14B inclusive: \$ _____
 [Note: The amount entered as the "Total Base Bid" should be identical to the Base Bid amount entered in Section 1 of the Bid Proposal form.]

BIDDER NAME: _____

END OF BID SCHEDULE

NONCOLLUSION DECLARATION

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

The undersigned declares:

I am the _____ of _____, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. 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. All statements contained in the bid are true. 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, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has no paid and will not pay, any person or entity for such purpose.

This declaration is intended to comply with California Public Contract Code Section 7106 and Title 23 U.S.C Section 112.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ [date], at _____ [city], _____ [state].

s/ _____

Name and Title [print]

END OF NONCOLLUSION DECLARATION

BID BOND

_____ (“Bidder”) has submitted a bid, dated _____, 20____ (“Bid”), to the City of San Pablo (“City”) for work on the **Randy Lane Drainage Improvement** Project (“Project”). Under this duly executed bid bond (“Bid Bond”), Bidder as Principal and _____, its surety (“Surety”), are bound to City as obligee in the penal sum of ten percent of the maximum amount of the Bid (the “Bond Sum”). Bidder and Surety bind themselves and their respective heirs, executors, administrators, successors and assigns, jointly and severally, as follows:

1. **General.** If Bidder is awarded the Contract for the Project, Bidder will enter into the Contract with the City in accordance with the terms of the Bid.
2. **Submittals.** Within ten days after City staff transmits the Contract to Bidder, as the apparent low bidder, for execution, Bidder must submit to City the following:
 - 2.1 **Contract.** The executed Contract, using the form transmitted by City;
 - 2.2 **Payment Bond.** A payment bond for 100% of the maximum Contract Price, executed by a surety licensed to do business in the State of California using the Payment Bond form included with the Contract Documents;
 - 2.3 **Performance Bond.** A performance bond for 100% of the maximum Contract Price, executed by a surety licensed to do business in the State of California using the Performance Bond form included with the Contract Documents; and
 - 2.4 **Insurance.** The insurance certificate(s) and endorsement(s) required by the Contract Documents, and any other documents required under the Instructions to Bidders.
3. **Enforcement.** If Bidder fails to execute the Contract and to submit the bonds and insurance certificates as required by the Contract Documents, Surety guarantees that Bidder forfeits the Bond Sum to City. Any notice to Surety may be given in the manner specified in the Contract and delivered or transmitted to Surety as follows:

Attn: _____
Address: _____
City/State/Zip: _____
Phone: _____
Fax: _____
Email: _____

4. **Duration; Waiver.** If Bidder fulfills its obligations under Section 2, above, then this obligation will be null and void; otherwise it will remain in full force and effect for 90 days following award of the Contract or until this Bid Bond is returned to Bidder, whichever occurs first. Surety waives the provisions of Civil Code Sections 2819 and 2845.

[Signatures are on the following page.]

This Bid Bond is entered into and effective on _____, 20_____.

SURETY:

s/ _____

Name: _____

Title: _____

(Attach Acknowledgement, Notary Seal, and Attorney-In-Fact Certificate)

CONTRACTOR:

s/ _____

Name: _____

Title: _____

END OF BID BOND

BIDDER'S QUESTIONNAIRE

RANDY LANE DRAINAGE IMPROVEMENT PROJECT

Within 48 hours following a request by City, a bidder must submit to the City a completed, signed Bidder's Questionnaire using this form provided with the Contract Documents and including all required attachments. The City may request this from one or more of the apparent low bidders following the bid opening, and may use the completed Questionnaire to evaluate a bidder's qualifications for this Project. The Questionnaire must be filled out completely, accurately, and legibly. Any errors, omissions, or misrepresentations in completion of the Questionnaire may be grounds for rejection of the bid or termination of a Contract awarded pursuant to the bid.

Part 1: General Information

Contractor Name: _____ ("Contractor")

Check One: ___ Corporation
 ___ Partnership
 ___ Sole Proprietorship
 ___ Joint Venture of: _____
 ___ Other: _____

Address: _____

Phone: _____

Fax/Email: _____

Owner of Company: _____

Contact Person: _____

Contractor's License Number(s): _____

Part 2: Bidder Experience

1. How many years has Bidder been in business under its present business name?

2. Has Bidder completed projects similar in type and size to this Project as a general contractor?

3. Has Bidder ever been disqualified on grounds that it is not responsible? If yes, provide additional information on a separate sheet of paper regarding the disqualification, including the name and address of the agency or owner of the subject project, the type and size of the project, the reasons that Bidder was disqualified as not responsible, and the month and year in which the disqualification occurred.

4. Has Bidder ever been terminated from a construction project, either as a general contractor or as a subcontractor? If yes, provide additional information on a separate sheet of paper regarding the termination, including the name and address of the agency or owner of the subject project, the type and size of the project, whether Bidder was under contract as a general contractor or a subcontractor, the reasons that Bidder was terminated, and the month and year in which the termination occurred.

5. Has Bidder ever had its contractor's license revoked? If yes, provide additional information on a separate sheet of paper regarding the date and circumstances if any revocation.

6. Has Bidder filed for bankruptcy within the past five years? If yes, provide additional information on a separate sheet of paper regarding the date and circumstances.

7. Provide information about Bidder's past projects performed as general contractor as follows:

7.1 Any project which is similar to this Project. Projects which include specific experience in **storm drain pipe installation, trench excavations deeper than 10 feet, concrete work in the canal, etc.** within the last three (3) years will receive the most consideration; and

7.2 Six (6) most recently completed public works projects within the last three (3) years; and

7.3 Three (3) largest completed projects within the last three (3) years.

8. Use separate sheets of paper provide all of the following information for each project identified in response to the above three categories:

- 8.1 Project Name
- 8.2 Location
- 8.3 Owner
- 8.4 Owner Contact (name and current phone number)
- 8.5 Architect or Engineer Name
- 8.6 Architect or Engineer Contact (name and current phone number)
- 8.7 Project Manager (name and current phone number)
- 8.8 Description of Project, Scope of Work Performed
- 8.9 Initial Contract Value (at time of bid award)
- 8.10 Final Cost of Construction (including change orders)
- 8.11 Original Scheduled Completion Date
- 8.12 Time Extensions Granted (number of days)
- 8.13 Actual Date of Completion
- 8.14 Number and amount of Stop Notices or Mechanic's Liens filed
- 8.15 Amount of liquidated damages assessed against Contractor
- 8.16 Nature and resolution of any claim, lawsuit, and/or arbitration between Contractor and the owner

Part 3: Verification

In signing this document, I, the undersigned, declare that I am duly authorized to sign and submit this Bidder's Questionnaire on behalf of the named Bidder, and that all responses and information set forth in this Bidder's Questionnaire and accompanying attachments are, to the best of my knowledge, true, accurate and complete as of the date of submission. **I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.**

Signature: _____ Date: _____

By [name, title]: _____

For [name of Bidder]: _____

END OF BIDDER'S QUESTIONNAIRE

CONTRACT

This public works contract ("Contract") is entered into by and between the City of San Pablo ("City") and _____ ("Contractor") for work on the **Randy Lane Drainage Improvement** Project ("Project").

The parties agree as follows:

1. **Award of Contract.** In response to the Notice Inviting Bids, Contractor has submitted a Bid Proposal to perform work on the Project, and on **<Date>**, 20**<Year>**, City authorized award of this Contract to Contractor for the amount of Contractor's bid.
2. **Contract Documents.** The Contract Documents incorporated into this Contract include and are comprised of all of the following:
 - 2.1 Notice Inviting Bids;
 - 2.2 Instructions to Bidders;
 - 2.3 Addenda, if any;
 - 2.4 Bid Proposal and attachments thereto;
 - 2.5 Contract;
 - 2.6 Payment and Performance Bonds;
 - 2.7 General Conditions;
 - 2.8 Special Conditions;
 - 2.9 Project Drawings and Specifications;
 - 2.10 Change Orders, if any;
 - 2.11 City Standard Details (available on the City's website);
 - 2.12 Notice of Contract;
 - 2.13 Notice to Proceed;
 - 2.14 Caltrans Standard Specifications 2016 edition
3. **Contractor's Obligations.** Contractor agrees to perform all of the Work required for the Project, as specified in the Contract Documents. Contractor must provide, furnish, and supply all things necessary and incidental for the timely performance and completion of the Work, including all necessary labor, materials, equipment, transportation, and utilities, unless otherwise specified in the Contract Documents. Contractor must use its best efforts to complete the Work in a professional and expeditious manner and to meet or exceed the performance standards required by the Contract Documents.
4. **Payment.** As full and complete compensation for Contractor's timely performance and completion of the Work in strict accordance with the terms and conditions of the Contract Documents, City will pay Contractor **<Contract Price in words>**Dollars (**\$<Contract Price in numbers>**) (the "Contract Price"), in accordance with the payment provisions in the General Conditions.
5. **Time for Completion.** Contractor will fully complete the Work for the Project within **120** calendar days from the commencement date given in the Notice to Proceed ("Contract Time"). By signing below, Contractor expressly waives any claim for delayed early completion.
6. **Liquidated Damages.** If Contractor fails to complete the Work within the Contract Time, City will assess liquidated damages in the amount of Four **Thousand** Dollars (**\$4000**) for each day of unexcused delay in completion, and the Contract Price shall be reduced accordingly. If the contractor fails to provide submittals within time limits specified in the

Contract Documents, the City may assess liquidated damages in the amount of Four **Thousand Dollars (\$4000)** for each day after notice to contractor.

7. Labor Code Compliance.

7.1 General. This Contract is subject to all applicable requirements of Chapter 1 of Part 7 of Division 2 of the Labor Code, including requirements pertaining to wages, working hours and workers' compensation insurance.

7.2 Prevailing Wages. This Project is subject to the prevailing wage requirements applicable to the locality in which the Work is to be performed for each craft, classification or type of worker needed to perform the Work, including employer payments for health and welfare, pension, vacation, apprenticeship and similar purposes. Copies of these prevailing rates are available online at <http://www.dir.ca.gov/DLSR>.

7.3 DIR Registration. City will not enter into the Contract with a bidder without proof that the bidder and its Subcontractors are registered with the California Department of Industrial Relations ("DIR") to perform public work under Labor Code Section 1725.5, subject to limited legal exceptions.

8. Workers' Compensation Certification. Under Labor Code Section 1861, by signing this Contract, Contractor certifies as follows: "I am aware of the provisions of Labor Code Section 3700 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 on this Contract."

9. Notice. Any notice, billing, or payment required by the Contract Documents must be made in writing, and sent to the other party by personal delivery, U.S. Mail, a reliable overnight delivery service, facsimile, or by email as a PDF (or comparable) file. Notice is deemed effective upon delivery unless otherwise specified. Notice for each party must be given as follows:

	City	Contractor
Name	City of San Pablo	
Address	13831 San Pablo Avenue	
City/state/zip	San Pablo, California 94806	
Phone	(510) 215-3060	
Fax	(510) 215-3013	
Attn:	City Clerk	
Email	RonalyN@sanpabloca.gov	
Copy to:	Jessica Cano, Admin. Clerk JessicaC@sanpabloca.gov	

10. General Provisions.

10.1 Assignment and Successors. Contractor may not assign its rights or obligations under this Contract, in part or in whole, without City's written consent. This Contract is binding on Contractor's successors and permitted assigns.

10.2 Third Party Beneficiaries. There are no intended third party beneficiaries to this Contract except as expressly provided in the General Conditions or Special Conditions.

- 10.3 Governing Law and Venue.** This Contract will be governed by California law and venue will be in the Superior Court of Contra Costa County, and no other place.
- 10.4 Amendment.** No amendment or modification of this Contract will be binding unless it is in a writing duly authorized and signed by the parties to this Contract.
- 10.5 Integration; Severability.** This Contract and the Contract Documents incorporated herein, including authorized amendments or Change Orders thereto, constitute the final, complete, and exclusive terms of the agreement between City and Contractor. If any provision of the Contract Documents, or portion of a provision, is determined to be illegal, invalid, or unenforceable, the remaining provisions of the Contract Documents will remain in full force and effect.
- 10.6 Authorization.** Each individual signing below warrants that he or she is authorized to do so by the party that he or she represents, and that this Contract is legally binding on that party. If Contractor is a corporation, signatures from two officers of the corporation are required pursuant to California Corporation Code Section 313.

[Signatures are on the following page.]

The parties agree to this Contract as witnessed by the signatures below:

CITY:

Approved as to form:

City of San Pablo

s/ _____
Matt Rodriguez
City Manager

s/ _____
Lynn Tracy Nerland
City Attorney

Date: _____

Date: _____

Attest:

s/ _____
Ted Denney
City Clerk

Date: _____

CONTRACTOR:

s/ _____

Name/Title [print]

Date: _____

s/ _____

Name/Title [print]

Date: _____

Contractor's Calif. License Number(s)

Seal:

Expiration Date(s)

END OF CONTRACT

PAYMENT BOND

The City of San Pablo ("City") and _____ ("Contractor") have entered into a contract, dated _____, 20 ____ ("Contract") for work on the **Randy Lane Drainage Improvement** Project ("Project"). The Contract is incorporated by reference into this Payment Bond ("Bond").

1. **General.** Under this Bond, Contractor as principal and _____, its surety ("Surety"), are bound to City as obligee in an amount not less than (\$ _____) ("Bond Sum"), under California Civil Code Sections 9550, et seq.
2. **Surety's Obligation.** If Contractor or any of its Subcontractors fails to pay any of the persons named in California Civil Code Section 9100 amounts due under the Unemployment Insurance Code with respect to work or labor performed under the Contract, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the Contractor and its Subcontractors, under California Unemployment Insurance Code Section 13020, with respect to the work and labor, then Surety will pay for the same.
3. **Beneficiaries.** This Bond inures to the benefit of any of the persons named in California Civil Code Section 9100, so as to give a right of action to those persons or their assigns in any suit brought upon this Bond. Contractor must promptly provide a copy of this Bond upon request by any person with legal rights under this Bond.
4. **Duration.** If Contractor promptly makes payment of all sums for all labor, materials, and equipment furnished for use in the performance of the Work required by the Contract, in conformance with the time requirements set forth in the Contract and as required by California law, Surety's obligations under this Bond will be null and void. Otherwise, Surety's obligations will remain in full force and effect.
5. **Waivers.** Surety waives any requirement to be notified of alterations to the Contract or extensions of time for performance of the Work under the Contract. Surety waives the provisions of Civil Code Sections 2819 and 2845. City waives requirement of a new bond for any supplemental contract under Civil Code Section 9550. Any notice to Surety may be given in the manner specified in the Contract and delivered or transmitted to Surety as follows:

Attn: _____
Address: _____
City/State/Zip: _____
Phone: _____
Fax: _____
Email: _____

6. **Law and Venue.** This Bond will be governed by California law, and any dispute pursuant to this Bond will be venued in the Superior Court of Contra Costa County, and no other place. Surety will be responsible for City's attorneys' fees and costs in any action to enforce the provisions of this Bond.

7. **Effective Date; Execution.** This Bond is entered into and is effective on _____, 20_____. Three identical counterparts of this Bond, each of which is deemed an original for all purposes, are hereby executed and submitted.

SURETY:

s/ _____

Name: _____

Title: _____

(Attach Acknowledgment with Notary Seal and Power of Attorney)

CONTRACTOR:

s/ _____

Name: _____

Title: _____

END OF PAYMENT BOND

PERFORMANCE BOND

The City of San Pablo ("City") and

_____ ("Contractor") have entered into a contract, dated _____, 20____ ("Contract") for work on the **Randy Lane Drainage Improvement** Project ("Project"). The Contract is incorporated by reference into this Performance Bond ("Bond").

1. **General.** Under this Bond, the Contractor as Principal and _____, its surety ("Surety"), are bound to City as obligee for an amount not less than Dollars (\$_____) (the "Bond Sum"). By executing this Bond, Contractor and Surety bind themselves and their respective heirs, executors, administrators, successors and assigns, jointly and severally, to the provisions of this Bond.
2. **Surety's Obligations; Waiver.** If Contractor fully performs its obligations under the Contract, including its warranty obligations under the Contract, Surety's obligations under this Bond will become null and void upon recordation of the notice of completion, provided Contractor has timely provided a warranty bond as required under the Contract. Otherwise Surety's obligations will remain in full force and effect until expiration of the one year warranty period under the Contract. Surety waives any requirement to be notified of and further consents to any alterations to the Contract made under the applicable provisions of the Contract Documents, including changes to the scope of Work or extensions of time for performance of Work under the Contract. Surety waives the provisions of Civil Code Sections 2819 and 2845.
3. **Application of Contract Balance.** Upon making a demand on this Bond, City will make the Contract Balance available to Surety for completion of the Work under the Contract. For purposes of this provision, the Contract Balance is defined as the total amount payable by City to the Contractor as the Contract Price minus amounts already paid to Contractor, and minus any liquidated damages, credits, or backcharges to which City is entitled under the terms of the Contract.
4. **Contractor Default.** Upon written notification from City that Contractor is in default under Article 13 of the Contract General Conditions, time being of the essence, Surety must act within the time specified in Article 13 to remedy the default through one of the following courses of action:
 - 4.1 Arrange for completion of the Work under the Contract by Contractor, with the City's consent, but only if Contractor is in default solely due to its financial inability to complete the Work;
 - 4.2 Arrange for completion of the Work under the Contract by a qualified contractor acceptable to City, and secured by performance and payment bonds issued by an admitted surety as required by the Contract Documents, at Surety's expense, or
 - 4.3 Waive its right to complete the Work under the Contract and reimburse City the amount of City's costs to have the remaining Work completed.
5. **Surety Default.** If Surety defaults on its obligations under the Bond, City will be entitled to recover all costs it incurs due to Surety's default, including legal, design professional, or delay costs.
6. **Notice.** Any notice to Surety may be given in the manner specified in the Contract and delivered or transmitted to Surety as follows:

Attn: _____
Address: _____
City/State/Zip: _____
Phone: _____
Fax: _____
Email: _____

7. **Law and Venue.** This Bond will be governed by California law, and any dispute pursuant to this Bond will be venued in the Superior Court for Contra Costa County, and no other place. Surety will be responsible for City's attorneys' fees and costs in any action to enforce the provisions of this Bond.

8. **Effective Date; Execution.** This Bond is entered into and effective on _____, 20____. Three identical counterparts of this Bond, each of which is deemed an original for all purposes, are hereby executed and submitted.

SURETY:

s/ _____

Name: _____

Title: _____

(Attach Acknowledgment with Notary Seal and Power of Attorney)

CONTRACTOR:

s/ _____

Name: _____

Title: _____

END OF PERFORMANCE BOND

WARRANTY BOND

The City of San Pablo ("City") and _____ ("Contractor") have entered into a contract, dated _____, 20____ ("Contract") for work on the **Randy Lane Drainage Improvement** Project ("Project"). The Contract is incorporated by reference into this Warranty Bond ("Bond").

1. **General.** Under this Bond, Contractor as principal and _____, its surety ("Surety"), are bound to City as obligee in the maximum amount of 15% of the final Contract Price
2. **Warranty Period.** The Contract requires Contractor to guarantee its work and that of its Subcontractors on the Project, against defects in materials or workmanship which are discovered during the one year period commencing with recordation of the Notice of Completion (the "Warranty Period").
3. **Surety's Obligations.** If Contractor faithfully carries out and performs its guarantee under the Contract, and, on due notice from City, repairs and make good at its sole expense any and all defects in materials and workmanship in the Project which are discovered during the Warranty Period, or if Contractor promptly reimburses City for all loss and damage that City sustains because of Contractor's failure to makes such repairs in accordance with the Contract requirements, then Surety's obligations under this Bond will be null and void. Otherwise, Surety's obligations will remain in full force and effect.
4. **Waiver.** Surety waives the provisions of Civil Code Sections 2819 and 2845.
5. **Notice.** Any notice to Surety may be given in the manner specified in the Contract and delivered or transmitted to Surety as follows:

Attn: _____
Address: _____
City/State/Zip: _____
Phone: _____
Fax: _____
Email: _____

6. **Law and Venue.** This Bond will be governed by California law, and any dispute pursuant to this Bond will be venued in the Superior Court for Contra Costa County, and no other place. Surety will be responsible for City's attorneys' fees and costs in any action to enforce the provisions of this Bond.
7. **Effective Date; Execution.** This Bond is entered into and is effective on _____, 20____. Three identical counterparts of this Bond, each of which is deemed an original for all purposes, are hereby executed and submitted.

[Signatures are on the following page.]

SURETY:

s/ _____

Name: _____

Title: _____

(Attach Acknowledgment with Notary Seal and Power of Attorney)

CONTRACTOR:

s/ _____

Name: _____

Title: _____

END OF WARRANTY BOND

GENERAL CONDITIONS

Article 1 Definitions

1.1 Definitions. The following definitions apply to all of the Contract Documents unless otherwise indicated. Defined terms and titles of documents are capitalized in the Contract Documents, with the exception of the words “day,” “furnish,” “including,” “install,” “work day” or “working day.”

Allowance means an amount included in the Bid Proposal for Work that may or may not be included in the Project, depending on conditions that will not become known until after bids are opened. If the Contract Price includes an Allowance and the cost of performing the Work covered by that Allowance is greater or less than the Allowance, the Contract Price will be increased or decreased accordingly.

Article, as used in these General Conditions, means a numbered Article of the General Conditions, unless otherwise indicated by the context.

Change Order means a written document duly approved and executed by City, which changes the scope of Work, the Contract Price, or the Contract Time.

City means the City of San Pablo, which has entered into the Contract with Contractor for performance of the Work, acting through its City Council, officers, employees, and authorized representatives.

Claim means a separate demand by Contractor for change in the Contract Time or Contract Price, that has previously been submitted to City in accordance with the requirements of the Contract Documents, and which has been rejected by City, in whole or in part; or a written demand by Contractor objecting to the amount of Final Payment.

Contract means the signed agreement between City and Contractor.

Contract Documents means, collectively, all of the documents listed as such in Section 2 of the Contract, including the Notice Inviting Bids; the Instructions to Bidders; addenda, if any; the Bid Proposal, and attachments thereto; the Contract; the Notice of Contract and Notice to Proceed; the payment and performance bonds; the General Conditions; the Special Conditions; the Project Drawings and Specifications; any Change Orders; and any other documents expressly made part of the Contract Documents.

Contract Price means the total compensation to be paid to the Contractor for performance of the Work, as set forth in the Contract and as amended by Change Order or adjusted for an Allowance. The Contract Price is not subject to adjustment due to inflation or due to the increased cost of labor, material, or equipment following submission of the Bid Proposal.

Contract Time means the number of calendar days for performance of the Work, as set forth in the Contract and as amended by Change Order.

Contractor means the individual, partnership, corporation, or joint-venture who has signed the Contract with City to perform the Work.

Day means a calendar day unless otherwise specified.

Design Professional means the licensed individual(s) or firm(s) retained by City to provide architectural or engineering services for the Project. If no Design Professional has been retained for this Project, any reference to Design Professional is deemed to refer to the Engineer.

Drawings means the City-provided plans and graphical depictions of the Project requirements, and does not include Shop Drawings.

Engineer means the City Engineer for the City of San Pablo and his or her authorized delegee(s).

Final Completion means the Contractor has fully completed all of the Work required by the Contract Documents, including all punch list items, any required commissioning, and has provided all required submittals, including the warranty bond, instructions and manuals, and as-built drawings to the City's satisfaction.

Final Payment means payment to Contractor of the unpaid Contract Price, including release of undisputed retention, less amounts withheld pursuant to the Contract Documents, including liquidated damages, up to 125% of the amount of any unreleased stop notice, amounts subject to setoff, up to 150% of any unresolved third-party claim for which Contractor is required to indemnify City, and up to 150% of any amount in dispute as authorized by Public Contract Code Section 7107.

Furnish means to purchase and deliver to the Worksite designated for installation.

Hazardous Materials means any substance or material identified now or in the future as hazardous under any federal, state, or local law or regulation, or any other substance or material that may be considered hazardous or otherwise subject to statutory or regulatory requirements governing handling, disposal, or cleanup.

Including, whether or not capitalized, means "including, but not limited to," unless the context requires otherwise.

Inspector means the individual(s) or firm(s) retained by City to inspect the workmanship, materials, and manner of construction of the Project and its components to ensure compliance with the Contract Documents and all applicable codes, regulations, and permits.

Install means to fix in place for materials, and to fix in place and connect for equipment.

Notice of Contract means a document notifying the Contractor of City staff intent to recommend that the San Pablo City Council award the Contract to the Contractor as the lowest responsible bidder. The Notice is typically issued after a determination of the low bidder and prior to City Council award.

Plans has the same meaning as Drawings.

Project means the public works project referenced in the Contract.

Project Manager means the individual designated by City to oversee and manage the Project on City's behalf and may include his or her authorized delegee(s) when the Project Manager is unavailable. If no Project Manager has been designated for this Project, any reference to Project Manager is deemed to refer to the Engineer.

Section as used in these General Conditions, means a numbered Section of the General Conditions, unless otherwise indicated by the context.

Shop Drawings means drawings, plan details or other graphical depictions prepared by or on behalf of Contractor, and subject to City approval, which are intended to provide details for fabrication, installation, and the like, of items required by or shown in the Drawings and Specifications.

Specifications means the technical, text specifications describing the Project requirements, which are prepared for and incorporated into this Project by or on behalf of City, and does not include the Contract, General Conditions or Special Conditions.

Subcontractor means an individual, partnership, corporation, or joint-venture retained by Contractor directly or indirectly through a subcontract to perform a specific portion of the Work. The term Subcontractor applies to subcontractors, suppliers, fabricators, and equipment lessors of all tiers, unless otherwise indicated by the context.

Technical Specifications means Specifications.

Work means all of the construction and services necessary or incidental to completing the Project in conformance with the requirements of the Contract Documents.

Work Day or Working Day, whether or not capitalized, means a weekday which is not a holiday observed by City.

Worksite means the place or places where the Work is performed.

Article 2 Roles and Responsibilities

2.1 Design Professional.

(A) **General.** Design Professional, as the City's representative, is responsible for the overall design of the Project, and to the extent authorized by City, may act on City's behalf to ensure performance of the Work in compliance with the Contract Documents.

(B) **Interpretation.** Design Professional will decide all questions pertaining to interpretation of the Drawings or Specifications. The Design Professional's decision regarding interpretation of the Drawings or Specifications is final and conclusive.

2.2 Contractor.

(A) **General.** Contractor must provide all labor, materials, equipment and services necessary to perform and timely complete the Work in strict accordance with the Contract Documents, and in an economic and efficient manner in the best interests of City.

(B) **Responsibility for the Work.** Contractor is responsible for supervising and directing all aspects of the Work to facilitate the efficient and timely completion of the Work. Contractor is solely responsible for, and required to exercise full control over, construction means, methods, techniques, sequences, procedures, and coordination of all portions of the Work with that of all other Contractors and Subcontractors, except to the extent that the Contract Documents provide other specific instructions.

(C) **Project Administration.** Contractor must provide sufficient and competent administration, staff, and skilled workforce necessary to perform and timely complete the Work in accordance with the Contract Documents.

(1) Before starting the Work, Contractor must designate in writing and provide complete contact information, including phone numbers and email address, for the officer or employee in Contractor's organization who is to serve as Contractor's primary representative for the Project, and who has authority to act on Contractor's behalf. A Subcontractor may not serve as Contractor's primary representative.

(2) Contractor must attend a pre-construction conference within eight days following award of the Contract, or as otherwise specified by the City. If requested by City, Contractor's superintendent and foreman and Subcontractor representatives must also attend the pre-construction conference.

(3) Contractor shall begin work as directed in the written Notice to Proceed, which shall specify a mutually-agreed upon first day of work. If the parties cannot so agree, the first day of work shall be 7 calendar days after contractor has received the Notice to Proceed. Contractor is only authorized to begin operations after the contract is fully executed and Notice to Proceed is issued.

(4) In no case will the contractor be allowed to begin work before the pre-construction conference is held.

(D) **On-Site Superintendent.** Contractor must, at all times during performance of the Work, provide a qualified and competent full-time superintendent, acceptable to City, and assistants, as necessary, who must be physically present at the Project site while any aspect of the Work is being performed. Failure to comply may result in temporary suspension of the Work, at Contractor's sole expense and with no extension of Contract Time, until the superintendent is physically present to supervise the Work. Contractor must provide written notice to City, as soon as practicable, before replacing the superintendent.

(E) **Standards; Compliance.** Contractor must, at all times, ensure that the Work is performed in a good workmanlike manner following best practices and in full compliance with the Contract Documents and all applicable laws, regulations, codes, standards, and permits. Under circumstances where more than one requirement or standard applies to a component of the Work, the most stringent standard, as determined by the Engineer, is to be applied.

(F) **Responsible Party.** Contractor is solely responsible to City for the acts or omissions of any party or parties performing portions of the Work or providing equipment, materials or services for or on behalf of Contractor or its Subcontractors.

(G) **Correction of Defects.** Contractor must promptly correct, at Contractor's sole expense, any Work that is determined by City, Project Manager, or the Inspector to be deficient or defective in workmanship, materials, and equipment.

(H) **Daily Reports.** Contractor must prepare a daily report to document the progress of the Work on a daily basis. Each daily report must account for all Work performed that day, including all labor, all equipment on site, and all Subcontractors. The daily report must clearly distinguish between Work included in the base bid, Work performed under a Change Order, and disputed Work; and must identify any circumstances affecting timely progress of the Work, e.g., weather or soil conditions, availability of materials, supplies and equipment and the like. Contractor must submit a copy of each daily report to the Project Manager within five days of the date of the report.

(I) **Contractor's Records.** Contractor must maintain all of its records relating to the Project in any form, including paper documents, photos, videos and electronic records.

Project records subject to this provision include, but are not limited to, daily reports, Project cost records and records relating to preparation of Contractor's bid.

- (1) Contractor's cost records must include all supporting documentation, including original receipts, invoices, and payroll records, evidencing its direct costs to perform the Work, including, but not limited to, costs for labor, materials and equipment. Each cost record should include, at a minimum, a description of the expenditure with references to the applicable requirements of the Contract Documents, the amount actually paid, the date of payment, and whether the expenditure is part of the original Contract Price, related to an executed Change Order, or otherwise categorized by Contractor as extra work. Contractor's failure to comply with this provision as to any claimed cost operates as a waiver of any rights to recover the claimed cost.
- (2) Contractor must continue to maintain its Project records in an organized manner for a period of four years after City's acceptance of the Project or following termination, whichever occurs first. Subject to prior notice to Contractor, City is entitled to inspect or audit any of Contractor's Project records relating to the Project or to investigate Contractor's plant or equipment during Contractor's normal business hours.

(J) **Local Preference.** Contractor will use materials, equipment and supplies from local vendors when the price, fitness and quality are equal to those available elsewhere. Contractor will have workers from within the City when they have the skill and ability equal to workers available elsewhere.

(K) **Permits and Licenses.** Contractor is responsible for timely obtaining at Contractor's sole expenses, and permits or licenses required to perform the Work, unless otherwise specified in the special conditions.

2.3 Subcontractors.

(A) **General.** All Work must be performed by Contractor's own forces except for the portion of Work allowed to be performed by Subcontractors listed in the Instructions to Bidders, if any. All Work which is not performed by Contractor with its own forces must be performed by Subcontractors. City reserves the right to approve or reject any and all Subcontractors proposed to perform the Work.

(B) **Contractual Obligations.** Contractor must require every Subcontractor to be bound to the provisions of the Contract Documents as they apply to the Subcontractor's portion(s) of the Work, and to likewise bind their subcontractors or suppliers. Nothing in these Contract Documents creates a contractual relationship between a Subcontractor and City, but City is deemed to be a third-party beneficiary of the contract between Contractor and each Subcontractor.

(C) **Termination.** If the Contract is terminated, each Subcontractor's agreement must be assigned by Contractor to City, subject to the prior rights of any surety, provided that the City accepts the assignment by written notification, and assumes all rights and obligations of Contractor pursuant to each such subcontract agreement.

(D) **Substitution of Subcontractor.** If Contractor requests substitution of a listed Subcontractor under Public Contract Code Section 4107, Contractor is solely responsible for all costs City incurs in responding to the request, including legal fees and costs to conduct a hearing.

2.4 Coordination of Work.

(A) **Concurrent Work.** City reserves the right to perform or to have performed other work on or adjacent to the Project site while the Work is being performed. Contractor is responsible for coordinating its Work with other work being performed on or adjacent to the Project site, and must avoid hindering, delaying, or interfering with the work of other contractors and subcontractors. To the full extent permitted by law, Contractor must hold harmless and indemnify City, Design Professional, and Project Manager against any and all claims arising from or related to Contractor's avoidable, negligent, or willful hindrance of, delay to, or interference with the work of another contractor or subcontractor.

(B) **Defects.** Before proceeding with any portion of the Work affected by the construction or operations of others, Contractor must give the City prompt written notification of any defects Contractor discovers which will prevent the proper execution of the Work. Failure to give notice of any such known defects will be deemed acknowledgement by Contractor that the work of others is not defective and will not prevent the proper execution of the Work.

2.5 Submittals. Unless otherwise specified, Contractor must submit to Project Manager for review and approval, all schedules, Shop Drawings, samples, product data and similar submittals required by the Contract Documents, or upon request by the Project Manager in PDF format. Unless otherwise specified, all submittals, including requests for information (RFIs), are subject to the general provisions of this Section.

(A) **General.** Contractor is responsible for ensuring that its submittals are accurate and conform to the Contract Documents.

(B) **Time and Manner of Submission.** Contractor must ensure that its submittals are prepared and delivered in a manner consistent with the current approved schedule for the Work and within the applicable time specified elsewhere in the Contract Documents, or if no time is specified, in such time and sequence so as not to delay the performance of the Work or completion of the Project.

(C) **Required Contents.** Each submittal must include the Project name and contract number, Contractor's name and address, the name and address of any Subcontractor or supplier involved with the submittal, the date, and references to applicable Specification section(s) and/or drawing and detail number(s).

(D) **Required Corrections.** If corrections are required, Contractor must promptly make and submit any required corrections in full conformance with the requirements of this Section.

(E) **Effect of Review and Approval.** Review or approval of a submittal by the City will not relieve Contractor from complying with the requirements of the Contract Documents. Contractor is responsible for any errors in any submittal, and review or approval of a submittal by the City is not an assumption of risk or liability by City.

(F) **Enforcement.** Any Work performed or material used without prior approval of a required submittal will be performed at Contractor's risk, and Contractor may be required to bear the costs incident thereto, including the cost of removing and replacing such Work, repairs to other affected portions of the Work, and the cost of additional time or services required of the Design Professional, Project Manager, Inspector or other City representative.

(G) **Excessive RFIs.** RFIs will be considered excessive or unnecessary if the Engineer determines that the explanation or response to the RFI is clearly and unambiguously discernable in the Contract Documents. The City's costs to review and

respond to excessive or unnecessary RFIs may be deducted from payments otherwise due to the Contractor.

Article 3 Contract Documents

3.1 Interpretation of Contract Documents.

(A) **Drawings and Specifications.** The Drawings and Specifications included in the Contract Documents are complementary. If Work is shown on one but not on the other, Contractor must perform the Work as though fully described on both, consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results. The Drawings and Specifications are deemed to include and require everything necessary and reasonably incidental to completion of the Work, whether or not particularly mentioned or shown. Contractor must perform all work and services and supply all things reasonably related to and inferable from the Contract Documents. In the event of a conflict between the Drawings and Specifications, the Specifications will control.

(B) **Duty to Notify.** If Contractor becomes aware of any ambiguity, discrepancy, omission, or error in the Drawings or Specifications, Contractor must immediately notify the Design Professional and request clarification of such, by submitting a written request for information (RFI) in the manner specified by City. The Design Professional's clarifications or interpretations will be final and binding.

(C) **Figures and Dimensions.** Figures control over scaled dimensions.

(D) **Technical or Trade Terms.** Any terms that have well-known technical or trade meanings will be interpreted in accordance with those meanings, unless otherwise specifically defined in the Contract Documents.

(E) **Measurements.** Contractor must verify all relevant measurements at the Worksite before ordering any material or performing any Work, and will be responsible for the correctness of those measurements.

3.2 Order of Precedence. Information included in one Contract Document but not in another will not be considered a conflict or inconsistency. Unless otherwise specified in the Special Conditions, in case of any conflict or inconsistency among the Contract Documents, the following order of precedence will apply, beginning from highest to lowest:

- (A) Change Orders;
- (B) Addenda;
- (C) Contract;
- (D) Notice to Proceed;
- (E) Notice of Contract;
- (F) Special Conditions;
- (G) General Conditions;
- (H) Payment and Performance Bonds;
- (I) Specifications;
- (J) Drawings;
- (K) City Standard Details
- (L) Contractor's Bid Proposal and attachments;
- (M) Notice Inviting Bids;
- (N) Instructions to Bidders; and

(O) Any documents prepared by and on behalf of a third party, that were not prepared specifically for this Project, e.g., Caltrans Standard Specifications or Caltrans Special Provisions.

3.3 Caltrans Standard Specifications. Any reference to or incorporation of the Standard Specifications of the State of California, Department of Transportation (“Caltrans”), including “Standard Specifications,” “Caltrans Specifications,” “State Specifications,” or “CSS,” means the most current edition of Caltrans’ Standard Specifications, unless otherwise specified (“Standard Specifications”), including the most current amendments as of the date that Contractor’s bid was submitted for this Project. The following provisions apply to use of or reference to the Standard Specifications:

(A) **Limitations.** None of the “General Provisions” of the Standard Specifications, i.e., Sections 1 through 9, applies to these Contract Documents with the exception of any specific provisions, if any, which are expressly stated to apply to these Contract Documents.

(B) **Conflicts or Inconsistencies.** If there is a conflict or inconsistency between any provision in the Standard Specifications and a provision of these Contract Documents, as determined by the Engineer or Design Professional, the provision in the Contract Documents will govern.

(C) **Meanings.** Terms used in the Standard Specifications are to be interpreted as follows:

(1) Any reference to the “Director” or “Engineer” is deemed to mean the City Engineer.

(2) Any reference to the “Special Provisions” is deemed to mean the Special Conditions.

(3) Any reference to the “Department” or “State” is deemed to mean City.

3.4 For Reference Only. Contractor is responsible for the careful review of any document, study, or report appended to the Contract Documents solely for informational purposes and identified as “For Reference Only.” Nothing in any document, study, or report so appended and identified is intended to supplement, alter, or void any provision of the Contract Documents. However, Contractor is advised that City or its representatives may be guided by information or recommendations included in such reference documents, particularly when making determinations as to the acceptability of proposed materials, methods, or changes in the Work. Contractor must promptly notify City of any perceived or actual conflict between the Contract Documents and any document provided For Reference Only.

Article 4 Bonds, Indemnity, and Insurance

4.1 Payment and Performance Bonds. Within ten days following issuance of the Notice of Contract, Contractor is required to provide a payment bond and a performance bond, each in the penal sum of not less than 100% of the Contract Price, using the bond forms included with the Contract Documents. Each bond must be issued by a surety admitted in California. If an issuing surety cancels the bond or becomes insolvent, within seven days following written notice from City, Contractor must substitute a surety acceptable to City. If Contractor fails to substitute an acceptable surety within the specified time, City

may, at its sole discretion, withhold payment from Contractor until the surety is replaced to City's satisfaction, or terminate the Contract for default.

4.2 Indemnity and Liability.

(A) **Contractor's Indemnity Obligation.** To the fullest extent permitted by law, Contractor must indemnify, defend, and hold harmless City, its agents and consultants, Design Professional, and Project Manager (individually, an "Indemnitee," and collectively the "Indemnitees") from and against any and all liability, loss, damage, claims, expenses (including, without limitation, attorney fees, expert witness fees, paralegal fees, and fees and costs of litigation or arbitration) (collectively, "Liability") of every nature arising out of or in connection with the operations of Contractor, its employees, Subcontractors, representatives, or agents, in bidding or performing the Work or its failure to comply with any of its obligations under the Contract, except such Liability caused by the active negligence, sole negligence, or willful misconduct of an Indemnitee. This indemnity requirement applies to any Liability arising from alleged defects in the content or manner of submission of the Contractor's bid for the Contract. Contractor's failure or refusal to timely accept a tender of defense pursuant to this provision will be deemed a material breach of this Contract.

(B) **Third Party Claims.** City will timely notify Contractor upon receipt of any third-party claim relating to the Contract, as required by Public Contract Code Section 9201.

(C) **No Personal Liability.** No member of the City Council or any individual officer, employee or authorized agent of the City will be personally liable to Contractor or to any Subcontractor for any liability arising under this Contract.

4.3 **Insurance.** No later than ten days following issuance of the Notice of Contract, Contractor is required to procure and provide proof of the insurance coverage required by this section in the form of certificates and endorsements. The required insurance must cover the activities of Contractor and its Subcontractors relating to or arising from the performance of the Work, and must remain in full force and effect at all times during the period covered by the Contract until the date of recordation of the notice of completion. All required insurance must be issued by a company licensed to do business in the State of California, and each such insurer must have an A.M. Best's financial strength rating of "A" or better and a financial size rating of "VIII" or better. If Contractor fails to provide any of the required coverage in full compliance with the requirements of the Contract Documents, City may, at its sole discretion, purchase such coverage at Contractor's expense and deduct the cost from payments due to Contractor, or terminate the Contract for default. Refer to the Special Conditions for further requirements.

4.4 **Warranty Bond.** As a condition precedent to Final Completion, Contractor must submit a warranty bond, using the form provided by City, to guarantee its Work as specified in Article 11, Completion and Warranty Procedures. The warranty bond must be issued by a surety admitted in California for 15% of the final Contract Price or as otherwise specified in the Contract Documents. If an issuing surety cancels the bond or becomes insolvent, within seven days following written notice from City, Contractor must substitute a surety acceptable to City.

Article 5
Contract Time

5.1 Time is of the Essence. Time is of the essence in Contractor's performance and completion of the Work, and Contractor must diligently prosecute the Work and complete it within the Contract Time.

(A) **General.** Contractor must commence the Work on the date indicated in the notice to proceed, and must fully complete the Work, in strict compliance with all requirements of the Contract Documents, and within the Contract Time.

(B) **Rate of Progress.** Contractor and its Subcontractors must, at all times, provide workers, materials, and equipment sufficient to maintain the rate of progress necessary to ensure full completion of the Work within the Contract Time. If City determines that Contractor is failing to prosecute the Work at a sufficient rate of progress, City may, in its sole discretion, direct Contractor to provide additional workers, materials, or equipment, or to work additional hours or days without additional cost to City, in order to achieve a rate of progress satisfactory to City. If Contractor fails to comply with City's directive in this regard, City may, at Contractor's expense, separately contract for additional workers, materials, or equipment or use City's own forces to achieve the necessary rate of progress. Alternatively, City may terminate the Contract based on Contractor's default.

5.2 Schedule Requirements. All schedules must be prepared using standard scheduling software acceptable to Design Professional, and must provide schedules in electronic and paper form as requested.

(A) **As-Planned (Baseline) Schedule.** Within 15 calendar days following issuance of the Notice of Contract (or as otherwise specified in the Special Conditions), Contractor must submit to City for review and approval an as-planned (baseline) schedule showing in detail how Contractor plans to perform and fully complete the Work within the Contract Time using critical path methodology. The as-planned schedule must include the work of all trades required for the Work, and must be sufficiently comprehensive and detailed to enable progress to be monitored on a day-by-day basis. For each activity, the as-planned schedule must be dated, provided in the format specified in the Contract Documents or as required by the Design Professional, and must include, at a minimum, a description of the activity, the start and completion dates, and the duration.

(B) **Progress Schedules.** Contractor must submit an updated progress schedule and three-week look-ahead schedule, in the format specified by the City, for review and approval with each application for a progress payment. The progress schedule must show how the actual progress of the Work to date compared to the as-planned schedule, and must identify any actual or potential impacts to the critical path.

(C) **Recovery Schedule.** If City determines that the Work is more than one week behind schedule, within seven days following written notice of such determination, Contractor must submit a recovery schedule, showing how the Contractor intends to perform and complete the Work within the Contract Time, based on actual progress to date.

(D) **City Review.** Contractor and its Subcontractors must perform the Work in accordance with the most current schedule for which no exceptions are taken unless otherwise directed by City. City's review of a schedule does not operate to extend the time for completion of the Work or any component of the Work, and will not affect City's right to assess liquidated damages for Contractor's unexcused delay in completing the Work within the Contract Time.

(E) **Posting.** Contractor must at all times maintain a copy of the most current approved progress or recovery schedule posted prominently in its on-site office.

(F) **Reservation of Rights.** City reserves the right to direct the sequence in which the Work must be performed or to make changes in the sequence of the Work in order to facilitate the performance of work by City or others, or to facilitate City's use of its property. The Contract Time or Contract Price may be adjusted to the extent such changes in sequence actually increase or decrease Contractor's time or cost to perform the Work.

(G) **Authorized Working Days and Times.** Contractor is limited to working Monday through Friday, excluding holidays, during City's normal business hours, except as expressly provided in the Special Conditions, or as authorized in writing by City. City reserves the right to charge Contractor for additional costs incurred by City due to Work performed on days or during hours not expressly authorized in these Contract Documents, including reimbursement of costs incurred for inspection, testing, and construction management services.

5.3 Delay and Extensions of Contract Time.

(A) **Excusable Delay.** The Contract Time may be extended if Contractor encounters an unavoidable delay in completing the Work within the Contract Time due to causes completely beyond Contractor's control, and which Contractor could not have avoided or mitigated through planning, foresight, and diligence ("Excusable Delay"). Grounds for Excusable Delay may include fire, earthquake, acts of terror or vandalism, epidemic, unforeseeable adverse government actions, unforeseeable actions of third parties, encountering unforeseeable hazardous materials, unforeseeable site conditions, suspension for convenience under Article 13, or unusually severe weather. Contractor is not entitled to any extension of time or compensation for Excusable Delay that is concurrent with Non-Excusable Delay.

(B) **Non-Excusable Delay.** Non-Excusable Delay includes delay to Final Completion that Contractor could have avoided or mitigated through planning, foresight and diligence, and includes delay caused by:

- (1) weather conditions which are normal for the location of the Project, as determined by reliable records, including monthly rainfall averages, for the preceding ten years;
- (2) Contractor's failure to order equipment and materials sufficiently in advance of the time needed for timely completion of the Work;
- (3) Contractor's failure to provide adequate notification to utility companies for connections or services necessary for the timely performance and completion of the Work;
- (4) foreseeable conditions Contractor could have ascertained from reasonably diligent inspection of the Worksite or review of the Contract Documents; or
- (5) Contractor's financial inability to perform the Work, including insufficient funds to pay its Subcontractors or suppliers.

(C) **Request for Extension of Contract Time.** A request for an extension of time and associated delay costs must be submitted in writing to the Project Manager within ten calendar days of the date the delay is first encountered, even if the duration of the delay is not yet known at that time, or shall be deemed waived. In addition to complying with

the requirements of this Article 5, the request must be submitted in compliance with the Change Order request procedures in Article 6, below. Strict compliance with these requirements is necessary to ensure that any delay or delay costs may be mitigated as soon as possible, and to facilitate cost-efficient administration of the Project and timely performance of the Work. Any request for an extension of time or delay costs that does not strictly comply with the requirements of Article 5 and Article 6 will be deemed waived.

(1) *Required Contents.* The request must include a detailed description of the cause(s) of the delay, and must also describe the measures that Contractor has taken to mitigate the delay and/or its effects, including efforts to mitigate the cost impact of the delay, e.g., by workforce management, change in sequencing, etc. If the delay is still ongoing at the time the request is submitted, the request should also include Contractor's plan for continued mitigation of the delay or its effects.

(2) *Delay Days and Costs.* The request must specify the number of days of Excusable Delay claimed, or provide a realistic estimate if the duration of the delay is not yet known. The request must specify the amount of any delay-related costs that are claimed, or provide a realistic estimate if the amount is not yet known. Any estimate of delay duration or cost must be updated in writing and submitted with all required supporting documentation as soon as the actual time and cost is known.

(3) *Supporting Documentation.* The request must also include any and all supporting documentation necessary to evidence the delay and its actual impacts, including schedule and cost impacts, including a time impact analysis using critical path methodology, and demonstrating unavoidable delay to Final Completion. The time impact analysis must be submitted in a form or format acceptable to City.

(4) *Burden of Proof.* Contractor has the burden of proving 1) that the delay was an Excusable Delay, as defined above, 2) that Contractor has made reasonable efforts to mitigate the delay and its schedule and cost impacts, 3) that the delay will unavoidably result in delaying Final Completion, and 4) that any delay costs claimed by Contractor were actually incurred and were reasonable under the circumstances.

(5) *Recoverable Costs.* If Contractor is granted an extension of time for Excusable Delay, recompense for delay costs shall be limited to actual, direct, reasonable, and substantiated costs, and will not include home office overhead, or markup for overhead and profit.

(6) *Legal Compliance.* Nothing in this provision is intended to require the waiver, alteration, or limitation of the applicability of Public Contract Code Section 7102.

(7) *No Waiver.* Any grant of an extension of time or delay costs due to an Excusable Delay will not operate as a waiver of City's right to assess liquidated damages for unexcused delay.

(8) *Dispute Resolution.* In the event of a dispute over entitlement to an extension of time or delay costs, Contractor may not stop working pending resolution of the dispute, but must continue to comply with its duty to diligently prosecute the performance and timely completion of the Work. Contractor's sole recourse for an unresolved dispute based on City's rejection of a Change Order request for an extension of time or delay costs is to comply with the Dispute Resolution provisions set forth in Article 12, below.

5.4 Liquidated Damages. It is expressly understood that if Final Completion is not achieved within the Contract Time, City will suffer damages which are difficult to determine and accurately specify. Pursuant to Public Contract Code section 7203, if Contractor fails to achieve Final Completion within the Contract Time, City will charge Contractor in the amount specified in the Contract for each day that Final Completion is delayed beyond the Contract Time, as liquidated damages and not as a penalty.

(A) **Liquidated Damages.** Liquidated damages will not be assessed for any Excusable Delay, as set forth above.

(B) **Milestones/Deadlines.** Liquidated damages will also be separately assessed for failure to meet milestones or deadlines specified elsewhere in the Contract Documents.

(C) **Setoff.** City is entitled to set off the amount of liquidated damages assessed against any payments otherwise due to Contractor, including setoff against release of retention. If there are insufficient Contract funds remaining to cover the full amount of liquidated damages assessed, City is entitled to recover the balance from Contractor or its performance bond surety.

(D) **Occupancy or Use.** Occupancy or use of the Project in whole or in part prior to Final Completion does not constitute City's acceptance of the Project and will not operate as a waiver of City's right to assess liquidated damages for Contractor's unexcused delay in achieving Final Completion.

Article 6 Contract Modification

6.1 Changes in Work. City reserves the right to make changes in the Work without invalidating the Contract. City may direct or Contractor may request changes in the Work, and any such changes will be formalized in a Change Order, which may include commensurate changes in the Contract Price or Contract Time as applicable. Contractor must promptly comply with City-directed changes in the Work in accordance with the intent of the original Contract Documents, even if Contractor and City have not yet reached agreement as to adjustments to the Contract Price or Contract Time.

(A) **City-Directed Change.** The Engineer is authorized to direct minor changes to the Work which do not involve a change in Contract Time or a change in Contract Price; and, in the event of an emergency, the Engineer is also authorized to direct extra work needed to avoid imminent harm to persons or property. In the event of a dispute over entitlement to or the amount of a change in Contract Time or a change in Contract Price related to an City-directed change, Contractor must perform the Work as directed and may not delay its work or cease work pending resolution of the dispute, but must continue to comply with its duty to diligently prosecute the performance and timely completion of the Work, including the Work in dispute. If the City requests a cost proposal and other contract adjustments for extra Work from the Contractor, the Contractor shall respond within five working days.

(B) **Contractor's Obligations.** In the event that City and Contractor dispute whether a portion or portions of the Work are already required by the Contract Documents as opposed to changed or extra Work, Contractor must perform the Work as directed and may not delay its Work or cease Work pending resolution of the dispute, but must continue to comply with its duty to diligently prosecute the performance and timely completion of the Work, including the Work in dispute.

(C) **Remedy for Non-Compliance.** Contractor's failure to promptly comply with an City-directed change is deemed a material breach of the Contract, and in addition to all other remedies available to it, City may, at its sole discretion, hire another contractor or use its own forces to complete the disputed Work at Contractor's sole expense, and may deduct the cost from the Contract Price.

(D) **Dispute Resolution.** Contractor's sole recourse for an unresolved dispute related to changes in the Work is to comply with the dispute resolution provisions set forth in Article 12, below.

6.2 Contractor Change Order Requests. Contractor must submit a request or proposal for a change in the Work or a change in the Contract Price or Contract Time as a written Change Order request or proposal.

(A) **Time for Submission.** Any request for a change in the Contract Price must be submitted in writing to the Project Manager within ten calendar days of the date that Contractor first encounters the circumstances, information or conditions giving rise to the Change Order request, even if the total amount of the requested change in the Contract Price or impact on the Contract Time is not yet known at that time.

(B) **Required Contents.** Any Change Order request or proposal submitted by Contractor must include a complete breakdown of actual or estimated costs and credits, and must itemize labor, materials, equipment, taxes, insurance, and subcontract amounts. Any estimated cost must be updated in writing as soon as the actual amount is known.

(C) **Required Documentation.** All claimed costs must be fully documented, and any related request for an extension of time or delay-related costs must be included at that time and in compliance with the requirements of Article 5 of the General Conditions.

(D) **Required Form.** Contractor must use City's form(s) for submitting all Change Order requests or proposals, unless otherwise specified by City.

(E) **Certification.** All Change Order requests must be signed by Contractor and must include the following certification:

"The undersigned Contractor certifies under penalty of perjury that its statements and representations in this Change Order request are true and correct. Contractor warrants that this Change Order request is comprehensive and complete, and agrees that any costs, expenses, or time extension request not included herein shall be deemed waived. Contractor understands that submission of claims which have no basis in fact or which Contractor knows to be false may violate the False Claims Act, as set forth in Government Code Sections 12650 et seq., and Chapter 3.17 of the San Pablo Municipal Code."

6.3 Adjustments to Contract Price. The amount of any increase or decrease to the Contract Price will be determined based on one of the following methods in the order provided:

(A) **Unit Pricing.** Amounts previously provided by Contractor in the form of unit prices, either in a bid schedule or schedule of values, will apply if such unit pricing has previously been provided in Contractor's accepted bid schedule or schedule of values for the affected Work.

(B) **Lump Sum.** A mutually agreed upon lump sum.

(C) **Time and Materials.** On a time and materials basis, which may be subject to a not-to-exceed limit, calculated as the total of the following sums:

- (1) All direct labor costs, excluding superintendence, plus 15% for overhead and profit;
- (2) All direct material costs, including sales tax, plus 15% for overhead and profit;
- (3) All direct plant and equipment rental costs, plus 15% for overhead and profit;
- (4) All direct subcontract costs plus 5% for overhead and profit; and
- (5) Increased bond or insurance premium costs computed at 1.5% of total of the previous four sums.

6.4 Unilateral Change Order. If City disagrees with the amount of compensation or extension of time that Contractor has requested, City may elect to issue a unilateral Change Order, directing performance of the Work, and authorizing a change in the Contract Price or Contract Time in the amount City believes is merited. Contractor's sole recourse to dispute the terms of a unilateral Change Order is to submit a timely Claim pursuant to Article 12, below.

6.5 Non-Compliance Deemed Waiver. Contractor waives its entitlement to any increase in the Contract Price or Contract Time if Contractor fails to fully comply with the provisions of this Article. Contractor will not be paid for unauthorized extra work.

Article 7 General Construction Provisions

7.1 Permits and Taxes.

(A) **General.** Contractor must obtain and pay for any and all permits, fees, or licenses required to perform the Work, unless otherwise indicated in the Contract Documents. Contractor must cooperate with and provide notifications to government agencies with jurisdiction over the Project, as may be required. Contractor must provide City with copies of all notices, permits, licenses, and renewals required for the Work.

(B) **Federal Excise Tax.** Contractor must pay for all taxes on labor, material and equipment, except Federal Excise Tax to the extent that City is exempt from Federal Excise Tax.

7.2 Temporary Facilities. Contractor must provide, at Contractor's sole expense, any and all temporary facilities, including onsite office, sanitary facilities, storage, scaffolds, barricades, walkways, and any other temporary structure required to safely perform the Work along with any utility services incidental thereto.

(A) **Standards.** Such structures must be safe and adequate for the intended use, and installed and maintained in accordance with all applicable federal, state, and local laws, codes, and regulations.

(B) **Removal and Repair.** Contractor must promptly remove all such temporary facilities when they are no longer needed or upon completion of the Work, whichever comes first. Contractor must promptly repair any damage to City's property caused by

the installation, use, or removal of the temporary facilities, and must promptly restore the property to its original or intended condition.

(C) **Additional Requirements.** Additional provisions pertaining to temporary facilities may be included in the Specifications or Special Conditions.

7.3 Signs. No signs may be displayed on or about City's property, except signage which is required by law or by the Contract Documents, without City's prior written approval as to content, size, design, and location.

7.4 Protection of Work and Property.

(A) **General.** Contractor is responsible at all times for protecting the Work and materials and equipment to be incorporated into the Work from damage until the Notice of Completion has been recorded. Except as specifically authorized by City, Contractor must confine its operations to the area of the Project site indicated in the Drawings. Contractor is liable for any damage caused to City's real or personal property, the real or personal property of adjacent property owners, or the work or personal property of other contractors working for City.

(B) **Unforeseen Conditions.** If Contractor encounters facilities, utilities, or other unknown conditions not shown on or reasonably inferable from the Drawings or apparent from inspection of the Project site, Contractor must promptly notify the Project Manager, and must avoid taking any action which could cause damage to the facilities or utilities pending further direction from the Project Manager. If the Project Manager's subsequent direction to Contractor affects Contractor's cost or time to perform the Work, Contractor may submit a Change Order request as set forth in Article 6, above.

(C) **Support; Adjacent Properties.** Contractor must provide, install, and maintain all shoring, bracing, underpinning, etc., necessary to provide support to City's property and adjacent properties and improvements thereon. Contractor must provide notifications to adjacent property owners as may be required by law.

7.5 Noninterference. Contractor must take reasonable measures to avoid interfering with City's use of its property at or adjacent to the Project site, including use of roadways, entrances, parking areas, walkways, and structures.

7.6 Materials and Equipment.

(A) **General.** Unless otherwise specified, all materials and equipment required for the Work must be new and of the best grade for the intended purpose, and furnished in sufficient quantities to ensure the proper and expeditious performance of the Work. Unless otherwise specified, all materials and equipment required for the Work are deemed to include all components required for complete installation and intended operation, and must be installed in accordance with the manufacturer's recommendation. Contractor is responsible for all shipping, handling, and storage costs associated with the materials and equipment required for the Work, and is responsible for protecting the Work and all of the required materials, supplies, tools and equipment at Contractor's sole cost until City accepts the Project.

(B) **City-Provided.** If the Work includes installation of materials or equipment to be provided by City, Contractor is solely responsible for the proper examination, handling, storage, and installation of such items in accordance with the Contract Documents. Contractor must promptly notify City of any defects discovered in City-provided materials or equipment. Contractor is solely responsible for any loss of or damage to such items which occurs while the items are in Contractor's custody and control, the cost of which

may be offset from the Contract Price and deducted from any payment(s) due to Contractor.

(C) **Intellectual Property Rights.** Contractor must, at its sole expense, obtain any authorization required for use of patented or copyright protected materials, equipment, devices or processes that are incorporated into the Work. Contractor's indemnity obligation in Article 4, applies to any claimed violation of intellectual property rights in violation of this provision.

7.7 Substitutions.

(A) **"Or Equal."** Any specification designating a material, product, thing, or service by specific brand or trade name, followed by the words "or equal," is intended only to indicate quality and type of item desired, and Contractor may request use of any equal material, product, thing, or service.

(B) **Request for Substitution.** A request for substitution must be submitted to the Project Manager for approval within the applicable time period provided in the Contract Documents. If no time period is specified, the substitution request may be submitted any time within 35 days after the date of award of the Contract, or sufficiently in advance of the time needed to avoid delay of the Work, whichever is earlier.

(C) **Substantiation.** All data substantiating the proposed substitute as an "equal" item must be submitted with the written request for substitution. Contractor's failure to timely provide necessary substantiation is ground for rejection of the proposed substitution, without further review.

(D) **Burden of Proving Equality.** Contractor has the burden of proving the equality of the proposed substitution. The Engineer has sole discretion to determine whether a proposed substitution is "equal," and Design Professional's determination is final.

(E) **Approval or Rejection.** The Engineer shall either:

(a) issue a written determination to the Contractor, as to whether or not the requested substitute material may be used in the performance of the Contract Documents; If the proposed substitution is approved, Contractor is solely responsible for any additional costs associated with the substituted item(s), or

(b) if the Engineer fails to issue a written determination within fifteen calendar days, the requested substitute material shall be deemed rejected.

If the Engineer determines that the substitute material may be used, he will issue a Change Order to the Contractor for such use on the project.

The Engineer's determination shall be final. The Contractor shall not order, install or use the substitute material unless and until approved by Change Order. If the proposed substitution is rejected, Contractor must, without delay, install the item specified.

Contractor shall not be entitled to an extension of Contract Time or any delay damages resulting from a request for a substitution of materials.

(F) **Contractor's Obligations.** The City's review of a proposed substitution will not relieve Contractor from any of its obligations under the Contract Documents. In the event Contractor makes an unauthorized substitution, Contractor will be solely responsible for all resulting cost impacts, including the cost of removal and replacement and the impact to other design elements.

7.8 Testing and Inspection.

(A) **General.** All materials, equipment, and workmanship used in the Work are subject to inspection by Inspector at all times and locations during construction and/or fabrication. All manufacturers' application or installation instructions must be provided to the Inspector at least ten days prior to the first such application or installation. Contractor must, at all times, make the Work available for inspection.

(1) The Inspector will not be available on the Project site at all times during construction. Contractor must plan ahead and schedule inspections at least two working days before the inspections are needed.

(2) The Inspector is authorized to inform Contractor if any portion of the Work does not conform to the requirements of the Contract Documents. If Contractor fails to take timely action to correct any such nonconformance, the Inspector is authorized to stop the Work until the appropriate correction has been made. Inspector also has authority to stop the Work based upon an unsafe condition or emergency.

(3) Contractor will be responsible for inspection costs, at City's established rates, for inspection time lost because the Work is not ready or Contractor fails to appear for a scheduled inspection.

(B) **Scheduling and Notification.** Contractor must schedule all tests required by the Contract Documents in time to avoid any delay to the progress of the Work. Contractor must provide timely notice to all necessary parties as specified in the Contract Documents.

(C) **Responsibility for Costs.** City will bear the initial cost of testing or inspection to be performed by independent testing or inspection consultants retained by City, subject to the following exceptions:

(1) Contractor will be responsible for the costs of any subsequent tests or inspections which are required to substantiate compliance with the Contract Documents, and any associated remediation costs.

(2) In addition, if any portion of the Work which is subject to testing or inspection is covered or concealed by Contractor prior to testing, Contractor will bear the cost of making that portion of the Work available for the testing or inspection required by the Contract Documents, and any associated repair or remediation costs.

(D) **Contractor's Obligations.** Any Work that fails to comply with the requirements of the Contract Documents must be promptly repaired, replaced, or corrected by Contractor, at Contractor's sole expense, even if that Work was previously inspected or included in a progress payment. Contractor is solely responsible for any delay occasioned by remediation of noncompliant Work. Inspection of the Work does not in any way relieve Contractor of its obligations to perform the Work as specified.

(E) **Distant Locations.** If required off-site testing or inspection must be conducted at a location more than 100 miles from the Project site, Contractor is solely responsible for the additional travel costs required for testing and/or inspection at such locations.

(F) **Final Inspection.** The provisions of this Section 7.8 apply to final inspection under Article 11, Completion and Warranty Provisions.

7.9 Clean up. Contractor must regularly remove debris and waste materials and maintain the Worksite in clean and neat condition.

(A) **General.**

The solid waste franchise agreement between the City and Richmond Sanitary Service (RSS), provides the company the exclusive right to collect and dispose of all solid waste in the City. All construction waste that is not self-hauled must be collected by RSS. Disposal-only contractors are not permitted to collect construction waste.

Prior to discontinuing work in an area, Contractor must clean the area and remove all rubbish along with its construction equipment, tools, machinery, waste and surplus materials. Contractor must, at all times, minimize and confine dust and debris resulting from construction activities.

(B) **Completion.** At the completion of the Work, Contractor must remove from the Worksite all of its equipment, tools, surplus materials, waste materials and debris. Before demobilizing from the Worksite, Contractor must ensure that all surfaces are cleaned, sealed, waxed, or finished as applicable, and that all marks, stains, paint splatters, and the like have been properly removed from the completed Work and the surrounding areas.

(C) **Non-Compliance.** If Contractor fails to commence compliance with its cleanup obligations within two business days following written notification from City or its representative, City may undertake appropriate cleanup measures without further notice and the cost will be deducted from any amounts due or to become due the Contractor.

7.10 Instructions and Manuals. Contractor must provide three copies each of all instructions and manuals required by the Contract Documents, unless otherwise specified. These must be complete as to drawings, details, parts lists, performance data, and other information that may be required for City to easily maintain and service the materials and equipment installed for this Project.

(A) **Submittal Requirements.** All manufacturers' application or installation instructions must be provided to the Inspector at least ten days prior to the first such application. The instructions and manuals, along with any required guarantees, must be delivered to the Design Professional for review.

(B) **Instruction of Personnel.** Contractor or its Subcontractors must instruct City's personnel in the operation and maintenance of any complex equipment as a condition precedent to Final Completion, if required in the Contract Documents.

7.11 As-built Drawings. Contractor and its Subcontractors must maintain on the Worksite a separate complete set of the Drawings which will be used solely for the purpose of recording changes made in any portion of the Work in order to create accurate record drawings at the end of the Project.

(A) **Duty to Update.** The as-built drawings must be updated as changes occur, on a daily basis if necessary. Progress payments may be delayed, in whole or in part, until the as-built drawings are brought up to date to the satisfaction of the Engineer. Actual locations to scale must be identified on the as-built drawings for all runs of mechanical and electrical work, including all site utilities, etc., installed underground, in walls, floors, or otherwise concealed. Deviations from the original Drawings must be shown in detail. The location of all main runs, whether piping, conduit, ductwork, drain lines, etc., must be shown by dimension and elevation.

- (B) **Format Requirements.** Submit as-built drawings in the following formats:
 - (1) AutoCAD (latest version). Include survey points and infrastructure shots.
 - (2) Acrobat PDF (full/actual size, >600dpi) scanned wet signed.
 - (3) One (full size bond) complete set wet-signed hardcopy.

- (C) **Final Completion.** Contractor must verify that all changes in the Work are depicted in the as-built drawings and must deliver the complete set of as-built drawings to the City for review and approval as a condition precedent to Final Completion.

7.12 Existing Utilities. As required by Government Code Section 4215, if, during the performance of the Work, Contractor discovers utility facilities not identified by City in the Contract Documents, Contractor must immediately provide written notice to City and the utility. City assumes responsibility for the timely removal, relocation, or protection of existing main or trunkline utility facilities located on the Project site, if those utilities are not identified in the Contract Documents. Contractor will be compensated in accordance with the provisions of the Contract Documents for the costs of locating, repairing damage not due to Contractor's failure to exercise reasonable care, and removing or relocating such utility facilities not indicated in the Drawings or Specifications with reasonable accuracy, and for equipment on the Project necessarily idled during such work. Contractor will not be assessed liquidated damages for delay in completion of the Work, to the extent such delay was caused by City's failure to provide for removal or relocation of the utility facilities.

7.13 Notice of Excavation. Government Code Section 4216.2, requires that except in an emergency, Contractor must contact the appropriate regional notification center, or Underground Services Alert at 800-642-2444 (for Northern California), at least two working days, but not more than 14 calendar days before starting any excavation if the excavation will be conducted in an area that is known, or reasonably should be known, to contain subsurface installations, and if practical, Contractor must delineate with white paint or other suitable markings the area to be excavated.

7.14 Trenching and Excavations.

(A) **Duty to Notify.** Contractor must promptly, and before the following conditions are disturbed, provide written notice to City if the Contractor finds any of the following conditions:

- (1) Material that Contractor believes may be a hazardous waste, as defined in Section 25117 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 the provisions of existing law;
- (2) Subsurface or latent physical conditions at the Worksite differing from those indicated by information about the Worksite made available to bidders prior to the deadline for submitting bids; or
- (3) Unknown physical conditions at the Worksite of any unusual nature, materially different from those ordinarily encountered and generally recognized as inherent in work of the character required by the Contract Documents.

(B) **City Investigation.** City will promptly investigate the conditions and if City finds that the conditions do materially differ or do involve hazardous waste, and cause a

decrease or increase in Contractor's cost of, or the time required for, performance of any part of the Work, City will issue a Change Order.

(C) **Disputes.** In the event that a dispute arises between the City and the Contractor regarding any of the conditions specified in subsection (A) above, Contractor will not be excused from any scheduled completion date provided for in the Contract Documents, but must proceed with all Work to be performed under the Contract. Contractor will retain any and all rights provided either by the Contract or by law which pertain to the resolution of disputes between Contractor and City.

7.15 Trenching of Five Feet or More. As required by Labor Code Section 6705, if the Contract Price exceeds \$25,000 and the Work includes the excavation of any trench or trenches of five feet or more in depth, a detailed plan must be submitted to City or its civil or structural engineer, for acceptance in advance of the excavation. The detailed plan must show the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation. If the plan varies from the shoring system standards, it must be prepared by a registered civil or structural engineer. Use of a shoring, sloping, or protective system less effective than that required by the Construction Safety Orders is prohibited.

7.16 New Utility Connections. City will pay connection charges and meter costs for new permanent utilities required by the Contract Documents, if any. Contractor must notify City sufficiently in advance of the time needed to request service from each utility provider so that connections and services are initiated in accordance with the Project schedule.

7.17 Lines and Grades. Contractor is required to use any benchmark provided by Design Professional. Unless otherwise specified in the Contract Documents, Contractor must provide all lines and grades required to execute the Work.

7.18 Historic or Archeological Items.

(A) **Contractor's Obligations.** Contractor must ensure that all persons performing Work at the Project site are required to immediately notify the Project Manager, upon discovery of any potential historic or archeological items, including historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints or other archeological, paleontological or historical feature on the Project site (collectively, "Historic or Archeological Items").

(B) **Discovery; Cessation of Work.** Upon discovery of any potential Historic or Archeological Items, Work must be stopped within an 85-foot radius of the find and may not resume until authorized in writing by Project Manager. If required by City, Contractor must assist in protecting or recovering the Historic or Archeological Items, any such assistance to be compensated as extra work on a time and materials basis under Article 6, Contract Modification. Any suspension of Work required due to discovery of Historic or Archeological Items will be treated as a suspension for convenience under Article 13.

7.19 Environmental Control. Contractor must not pollute any drainage course or its tributary inlets with fuels, oils, bitumens, acids, insecticides, herbicides or other harmful materials. Contractor and its Subcontractors must at all times in the performance of the Work comply with all applicable federal, state, and local laws and regulations concerning pollution of waterways.

(A) **Stormwater Permit.** Contractor must comply with all applicable conditions of the State Water Resources Control Board National Pollutant Discharge Elimination System General Permit for Waste Discharge Requirements for Discharges of Stormwater Runoff Associated with Construction Activity ("Stormwater Permit").

(B) **Contractor's Obligations.** If required for the Work, a copy of the Stormwater Permit is on file in City's principal administrative offices, and the Contractor must comply with the same without adjustment of the Contract Price or the Contract Time. The Contractor must timely and completely submit required reports and monitoring information required by the conditions of the Stormwater Permit, the Contractor must comply with all other applicable state, municipal or regional laws, ordinances, rules or regulations governing discharge of stormwater, including applicable municipal stormwater management programs.

(C) **CALGreen's Construction and Demolition Requirements.** The contractor must comply with CALGreen's Construction and Demolition requirements (<http://www.calrecycle.ca.gov/LGCentral/Library/CandDModel/Instruction/FAQ.htm>) and complete the City's Construction Waste Management Form (included in the Appendices).

(D) **PCBs in Building Materials.** Buildings of masonry structure built or renovated between 1950 and 1979 are likely to have PCB containing materials (caulk, light ballasts, oils, paint, etc.). Therefore, projects meeting this criteria will be required to perform sampling for PCBs in accordance with USEPA Code of Federal Regulations (40 CFR part 761). In addition, the San Pablo Municipal Code Section 8.40.110(D) permits the City to require the contractor to test and provide reports for any premises that may cause or contribute to illicit stormwater discharges (i.e. PCBs). If PCBs are found to be onsite, USEPA Code of Federal Regulations (40 CFR part 761) will require that any PCB containing material is removed and disposed of in accordance with these guidelines. The contractor shall demonstrate to the EPA and copy the City that they meet these guidelines.

7.20 Sound Control Requirements. Sound control shall conform to these Special Provisions and the City's Noise Control ordinance (San Pablo Municipal Code Chapter 9.12).

The noise level from the contractor's operations between the hours of 10:00 p.m. and 7:00 a.m. (if such hours are allowed by City Engineer), shall not exceed 86 DbA at a distance of 50 feet. This requirement does not relieve the Contractor from responsibility for complying with other laws regulating noise levels.

The noise level requirement shall apply to all equipment on the job or related to the job, including but not limited to trucks, transit mixers or transient equipment that may or may not be owned by the Contractor. The use of loud sound signals shall be avoided in favor of light warnings except those required by safety laws for the protection of personnel.

Article 8 Payment

8.1 Schedule of Values. Prior to submitting its first application for payment, Contractor must prepare and submit to Project Manager a schedule of values apportioned to the various divisions and phases of the Work. Each line item contained in the schedule of values must be assigned a value such that the total of all items equals the Contract Price. The items must be sufficiently detailed to enable accurate evaluation of the percentage of completion claimed in each application for payment, and the assigned value consistent with any itemized or unit pricing submitted with Contractor's bid.

8.2 Progress Payments. Following the last day of each month, or as otherwise required by the Special Conditions or Specifications, Contractor will submit to Project Manager a monthly application for payment for Work performed during the preceding month based on the estimated value of the Work performed during that preceding month.

(A) **Application for Payment.** Each application for payment must be itemized to include labor, materials, and equipment incorporated into the Work, and materials and equipment delivered to the Worksite, as well as authorized and approved Change Orders. Each pay application must be supported by the Contractor's schedule of values and any other substantiating data required by the Contract Documents

(B) **Payment of Undisputed Amounts.** City will pay the undisputed amount due, as certified by the Design Professional, within thirty (30) days after Contractor has submitted a complete and accurate payment application, subject to Public Contract Code Section 20104.50. City will deduct a percentage from each progress payment as retention, as set forth in Section 8.5, below, and may deduct additional amounts as set forth in Section 8.3, below.

8.3 Adjustment of Payment Application. City may adjust or reject a payment application, including application for Final Payment, in whole or in part, based upon any of the circumstances listed below. Contractor will be notified in writing of the basis for the adjustment, and will be promptly paid once the basis for that adjustment has been remedied and no longer exists.

(A) Contractor's unexcused failure to perform the Work as required by the Contract Documents, including correction or completion of punch list items;

(B) Loss or damage caused by Contractor or its Subcontractor(s) arising out of or relating to performance of the Work;

(C) Contractor's failure to pay its Subcontractors and suppliers when payment is due;

(D) Failure to timely correct rejected, nonconforming, or defective Work;

(E) Unexcused delay in performance of the Work;

(F) Any unreleased stop notice, retained as 125% of the amount claimed;

(G) Failure to submit any required schedule, schedule update or daily reports in the manner and within the time specified in the Contract Documents:

(H) Failure to maintain or submit as-built documents in the manner and within the time specified in the Contract Documents;

(I) Work performed without approved Shop Drawings, when approved Shop Drawings are required before proceeding with the Work;

(J) Contractor's payroll records are delinquent or inadequate; and

(K) Any other costs or charges that may be offset against payments due, as provided in the Contract Documents, including liquidated damages and costs incurred to review excessive or unnecessary RFIs.

8.4 Acceptance of Work. Neither City's payment of progress payments nor its partial or full use or occupancy of the Project constitutes acceptance of any part of the Work.

8.5 Retention. City will retain five percent of the amount due on each progress payment, or the percentage stated in the Notice Inviting Bids, whichever is greater, as retention to ensure full and satisfactory performance of the Work.

(A) **Substitution of Securities.** As provided by Public Contract Code Section 22300, Contractor may request in writing that it be allowed, at its sole expense, to substitute securities for the retention withheld by City. Any escrow agreement entered into pursuant to this provision will fully comply with Public Contract Code Section 22300, and will be subject to approval as to form by City's legal counsel.

(B) **Release of Undisputed Retention.** All undisputed retention, less any amounts that may be assessed as liquidated damages, retained for stop notices, or otherwise withheld under Section 8.3 or 8.6 will be released as Final Payment to Contractor no sooner than 35 days following recordation of the notice of completion, and no later than 60 days following acceptance of the Project by City's governing body or authorized designee, or, if the Project has not been accepted, no later than 60 days after the Project is otherwise considered complete under Public Contract Code Section 7107(c).

8.6 Setoff. City is entitled to set off any amounts due from Contractor against any payments due to Contractor. City's entitlement to setoff includes progress payments as well as Final Payment and release of retention.

8.7 Payment to Subcontractors and Suppliers. Each month, Contractor must promptly pay each Subcontractor and supplier the value of the portion of labor, materials, and equipment incorporated into the Work or delivered to the Worksite by the Subcontractor or supplier during the preceding month. Such payments must be made in accordance with the requirements of the law, and those of the Contract Documents and applicable subcontract or supplier contract.

(A) **Withholding for Stop Notice.** City will withhold 125% of the amount claimed by an unreleased stop notice, a portion of which may be retained by City for the costs incurred in handling the stop notice claim, including attorneys' fees and costs, as authorized by law.

(B) **Joint Checks.** City reserves the right to issue joint checks made payable to the Contractor and its Subcontractors or suppliers. As a condition to release of payment by a joint check, the joint check payees may be required to execute a joint check agreement in a form provided or approved by City. The joint check payees will be jointly and severally responsible for the allocation and disbursement of funds paid by joint check. Payment by joint check will not be construed to create a contractual relationship between City and a Subcontractor or supplier of any tier beyond the scope of the joint check agreement.

8.8 Final Payment. Contractor's application for Final Payment must comply with the requirements for submitting an application for a progress payment as stated in Section 8.2, above. Application shall also include completed and signed labor compliance forms for federal or CDBG funded projects, if required. Corrections to previous progress payments, including adjustments to estimated quantities for unit priced items, may be included in the Final Payment. The date of Final Payment is deemed to be effective on the date that City acts to release retention as final payment to Contractor, or otherwise provides written notice to Contractor of Final Payment. If the amount due from Contractor to City exceeds the amount of Final Payment, City retains the right to recover the balance from Contractor or its sureties.

8.9 Release of Claims. City may, at any time, require that payment of the undisputed portion of any progress payment or Final Payment be contingent upon Contractor furnishing City with a written release of all claims against City arising from or related to the portion of Work covered by those undisputed amounts. Any disputed amounts may be specifically excluded from the release.

- 8.10 Warranty of Title.** Contractor warrants that title to all work, materials, or equipment incorporated into the Work and included in a request for payment will pass over to City free of any claims, liens, or encumbrances upon payment to Contractor.

Article 9 Labor Provisions

- 9.1 Discrimination Prohibited.** Discrimination against any prospective or present employee engaged in the Work on grounds of race, color, ancestry, national origin, ethnicity, religion, sex, sexual orientation, age, disability, or marital status is strictly prohibited. Contractor and its Subcontractors are required to comply with all applicable Federal and California laws including the California Fair Employment and Housing Act (Government Code Sections 12900 et seq.), Government Code Section 11135, and Labor Code Sections 1735, 1777.5, 1777.6, and 3077.5.

9.2 Labor Code Requirements.

(A) **Eight Hour Day.** Under Labor Code Section 1810, eight hours of labor constitute a legal day's work under this Contract.

(B) **Penalty.** Under Labor Code Section 1813, Contractor will forfeit to City as a penalty, the sum of \$25.00 for each day during which a worker employed by Contractor or any Subcontractor is required or permitted to work more than eight hours in any one calendar day or more than 40 hours per calendar week, except if such workers are paid overtime under Labor Code Section 1815.

(C) **Apprentices.** Contractor is responsible for compliance with the requirements governing employment and payment of apprentices, as set forth in Labor Code Section 1777.5, which is fully incorporated by reference.

(D) **Notices.** Under Labor Code Section 1771.4, Contractor is required to post all job site notices prescribed by law or regulation.

- 9.3 Prevailing Wages.** Each worker performing Work under this Contract that is covered under Labor Code Section 1720 or 1720.9, including cleanup at the Project site, must be paid at a rate not less than the prevailing wage as defined in Sections 1771 and 1774 of the Labor Code. The prevailing wage rates are available online at <http://www.dir.ca.gov/dlsr>. Contractor must post a copy of the applicable prevailing rates at the Worksite.

(A) **Penalties.** Under Labor Code Section 1775, Contractor and any Subcontractor will forfeit to City as a penalty up to \$200.00 for each calendar day, or portion a day, for each worker paid less than the applicable prevailing wage rate. Contractor must also pay each worker the difference between the applicable prevailing wage rate and the amount actually paid to that worker.

(B) **Federal Requirements.** If this Project is subject to Federal prevailing wage requirements in addition to California prevailing wage requirements, Contractor and its Subcontractors are required to pay the higher of the current applicable prevailing wage rates under federal law, available online at <http://www.access.gpo.gov/davisbacon/ca.html>, or under California law, available online at <http://www.dir.ca.gov/DLSR>.

9.4 Payroll Records. Contractor must comply with the provisions of Labor Code Sections 1776 and 1812 and all implementing regulations, which are fully incorporated by this reference, including requirements for electronic submission of payroll records.

(A) **Contractor and Subcontractor Obligations.** Contractor and each Subcontractor must keep accurate payroll records, 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 in connection with the Work. Each payroll record must contain or be verified by a written declaration that it is made under penalty of perjury, stating both of the following:

(1) The information contained in the payroll record is true and correct.

(2) The Contractor or Subcontractor has complied with the requirements of Labor Code Sections 1771, 1811, and 1815 for any Work performed by its employees on the Project.

(B) **Certified Record.** A certified copy of an employee's payroll record must be made available for inspection or furnished to the employee or his or her authorized representative on request, to City, or to the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations, and as further provided by the Labor Code.

(C) **Enforcement.** Upon notice of noncompliance with Labor Code Section 1776, Contractor or Subcontractor has ten days in which to comply with requirements of this section. If Contractor or Subcontractor fails to do so within the ten day period, Contractor or Subcontractor will forfeit a penalty of \$100.00 per day, or portion a day, for each worker for whom compliance is required, until strict compliance is achieved. Upon request by the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement, these penalties will be withheld from progress payments then due.

9.5 Labor Compliance. Under Labor Code section 1771.4, the Contract for this Project, if awarded on or after January 15, 2015, is subject to compliance monitoring and enforcement by the California Department of Industrial Relations.

Article 10 Safety Provisions

10.1 Safety Precautions and Programs. Contractor and its Subcontractors are fully responsible for safety precautions and programs, and for the safety of persons and property in the performance of the Work. Contractor and its Subcontractors must comply with all applicable safety laws, rules and regulations and seek to avoid injury, loss, or damage to persons or property by taking reasonable steps to protect its employees and other persons at the Worksite, materials and equipment stored on or off site, and property at or adjacent to the Worksite.

(A) **Reporting Requirements.** Contractor must immediately provide a written report to City of all recordable accidents and injuries occurring at the Worksite. If Contractor is required to file an accident report with a government agency, Contractor will provide a copy of the report to City.

(B) **Legal Compliance.** Contractor's safety program must comply with the applicable legal and regulatory requirements. Contractor must provide City with copies of all notices required by law or regulation.

(C) **Contractor's Obligations.** Any damage or loss caused by Contractor arising from the Work which is not insured under property insurance must be promptly remedied by Contractor.

(D) **Remedies.** If City determines, in its sole discretion, that any part of the Work or Worksite is unsafe, City may, without assuming responsibility for Contractor's safety program, require Contractor or its Subcontractor to cease performance of the Work or to take corrective measures to the City's satisfaction. If Contractor fails to promptly take the required corrective measures, City may perform them and deduct the cost from the Contract Price. Contractor agrees it is not entitled to submit a Claim for damages, for an increase in Contract Price, or for a change in Contract Time based on Contractor's compliance with the City's request for corrective measures pursuant to this provision.

10.2 Hazardous Materials. Unless otherwise specified, this Contract does not include the removal, handling, or disturbance of any asbestos or other Hazardous Materials. If Contractor encounters materials on the Worksite that Contractor reasonably believes to be asbestos or other Hazardous Materials, and the asbestos or other Hazardous Materials have not been rendered harmless, Contractor may continue Work in unaffected areas reasonably believed to be safe, but must immediately cease work on the area affected and report the condition to the City. No asbestos, asbestos-containing products or other Hazardous Materials may be used in performance of the Work.

10.3 Material Safety. Contractor must maintain Material Safety Data Sheets ("MSDS") at the Worksite, as required by law, for materials or substances used or consumed in the performance of the Work. The MSDS shall be accessible and available to Contractor's employees, Subcontractors, and the City.

(A) **Contractor Obligations.** Contractor is solely responsible for the proper delivery, handling, use, storage, removal, and disposal of all materials brought to the Worksite and/or used in the performance of the Work.

(B) **Labeling.** Contractor must ensure proper labeling on any material brought onto the Worksite so that any persons working with or in the vicinity of the material may be informed as to the identity of the material, any potential hazards, and requirements for proper handling, protections, and disposal.

Article 11 Completion and Warranty Provisions

11.1 Final Completion.

(A) **Final Inspection.** When the Work required by this Contract is fully performed, Contractor must provide written notification to the Project Manager requesting final inspection. Based on this inspection, the Design Professional will prepare a punch list of items that are incomplete, incorrectly installed, or not operating as required by the Contract Documents. The omission of any such item from this punch list will not relieve the Contractor from fulfilling all requirements of the Contract Documents. If Contractor requests final inspection and City determines that Work exceeding five percent of the total value of the Contract, as adjusted, remains unfinished, Contractor will be responsible for the City's costs, including staff time, for performance of the final inspection on a premature basis.

(B) **Punch List.** The City will deliver the punch list to Contractor and will specify the time by which all of the punch list items must be completed or corrected. The punch list

may include City's estimated cost to complete each punch list item if Contractor fails to do so within the specified time.

(C) **Requirements for Final Completion.** Final Completion will be achieved upon completion or correction of all punch list items, as verified by inspection, and upon satisfaction of all other Contract requirements, including any commissioning required under the Contract Documents, and submission of all final submittals, including a warranty bond as required under Section 4.4, instructions and manuals as required under Section 7.10, and as-built drawings as required under Section 7.11, all to City's satisfaction.

(D) **Acceptance.** Following Final Completion, the Project is considered accepted once the City Council takes action during a public meeting to accept the Project. If the City Council authorizes the Engineer to accept the Project, the Project is considered accepted upon the Engineer's issuance of a written notice of acceptance. After the Project has been formally accepted by City, City will file a notice of completion with the County Recorder.

(E) **Final Payment.** Final Payment and release of retention, less any sums withheld pursuant to the provisions of the Contract Documents, will not be made sooner than 35 days after recordation of the notice of completion. If Contractor fails to complete all of the punch list items within the specified time, City may elect to accept the Project and record the notice of completion, and withhold up to 150% of City's estimated cost to complete the remaining items from Final Payment.

11.2 Warranty.

(A) **General.** Contractor warrants that all materials and equipment will be new unless otherwise specified, of good quality, in conformance with the Contract Documents, and free from defective workmanship and materials. Contractor further warrants that the Work will be free from material defects not intrinsic in the design or materials required in the Contract Documents. At City's request, Contractor must furnish satisfactory evidence of the quality and type of materials and equipment furnished. Contractor's warranty does not extend to damage caused by normal wear and tear, or improper use or maintenance.

(B) **Warranty Period.** Contractor's warranty must guarantee its Work for a period of one year from the date of recordation of the notice of completion (the "Warranty Period"), except when a longer guarantee is provided by a supplier or manufacturer or is required by the Specifications or Special Conditions. Contractor must obtain from its Subcontractors, suppliers and manufacturers any special or extended warranties required by the Contract Documents.

(C) **Warranty Documents.** As a condition precedent to acceptance, Contractor must supply City with all warranty and guarantee documents relevant to equipment and materials incorporated into the Work and guaranteed by their suppliers or manufacturers.

(D) **Subcontractors.** The warranty obligations in the Contract Documents apply to Work performed by Contractor and its Subcontractors, and Contractor expressly agrees to act as co-guarantor of such Work.

(E) **Contractor's Obligations.** Upon written notice from City to Contractor of any defect in the Work discovered during the Warranty Period, Contractor or its responsible Subcontractor must promptly correct the defective Work at its own cost. Contractor's obligation to correct defects discovered during the Warranty Period will continue past the expiration of the Warranty Period as to any defects in Work for which Contractor was notified prior to expiration of the Warranty Period.

(F) **City's Remedies.** If Contractor and/or its responsible Subcontractor fails to correct defective Work within ten days following notice by City, or sooner, if required by the circumstances, Contractor expressly agrees that City may correct the defects to conform with Contract Documents at Contractor's sole expense, and Contractor agrees to reimburse City for its costs within 30 days following City's submission of a demand for payment pursuant to this provision. If City is required to initiate legal action to compel Contractor's compliance with this provision, and City is the prevailing party in such action, Contractor is solely responsible for all of City's attorney's fees and legal costs expended to enforce Contractor's warranty obligations herein in addition to any and all costs incurred by City to correct the defective Work.

11.3 Use Prior to Final Completion. City reserves the right to occupy or make use of the Project, or any portions of the Project, prior to Final Completion if City has determined that the Project or portion of it is in a condition suitable for the proposed occupation or use, and that it is in its best interest to occupy or make use of the Project, or any portions of it, prior to Final Completion. City will notify Contractor in writing of its intent to occupy or make use of the Project or any portions of the Project, pursuant to this provision.

(A) **Non-Waiver.** Occupation or use prior to Final Completion will not operate as acceptance of the Work or any portion of it, nor will it operate as a waiver of any of City's rights or Contractor's duties pursuant to these Contract Documents, and will not affect nor bear on the determination of the time of substantial completion with respect to any statute of repose pertaining to the time for filing an action for construction defect.

(B) **City's Responsibility.** City will be responsible for the cost of maintenance and repairs due to normal wear and tear with respect to those portions of the Project that are being occupied or used before final completion. The Contract Price or the Contract Time may be adjusted pursuant to the applicable provisions of these Contract Documents if, and only to the extent that, any occupation or use under this Section actually adds to Contractor's cost or time to perform the Work.

11.4 Substantial Completion. For purposes of determining "substantial completion" with respect to any statute of repose pertaining to the time for filing an action for construction defect, "substantial completion" is deemed to mean the last date that Contractor or any Subcontractor performs Work on the Project prior to recordation of the Notice of Completion, except for warranty work performed under this Article.

Article 12 Dispute Resolution

12.1 Claims. This Article applies to and provides the exclusive procedures for any Claim arising from or related to the Contract or performance of the Work.

(A) **Definition.** "Claim" means a separate demand by Contractor, submitted in writing, for change in the Contract Time or Contract Price that has previously been submitted to City in accordance with the requirements of the Contract Documents, and which has been rejected by City, in whole or in part.

(B) **Limitations.** A Claim may only include the portion of a previously rejected demand that remains in dispute between Contractor and City. With the exception of any dispute regarding the amount of money actually paid to Contractor as Final Payment, Contractor is not entitled to submit a Claim demanding a change in the Contract Time or the Contract Price, which has not previously been submitted to City in full compliance with Article 5 and Article 6, and subsequently rejected in whole or in part by City.

(C) **Scope of Article.** This Article is intended to provide the exclusive procedures for submission and resolution of Claims of any amount, and applies in addition to the provisions of Public Contract Code Sections 20104, et seq.

12.2 Claims Submission. The following requirements apply to any Claim subject to this Article:

(A) **Substantiation.** The Claim must be submitted to City in writing and must include all of the documents necessary to substantiate the Claim including the change order request that was rejected in whole or in part, and City's rejection. Any Claim for additional payment must include a complete, itemized breakdown of all labor, materials, taxes, insurance, and subcontract, or other costs. Substantiating documentation such as payroll records, receipts, invoices, or the like, must be submitted in support of each claimed cost. Any Claim for an extension of time or delay costs must be substantiated with schedule analysis and narrative depicting and explaining claimed time impacts. Any claim for lost productivity or efficiency must be supported with a detailed analysis based on Measured Mile Method, using verifiable data and current industry standard forensic practices.

(B) **Claim Format.** A Claim must be submitted in the following format:

- (1) General introduction.
- (2) Relevant background information.
- (3) Detailed explanation of the issue(s) in dispute. For multiple issues, separately number and identify each issue and include the following for each separate issue:
 - a) Background, including references to relevant provisions of the Contract Documents.
 - b) A succinct statement of the matter in dispute, including Contractor's position and the basis for that position.
 - c) A chronology of relevant events.
 - d) Identify and attach all supporting documents. (See subsection (A), above, on Substantiation.)
 - e) Begin each issue on a separate page.
- (4) Summary of issues and damages.
- (5) The following certification, executed by Contractor's authorized representative:

"The undersigned Contractor certifies under penalty of perjury that its statements and representations in this Claim are true and correct. Contractor warrants that this Claim is comprehensive and complete as to the matters in dispute, and agrees that any costs, expenses, or delay claim not included herein are deemed waived. Contractor understands that submission of a Claim which has no basis in fact or which Contractor knows to be false may violate the False Claims Act (Government Code Section 12650 et seq.)."

(C) **Submission Deadlines.**

(1) A Claim must be submitted within 15 days following the date that City notified Contractor in writing that a request for a change in the Contract Time or Contract Price, duly submitted in compliance with Article 5 and Article 6, has been rejected in whole or in part.

(2) With the exception of any dispute regarding the amount of Final Payment, any Claim must be filed on or before the date of Final Payment, or will be deemed waived.

(3) A Claim disputing the amount of Final Payment must be submitted within 15 days of the effective date of Final Payment, under Section 8.8, above.

(4) Strict compliance with these Claim submission deadlines is necessary to ensure that any dispute may be mitigated as soon as possible, and to facilitate cost-efficient administration of the Project. Any Claim that is not submitted within the specified deadlines will be deemed waived by Contractor.

12.3 Claims Under \$50,000. For any Claim of less than \$50,000.00, City will respond in writing within 45 days of receipt of the Claim, or may first request, in writing, within 30 days of receipt of the Claim, any additional documentation supporting the Claim or relating to defenses to the Claim that City may have against Contractor. If Contractor fails to submit the additional documentation to City within 15 days of receipt of City's request, the claim will be deemed waived.

(A) **Additional Information.** If additional information is thereafter required, it may be requested and provided upon mutual agreement of City and Contractor.

(B) **City's Response.** City's written response to the Claim, as further documented, will be submitted to Contractor within 15 days after receipt of the further documentation or within a period of time no greater than that taken by Contractor in producing the additional information, whichever is greater.

(C) **Non-Waiver.** Any failure by City to respond within the times specified above may not be construed as acceptance of the Claim in whole or in part, or as a waiver of any provision of these Contract Documents.

12.4 Claims From \$50,000 to \$375,000. For any Claim of over \$50,000.00, and less than or equal to \$375,000.00, City will respond in writing within 60 days of receipt of the Claim, or may request, in writing, within 30 days of receipt of the Claim, any additional documentation supporting the Claim or relating to the defenses to the Claim that City may have against Contractor. If Contractor fails to submit the additional documentation to City within 30 days of receipt of City's request, the claim will be deemed waived.

(A) **Additional Information.** If additional information is thereafter required, it may be requested and provided upon mutual agreement of City and Contractor.

(B) **City's Response.** City's written response to the Claim, as further documented, will be submitted to Contractor within 30 days of 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.

(C) **Non-Waiver.** Any failure by City to respond within the times specified above may not be construed as acceptance of the Claim in whole or in part, or as a waiver of any provision of these Contract Documents.

12.5 Claims Over \$375,000. For any Claim of over \$375,000.00, City will respond in writing within 90 days of receipt of the Claim. City may request, in writing, within 45 days of receipt of the Claim, any additional documentation supporting the Claim relating to defenses to the Claim that City may have against the Contractor. If Contractor fails to submit the additional documentation to City within 45 days of receipt of City's request, the claim will be deemed waived.

(A) **Additional Information.** If additional information is thereafter required, it may be requested and provided upon mutual agreement of City and Contractor.

(B) **City's Response.** City's response to the Claim, as further documented, will be submitted to Contractor within 45 days after receipt of the further documentation, or within a period of time no greater than that taken by Contractor in producing the additional information or requested documentation, whichever is greater.

(C) **Non-Waiver.** Any failure by City to respond within the times specified above may not be construed as acceptance of the Claim in whole or in part, or as a waiver of any provision of these Contract Documents.

12.6 Meet and Confer.

(A) **Claims up to \$375,000.** For Claims less than or equal to \$375,000.00, if Contractor disputes the City's written response, or City fails to respond within the specified time, Contractor must notify City in writing, either within 15 days of receipt of City's response, or within 15 days of City's failure to respond within the specified time, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. If Contractor fails to dispute City's response, in writing, within the specified times, Contractor's Claim will be deemed waived.

(1) Upon receipt of the demand to meet and confer, City will schedule the meet and confer conference to be held within 30 days, or later if needed to ensure the mutual availability of all of the individuals that each party requires to represent its interests at the meet and confer conference.

(2) The meet and confer conference will be scheduled at a location at or near City's principal office.

(3) If the Claim or any portion remains in dispute following the meet and confer conference, the parties may agree to mediation, as set forth in Section 12.7, below, or if unable to agree, Contractor may file a claim as provided in Government Code Section 900 et seq. (a "Government Code Claim").

(B) **Claims over \$375,000.** For any Claim greater than \$375,000.00, if Contractor disputes the City's written response, or City fails to respond within the specified time, Contractor must notify City in writing, either within 30 days of receipt of City's response, or within 30 days of City's failure to respond within the specified time, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. If Contractor fails to dispute City's response, in writing, within the specified times, Contractor's Claim will be deemed waived.

(1) Upon receipt of the demand to meet and confer, City will schedule the meet and confer conference to be held within 60 days, or later if needed to ensure the

mutual availability of all of the individuals that each party requires to represent its interests at the meet and confer conference.

(2) The meet and confer conference will be scheduled at a location at or near City's principal office.

(3) For any Claim or any portion(s) of a Claim that remains in dispute following the meet and confer conference, the parties agree to make a good faith effort to resolve the dispute through mediation as a condition precedent to filing a Government Code Claim and initiating litigation.

12.7 Mediation and Government Code Claims.

(A) **Mediation.** Mediation under this Article will be scheduled within 60 days following conclusion of the meet and confer process, with a mediator that the parties mutually agreed upon. The mediation itself may take place more than 60 days following conclusion of the meet and confer process to ensure the mutual availability of the selected mediator and all of the individuals that each party requires to represent its interests. The parties must share the costs of mediation equally, except costs incurred by each party for representation by legal counsel or any other consultant.

(B) Government Code Claims.

(1) Timely presentment of a Government Code Claim is a condition precedent to filing any legal action based on or arising from the Contract.

(2) The time for filing a Government Code Claim will be tolled from the time the Contractor submits its written Claim pursuant to Section 12.2, above, until the time that Claim is denied as a result of the meet and confer process, including any period of time used by the meet and confer process. If the parties agree to mediation pursuant to Section 12.7, below, the time for filing a Government Code Claim will be tolled until conclusion of the mediation by impasse.

12.8 Tort Claims. This Article does not apply to tort claims and nothing in this Article is intended nor will be construed to change the time periods for filing tort-based Government Code Claims.

12.9 Arbitration. It is expressly agreed, under California Code of Civil Procedure Section 1296, that in any arbitration to resolve a dispute relating to this Contract, the arbitrator's award must be supported by law and substantial evidence.

12.10 Damages. Contractor bears the burden of proving entitlement to and the amount of any claimed damages. Contractor is not entitled to damages calculated on a total cost basis, but must prove actual damages. Contractor is not entitled to recovery of any alleged home office overhead. The Eichleay Formula may not be used for any recovery under the Contract. Contractor is not entitled to consequential damages, including home office overhead or any form of overhead not directly incurred at the Worksite; lost profits; loss of productivity; lost opportunity to work on other projects; diminished bonding capacity; increased cost of financing for the Project; extended capital costs; non-availability of labor, material or equipment due to delays; or any other indirect loss arising from the Contract.

12.11 Multiple Claims. In the interest of efficiency, City, acting in its sole discretion, may elect to process multiple Claims concurrently, in which case the applicable procedures above will be based on the total amount of such Claims rather than the amount of each

individual Claim. Any such election will not operate to change or waive any other requirements of this Article.

- 12.12 Other Disputes.** The procedures in this Article 12 will apply to any and all disputes or legal actions, in addition to Claims, arising from or related to this Contract, unless and only to the extent that compliance with a procedural requirement is expressly and specifically waived by City. Nothing in this Article is intended to delay suspension or termination under Article 13.

Article 13 Suspension and Termination

- 13.1 Suspension for Cause.** In addition to all other remedies available to City, if Contractor fails to perform or correct work in accordance with the Contract Documents, City may immediately order the Work, or any portion of it, suspended until the cause for the suspension has been eliminated to City's satisfaction.
- (A) **Failure to Comply.** Contractor will not be entitled to an increase in Contract Time or Contract Price for a suspension occasioned by Contractor's failure to comply with the Contract Documents.
- (B) **No Duty to Suspend.** City's right to suspend the Work will not give rise to a duty to suspend the Work, and City's failure to suspend the Work will not constitute a defense to Contractor's failure to comply with the requirements of the Contract Documents.
- 13.2 Suspension for Convenience.** City reserves the right to suspend, delay, or interrupt the performance of the Work in whole or in part, for a period of time determined to be appropriate for City's convenience, and not due to any act or omission by Contractor or its Subcontractors. Upon notice by City pursuant to this provision, Contractor must immediately suspend, delay, or interrupt the Work as directed by City. The Contract Price and the Contract Time will be equitably adjusted by Change Order to reflect the cost and delay impact occasioned by such suspension for convenience.
- 13.3 Termination for Default.** Contractor may be deemed in default for a material breach of or inability to perform the Contract, including Contractor's refusal or failure to supply sufficient skilled workers, proper materials, or equipment to perform the Work within the Contract Time; refusal or failure to make prompt payment to its employees, Subcontractors, or suppliers or to correct rejected work; disregard of laws, regulations, ordinances, rules, or orders of any public agency with jurisdiction over the Project; or if Contractor lacks financial capacity to complete the Work within the Contract Time; or is otherwise responsible for a material breach of the Contract requirements.
- (A) **Notice.** Upon City's determination that Contractor is in default, City may provide Contractor and its surety written notice of default and intent to terminate the Contract.
- (B) **Termination.** Within seven calendar days after notice of intent to terminate for default has been given, unless the default is cured or arrangements to cure the default have been made and memorialized in writing, to City's satisfaction, City may terminate the Contract by written notice to Contractor with a copy to Contractor's surety.
- (C) **Waiver.** Time being of the essence in the performance of the Work, if Contractor's surety fails to arrange for completion of the Work in accordance with the Performance Bond, within seven calendar days from the date of the notice of termination, Contractor's surety will be deemed to have waived its right to complete the Work under

the Contract, and City may immediately make arrangements for the completion of the Work through use of its own forces, by hiring a replacement contractor, or by any other means that City determines advisable under the circumstances. Contractor and its surety will be jointly and severally liable for any additional cost incurred by City to complete the Work following termination. In addition, City will have the right to use any materials, supplies, and equipment belonging to Contractor and located at the Worksite for the purposes of completing the remaining Work.

(D) **Wrongful Termination.** If a court of competent jurisdiction or an arbitrator later determines that the termination for default was wrongful, the termination will be deemed to be a termination for convenience, and Contractor's damages will be strictly limited to the compensation provided for termination for convenience, in Section 13.4, below. Contractor waives any claim for any other damages for wrongful termination including consequential damages, lost opportunity costs or lost profits.

13.4 Termination for Convenience. City reserves the right to terminate all or part of the Contract for convenience upon written notice to Contractor. Upon receipt of such notice, Contractor must immediately stop the Work, comply with City's instructions to protect the completed Work and materials, and use its best efforts to minimize further costs. In the event of termination for convenience, the parties agree that the following will constitute full and fair compensation to Contractor, and that Contractor will not be entitled to any additional compensation:

(A) **Completed Work.** The value of its Work satisfactorily performed to date, including Project overhead and profit based on Contractor's schedule of values;

(B) **Demobilization.** Actual and substantiated demobilization costs; and

(C) **Markup.** Five percent of the total value of the Work performed as of the date of notice of termination or five percent of the value of the Work yet to be completed, whichever is less.

13.5 Provisions Remaining in Effect. Upon termination pursuant to this Article, the provisions of the Contract Documents remain in effect as to any claim, indemnity obligation, warranties, guarantees, submittals of as-built drawings, instructions, or manuals, or other such rights and obligations arising prior to the termination date.

Article 14 Miscellaneous Provisions

14.1 Assignment of Unfair Business Practice Claims. Under Public Contract Code Section 7103.5, Contractor and its Subcontractors agree to assign to City 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. Section 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 Contract or subcontract. This assignment will be effective at the time City tenders Final Payment to Contractor, without further acknowledgement by the parties.

14.2 Provisions Deemed Inserted. Every provision of law required to be inserted in the Contract Documents is deemed to be inserted, and the Contract Documents will be construed and enforced as though such provision has been included. If it is discovered that through mistake or otherwise that any required provision was not inserted, or not correctly inserted, the Contract Documents will be amended accordingly.

- 14.3 Waiver.** No waiver of a breach, failure of any condition, or any right or remedy contained in or granted by the provisions of the Contract Documents will be effective unless it is in writing and signed by the party waiving the breach, failure, right, or remedy. No waiver of any breach, failure, right, or remedy will be deemed a waiver of any other breach, failure, right, or remedy, whether or not similar, nor will any waiver constitute a continuing waiver unless specified in writing by the waiving party.
- 14.4 Titles, Headings, and Groupings.** The titles and headings used and the groupings of provisions in the Contract Documents are for convenience only and may not be used in the construction or interpretation of the Contract Documents or relied upon for any other purpose.
- 14.5 Statutory and Regulatory References.** With respect to any amendments to any statutes or regulations referenced in these Contract Documents, the reference is deemed to be the version in effect on the date that that bids were due.

END OF GENERAL CONDITIONS

SPECIAL CONDITIONS

1. Insurance.

To meet the deadline to finish construction of the new bridge culvert outfall, required insurance, bonds, business license and other paperwork shall be provided the day after the Council Awards the contract to the lowest bidder on September 18, 2017.

(A) ***Policies and Limits.*** The following insurance policies and limits are required for this Contract unless otherwise specified in the *Special Conditions*:

(1) *Commercial General Liability Insurance ("CGL")*: The CGL policy must be issued on an occurrence basis, written on a comprehensive general liability form, and must include coverage for liability arising from Contractor's or its Subcontractor's operations in the performance of the Work, including contractor's protected coverage, blanket contractual, completed operations, vehicle coverage and employer's non-ownership liability coverage, with limits of at least \$5,000,000.00 per occurrence, and \$10,000,000.00 aggregate. The CGL policy must name City as an additional insured for all liability arising out of the operations by or on behalf of the named insured, and must protect City, its officers, employees, and agents against any and all liability for personal injury, death, or property damage or destruction arising directly or indirectly in the performance of the Contract. The additional insured endorsement must be provided using ISO form CG 20 10 11 85 alone, or both forms CG 20 10 10 01 and CG 20 37 10 01. The CGL coverage may be arranged under a single policy for the full limits required or by a combination of underlying policies with the balance provided by excess or umbrella policies, provided each such policy complies with the requirements set forth herein.

(2) *Builder's Risk Insurance*: The Builder's Risk Insurance policy must be issued on occurrence basis, for all-risk coverage on a 100% completed value basis on the insurable portion of the Project for the benefit of City.

(3) *Workers' Compensation Insurance and Employer's Liability*: The policy must comply with the requirements of the California Workers' Compensation Insurance and Safety Act, with of at least \$1,000,000.00. If Contractor is self-insured, Contractor must provide its Certificate of Permission to Self-Insure, duly authorized by the Department of Industrial Relations.

(4) *Automobile Liability*. The automobile liability policy must provide coverage of at least \$1,000,000 combined single-limit per accident for bodily injury, death or property damage.

(B) ***Notice.*** Each certificate of insurance must state that the coverage afforded by the policy or policies will not be reduced, cancelled or allowed to expire without at least 30 days written notice to City, unless due to non-payment of premiums, in which case ten days written notice must be made to City.

(C) ***Waiver of Subrogation.*** Each required policy must include an endorsement providing that the carrier agrees to waive any right of subrogation it may have against City.

(D) ***Required Endorsements.*** The CGL Policy and the Builder's Risk Policy must include the following specific endorsements:

(1) The inclusion of more than one insured will not operate to impair the rights of one insured against another, and the coverages afforded will apply as though separate policies have been issued to each insured.

(2) The insurance provided by Contractor is primary and no insurance or self-insurance held or owned by City, its officers, officials, employees or volunteers may be called upon to contribute to a loss. Any insurance or self-insurance held or owned by City, its officers, officials, employees and volunteers is excess to Contractor's insurance and may not be called on to cover or contribute to any loss covered by Contractor's insurance.

(3) This policy does not exclude explosion, collapse, underground excavation hazard, or removal of lateral support.

(E) **Subcontractors.** Contractor must ensure that each Subcontractor is required to maintain the same insurance coverage required under this Section 4.3, with respect to its performance of Work on the Project, including those requirements related to the additional insureds and waiver of subrogation. Contractor must confirm that each Subcontractor has complied with these insurance requirements before the Subcontractor is permitted to begin Work on the Project. Upon request by the City, Contractor must provide certificates and endorsements submitted by each Subcontractor to prove compliance with this requirement. The insurance requirements for Subcontractors do not replace or limit the Contractor's insurance obligations.

(F) **Deductibles and Self-Insured Retentions.** Any deductibles or self-insured retentions that apply to the required insurance (collectively, "deductibles") are subject to approval by City, acting in its sole discretion, and must be declared by Contractor when it submits its certificates of insurance and endorsements pursuant to this Section 4.3. If City determines that the deductibles are unacceptably high, at City's option, Contractor must either reduce or eliminate the deductibles as they apply to City and all required additional insured, as stated in subsection 4.3(A)(1), above; or must provide a financial guarantee, to City's satisfaction, guaranteeing payment of losses and related investigation, claim administration and legal expenses.

2. Submittals. The submittals checked below must be submitted to the Engineer at or before the pre-construction conference to be reviewed for general conformance with the Contract Documents. If exceptions are taken, re-submittal may be required before the Work may begin. The Engineer's review does not relieve the Contractor or its Subcontractors of responsibility for verifying dimensions, coordination, performance, or accuracy.

- Baseline (as-planned) schedule. (See General Conditions section 5.2.)
- Name and contact information for Contractor's authorized onsite representative, including cell phone, email address and home phone number.
- Emergency contact list with names and phone numbers, including cell phone numbers, for at least three representatives who can be reached after hours.
- The names and titles of each individual authorized to sign Change Orders and any other legally binding documents on behalf of Contractor.
- The name and address of each Subcontractor not already listed on the Subcontractor List form, including a description and cost information for the portion of the Work by each Subcontractor and the Subcontractor's DIR registration number.

- An equipment list which includes a description, identification number, make, model number, and other relevant information for each piece of equipment to be used on the Project.
- Proposed truck and hauling routes.
- A draft copy of the proposed Notification to residents within the Project area.
- Water Pollution Control Program.
- City's Construction Waste Management Form (See Appendices).
- Submittal schedule, listing description, supplier, source, and target dates for submission of all required submittals. The dates must be coordinated with the baseline schedule and related items should be submitted at the same time.
- Other:
 - Traffic Control Plan
 - Work Plan, Construction Schedule, Construction Sequencing Plan
 - Demolition Plan
 - Pothole Plan
 - Dewatering equipment and plan
 - Shoring, sheeting and bracing Plan
 - Materials: Aggregate Base Course, Air compressors, Asphalt mixes, Steel Pipe, Concrete barrels, Concrete mixes, Detection systems, Engineered fill, Engines and appurtenances, Fences, barricades and gates, Frame and Cover, Gas monitoring systems, Generators and appurtenances, Gravel bedding, Grout, Hardware, Imported fill, Miscellaneous furnishings, Paints, coatings and finishes, Pipe, fittings, Pipe material, connection and specials, Precast concrete bases and elements, Primary elements, Pumps, Reinforcing steel and layout drawings, Sheet pile, Signs, Structural steel, Traffic signage and equipment
 - Equipment provided by the CONTRACTOR,
 - Office equipment and furnishings provided by CONTRACTOR
 - *CEQA Mitigation measures*
 - *Site maintenance*

3. Caltrans Standard Specifications. Work shall be done in accordance with the State of California Department of Transportation 2016 Standard Specifications and the 2010 Standard Plans of the State of California Department of Transportation and City of San Pablo Standard Plans insofar as they apply and in accordance with the following Special Provisions.

4. Entry to Private Property. Work on this project will require entry onto private property. The City's right of entry is subject to the following written agreement(s) between City and the private property owner(s):

1. **2280 Giant Road, San Pablo, CA. APN: 011-010-075**
OWNER NAME:
2. **905 Randy Lane, San Pablo, CA. APN: 411-010-025**
OWNER NAME:

4.1 Compliance. Contractor and its employees, subcontractors, and suppliers must strictly comply with the limitations of the above agreement(s) when entering onto the private property during the course of construction. Full copies of the agreement(s) may be obtained by **Permanent Easement and City's Right-of-Entry**.

5. **Areas for Contractor's Use.** The street right of way shall be used only for purposes that are necessary to perform the required work. The Contractor shall not occupy the right of way, or allow others to occupy the right of way, for purposes which are not necessary to perform the required work.

No area is available within the contract limits for the exclusive use as a staging area of the Contractor. However, temporary storage of equipment and materials on City property is available close to the Davis Park entry walkway along Rumrill Blvd. Use of the Contractor's work areas and other City-owned property shall be at the Contractor's own risk, and the City shall not be held liable for damage to or loss of materials or equipment located within such areas. If the Contractor desires to use the City property adjacent to Rumrill Blvd., he shall execute the "Form Letter of Agreement for Use of City Property" included in the Appendices.

If additional area is required, the Contractor shall secure, at the Contractor's own expense, areas required for storage of equipment or materials or for other purposes, and provide documentation of the right of such use.

Before final inspection of the work, the Contractor shall clean the material sites and all ground occupied by the Contractor of all rubbish, excess materials, falsework, temporary structures and equipment. All parts of the work shall be left in a neat and presentable condition.

6. **Authorized Work Days and Hours.**

6.1 Authorized Work Days. Except as expressly authorized in writing by City, Contractor is limited to performing Work on the Project on the following days of the week, excluding holidays observed by City: Monday to Friday. Work on Saturdays, Sundays and established City Holidays (included in Appendices) shall not be allowed without prior written consent by the City.

6.2 Authorized Work Hours. Except as expressly authorized in writing by City, Contractor is limited to performing Work on the Project during the following hours: 8:00 a.m. to 5:00 p.m. Night work is not allowed.

Business hours and days are defined as normal City Hall office hours (7:30 a.m. to 6:00 p.m., Monday through Thursday). City inspections, procurement of permits, submittals and other City related businesses will be provided during this time. The contractor may request for inspections on a Friday four business days prior to the requested date.

Other restrictions on hours will remain in effect, including lane closure time limitations as required by the contract documents and labor code requirements.

7. **Mitigation.** Construction on this Project is subject to certain mitigation measures set forth in the **Randy Lane Drainage Improvement Project Initial Study / Mitigated Negative Declaration May 2017** (the "Environmental Document"). Contractor may obtain an electronic copy of the Environmental Document through an email request to the Project Manager. Contractor is responsible for fully complying with all mitigation measures pertaining to performance of the Work.

8. **Examination of Contract Documents and Site of Work.** Attention is directed to the Instructions to Bidders, Section 2 "Examination of Contract Documents and Project Site". City has obtained report(s):
1. Geotechnical Report - Randy Lane Storm Drain, San Pablo, CA
 2. Randy Lane Drainage Improvement Project Initial Study / Mitigated Negative Declaration May 2017.
 3. Results of Archaeological Extended Phase I Study for the Randy Lane Drainage Improvement Project, dated July 21, 2017.

These documents are available for viewing at the City Hall. The report(s) may contain facts that may materially affect bidders' bids.

In addition, City has constructed other public works projects and obtained reports and other information in the course of the design and construction of those other public works construction projects, all of which may contain facts that may materially affect bidders' bids. Bidders are strongly encouraged to inspect all of City's reports, records and documents referred to above. Said reports and documents will be made available upon written request at *City hall* for inspection and copying at bidders' sole cost and expense, during City Hall business hours, or may be viewed on the City's website.

9. **Liquidated Damages For Failure To Meet Milestones/Deadlines.** Provisions of General Conditions Section 5.4 will apply for failure to meet the following milestone/deadline:
- (A) **The stormdrain outfall construction work at the San Pablo creek bridge culvert shall be completed prior to continuous creek flow within the project footprint.**

10. **Minimum Standards and Inspection.** These documents reference minimum standards. If Federal, State or other governing codes or standards are more stringent, the more stringent requirements will apply. Notwithstanding that work or materials have been previously inspected by the Engineer or that payment thereof has been included in a progress payment, Contractor is not relieved from constructing the project in conformance with applicable codes or standards.

The Inspector authorized by the City/Engineer shall inspect the work and enforce the contract documents. Inspector will not be available on site during all construction activities, and Contractor shall schedule necessary inspections a minimum of 2 business days in advance.

In the event that Inspector notices an eminently unsafe condition, or in an emergency, Inspector shall have authority to stop work. Contractor shall not be entitled to delay claims for stoppage of unsafe work or work not performed in conformance with the Contract Documents.

The Inspector shall, at all times, have safe access to the work during its construction, and shall be furnished with every reasonable facility for ascertaining that the materials and the workmanship are in accordance with the requirements and intentions of these specifications, the special provisions and the plans. All work done and all materials furnished shall be subject to the Engineer's inspection.

Projects financed in whole or in part with Federal funds shall be subject to inspection at all times by the Federal agency involved.

The City may also arrange for the Contra Costa County Flood Control District to inspect and provide technical consultation on wall penetration related work. The County representative's role during construction shall be limited to making recommendations to the City, and they shall not have authority to approve or reject work, or interpret the Contract Documents.

The City may also arrange for an Independent Testing Lab to perform quality assurance work and/or Special Inspections, where required by the Plans. The Testing Lab or Special Inspector's role during construction shall be limited to making recommendations to the City, and the Testing Lab or Special Inspector shall not have authority to approve or reject work, or interpret the Contract Documents.

Separate and independent from the inspection above, the project may require building, electrical or other inspections by City Building Officials for code compliance, as indicated elsewhere in these documents. Such inspectors shall have the authority provided to them by local ordinances, regulations and/or practices.

Inspections may also be required by water, sewer, telephone and other utility companies. Such inspectors shall have the authority to inform the Contractor of any failure of the Work or materials to conform to their standards. In the event the Contractor does not take action to correct any such failures, the City Inspector shall have the authority to stop the work in question, and will confirm such action in writing. Contractor shall not be entitled to delay damages for stoppage of work not performed in conformance with utility company requirements.

It is the contractor's responsibility to request any and all inspections required for completion of the project.

11. **Final Pay Quantities.** When the estimated quantities for a specific portion of the work are designated on the bid sheets as final pay quantities, said estimated quantities shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the City Engineer. If such dimensions are revised, and such revisions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the changes in the dimensions. The estimated quantities for such specific portion of the work shall be considered as approximate only and no guarantee is made that the quantities which can be determined by computations, based on the details and dimensions shown on the plans, will equal the estimated quantities. No allowance will be made in the event that the quantities based on computations do not equal the estimated quantities.

When portions of an item have been designated on the bid sheets as final pay quantities, portions not so designated will be measured and paid for in accordance with the applicable provisions of these Specifications and the Special Provisions

12. **Monument Protection.** Monuments placed by surveyors must be preserved, in accordance with State Business & Professions Code section 8771.

For projects where the Plans indicate a known monument will be disturbed and replaced, the existing monument, typically consisting of a concrete core and brass tack, nail or other marking device located inside of a survey monument cover with frame, shall not be disturbed until the Contractor has arranged for establishment of reference points to preserve the location of the monument by a licensed surveyor.

The Contractor shall also not disturb other monuments that may/may not be shown on the plans including railroad spikes, brass tacks, nails or other markers set by surveyors, and

shall advise the City upon discovery of these monuments to determine how they shall be preserved. The Contractor shall exercise caution when working around monuments so as not to disturb them. During milling, grinding, excavation or other operations, the Contractor shall work around survey monuments unless specifically otherwise indicated on the Plans. If a monument is disturbed or damaged during adjusting, milling or other operations, the Contractor shall be responsible for all costs associated with the reestablishment of the monument including but not limited to surveying performed by a Licensed Surveyor, filing required documents with County and constructing the new monument in accordance with appropriate Contra Costa County Standards.

13. **Dust Control.** The Contractor shall comply with air pollution control rules, regulations, ordinances, and statutes that apply to work performed under the Contract, including air pollution control rules, regulations, ordinances, and statutes provided in Govt Code § 11017 (Pub Cont Code § 10231). The contractor shall prevent and alleviate dust by applying water, dust palliative or both, and by covering active and inactive stockpiles. All dust control shall be in conformance with State Standards Specifications Section 14-9.03, Dust Control.
14. **Order of Work:** When required by the special provisions or plans, the Contractor shall follow the sequence of operations as set forth herein and described in Technical Specification Section 01130 – Special Project Constraints.
15. **Notification of Residents and Businesses.** Prior to the start of work, the Contractor shall notify each residence and each business located at the project site/project area of the planned work schedule. Notices shall be in writing, in both English and Spanish, shall include contact information/telephone numbers for both the contractor and the city representative and shall be delivered at least 3 working days prior to the start of any work which may affect access to the residence or business for traffic, deliveries, workers or pedestrians; a Sample model letter to residents is included in the appendix. Contractor shall submit to city signed confirmation that notices were delivered, confirming range of addresses and time of delivery.

Notices must be approved by the City Engineer prior to delivery, and shall include the estimated project schedule, the extent of the project and names and contact information for the contractor and the City.

Temporary NO PARKING signs shall be set up 72 hours in advance (but no earlier than 96 hours in advance) of any parking restrictions, and shall be removed promptly when no longer needed, including periods when work will not be occurring for one week or more. The Contractor shall provide, erect, and maintain NO PARKING signs.

16. **Record Drawings/ As-Built Plans.** The Contractor shall keep a set of project plans at the Project site which shall be used only as Project Record Drawings. These shall include Contract Drawings, wiring diagrams, and other shop drawings. The Contractor shall update the drawings daily, and shall review changes to the drawings with the Engineer at the end of each week's work. The drawings shall be clearly marked by the Contractor with changes from the Contract Drawings and Specifications, and exact as-built locations of the improvements constructed. Dimensions shall be shown from a minimum of 2 permanent points of reference (such as building corners or monuments) for the following items\:

- New and existing underground utilities, including storm drain, sewer, water and gas mains and service laterals
- Monuments and benchmarks
- Water meters and connections to water source
- Irrigation pipelines, valves, conduit, wiring and controllers
- Electric meters

Electrical conduits and wiring
Other items as directed by the Engineer

The Contractor shall submit current prints of the record set to the Engineer once per month. Engineer's Estimates for payment will not be processed until current record drawings are received and accepted.

At the completion of the job, as a punch list item, the Contractor shall submit As-Built plans to the Engineer in legible format, utilizing red markings to show changes or corrections to the plans to reflect the as-built dimensions or conditions. The As-Built plans shall be submitted on untorn, clean, full-size project plans (blueprints or bond xerox).

- 17. Water Pollution Controls.** A Water Pollution Control Program must be submitted and accepted by the City Engineer prior to the start of work, unless a SWPPP is required per these Special Provisions.

The Contractor shall take all measures necessary to keep all substances used in or resulting from his work out of the gutters, storm drains and creeks. To this effect, the Contractor shall employ the "Best Management Practices (BMP's) for Construction and New Development" required by the City, and, when a SWPPP is included in these Special Provisions, Contractor shall comply with the SWPPP. Contractor shall maintain all temporary erosion and/or sediment controls, including removing sediment trapped at storm drain inlets as needed after rain so that said inlets remain functional.

A fine of \$500 shall be assessed to the Contractor for each calendar day when the measures are not properly installed or maintained, as determined by the Engineer.

- 18. Maintaining Traffic, Public Convenience and Public Safety.** Attention is directed to State of California Department of Transportation Standard Specifications Sections 7.1.03, "Public Convenience;" 7.1.04, "Public Safety;" and 12, "Temporary Traffic Control".

State of California Department of Transportation Standard Specifications Section 12-1.03, "Flagging Costs" is modified here to provide that all flagging costs shall be included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

All sections of the California Vehicle Code shall be in full effect except as provided hereinafter. Section 591 and any other section excluding roads under construction from certain requirements of the Vehicle Code shall be in effect only as permitted by the City Engineer. The Engineer's permission shall not be construed to relieve any person from the duty of exercising due care.

Two lanes of traffic (one lane in each direction minimum 10 feet per lane) shall be open to vehicular traffic for the entire length of the project at all times, unless otherwise approved by the City Engineer. Striping and/or cones and barricades properly marked shall be used to delineate the traffic lanes. Access to driveways shall be maintained at all times. No traffic lanes may be closed before 9:00 a.m. or after 3:30 p.m. without written permission from the City Engineer.

When entering or leaving roadways which bear public traffic, the Contractor's equipment, whether empty or loaded, shall in all cases yield to public traffic.

The use of florescent traffic cones to direct traffic away from excavations shall be considered lane closure. When traffic cones or delineators are used to delineate a temporary edge of traffic lane, the line of cones or delineators shall be considered to be

the edge of traffic lane, however, the Contractor shall not reduce the width of an existing lane to less than 10 feet without written approval from the Engineer.

When work is not in progress on a trench or other excavation that requires closure of an adjacent lane, the traffic cones or portable delineators used for the lane closure shall be placed off of and adjacent to the edge of the traveled way. The spacing of the cones or delineators shall be not more than the spacing used for the lane closure.

It shall be the contractor's responsibility to maintain public facilities and roadways adjacent to the project site free of all construction debris. Dirt, gravel, asphalt, or other materials from delivery or haul trucks shall be removed from such facilities and roadways on a daily basis, or as directed by the City Engineer

The provisions in this section may be modified or altered if, in the opinion of the City Engineer, public traffic will be better served and work expedited. Such modifications or alterations shall not be adopted until approved in writing by the City Engineer. All hauling on City streets shall be on a haul route approved by the City Engineer.

- ***one lane of traffic shall be open at all times with approval by the City Engineer***
- ***special attention shall be given to the fact that tow trucks and larger vehicles travel on Giant Road at the job site. Access for emergency vehicles is crucial and shall be given top priority at all times.***

- 19. Permits and Licenses.** For public right-of-way construction work, the Contractor shall procure all permits and licenses, pay all charges and fees and give all notices necessary and incidental to and necessary to the lawful performance of the work.

City of San Pablo permits which may be required, but are not necessarily limited to, include a building permit, overload or transportation permit, encroachment permit, grading permit, C.3 permit, NPDES permit, certificate of occupancy. City permit fees will be waived for work on this project. The Contractor shall be responsible to schedule inspections for each permit, if applicable.

The project cannot be Awarded to the Contractor by the Council until all permits are approved:

1. **Section 408 permit by Contra Costa Flood Control District (FDC) in partnership with Army Corp of Engineers Readiness (structures) Branch (Corp-Readiness).**
 - **Status: currently in review.**
2. Section 1602 permit by California Fish and Wildlife (CDFW).
 - Status: Streambed Alteration Agreement not needed. Letter attained (Notification No. 1600-2017-0311-R3).
3. Section 404 by Army Corp of Engineers (Corp, general environmental branch).
 - Status: Permit (No. 2017-00318) not needed. Email confirmation obtained.
4. Section 401 by Regional Water Quality Control Board (Water Board).
 - Status: Requires Notice of Intent only (no permit needed); NOI submitted. Email confirmation obtained. Water Board will provide Notice of Applicability (NOA).

When permits from other agencies (e.g. Caltrans, Contra Costa County, Dept. of Fish & Game) or Utility companies (e.g. PG&E, EBMUD, WCWD) are required for the Work and/or included in the appendix in these Special Provisions, Contractor shall be responsible to comply with all permit conditions and inspection requirements. Upon completion of the

work, Contractor shall obtain written documentation from the respective agency or utility company that permit is finalized/closed out and accepted, and submit it to the City.

Temporary use permit(s) - it shall be the responsibility of the contractor to obtain temporary use permits for the use of any private property as a staging area, equipment and/or material storage yard, etc. Use permit conditions will vary and the contractor should contact the City of San Pablo Planning Department for specific requirements prior to submitting a bid. No work shall commence without these permits or licenses. Contractor shall comply with all conditions of the permits.

The City shall finalize the necessary permits for approval and shall be released to the contractor. Contractor shall pull all necessary permits from all the different associated agencies five calendar days after the pre-construction meeting.

20. Construction Staking.

Construction staking shall be provided by the contractor and all costs related thereto shall be included in the unit costs for each item requiring staking. The City Engineer shall be the sole judge of the sufficiency of any construction stakes and the need thereof. All construction staking shall be provided under the direction of a professional land surveyor licensed in the State of California, who shall submit evidence of such license to Engineer.

- 21. Construction Details.** Contractor is advised that where no pay item is listed in the bid schedule, the cost for the work described in these Construction Details, plans and specifications shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefore.

END OF SPECIAL CONDITIONS (GENERAL)

**SPECIAL CONDITIONS (TECHNICAL SPECIFICATIONS)
WILL BE ON THE NEXT SECTION / PAGE.**

TECHNICAL SPECIFICATIONS

Technical Specifications

City of San Pablo

Randy Lane Drainage Improvement Project

Section	Title
DIVISION 1	
01110	SUMMARY OF WORK
01130	SPECIAL PROJECT CONSTRAINTS
01200	MEASUREMENT AND PAYMENT
01310	PROJECT MEETINGS
01400	QUALITY CONTROL
01420	REFERENCE STANDARDS AND ABBREVIATIONS
01500	TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES
01505	MOBILIZATION
01725	PIPELINE TESTING & CLEANUP
01800	OPERATIONAL COMPLETION AND PROJECT CLOSEOUT
DIVISION 2	
02200	SITE PREPARATION
02220	DEMOLITION
02300	EARTHWORK
02770	ASPHALT CONCRETE PAVING
02830	FENCING
DIVISION 3	
03100	CONCRETE FORMWORK
03200	CONCRETE REINFORCING
03251	CONCRETE JOINTS
03300	CAST-IN-PLACE CONCRETE
03400	PRECAST CONCRETE STRUCTURES
03600	GROUT
DIVISION 4	
Not Used	

Section	Title
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DIVISION 5

Not Used

DIVISION 6

Not Used

DIVISION 7

NOT USED

DIVISION 8

NOT USED

DIVISION 9

NOT USED

DIVISION 10

NOT USED

DIVISION 11

NOT USED

DIVISION 12

NOT USED

DIVISION 13

NOT USED

DIVISION 14

NOT USED

DIVISION 15

15100	PIPE AND FITTINGS
15100 PS	PIPE SCHEDULE
15100 PSDS DIP	PIPING SYSTEM DATA SHEET – DUCTILE IRON PIPE
15100 PSDS PVC2	PIPING SYSTEM DATA SHEET – PVC PRESSURE PIPE
15100 PSDS WSP	PIPING SYSTEM DATA SHEET – WELDED STEEL PIPE

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Section	Title
15120	PIPING SPECIALTIES
15200	VALVES AND OPERATORS

DIVISION 16

Not Used

APPENDIX A	GEOTECHNICAL REPORT
APPENDIX B	ENVIRONMENTAL DOCUMENTS
APPENDIX C	PERMITS

THE FOLLOWING DIVISIONS 1 TO 15 OF THESE TECHNICAL SPECIFICATIONS WERE
PREPARED UNDER THE SUPERVISION OF

Jigar D. Shah, P.E.

California Registered Civil Engineer No. 66080

Expiration 06/30/2018

WATER WORKS ENGINEERS, LLC.

1322 Blue Oaks Blvd, Suite 300

Roseville, CA 94678

916-780-2888 x 414

A handwritten signature in blue ink, appearing to read "J. D. Shah", is centered on the page. The signature is written in a cursive style with a period at the end.

Signature:

Date:

DIVISION 01

SECTION 01110

SUMMARY OF WORK

PART 1 - GENERAL

1.1 LOCATION AND DESCRIPTION OF WORK

- A. The Work covers the construction of approximately 542 LF of 14- to 24-inch Storm Drain pipeline; three (3) 48-inch diameter Storm Drain Manholes; one (1) Drainage Inlet; creating storm drain discharge through existing concrete canal wall penetration; connection of existing storm drain system; abandon existing storm drain system and discharge in San Pablo Creek and performing related required work, located as shown on these Drawings and Specifications.
- B. The CONTRACTOR shall be responsible for the acceptance, handling, installation and startup of this and all other equipment for the Project.
- C. The Work is located in the City of San Pablo, Township 1N, Range 5W on the Mount Diablo Base, California USGS 7.0-minute topographic quadrangle. The Work is along Giant Road and Randy Lane intersection discharging to San Pablo creek.
- D. The Work will be constructed under one contract. The Contract Documents include the following:
 - 1. Volume 1 – Bid Documents and Specifications.
 - 2. Volume 2 – Drawings
 - 3. Appendices –
 - A. Geotechnical Report (Available at the City Hall)
 - B. CEQA documents (Available at the City Hall)
 - C. Permits (Available at the City Hall)

1.2 COORDINATION

- A. The CONTRACTOR shall be solely responsible for coordination of all of the Work of this Contract.
- B. The CONTRACTOR shall supervise, direct and cooperate fully with all Subcontractors, manufacturers, fabricators, suppliers, distributors, installers, testing agencies and all others whose services, materials or equipment are required to ensure completion of the Work within the Contract Time.
- C. The CONTRACTOR shall cooperate fully and allow all governmental agency representatives such as from USACOE, CDFW, Wilton Rancheria Tribe, RWQCB, Contra Costa County, EBMUD, City of San Pablo and other related agencies for project inspection during the construction.
- D. Work of Others:
 - 1. The CONTRACTOR shall cooperate with and coordinate CONTRACTOR's Work with the work of any other contractor, utility service companies, or OWNER's employees performing work at the site.

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2. The CONTRACTOR shall also coordinate their Work with the work of others to assure compliance with schedules.
 3. The CONTRACTOR shall attend and participate in all project coordination or progress meetings and report on the progress of all Work and compliance with schedules.
 4. If any part of the work depends upon the work of others for proper execution or results, the CONTRACTOR shall inspect and promptly report to the ENGINEER any apparent discrepancies or defects in such work of others that render it unsuitable for such proper execution and results.
 5. Failure of the CONTRACTOR to so inspect and report shall constitute an acceptance of the work of others as fit and proper except as to defects, which may develop in the work of others after execution of the work by the CONTRACTOR.
- E. Interference with work on utilities:
1. The CONTRACTOR shall cooperate fully with all utility forces of the OWNER or forces of other public or private agencies engaged in the relocation, altering, or otherwise rearranging of any facilities, which interfere with the progress of the work.
 2. The CONTRACTOR shall schedule the work so as to minimize interference with said relocation, altering, or other rearranging of facilities.
- F. Responsibility for Damage:
1. The CONTRACTOR shall not be responsible for damage done by CONTRACTORS not under their jurisdiction.
 2. The CONTRACTOR will not be liable for any such loss or damage, unless it is through the negligence of the CONTRACTOR.

1.3 SITE CONDITIONS

- A. Site Investigation and Representation
1. The CONTRACTOR acknowledges that it has satisfied itself as to the nature and location of the work, the general and local conditions, particularly those bearing upon availability of transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads, and uncertainties of weather, tide stages, or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during the prosecution of the work and all other matters which can in any way affect the work or the cost thereof under this Contract.
 2. The CONTRACTOR further acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials to be encountered from inspecting the site and from evaluating information derived from exploratory work that may have been done by the OWNER or included in these Contract Documents. Any failure by the CONTRACTOR to become acquainted with all the available information will not relieve the CONTRACTOR from responsibility for properly estimating the difficulty or cost of successfully performing the work.
 3. Field Verification:
 - a. Before undertaking each part of the work, the CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements.
 - b. As the work proceeds, the CONTRACTOR shall field verify the depth and location of all buried utilities, and existing systems, and location of hazardous waste and contaminants.
 - c. The CONTRACTOR shall promptly report in writing to the ENGINEER any conflict, error, or discrepancy, which the CONTRACTOR may discover and shall obtain a

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written interpretation or clarification from the ENGINEER before proceeding with any work affected thereby.

- d. The CONTRACTOR shall field verify the depth and location of the rock outcropping that may interfere within the pipeline trench.
- e. Rock and boulder excavation may require relatively unconventional methods of excavation. The CONTRACTOR shall be aware that blasting is prohibited on this project.

B. Existing Utilities and Improvements

1. Location of Underground Utilities:

- a. Known existing underground conduits, pipelines and other utilities have been shown on the contract drawings in their approximate locations (within 3 feet of actual location). However, the accuracy or completeness of utilities indicated on the drawings is not guaranteed.
- b. It shall be the responsibility of the CONTRACTOR to determine the exact location of all utilities and their service connections.
- c. All potholing or other procedures for verifying utility location shall be performed by the CONTRACTOR as necessary to prepare for excavation at least 4 working days in advance of scheduled excavation.
- d. The CONTRACTOR shall immediately notify the ENGINEER as to any utility located by him which has been incorrectly shown or omitted from the drawings.
- e. If the CONTRACTOR cannot locate an underground utility whose presence is indicated on the Drawings, the ENGINEER shall be notified in writing.
- f. The CONTRACTOR shall ascertain the exact locations of underground utilities whose presence is indicated on the Drawings, the locations of their service laterals work and of service laterals or appurtenances of any other underground utilities which can be inferred from the presence of visible facilities such as buildings, meters and junction boxes prior to doing work that may damage such utilities or interfere with their service.
- g. Utilities Not Shown on Drawings:
 - 1) Attention is directed to the possible existence of underground utilities not indicated on the Drawings and to the possibility that underground utilities may be in a location different from that indicated on the Drawings.
 - 2) If the ENGINEER determines that the underground utility for which such notice has been given has not been depicted on the Drawings with reasonable accuracy (within 3 feet of actual location), the additional cost incurred in locating the utility will be paid for as extra work as provided in the General Conditions.
 - 3) If the CONTRACTOR discovers underground utility not indicated on the Drawings, the CONTRACTOR shall immediately give the ENGINEER and the Utility Company written notification of the existence of such utility.
 - 4) Such utilities shall be located and protected from damages as directed by the ENGINEER and the cost of such work will be paid for as extra work as provided in the General Conditions.

2. Utility Coordination:

- a. The CONTRACTOR shall notify Underground Service Alert (USA) North 811 at least 4 days prior to excavation, telephone 811 or (800) 642-2444.
- b. The CONTRACTOR shall also contact all utility owners not registered with USA but known to have utilities in the project area to field locate underground utilities at least 4 days prior to excavation.
- c. The CONTRACTOR shall notify all owners of utilities when the Work is in progress and shall make arrangements as are necessary to make any emergency repairs.

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- d. Existing utilities that are shown or that are made known and located to the CONTRACTOR prior to excavation, and that are to be retained; and all utilities that are constructed during excavation operations shall be properly supported and protected from damage during the progress of the work.
- 3. Utility Protection and Damage:
 - a. Existing utilities that are shown or that are made known and located to the CONTRACTOR prior to excavation, and that are to be retained, and all utilities that are constructed during excavation operations shall be properly supported and protected from damage during the progress of the work.
 - b. Should any damage to a utility occur during the progress of the work, the CONTRACTOR shall notify the OWNER or the utility at once and render all assistance possible to repair the damage and restore the service.
 - c. No extra compensation will be made for the repair of any services or utility damaged by the CONTRACTOR nor for any damage incurred through neglect or failure to provide adequate protection to existing utilities.
 - d. The provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.
 - e. Damaged water pipelines will be repaired by the CONTRACTOR at his expense as per EBMUD standards. If the CONTRACTOR fails to repair the water pipelines the OWNER reserves the right to withhold the amount owed from the CONTRACTOR's Progress Payment.
 - f. Damage Report:
 - 1) In the event that the CONTRACTOR damages any underground utilities not shown on the Drawings or not depicted on the Drawings with reasonable accuracy (within 3 feet of actual location) or any lateral service the location of which could not be inferred by the CONTRACTOR, a written report thereof shall be made immediately to the ENGINEER.
 - 2) The CONTRACTOR's report shall also advise the ENGINEER of any schedule delays. Compensation for such delays will be determined in accordance with the General Conditions. The CONTRACTOR shall be entitled to no other compensation for any such damage.
- 4. All utilities encountered along the line of the work shall remain continuously in service during all work under the Contract, unless otherwise shown on the drawings, or unless other arrangements satisfactory to the ENGINEER are made with the owner of said utilities.

C. CONTRACTOR's Responsibility for Utility Facilities and Service

- 1. Where the CONTRACTOR's operations could cause damage or inconvenience to railway, telephone, television, power, oil, gas, water, sewer, or irrigation systems, the CONTRACTOR shall make all arrangements necessary for the protection of these utilities and services.
- 2. The CONTRACTOR shall be solely and directly responsible to the owner and operators of such properties for any damage, injury, expense, loss, inconvenience, delay, suits, actions, or claims of any character brought because of any injuries or damage which may result from the construction operations under this Contract.
- 3. Neither the OWNER nor its officers or agents shall be responsible to the CONTRACTOR for damages as a result of the CONTRACTOR's failure to protect utilities encountered in the work.
- 4. In no event shall interruption of any utility service be allowed outside working hours unless granted by the owner of the utility.

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5. No sand, mud, rocks or other construction debris shall be disposed of in the sanitary sewers or storm sewers.
6. Where bypassing of sewage is required to perform sewer repairs or service relocations and where temporary pumps are required to bypass any sewage across traffic lanes, the discharge lines crossing the traffic lanes shall be buried a minimum of 4 inches below the pavement surface and backfilled with temporary asphalt concrete surfacing. The CONTRACTOR shall take all necessary steps to assure continuous flow of sewage. Bypassing of untreated wastewater to surface waters or courses will not be permitted.
7. The CONTRACTOR shall replace, at its own expense, any and all existing utilities or structures removed or damaged during construction, to their existing condition unless otherwise provided for in these Contract Documents.
8. The CONTRACTOR shall repair or replace, at its own expense, all pavement damaged during the construction, to its existing condition unless otherwise provided for in these Contract Documents.

D. Names of Known Utilities Serving the Area

1. The following is a list of the known public utilities serving the area:
 - a. Water – EBMUD – Mr. Ali Chehrazi – (510) 287-0834
 - b. Sewer – WCWD – Mr. Cecil Vilorio – (510) 222-6700
 - c. Telephone – Comcast – Mr. Robert Obiacoro – (925) 344-2407
 - d. Electric & Gas – PG&E – Mr. Jerry Cabral – (510) 437-2164
 - e. Gas – PG&E – Ms. Piper Wagner – (530) 889-5089
 - f. Petroleum – Chevron – Mr. Jeremy Gross - (925) 753-2003
 - g. San Pablo Canal – CCCFCD – Mr. Mario Consolacion – (925) 313-2283
 - h. Roads & Drainage – Ms. Ronalyn Nonato – (510) 215-3065

E. Interfering Structures

1. The CONTRACTOR shall take necessary precautions to prevent damage to existing structures whether on the surface, aboveground, or underground. An attempt has been made to show major structures on the Drawings. While the information has been compiled from the best available sources, its completeness and accuracy cannot be guaranteed, and it is presented as a guide to avoid possible difficulties.
2. The CONTRACTOR shall protect all existing structures, trees, shrubs, and other items on the project site that are to be preserved, by substantial barricades or other devices commensurate with the hazard, from injury or destruction by vehicles, equipment, workmen, or other agents.
3. Where existing fences, gates, buildings, or any other structure must be removed to properly carry out the work, or are damaged during the work, they shall be restored at the CONTRACTOR's expense to their original condition or better.
4. Without additional compensation, the CONTRACTOR may remove and replace in a condition as good as or better than original, any small structures such as fences, and signposts that interfere with the CONTRACTOR's operations.
5. The CONTRACTOR shall protect the existing trees in place and only remove the trees that are marked as "X" on the Contract Drawings. The CONTRACTOR shall replant and replace a tree or shrub that is damaged or removed if it is indicated as "PROTECT/SUPPORT" on the Contract Drawings.

F. Field Relocation

1. During the progress of construction, it is expected that minor relocations of the work will be necessary.
2. Such relocations shall be made only by direction of the ENGINEER.

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3. If existing structures are encountered that will prevent construction as shown, notify the ENGINEER before continuing with the work in order that the ENGINEER may make such field revisions as necessary to avoid conflict with the existing structures.
4. If the CONTRACTOR shall fail to notify the ENGINEER when an existing structure is encountered, and shall proceed with the work despite this interference, CONTRACTOR shall do so at their own risk.
5. Any CONTRACTOR request(s) for additional compensation or contract time resulting from necessary field relocations will be considered as set forth in the General Conditions.
6. If the CONTRACTOR fails to notify the ENGINEER when a structure which interferes with construction is encountered, and proceeds with the work despite this obstruction, the CONTRACTOR shall do so at their own risk and at no additional cost to the OWNER.

1.4 REFERENCE POINTS AND SURVEYS

- A. Location and elevation of bench marks are shown on Drawings.
- B. Dimensions for lines and elevations for grades of structures, appurtenances, and utilities are indicated on Drawings, together with other pertinent information required for laying out Work. If conditions vary from those indicated, notify OWNER immediately, who will make minor adjustments required.
- C. OWNER may perform checks to verify accuracy of CONTRACTOR's layout Work and that completed Work complies with Contract Documents.
- D. Any existing survey points or other control markers destroyed without proper authorization will be replaced by owner of the survey points or control markers at CONTRACTOR's expense.
- E. CONTRACTOR's Responsibilities:
 1. Provide all survey and layout required.
 2. Locate and protect reference points prior to starting site preparation.
 3. Notify OWNER at least 3 working days in advance of time when grade and line to be provided by others will be needed.
 4. Check and establish exact location of existing facilities prior to construction of new facilities and any connections thereto.
 5. In event of discrepancy in data provided by OWNER, request clarification before proceeding with Work.
 6. Provide cut sheets for all staking.
 7. Preserve and leave undisturbed control staking until ENGINEER has completed checks it deems necessary.
 8. Re-establish reference points resulting from destruction by CONTRACTOR's operations.
 9. Cooperate with ENGINEER so that checking and measuring may be accomplished with least interference to CONTRACTOR's operations.

1.5 SEQUENCE AND PROGRESS OF WORK

- A. The CONTRACTOR shall submit a Construction Schedule covering the entire Work in accordance with Section 01320, Progress Schedule.

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- B. The CONTRACTOR shall incorporate the requirements of Section 01130, Special Project Constraints, into the Construction Schedule.
- C. Alternate Sequence:
 - 1. The CONTRACTOR's schedule may use a different sequence from that shown or specified, if techniques and methods known to the CONTRACTOR will result in cost and time savings to the OWNER, still achieve the required objective and maintain the same or greater level of treatment.
 - 2. The ENGINEER's determination on the acceptability of any alternative sequence from that shown or specified shall be final.

1.6 CONTRACTOR'S USE OF WORK AREA

- A. The CONTRACTOR shall coordinate use of work area designated as Temporary Construction Easements (TCE) or Public Right-of-Way (ROW) on the Contract Drawings, for the CONTRACTOR's mob/demob, storage and the operations of the CONTRACTOR's workmen, with OWNER, Private Property Owner and ENGINEER.
- B. Restriction of Work Area:
 - 1. TCE or ROW Area:
 - a. The CONTRACTOR shall use existing ROW area as designated on the Contract Drawings for mobilization/demobilization, only designated tree removal, clear and grub, storage of equipment and materials ONLY.
 - b. The full use of the premises for storage, the operations of workmen and for all other construction activities will not be available to the CONTRACTOR.
 - c. The CONTRACTOR shall not excavate outside the ROW area without a written approval from the OWNER and the ENGINEER.
 - d. The CONTRACTOR shall protect and support all trees, landscaping and vegetation within and outside the ROW area except for the trees marked as "X" on the Contract Drawings.
 - e. The CONTRACTOR must operate entirely within the space allowed to the CONTRACTOR.
 - 2. Permanent Easement (PE) Area:
 - a. The CONTRACTOR shall use PE area as designated on the Contract Drawings for clear & grub, surface modification, tree removal and pipeline excavation ONLY.
 - b. The CONTRACTOR may use PE area for storage of equipment and materials if space permits.
 - c. The CONTRACTOR must operate entirely within the space allowed to the CONTRACTOR.
- C. The CONTRACTOR shall be solely responsible for obtaining and paying all costs in connection with any additional work area, storage sites, access to the site or temporary right-of-way, which may be required for proper completion of the Work.
- D. Limitations on Use of Work Area:
 - 1. It shall be understood that responsibility for protection and safe-keeping of equipment and materials on or near the site will be entirely that of the CONTRACTOR and that no claim shall be made against the OWNER or their authorized representatives by reason of any act.
 - 2. It shall be further understood that should any occasion arise necessitating access to the sites occupied by these stored materials or equipment, the ENGINEER shall

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direct the CONTRACTOR owning or responsible for the stored materials and equipment to immediately move the same.

3. No materials or equipment may be placed upon the private property or property of the OWNER, other than in the designated areas as shown on the Drawings, unless the Private Property Owner or the OWNER has agreed to the location contemplated by the CONTRACTOR to be used for storage.
4. All stored materials shall be labeled according to the appropriate contractor or Subcontractor with the manufacturer's label as well.
5. Appropriate material safety data sheets (e.g., MSDS) shall be provided.
6. The Work is located in the dense wooded area and parallel to the creek. The CONTRACTOR shall only remove designated trees as shown on the drawings and protect remaining trees in place. Any damage to protected trees shall be solely responsibility of the CONTRACTOR.

E. The CONTRACTOR shall restore existing areas to its original condition in a manner satisfactory to OWNER and the ENGINEER.

F. The CONTRACTOR shall be required to share use of the premises with other Contractors whose services the OWNER has obtained or will obtain for construction of other facilities on the site.

1.7 CONTRACTOR'S USE OF OWNER'S FACILITIES

A. The CONTRACTOR may use existing facilities or equipment in the Work for construction purposes, only if the OWNER's written permission is obtained.

B. Restore existing facilities and equipment used for temporary purposes to original condition in a manner satisfactory to OWNER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

++ END OF SECTION ++

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SECTION 01130

SPECIAL PROJECT CONSTRAINTS

PART 1 - GENERAL

1.1 LIMIT OF CONSTRUCTION ACTIVITIES ON WORK SITE

A. Construction Work Area:

1. The CONTRACTOR shall coordinate use of work area designated as Temporary Construction Easement (TCE) or Public Right-of-Way (ROW) on the Contract Drawings, for the CONTRACTOR's mob/demob, storage and the operations of the CONTRACTOR's workmen, with OWNER, Private Property Owner and ENGINEER.
2. Restriction of work area is further defined in 01110 - SUMMARY OF WORK specification.

B. Traffic Control:

1. During non-work hours, the CONTRACTOR shall keep all lanes of traffic open and clear. All trenches shall be backfilled or covered with suitable steel plates and open to traffic.
2. No equipment, construction material or excavated material that will interfere with traffic shall be stored on streets or roadways at any time.

C. Interfering Structures:

1. The CONTRACTOR shall take necessary precautions to prevent damage to existing structures whether on the surface, aboveground, or underground. An attempt has been made to show major structures on the Drawings. While the information has been compiled from the best available sources, its completeness and accuracy cannot be guaranteed, and it is presented as a guide to avoid possible difficulties.
2. The CONTRACTOR shall protect all existing structures, trees, shrubs, and other items on the project site that are to be preserved, by substantial barricades or other devices commensurate with the hazard, from injury or destruction by vehicles, equipment, workmen, or other agents.
3. Additional restrictions are listed in 01110 - SUMMARY OF WORK specification.

1.2 CONTRACT DOCUMENT PRECEDENCE

- A. The component in the Contract Documents are intended to provide explanation for each other. Any work shown on the Plans and not in the Specifications, or vice versa, is to be executed as if indicated in both. In case of conflict in the Contract follow GENERAL CONDITIONS Section 3.2 for the order of precedence.
- B. In the event any conflict between any provisions of the Contract Agreement or of the specifications or of the drawings shall develop, the OWNER shall determine which provision shall prevail and his decision shall be final and binding upon the parties and shall not be subject to arbitration or review.

1.3 PERMITS

- A. The provisions of the following permits shall be followed:

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PERMIT TYPE	PERMIT DEPARTMENT	PERMIT ISSUE DATE	PERMIT EXPIRE DATE
Section 404	U.S. Army Corps of Engineers (USACE)	NOT REQUIRED	
Section 401	Regional Water Resources Control Board (RWRCB)	NOT REQUIRED	
Section 1602 – Streambed Alteration	California Dept of Fish and Wildlife (CDFW)	NOT REQUIRED	
Encroachment Permit	City of San Pablo (CITY)	CONTRACTOR SHALL OBTAIN PRIOR TO CONSTRUCCION	
Encroachment Permit	Contra Costa County Flood Control District (CCCFCB)	OWNER SHALL OBTAIN PRIOR TO CONSTRUCCION	
Dust Control	Bay Area Air Quality Management District (BAAQMD)	CONTRACTOR SHALL OBTAIN PRIOR TO CONSTRUCCION	

- B. CONTRACTOR shall fully understand and follow the requirements specified in the Project Initial Study/Mitigated Negative Declaration (IS/MND) and Mitigation Monitoring and Reporting Plan (MMRP).

1.4 SEQUENCE OF WORK

A. General:

1. The CONTRACTOR shall schedule and sequence their work in order to complete the Work by the specified completion date.
2. The OWNER's stormwater collection system must remain operational at all times.
3. Re-vegetation of graded areas shall take place as quickly as possible as weather permits.
4. Prior to starting the project construction, the CONTRACTOR shall confer with the ENGINEER, OWNER's representative, and all affected utility representatives to develop an approved construction schedule which will limit disruptions of existing utilities in the project area.
5. The CONTRACTOR shall submit project constraint plans (as further defined herein), schedules and other documentation required by these Contract Documents and requested by the ENGINEER to describe the anticipated approach and sequence of activities to complete the project works.
6. The CONTRACTOR must have an approved sequence of work prior to commencing construction work. The CONTRACTOR shall submit sequence of work documentation for approval to the ENGINEER at the pre-construction meeting or ten (10) working days prior to commencing work, whichever is greater.

1.5 PROJECT CONSTRAINTS

A. Regular Working Hours:

1. The working hours for the project shall be 8 a.m. to 5:00 p.m., except that no work will be allowed on Saturdays, Sundays, or holidays officially recognized by the OWNER, unless otherwise approved by the OWNER.

B. Maintenance of OWNER's Operations:

1. Constraints listed herein involve limits on activities during construction. These limits relate to the critical nature of the existing sewer system.

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2. Continuous operation of OWNER's facilities is of critical importance. Schedule and conduct activities to enable existing facilities to operate continuously, unless otherwise specified.
3. Work Plan:
 - a. The CONTRACTOR shall submit a detailed Work Plan and time schedule for all construction activities that will make it necessary to remove a pipeline, electrical circuit, structure, road or other facilities from service, including the critical outages identified herein.
 - b. Perform Work continuously during critical connections and changeovers, and as required to prevent interruption of OWNER's operations.
4. Shutdowns:
 - a. Coordinate proposed Work with OWNER and facility operations personnel before affecting unit shutdowns. The CONTRACTOR shall provide written confirmation of the shutdown date and time two (2) working days prior to the actual shutdown.
 - b. Under no circumstances shall the CONTRACTOR cease Work at the end of a normal working day or at the end of a working week if such actions may inadvertently cause a cessation of any facility operating process, in which case, remain onsite until necessary repairs are complete.
5. Do not proceed with Work affecting a facility's operation without obtaining OWNER's advance approval of the need for and duration of such Work.

C. Relocation of Existing Facilities:

1. During construction, it is expected that minor relocations of Work will be necessary.
2. Provide complete relocation of existing structures and Underground Facilities, including piping, utilities, equipment, structures, electrical conduit wiring, electrical duct bank, and other necessary items.
3. Use only new materials for relocated facility. Match materials of existing facility, unless otherwise shown or specified.
4. Perform relocations to minimize downtime of existing facilities.
5. Install new portions of existing facilities in their relocated position prior to removal of existing facilities, unless otherwise accepted by OWNER.
6. CONTRACTOR shall coordinate with Aaron Shear (510-715-8149) or Andrew Hawksworth (510-287-1388) at East Bay Municipal Utility District (EBMUD) for relocation of existing water service lines that are 1-inch or smaller in size when constructing new storm drain pipe on Randy Lane and Giant Road. CONTRACTOR must notify property owner and utility agency prior to beginning of drainage system construction.

D. Excavation and Trench Safety:

1. The CONTRACTOR must obtain a permit from the Division of Industrial Relations per Labor Code Section 6500, as specified in California Code of Regulations, Title 8, Article 6, Section 1539 "Permits" of the Construction Safety Orders, for all excavations five feet (5') or deeper to which an employee is required to descend. The permit shall be kept at the construction site at all times.
2. In accordance with Labor Code Section 6705, at least five (5) Working Days in advance of excavation of any trench or trenches five feet (5') or more in depth, with a total value of twenty-five thousand dollars (\$25,000) or more, the CONTRACTOR shall submit to the OWNER a detailed plan showing the design of shoring, bracing, sloping, or other provisions for worker protection from the hazard of caving ground during the excavation of such trench or trenches. If such plan varies from the

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- shoring system standards, the plan shall be prepared by a California registered civil or structural engineer. A signed copy of the detailed plan shall be on the site at the time of the excavation. Nothing in this Section shall be deemed to allow the use of a shoring, sloping, or 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 or any of its employees. These systems must support the sides of the excavation and prevent soil movement that could cause injury to any person or structure. Any damage resulting from a lack of adequate shoring, bracing, shielding or sheeting shall be repaired at the CONTRACTOR's expense.
3. The CONTRACTOR shall immediately replace or repair any unsafe ladder, scaffolding, shoring, or bracing, or correct any other dangerous or hazardous situation that exists.
 4. The shoring, bracing, shielding and sheeting plan shall contain alternative (i.e., contingent) systems should the initial systems not achieve the following minimum performance requirements.
 - a. Protect personnel that enter the excavation.
 - b. Protect existing utilities, pavements and structures.
 - c. Excavation of slopes and/or installation of the shoring system must be done in a manner that does not damage existing structures, pavements, and utilities including through settlement, heave, or vibrations.
 - d. Prevent caving or lateral movement of excavation walls and associated loss of adjacent ground and adjacent ground surface settlement, even when subjected to construction vibrations.
 - e. Provide stable excavation walls, slopes, and bottom.
 - f. Allow for removal of shoring and excavation backfilling in a manner that does not damage the finished pipeline or existing structures, pavements, and utilities including through settlement, heave, or vibrations. Any void space created by shoring removal should be completely filled with controlled density fill.
 - g. Resist lateral loads from vehicular traffic, construction equipment and spoils, and hydrostatic pressures, if any.
 5. Site specific shoring design submittal shall be required when excavations fall within an imaginary plane projected downward at an inclination of 1H: 1V from the nearest edge of adjacent structures and utilities.
 6. The CONTRACTOR shall monitor and evaluate subsurface soil conditions encountered in project excavations. Contractors and their excavation designers shall acknowledge Cal/OSHA requirements to develop their own assessment of safe slopes for the project. The responsibility for soil type classification and determination of safe temporary slope inclinations is a field decision to be made at the time of excavation by the Contractor's "competent person".
 7. In the interest of public safety and convenience, the entire open trench and all excavations shall be plated and equipment relocated as directed to minimize public impact at the end of each working day. The completed sections of trench shall be backfilled and compacted, and when in streets, opened to traffic as soon as possible.
 8. A Competent Person, as defined in California Code of Regulations, Title 8, Construction Safety Orders, Section 1504, "Definitions", shall be on site at all times when the CONTRACTOR's employees are working within the trench. A "Competent Person" is one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measure to eliminate them.
 9. CONTRACTOR shall submit detailed Sheeting, Shoring and Bracing Plan as per Contract Specification 02300 – Earthwork.

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- E. Overtime:
1. Conduct Work outside regular working hours on prior written consent of OWNER to meet Project schedule and avoid undesirable conditions.
 2. All overtime Work by the CONTRACTOR necessary to conform to the requirements of this Section and related Sections shall be performed by the CONTRACTOR, at no cost to the OWNER and shall be performed in accordance with the General Conditions. The CONTRACTOR shall make no claims for extra compensation as a result thereof.

1.6 PROJECT CONSTRAINT PLANS:

- A. Work Plan & Sequence of Work Documentation:
1. CONTRACTOR shall submit the work plans listed below for approval to the ENGINEER at the pre-construction meeting or fifteen (15) working days prior to commencing work, whichever is earlier.
 2. CONTRACTOR shall submit a detailed Work Plan and time schedule for all construction activities including outfall construction in accordance with section 1.10.
 3. Construction Procedure and Sequence of Construction Plan:
 - a. The plan shall provide detailed drawings and a written description of the construction procedure and sequence of construction.
 - b. The Plan shall include:
 - 1) What equipment will be present including standby equipment;
 - 2) What assistance will be required by the OWNER's operating personnel;
 - 3) An emergency backup plan identifying what action will be taken if Work cannot be completed within the allotted time;
 - 4) Which individual will be in charge of the activity;
 - 5) Conduct work on private property and minimize the impact to private property / commercial properties to the extent possible. Ingress/egress shall remain open at all times so as not to adversely affect the business or businesses. Provide estimated timelines for completion of key activities such as outfall construction, that can be used to notify affected private property owners of construction activities that will affect them.
 - 6) Complete work that will require temporarily closing lanes for traffic.
 - 7) Detail description of wall penetration procedure at San Pablo concrete channel wall, work schedule, canal access, debris capturing methods, hanging scaffolding, and other pertaining work required to install new storm drain pipe and discharge point.
 - 8) Complete work of installing new storm drain pipe prior to abandoning existing storm drain system. CONTRACTOR shall test all new piping prior to connecting with existing storm drain system as per Specifications 01725.
- B. Pothole Plan:
1. CONTRACTOR shall submit utility pothole plan for approval to the ENGINEER at the pre-construction meeting or fifteen (15) working days prior to commencing work, whichever is earlier.
 2. It shall be the responsibility of the CONTRACTOR to determine the exact location of all utilities and their service connections.
 3. All potholing or other procedures for verifying utility location shall be performed by the CONTRACTOR to prepare for excavation at least 5 working days in advance of scheduled excavation.
 4. The CONTRACTOR shall ascertain the exact locations of underground utilities whose presence is indicated on the Drawings, the locations of their service laterals work

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and of service laterals or appurtenances of any other underground utilities, which can be inferred from the presence of visible facilities such as buildings, meters and junction boxes prior to doing work that may damage such utilities or interfere with their service.

5. Pothole plan shall show minimum of existing utility, size, and location of pothole.
6. The CONTRACTOR shall notify Underground Service Alert (USA) at least 2 days prior to excavation, telephone 811 or (800) 227-2600.
7. The CONTRACTOR shall also contact all utility owners not registered with USA but known to have utilities in the project area to field locate underground utilities at least 4 days prior to excavation.
8. The CONTRACTOR shall pothole all pertinent utility crossings including service connections and utilities located within 5 feet of the new sewer line.
9. CONTRACTOR shall meet additional requirements for potholing existing utilities as per the Contract Specification 01110 – Summary of Work.
10. CONTRACTOR must submit potholing data to the OWNER and ENGINEER for their review and comment.

C. Trench Support System Plan:

1. CONTRACTOR shall prepare and submit a detail excavation support systems and excavation support plan as per OSHA guidelines and as described in Contract Specification Section 02300 – Earthwork and herein. A plan shall be stamped and signed by a Professional Civil or Structural Engineer, licensed in the State of California.

D. Site Access, Staging, Safety and Security Plan:

1. Prepare a Staging, Site Access, Safety and Security Plan in accordance to General Conditions Section 7.2 – Temporary Facilities and Contract Specification Section 01500, which shall include, but not be limited to:
 - a. Description of how and where CONTRACTOR will stage materials and equipment during and after working hours.
 - b. Description of safety measures CONTRACTOR shall employ along access route to minimize Health and Safety risks for public.
 - c. Description of measures CONTRACTOR shall employ to ensure security of materials and equipment stored in project staging areas and within Rehabilitation Work Area during and after working hours. Measures may include but are not limited to fencing, gates, locks, security personnel, etc.
2. CONTRACTOR shall be responsible at all times for ensuring the measures included in the plan are implemented and followed for the duration of the project.
3. CONTRACTOR shall be solely liable at all times for the health, safety and security of its employees, equipment and materials in the project staging areas and Rehabilitation Work Area for the duration of the project.

E. Traffic Control Plan

1. Prepare in accordance with 2010 Caltrans Standard Specifications, DIVISION 1 GENERAL PROVISIONS, SECTION 7. LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC, 7-1.03 PUBLIC CONVENIENCE and 7-1.04 PUBLIC SAFETY.

1.7 PRIVATE PROPERTY RESTRICTIONS

A. General:

1. The CONTRACTOR shall take necessary precautions to prevent damage to existing structures whether on the surface, aboveground, or underground. An attempt has

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- been made to show major structures on the Drawings. While the information has been compiled from the best available sources, its completeness and accuracy cannot be guaranteed, and it is presented as a guide to avoid possible difficulties.
2. The CONTRACTOR shall protect all existing structures, driveways, trees, shrubs, and other items on the project site that are to be preserved, by substantial barricades or other devices commensurate with the hazard, from injury or destruction by vehicles, equipment, workmen, or other agents.
 3. Where existing fences, gates, buildings, or any other structure must be removed to properly carry out the work, or are damaged during the work, they shall be restored at the CONTRACTOR's expense to their original condition or better.
- B. The CONTRACTOR shall take extra care in constructing the new storm drain line on Randy Lane. Existing sidewalk must be removed and replaced as per CITY standards and as shown on the Contract Drawings.
- C. CONTRACTOR shall only use work area designated as Construction Activities/Access (CA) and Permanent Easement (PE) on the Contract Drawings. Restriction of work area is further defined in 01110 - SUMMARY OF WORK specification.

1.8 ENVIRONMENTAL RESTRICTIONS

- A. General:
1. The control of environmental pollution requires consideration of air, water and land, and involves management of noise and solid waste, as well as other pollutants.
 2. Federal, State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the CONTRACTOR in writing, through the Engineer, of any non-compliance with Federal, State or local requirements. Such notice, when delivered to the CONTRACTOR or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the CONTRACTOR fails or refuses to comply promptly, the OWNER may issue an order stopping all or part of the work until satisfactory corrective action has been taken.
 3. In addition to the restrictions listed in this section, the CONTRACTOR shall implement any additional measures identified in the permits and as required by the agency representatives.
 4. CONTRACTOR shall remove and dispose properly all trash and construction debris from the work area at the end of work day.
 5. CONTRACTOR shall follow all requirements listed in Initial Study/Mitigated Negative Declaration document attached in Appendix B of the contract documents.
 6. No equipment refueling or fuel storage will take place within 100 ft of a body of water.
 7. CONTRACTOR must obey all requirements listed in General Conditions section 7.19 – Environmental Control.
- B. Services Provided by OWNER:
1. OWNER will provide a qualified biologist and archaeologist to survey and verify that no sensitive resources are located on off-road staging areas outside the construction corridor. If sensitive resources are found, CONTRACTOR will stake/flag an appropriate buffer zone to avoid impacts. If impacts on sensitive resources cannot be avoided, the site will not be used.
- C. Protection of Wetlands & U.S Waterways:

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1. General –
 - a. CONTRACTOR shall take all precautions to prevent any damage to any stream or surface water from pollution by debris, sediment or other material, or from the manipulation of equipment and/or materials in or near such streams. Water that has been used for washing or processing, that contains oils or sediments that will reduce the quality of the water in the stream, shall not be directly returned to the stream. Divert such waters through a settling basin or filter before being directed into streams or surface waters.
 - b. CONTRACTOR shall not discharge water from dewatering operations directly into any live or intermittent stream, channel, wetlands, surface water or any storm sewer. Water from dewatering operations shall be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels.
 - c. CONTRACTOR must capture all debris, contaminated water, oil, etc used during the construction of a wall penetration in a temporary catchment placed in the concrete channel. No debris, contaminated water, oil, etc used during the construction of a wall penetration shall enter the canal. If continuous flows in the creek are present, a hanging catchment is required over the wall.
2. U.S Surface Waters & Streams –
 - a. CONTRACTOR shall comply with appropriate best management practices (BMPs) implemented during construction as outlined in the OWNER's General Conditions and Special Conditions of the project.

D. Detection of Hazardous Materials:

1. CONTRACTOR shall be aware that project site is designated as "Low-Risk" for encountering soil or groundwater contamination within the excavation area.
2. CONTRACTOR shall provide a field photoionization detector (PID) onsite and measure potential volatile organic compounds (VOCs) such as benzene associated with petroleum products.
3. CONTRACTOR shall provide personal protective equipment (PPE) suitable to resist exposure to the detected VOCs.

1.9 ARCHAEOLOGICAL RESTRICTIONS

- A. In the event that archaeological or historical deposits are discovered during construction activities, all work in the immediate vicinity of the discovery will be stopped immediately and the CONTRACTOR will notify the OWNER.
- B. CONTRACTOR shall comply with all requirements in General Conditions section 7.18 – Historic or Archeological items and hereon.
- C. OWNER will provide a qualified professional archaeologist to monitor, record, test and data recovery all archaeological or historical deposits discovered during all ground-disturbing activities. If sensitive resources are found, CONTRACTOR will stake/flag an appropriate buffer zone to avoid impacts. If impacts on sensitive resources cannot be avoided, the site will not be used. CONTRACTOR shall allow and comply with all request and requirements by a Native American representative to monitor during such ground-disturbing activities..

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1.10 SCHEDULED SHUTDOWNS AND CONSTRUCTION SEQUENCING CONSTRAINTS

- A. Critical work sequencing constraints are described in this paragraph. Work not specifically covered in this Section may, in general, be done anytime during the contract period.
- B. Construction Sequencing Constraints:
1. General:
 - a. CONTRACTOR shall make provisions to ensure uninterrupted service to all property owners.
 - b. CONTRACTOR shall be cautious of existing gas and water mains, and gas and water service crossings on Randy Lane and Giant Road. Any damage to existing gas and water lines shall be sole responsibility of the CONTRACTOR.
 - c. All new storm drain pipes shall be tested, approved and accepted by CITY's current standards and as stated in the Contract Specification Section 01725 prior to connecting existing storm drain system and allowing any water to flow through.
 - d. Provide access to all residences and other services at all times.
 - e. The Construction Sequencing and other items described herein is in no way intended to direct the CONTRACTOR in its selected means and methods of construction, nor is it intended to list every item of work the CONTRACTOR must complete to fulfill the requirements of these Contract Documents. The CONTRACTOR may submit an alternate work sequence for approval within the Sequence of Work Documentation. The CONTRACTOR shall be solely responsible for the means and methods of construction.
 2. Construction Sequencing:
 - a. From Sta No: 15+35 to Sta No: 15+43 – Wall Penetration:
 - 1) Maintain access to private property owner at all times;
 - 2) Setup a scaffolding or similar in the canal;
 - a) Hanging scaffolding required in case there is potential for water in the creek.
 - b) Standing scaffolding is acceptable in case the existing channel is dry.
 - 3) Saw-cut and chip out concrete within the perimeter of wall from the land side;
 - 4) Install rebar and wall sleeve from the land side;
 - 5) Install concrete formwork on both sides of the wall;
 - 6) Pour concrete from the land side and let it cure;
 - 7) Strip forms after concrete is cured;
 - 8) Install new pipeline within the sleeve and place a waterstop around it;
 - 9) Install a flap gate in accordance with the Contract Drawings.
 - b. From new SDMH #2 at Sta No: 14+64 to Sta No: 15+35 – Private Property:
 - 1) Construct pipeline on Private Property within 10-foot easement as shown on drawings;
 - 2) Construct SDMH #3 and remaining pipeline up to existing canal wall such that there is enough work area available at the wall;
 - c. From new SDMH #1 at Sta No: 11+20 to SDMH #2 at Sta No: 14+64 – Giant Road:
 - 1) Set up traffic control with minimum one lane open during construction;
 - 2) Construct pipeline on Giant Road and maintain a minimum of 4-foot separation from the lip of the gutter to the center of the pipeline within Giant Road ROW;

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- 3) Extend existing water service and relocate water meter box for APN: 011-010-075 as per drawings;
- d. From new DI at Sta No: 10+00 to SDMH 1 at Sta No: 11+20 – Randy Lane:
 - 1) Remove existing DI and replace with new DI at Sta No: 10+00;
 - 2) Construct pipeline under the sidewalk connecting to SDMH #1 on Giant Road;
 - 3) Provide ingress and egress to all residential traffic on Randy lane during construction;
 - 4) Construct curb, gutter and sidewalk as per the drawings. If any portion of existing driveway or private property are damaged, construct them immediately after pipe installation on Randy Lane;

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

+ + END OF SECTION + +

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SECTION 01200

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 GENERAL

- A. Payment will be made at the price bid for each item listed on the bidding form or as extra work as provided in the General Conditions.
- B. No initial progress payment (other than a single mobilization payment as described in Article 1.3 below) will be made prior to acceptance by the ENGINEER of the CPM Construction Schedule, the associated Schedule of Values, and the list of anticipated submittals.
- C. No subsequent progress payment will be made prior to receipt by the ENGINEER of the monthly update of the Construction Progress Schedule, as specified in Sections 01310, Project Meetings and 01320, Progress Schedule.
- D. No subsequent progress payment will be made prior to receipt by the ENGINEER of Certified Payrolls for the previous month.
- E. All Work required by the Contract, Drawings, and Specifications not otherwise used as a separate bid item, shall be considered as included in the prices of the bid, and no additional compensation will be made.

1.2 SCHEDULE OF VALUES FOR PAYMENTS

- A. Submit to the ENGINEER, within 5 days of acceptance of the Construction Schedule, five (5) copies of a Schedule of Values. The Schedule of Values shall be a form showing a detailed breakdown of quantities and prices of work and materials required to perform and complete the contract.
- B. The Schedule of Values shall provide a cost breakdown for each element detailed in the approved Construction Schedule. The total of the price breakdown must agree with the lump-sum price bid. The elements listed and price breakdown shall not be front end loaded or unbalanced, shall be subject to adjustment between the ENGINEER and the CONTRACTOR, and will be used as a basis for progress payments.
- C. The Schedule of Values will be used as a basis for determining the amount of the monthly progress payments.
- D. Acceptance of the Schedule of Values by the ENGINEER shall not relieve the CONTRACTOR of the responsibility of performing all the work needed to complete the project at the lump-sum price bid.

1.3 DEFINITION OF BID ITEMS

- A. Definition of Bid Item Quantities:
 - 1. Lump Sum (LS) – The bid amount for performing all related and/or required work to complete item in question.

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2. Linear Foot (LF) – The bid amount for distance measured horizontally along the ground surface to determine the length of work performed.
3. Square Foot (SF) – The bid amount for the surface area of an item of work measured in its final placed condition.
4. Each (EA) – The bid amount for performing all related or required work to construct one complete work item as specified and shown on plans.
5. Cubic Yard (CY) – The bid amount for the volumetric area of an item of work measured in its final placed condition.

1.4 DESCRIPTION OF BID ITEMS

A. Item 1, Mobilization/Demobilization (LS): Mobilization & Demobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the Site; for the establishment of all pipelines, existing pipeline removal and abandonment and other necessary pipeline Work; and for all other work and operations which must be performed, or costs incurred, prior to beginning the Work, and as described in Specs section 01505.

1. Measurement and Payment:

a. Payment for mobilization/demobilization will be as follows:

- 1) When the Contract, proposed Description of Bid Items includes a separate item for mobilization/demobilization, payment for mobilization/demobilization will include full compensation for the furnishing of all labor, materials, tools, equipment, administrative costs, and incidentals for mobilization/demobilization.
- 2) The OWNER anticipates no greater than two percent (2%) of the total Contract Sum as a separate pay item for mobilization/demobilization.
- 3) In the event the CONTRACTOR submits a mobilization/demobilization pay item greater than two percent (2%) of the total Contract Sum, the OWNER will pay any excess mobilization/demobilization amount with the final Progress Payment.

b. Payment for mobilization/demobilization will be prorated as follows:

- 1) When the Progress Payment request is two percent (2%) or more of the original total Contract Sum (excluding mobilization/demobilization), fifty percent (50%) of the contract item price for mobilization/demobilization or one percent (1.0%) of the total Contract Sum, whichever is less, will be paid for mobilization/demobilization.
- 2) When the Progress Payment request is ten percent (10%) or more of the original total Contract Sum (excluding mobilization/demobilization), seventy percent (70%) of the contract item price for mobilization/demobilization will be paid for mobilization/demobilization.
- 3) When the Progress Payment request is twenty percent (20%) or more of the original total Contract Sum (excluding mobilization/demobilization), ninety percent (90%) of the contract item price for mobilization/demobilization will be paid for mobilization/demobilization.
- 4) When the Progress Payment request is fifty percent (50%) or more of the original total Contract Sum (excluding mobilization/demobilization), one hundred percent (100%) of the contract item price for mobilization/demobilization will be paid for mobilization/demobilization.
- 5) After final acceptance of the Contract, the amount, if any, of the Contract item price for mobilization/demobilization in excess of two percent (2%) of the original total Contract Sum will be included for payment in the final estimate.

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- c. The OWNER will not pay additional mobilization/demobilization compensation for work under a Contract Change Order. Payment for mobilization/demobilization shall be subject to retention.
- B. Item 2, Special Project Constraints, General Requirements, Special Inspection and Permits (LS): See Technical Specifications Section 01130 – Special Project Constraints. The CONTRACTOR shall prepare a safety plan, Work plan, Construction Schedule, pothole plan, emergency response plan and fulfilling Specs 01130 requirements. Additional miscellaneous items for the construction of the Work, which is not included in the specific bid items, shall be included in this bid item.
 1. Measurement and Payment:
 - a. Payment for development and implementation of special requirements described in the sequence of work shall be on a lump sum basis. OWNER will pay not more than one and one-half percent (1.0%) of the total Contract Sum as a separate pay item for all required plans and permits.
 - b. CONTRACTOR may submit for payment of one quarter (1/4) of this pay item after submittal of the plan to the OWNER for review.
 - c. CONTRACTOR may submit for the second one quarter (1/4) of this pay item upon receipt of approved submittal by the OWNER.
 - d. CONTRACTOR may submit for the remaining one half (1/2) of this pay item after all measures described in the plan have been implemented to the satisfaction of the OWNER and construction has commenced.
- C. Item 3, Sheeting, Shoring & Bracing (LS): Installing a Sheeting, Shoring and Bracing will include all labor, materials, equipment and supplies required to provide sheeting, shoring, and bracing for all open cut construction, including but not limited to trenches for the installation of the pipe. CONTRACTOR shall follow all safety and health requirements set forth by CDIR and OSHA. This item shall include work required to complete all sheeting, shoring and bracing of all trench construction. The CONTRACTOR shall submit sheeting, shoring and bracing plan as described in Contract Specification Section 01130 and in General Condition section 7.15 – Trenching of Five Feet or More.
 1. Measurement and payment:
 - a. CONTRACTOR of sheeting, shoring and bracing shall be paid a percentage of lump sum amount equal to percent completion, approval and acceptance of sheet, shoring and bracing work by the OWNER and ENGINEER.
- D. Item 4, Traffic Control & Signage (LS): Installing a Traffic control and signage will consist of all labor, materials, equipment and supplies, including but not limited to traffic signs, public notifications, flagpersons, detours as required by the City of San Pablo and other traffic control requirements imposed by City requirements. The CONTRACTOR shall submit a traffic control plan as described in the Contract Specification Section 01130 and as per Special Conditions.
 1. Measurement and payment:
 - a. CONTRACTOR of traffic control and signage shall be paid a percentage of lump sum amount equal to percent completion, approval and acceptance of traffic control and signage work by the OWNER and ENGINEER.
- E. Item 5, Trench Restoration – Public Road (SF): Construction of Trench Restoration in public road within CITY limits consists of all labor, materials, equipment and supplies, including but not limited to preparation of finish grade with 8" AB material compacted at

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95% relative compaction and placing a 3" AC material over the finish grade as shown in detail 1 on Contract Drawing CD-1 up to the limits of damaged roadway to its existing or better condition during the construction of the Work.

1. Measurement and payment:

- a. The CONTRACTOR for the trench restoration – public road shall be paid by actual installed square footage of trench section detail 1 on Contract Drawing CD-1 and as approved and accepted by the OWNER and ENGINEER during the construction of the Work.

F. Item 6A, Replace Curb and Gutter (LF): Removal and replacement of curb and gutter will consist of all labor, materials, equipment and supplies, including but not limited to constructing curb and gutter on Randy Lane as shown on the contract documents and described in this specification. The unit price includes removal of existing curb and gutter, place concrete forms, pour concrete, construct curb & gutter as per CITY detail SA03, cure concrete, remove forms, expansion joints and other curb and gutter related all activities along the alignment as shown on the contract drawings and described in this specification.

1. Measurement and payment:

- a. The CONTRACTOR for the curb and gutter shall be paid by actual installed lineal footage amount as approved and accepted by the OWNER and ENGINEER during the construction of the Work.

G. Item 6B, Replace Sidewalk (SF): Removal and replacement of a sidewalk will consist of all labor, materials, equipment and supplies, including but not limited to constructing a sidewalk on Randy Lane as shown on the contract documents and described in this specification. The unit price includes removal of existing sidewalk, place concrete forms, pour concrete, construct sidewalk as per CITY detail SA03, cure concrete, remove forms, expansion joints and other sidewalk related all activities along the alignment as shown on the contract drawings and described in this specification.

1. Measurement and payment:

- a. The CONTRACTOR for the sidewalk shall be paid by actual installed square footage amount as approved and accepted by the OWNER and ENGINEER during the construction of the Work.

H. Item 7, Remove and Repair Driveway (SF): Remove and repair driveway will consist of all labor, materials, equipment and supplies, including but not limited to removing any damaged driveway to its nearest expansion joint and constructing concrete driveway on Randy Lane as shown on the contract documents and described in this specification. The unit price includes removal of portion of damaged driveway, place concrete forms, pour concrete, construct driveway as per CITY detail SA04, cure concrete, remove forms, expansion joints and driveway related all activities along the alignment as shown on the contract drawings and described in this specification.

1. Measurement and payment:

- a. The CONTRACTOR for the remove and repair driveway shall be paid by actual installed square footage of driveway per CITY detail SA04 and as approved and accepted by the OWNER and ENGINEER during the construction of the Work.

I. Item 8, Existing Utility Protection (EA): Existing utility protection will consist of all labor, materials, equipment and supplies, including but not limited to field adjustment,

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relocating and placing CLSM backfill as per utility agency standards along the alignment shown on the contract drawings and described in this specification. The unit price includes trench excavation, support and protect existing utility, bedding/backfilling/compaction using CLSM around the utility, , reconnection of existing water service to water meter, utility crossings as per detail 3 on CD-01 of contract drawing, and other utility protection related all activities along the alignment as shown on the contract drawings and described in this specification.

1. Measurement and payment:

- a. CONTRACTOR of utility protection shall be paid upon actual number of utilities being field adjusted and protected using CLSM along the storm drain pipeline alignment as approved and accepted by the OWNER and ENGINEER during the construction of the Work.

J. Item 9A, 14" Storm Drain Pipe (LF): Placing a storm drain pipe will consist of all labor, materials, equipment and supplies, including but not limited to providing 14-inch PVC C905 DR 25 pipe materials and fittings, along the alignment shown on the contract drawings and described in this specification. The unit price includes trench excavation, bedding/backfilling/compaction up to and including subgrade, trench dewatering, soft material excavation with filter fabric as shown in trench detail, pipe material and fittings, locator wire and caution tape, pipe layout, pipe installation, connection to the SDMH using pipe-to-manhole fitting, utility crossings as per contract drawing detail, trench compaction, pipeline cleaning/testing, best management practices (BMPs) installation; hydroseeding all unpaved disturbed area within TCE and other pipeline related all activities along the alignment as shown on the contract drawings and described in this specification.

1. Measurement and payment:

- a. CONTRACTOR of installing a 14" storm drain pipe shall be paid upon actual installed length of buried pipe, measured in linear feet along the alignment from the center of the SDMH or connection point to the end of the existing SD pipe as approved and accepted by the OWNER and ENGINEER during the construction of the Work.

K. Item 9B, 18" Storm Drain Pipe (LF): Placing a storm drain pipe will consist of all labor, materials, equipment and supplies, including but not limited to providing 18-inch PVC C905 DR 25 pipe materials and fittings, along the alignment shown on the contract drawings and described in this specification. The unit price includes trench excavation, bedding/backfilling/compaction up to and including subgrade, trench dewatering, soft material excavation with filter fabric as shown in trench detail, pipe material and fittings, locator wire and caution tape, pipe layout, pipe installation, connection to the SDMH using pipe-to-manhole fitting, utility crossings as per contract drawing detail, trench compaction, pipeline cleaning/testing, best management practices (BMPs) installation; hydroseeding all unpaved disturbed area within TCE and other pipeline related all activities along the alignment as shown on the contract drawings and described in this specification.

1. Measurement and payment:

- a. CONTRACTOR of installing a 18" storm drain pipe shall be paid upon actual installed length of buried pipe, measured in linear feet along the alignment from the center of the SDMH or connection point to the end of the existing SD pipe as approved and accepted by the OWNER and ENGINEER during the construction of the Work.

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L. Item 9C, 24" Storm Drain Pipe (LF): Placing a storm drain pipe will consist of all labor, materials, equipment and supplies, including but not limited to providing 24-inch PVC C905 DR 25 pipe materials and fittings, along the alignment shown on the contract drawings and described in this specification. The unit price includes trench excavation, bedding/backfilling/compaction up to existing ground in unpaved areas and up to subgrade in paved areas, trench dewatering, soft material excavation with filter fabric as shown in trench detail, pipe material and fittings, locator wire and caution tape, pipe layout, pipe installation, connection to the SDMH using pipe-to-manhole fitting, utility crossings as per contract drawing detail, trench compaction, pipeline cleaning/testing, best management practices (BMPs) installation; hydroseeding all unpaved disturbed area within TCE and other pipeline related all activities along the alignment as shown on the contract drawings and described in this specification.

1. Measurement and payment:

a. CONTRACTOR of installing a 24" storm drain pipe shall be paid upon actual installed length of buried pipe, measured in linear feet along the alignment from the center of the SDMH or connection point to the end of the existing SD pipe as approved and accepted by the OWNER and ENGINEER during the construction of the Work.

M. Item 10, 48" Dia Storm Drain Manhole (EA): Placing a 48" diameter SDMH will consist of all labor, materials, equipment and supplies, including but not limited to providing materials, installation and testing of pre-cast or cast-in-place SDMH base, barrels, 18-inch and larger height eccentric or concentric cones, frame and cover, storm drain pipe connections along the alignment as shown in the contract drawings and described in this specification. The unit price includes trench excavation, bedding/backfilling/compaction up to and including subgrade, trench dewatering, soft material excavation with filter fabric as shown in trench detail, manhole installation, utility crossings as per drawing detail, trench compaction, manhole cleaning/testing, and other manhole related all activities along the alignment as shown on the contract drawings and described in this specification.

1. Measurement and payment:

a. The CONTRACTOR of installing a 48" diameter SDMH shall be paid on actual quantity of SSMH installed and tested as approved and accepted by the OWNER and ENGINEER during the construction of the Work.

N. Item 11, Type "A" Drainage Inlet (LS): Placing a drainage inlet will consist of all labor, materials, equipment and supplies, including but not limited to providing materials, installation and testing of pre-cast Type A 36" drainage inlet frame and cover, pipe connections along the alignment as shown in the contract drawings and described in this specification. The unit price includes trench excavation, removal of existing drainage inlet, bedding/backfilling/compaction up to and including subgrade, dewatering, soft material excavation with filter fabric as shown in trench detail, drainage inlet installation, existing 18" Reinforced Concrete (RC) pipe fitting and spool pipe connection installation to Drainage Inlet, 14" Ductile Iron (DI) fitting and spool pipe connection installation to Drainage Inlet, connecting new and existing storm drain pipes, pipe fittings, trench compaction, cleaning/testing, and other related all activities along the alignment as shown on the contract drawings and described in this specification.

1. Measurement and payment:

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- a. The CONTRACTOR for the drainage inlet shall be paid a percentage of lump sum amount equal to percent completion approved and accepted by the OWNER and ENGINEER during the construction of the Work.
- O. Item 12, Concrete Channel Outfall (LS): Constructing a new outfall through concrete channel wall will consist of all labor, materials, equipment and supplies, including but not limited to providing materials, installation of a 30" steel sleeve, inserting 24-inch PVC in the concrete wall opening and installing a storm drain pipe as shown in the contract drawings and described in this specification. The unit price includes trench excavation, bedding/backfilling/compaction up to and including subgrade, dewatering, soft material excavation with filter fabric as shown in trench detail, installing scaffolding, saw-cut and chip off concrete channel wall opening, installing rebar and pour concrete, capture debris from the channel during construction via catchment, utility crossings as per drawing detail, connecting new storm drain pipe, waterstop, slip-on flapper gate, trench compaction, cleaning/testing, and other related all activities along the alignment as shown on the contract drawings and described in this specification.
1. Measurement and payment:
 - a. The CONTRACTOR for concrete channel outfall shall be paid a percentage of lump sum amount equal to percent completion approved and accepted by the OWNER and ENGINEER during the construction of the Work.
- P. Item 13, Abandon Existing Storm Drain Pipe and Discharge (LS): Abandoning existing storm drain line will consist of all labor, materials, equipment and supplies, including but not limited to CCTV 50 feet of existing pipe from existing outfall, cleaning the pipeline, place 5-feet in length concrete plug on both ends of pipeline and its appurtenances, remove frame & cover and salvage to City, remove top cone of manhole, fill with gravel and compact at 90% relative compaction, remove discharge flapper valve and place minimum of 5-feet long concrete plug from the Creek, capture all debris from the creek during construction, dispose non-salvage materials as per local and state regulations as per contract drawings and Specification Section 02220 - Demolition.
1. Measurement and payment:
 - a. CONTRACTOR of abandon existing storm drain pipe and discharge shall be paid a percentage of lump sum amount equal to percent completion approved and accepted by the OWNER and ENGINEER during the construction of the Work.
- Q. Item 14A, Monitor, Test and Detect Hazardous Materials (LS): Based on the initial investigation of the project site, it is determined to be "Low Risk" for encountering soil or groundwater contamination in the proposed excavation area. Monitor, Test and Detect Hazardous Material will consist of all labor, materials, equipment and supplies, including by not limited to monitor, detect and test the presence or likely presence of any hazardous substances or petroleum products that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. monitor, detect, remove and transport contaminated soils. The unit price includes monitoring, testing, detecting hazardous material from the project site using a field photoionization detector (PID) for measuring VOC; provide worker safety equipment such as Personal Protective Equipment (PPE) if hazardous materials are present; sample and analyze trench groundwater for petroleum products including gasoline, diesel and derivatives thereof; discharge pre-treated groundwater to West County Wastewater District permitted nearby sewer manhole; and as shown on the contract documents and described in this specification.

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1. Measurement and payment:
 - a. CONTRACTOR of monitor, test and detect hazardous materials shall be paid a percentage of lump sum amount equal to percent completion approved and accepted by the OWNER and ENGINEER during the construction of the Work.

- R. Item 14B, Haul-away Hazardous Materials (CY): Based on the initial investigation of the project site, it is determined to be "Low Risk" for encountering soil or groundwater contamination in the proposed excavation area. Haul-away Hazardous Materials will consist of all labor, materials, equipment and supplies, including by not limited to haul-away the detected hazardous substances or petroleum products. The unit price includes haul-away detected hazardous material to approved landfill; paying all required disposal costs; dispose in accordance with local, state and federal regulations; and other related items as shown on the contract drawings and described in this specification.
 1. Measurement and payment:
 - a. CONTRACTOR shall be paid for the actual volume of haul-away hazardous materials removed from the pipe trench as approved and accepted by the OWNER and ENGINEER during the construction of the Work.

1.5 PROGRESS PAYMENTS

- A. Progress Payment Request Submittal:
 1. Unless otherwise mutually agreed, by the 25th of each month, the CONTRACTOR shall prepare and submit monthly progress payment requests for work completed through the 25th day of the month.
 2. Said payment request shall be based on the breakdown of activities as specified in the Schedule of Values described in Article 1.2 above.
 3. The monthly schedule update shall be submitted as part of the monthly progress payment report.

- B. The ENGINEER will review progress payment requests and make a determination of the percent completion of all activities (rounded to the nearest whole percent) based on an approximate measurement of all materials supplied and work performed.

- C. In the event that the CONTRACTOR fails to provide the OWNER with an acceptable Monthly Contract Record Drawing Submittal in accordance with General Conditions and Special Conditions of the project, the OWNER shall deduct compensation for such monthly submittal as per General Conditions and Special Conditions of the project. Said deduction shall become the sole property of the OWNER.

- D. Retention:
 1. From the amount thus determined, five percent (5%) thereof will be deducted as retention by OWNER for performance security.
 2. Acceptance of separate components shall not operate to release performance retention.
 3. The amount of all payments previously made to the CONTRACTOR and any amounts due the OWNER from the CONTRACTOR for supplies, materials, services, damages, or otherwise deductible under the terms of the contract will be deducted from the remainder.
 4. The remaining amount will be paid as a progress payment by the OWNER to the CONTRACTOR on the third Friday of the succeeding month or as soon thereafter as is practical.

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- E. In addition to the retention under Paragraph D above, the whole or part of any payment of the estimated amount due the CONTRACTOR may be withheld as an additional retention if such course be deemed necessary to protect the OWNER from loss due to the CONTRACTOR's failure to perform any of the following: (1) meet CONTRACTOR's payment obligations; (2) execute the work; (3) correct defective work; (4) settle damages as provided; or (5) produce substantial evidence that no stop notices will or have been filed, and/or if it has been determined that unpaid balances may be insufficient to complete the work.
- F. All material and work covered by progress payments thereupon become the sole property of the OWNER, but this provision shall not be construed as relieving the CONTRACTOR from sole responsibility for all materials and work upon which payments have been made or the restoration of any damaged work or as a waiver of the OWNER's right to require fulfillment of all of the contract terms. Said CONTRACTOR's obligation extends through the close of the warranty period.
- G. Payment for Materials:
1. No payment shall be made for materials stored offsite.
 2. Payment may be made for those materials delivered to the site but not incorporated in the work to the extent that the materials are included in the Construction Schedule as cost-loaded material delivery activities.
 3. Only material items manufactured specifically for this project and that cost individually in excess of \$20,000 will be considered for partial payment as stored materials.
 4. Partial payment for materials delivered will not be made before the respective shop drawings, installation instructions and O&M manuals have been submitted, reviewed, and accepted in accordance with General Conditions and Special Conditions of the project.
 5. To receive partial payment for materials delivered to the site, but not incorporated in the work, it shall be necessary for the CONTRACTOR to submit to the ENGINEER, at least 7 days prior to the end of said month, a list of such materials.
 6. At their sole discretion, the ENGINEER will approve items for which partial payment is to be made.
 7. The list of materials and invoices shall be clearly identified by referencing the associated activity or item on the price breakdown.
 8. Partial payment for materials delivered to the site or a bonded warehouse will be made in an amount equal to 75% of the respective suppliers' invoices(s) for the actual net cost for the item(s) delivered plus delivery charges.
 9. The CONTRACTOR's actual net cost for the materials must be supported by invoices of suppliers.
 10. Proper storage and protection of materials shall be provided by the CONTRACTOR. Final payment shall be made only for materials actually incorporated in the work and, upon acceptance of the work, all materials remaining for which advance payments had been made shall revert to the CONTRACTOR, unless otherwise agreed, and partial payments made for these items shall be deducted from the final payment for the work.

1.6 FINAL PAYMENT AND RELEASE OF CLAIMS

1. Upon the completion of the work as determined by the ENGINEER, a Notice of Acceptance will be issued and recorded with the County.
2. The OWNER will pay to the CONTRACTOR within 35 days after filing of the Notice of Acceptance, or as soon thereafter as practicable, the remaining amount due the CONTRACTOR including retainage, less all prior payments and advances whatsoever

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to or for the account of the CONTRACTOR for supplies, materials, services, damages, stop notices, or otherwise deductible under the terms of the contract.

3. All prior estimates and payments including those relating to extra work shall be subject to correction by this payment, which throughout this contract is called "Final Payment".

1.7 RELEASE OF CLAIMS:

- A. Neither the final payment nor any part of the retained percentage shall become due until the CONTRACTOR shall have delivered to the OWNER a complete release of all claims against the OWNER arising under and by virtue of this contract and related to undisputed amounts, including claims of Subcontractors and suppliers of either materials or labor.
- B. If disputed contract claims in stated amounts are unresolved 35 days after issuance of the Notice of Acceptance, a progress payment of undisputed amounts and retained funds will be made by OWNER upon receipt of a release specifically excluding the disputed contract claims.
- C. Claims by the OWNER against the CONTRACTOR for liquidated damages or actual damages or other causes will be a valid basis for withholding of funds by the OWNER.
- D. Upon resolution of disputed claims the CONTRACTOR shall execute a supplemental release and, upon delivery the OWNER will make final payment.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

+ + END OF SECTION + +

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SECTION 01310
PROJECT MEETINGS

PART 1 - GENERAL

1.1 PRE-CONSTRUCTION CONFERENCE

- A. Upon receipt of the Notice to Proceed, or at an earlier time if mutually agreeable, the ENGINEER will arrange a preconstruction conference to be attended by the CONTRACTOR's superintendent or other project representative authorized to commit on the behalf of the CONTRACTOR and to direct the performance of the work by others, the OWNER, the ENGINEER or ENGINEER's representative, and representatives of utilities, major subcontractors, and others involved in the execution of the work.
- B. The purpose of this conference will be to establish a working relationship and understanding between the parties and to discuss subjects as may be pertinent for the execution of the work.
- C. CONTRACTOR shall be prepared to discuss the following subjects, as a minimum:
 - 1. Required schedules.
 - 2. Status of Bonds and insurance.
 - 3. Sequencing of critical path work items.
 - 4. Progress payment procedures.
 - 5. Project changes and clarification procedures.
 - 6. Use of site, access, office and storage areas, security and temporary facilities.
 - 7. Major product delivery and priorities.
 - 8. CONTRACTOR's safety plan and representative.

1.2 PROGRESS MEETINGS

- A. The ENGINEER will arrange and conduct progress meetings. The ENGINEER will prepare and circulate a draft agenda of each meeting. The CONTRACTOR may add items as appropriate to the draft agenda.
- B. Progress meetings will be conducted on a regular basis, at such frequency as the OWNER and CONTRACTOR may mutually agree. Progress meetings shall be attended by the ENGINEER, OWNER Operations personnel, CONTRACTOR's superintendent or other project representative, and representatives of all subcontractors involved in the work at the time of the meeting, required by the CONTRACTOR, or requested by the OWNER.
- C. The purpose of the meetings will be to facilitate the work of the CONTRACTOR and any subcontractor or other organization that is not up to schedule, resolve conflicts, identify and resolve any potential delays or necessary changes in the work and in general, coordinate and facilitate the execution of the work.
- D. The agenda of progress meetings shall include review of work progress, the latest Construction Schedule submittal (monthly), potential project delays, the status of key shop drawings, submittal reviews, information requests, safety concerns, record drawings, and extra work items.

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1.3 CONSTRUCTION SCHEDULE REVIEW

- A. The Construction Schedule will be reviewed monthly during an agreed upon progress meeting to verify at a minimum:
 - 1. Actual start and finish dates of completed activities since the last progress meeting.
 - 2. Durations and progress of all activities not completed.
 - 3. Critical submittals/materials delivery problems.
 - 4. Potential project delays.
 - 5. Any activity behind schedule and CONTRACTOR's plan to bring it back on schedule.
 - 6. Reason, logic, time, and cost data for Change Order work that is to be incorporated into the Construction Schedule or payment request form.
 - 7. Payment due to the CONTRACTOR based on percentage complete of items in the submittal payment request form.

- B. At the progress meeting, the CONTRACTOR shall provide an update of the Construction Schedule as described in Section 01320, Progress Schedule.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

++ END OF SECTION ++

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SECTION 01400

QUALITY CONTROL

PART 1 - GENERAL

1.1 OBSERVATION AND SUPERVISION

- A. The ENGINEER or ENGINEER's appointed representative will review the Work and the CONTRACTOR shall provide facilities and access to the Work at all times as required to facilitate this review.
- B. Responsibility:
 - 1. The CONTRACTOR shall be solely responsible to supervise and direct the entire Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to complete the Work in accordance with the Contract Documents.
 - 2. The CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, quality control, and procedures of construction and safety precautions and programs incidental thereto.
 - 3. The foregoing includes work performed by the CONTRACTOR's Subcontractors.
 - 4. The CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.
- C. Superintendent:
 - 1. The CONTRACTOR shall designate in writing and keep on the work site at all times during its progress a technically qualified, English-speaking superintendent, who shall not be replaced without written acceptance of the ENGINEER.
 - 2. The superintendent shall be the CONTRACTOR's representative at the job site and shall have authority to act on behalf of the CONTRACTOR.
 - 3. All communications given to the superintendent shall be as binding as if given to the CONTRACTOR.
 - 4. The CONTRACTOR's superintendent shall be present at the site of the Work at all times while work is in progress. Failure to observe this requirement shall be considered as suspension of the Work by the CONTRACTOR until such time as such superintendent is again present at the site.

1.2 RESPONSIBILITY

- A. The CONTRACTOR is responsible for conducting all testing and inspection specifically required by the Specifications and otherwise necessary to ensure compliance with the Contract Documents.
 - 1. Approval of Testing Laboratories:
 - a. All laboratory work under this contract shall be performed by a laboratory approved by the OWNER and the ENGINEER, whether the laboratory is employed by the CONTRACTOR, or is owned and operated by the CONTRACTOR.
 - b. The basis of approval includes the following:
 - 1) Testing laboratories performing work in connection with concrete, steel, and bituminous materials shall comply with ASTM E329 and ASTM D3666, respectively.

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- 2) Testing laboratories performing work not in connection with concrete, steel, bituminous materials, soils and non-destructive testing shall comply with ASTM E548.
- B. OWNER may conduct periodic independent testing and inspection to verify compliance with the Contract Documents.
- C. Retesting:
 1. The OWNER reserves the right to back-charge the CONTRACTOR for retesting of deficient or defective work or products upon written notification.
 2. Compensation for retesting on behalf of the OWNER will be made through deductions from the Progress Payments.
- D. The CONTRACTOR is responsible for correcting all defective work discovered prior to final acceptance of the Contract, despite the failure of the Inspector(s) to discover it.
- E. CONTRACTOR shall provide trench support per OSHA guidelines and other applicable laws and ordinances during construction for accessing trench safely for inspection by the representative of the OWNER, ENGINEER, AGENCIES, and TRIBAL OFFICIAL as outlined in Specs 01130 and 02300.

1.3 TESTS AND INSPECTIONS

- A. The CONTRACTOR shall be responsible for scheduling all tests required.
- B. The CONTRACTOR shall pay for all tests including, but not limited to:
 1. Inspections and tests necessary to comply with laws, ordinances, rules, regulations and orders of public authorities pursuant to General Conditions.
 2. Mix designs, including tests of trial batches, on concrete mixes.
 3. Tests of materials, inspections, and certifications required by the Specifications.
 4. Testing, adjusting, and balancing of equipment and systems required by the Specifications.
 5. One tension and elongation test for each 5 tons of steel or fractional part thereof for each size will be required, unless the steel can be identified by heat or melt numbers and is accompanied by mill analysis and test reports. Commercial stock may be used, subject to approval of the ENGINEER.
 6. Any testing performed by the CONTRACTOR for their own quality control (e.g., compaction tests).
 7. Retests or re-inspections by the OWNER, if required, and tests or inspections required due to CONTRACTOR error or lack of required identifications of material.
 8. Any and all water used by the CONTRACTOR in any testing.
- C. Two copies of the agency or laboratory report of each test or inspection shall be provided to the ENGINEER. All tests of materials shall be made in accordance with the commonly recognized standards of national technical organizations, and such other special methods and tests as are prescribed in the Contract Documents.
- D. Purchase Orders:
 1. One copy of each of the CONTRACTOR's purchase orders for materials forming a portion of the work shall be furnished to the ENGINEER, if requested.
 2. Each such purchase order shall contain a statement that the materials included in the order are subject to inspection by the OWNER.

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3. Materials purchased locally will be inspected at the point of manufacture or supply, and materials supplied from points more than 50 miles from the job site will be inspected upon arrival at the job, except when other inspection requirements are provided for specific materials in other Sections of this Specification.

E. Samples:

1. The CONTRACTOR shall furnish samples of materials as are required by the ENGINEER, without charge.
2. No material shall be used until the ENGINEER has had the opportunity to test or examine such materials.
3. Samples will be secured and tested whenever necessary to determine the quality of the material.
4. Samples and test specimens prepared at the job site, such as concrete test cylinders, shall be taken or prepared by the ENGINEER in the presence and with the assistance of the CONTRACTOR.

1.4 AUTHORITY AND DUTIES OF INSPECTOR

- A. Inspectors employed by the OWNER shall be authorized to inspect all work done and materials and equipment furnished to complement the CONTRACTOR furnished independent inspector.
1. Such inspection may extend to all or any part of the work, and to the preparation, fabrication, or manufacture of the materials and equipment to be used.
 2. The Inspector will not alter or waive the provisions of the Contract Documents.
 3. The Inspector will keep the ENGINEER informed as to the progress of the work and the manner in which it is being done.
 4. The Inspector will call the CONTRACTOR's attention to nonconformance with the Contract Documents that the Inspector may have observed.
 5. The Inspector will not be responsible for the adequacy or correctness of the CONTRACTOR's means, methods, techniques, sequences, or procedures for construction.
 6. The Inspector will not approve or accept any portion of the work, issue instructions contrary to the Contract Documents, or act as foreman for the CONTRACTOR.
 7. The Inspector may reject defective materials, equipment, or work when it is not in compliance with the Contract Documents.
 8. The Inspector may request to enter the trench area for inspection of any rock, cultural resources, environmental resources, etc during construction.
 9. The Inspector will not be responsible for:
 - a. The CONTRACTOR's quality control program.
 - b. The CONTRACTOR's safety program.
 - c. Coordinating the work or activities of the CONTRACTOR or their Subcontractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

+ + END OF SECTION + +

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SECTION 01420

REFERENCE STANDARDS AND ABBREVIATIONS

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

- A. The standards referred to, except as modified, shall have full force and effect as though printed in this Specification, and shall be the latest edition or revision thereof in effect on the bid opening date, unless a particular edition or issue is indicated. Copies of these standards are not available from the OWNER.
- B. The ENGINEER will furnish, upon request, information as to how copies may be obtained.
- C. Abbreviations and terms, or pronouns in place of them, shall be interpreted as follows:

AASHTO:	American Association of State Highway and Transportation Officials, Standard Specifications
ACI:	American Concrete Institute, Standards
AFBMA:	Anti-Friction Bearing Manufacturer's Association, Inc.
AGA:	American Gas Association
AGC:	Associated General Contractors
AGMA:	American Gear Manufacturer's Association
AHAM:	Association of Home Appliance Manufacturer's
AI:	The Asphalt Institute
AIA:	American Institute of Architects
AISC:	American Institute of Steel Construction, Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings, and the AISC Code of Standard Practice
AISI:	American Iron and Steel Institute
AITC:	American Institute of Timber Construction
AMCA:	Air Moving and Conditioning Association, Standards
ANSI:	American National Standards Institute
APA:	American Plywood Association
API:	American Petroleum Institute
APWA:	American Public Works Association, Standard Specifications for Public Works Construction
ASA:	Acoustical Society of America
ASAE:	American Society of Agriculture Engineers
ASCE:	American Society of Civil Engineers
ASHRAE:	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASLE:	American Society of Lubricating Engineers
ASME:	American Society of Mechanical Engineers
ASQC:	American Society of Quality Control
ASSE:	American Society of Sanitary Engineers
ASTM:	American Society for Testing and Materials, Standards
AWG:	American Wire Gauge
AWPA:	American Wood-Preservers' Association, Standards

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AWPI:	American Wood Preservers Institute
AWS:	American Welding Society
AWWA:	American Water Works Association, Standards
BBC:	Basic Building Code, Building Officials and Code Administrators International
BHMA:	Builders Hardware Manufacturer's Association
CAL/OSHA:	California/Occupational Safety and Health Administration, Standards
CBM:	Certified Ballast Manufacturer's
CCR:	California Code of Regulations
CEMA:	Conveyors Equipment Manufacturer's Association
CGA:	Compressed Gas Association
CISPI:	Cast Iron Soil Pipe Institute, Standards
CLFMI:	Chain Link Fence Manufacturer's Institute
CMAA:	Crane Manufacturers' Association of America
CMA:	Concrete Masonry Association
CRSI:	Concrete Reinforcing Steel Institute, Standards
Caltrans:	CalTrans Standard Specifications, State of California, Department of Transportation
DCDMA:	Diamond Core Drill Manufacturer's Association
DOSH:	Division of Occupational Safety and Health, State of California, Department of Industrial Relations
EIA:	Electronic Industries Association
ETL:	Electrical Test Laboratories
FED/OSHA:	Federal Occupational Safety and Health Administration, Standards
FM:	Factory Mutual
ICBO:	International Conference of Building Officials
ICEA:	Insulated Cable Engineers Association
IEEE:	Institute of Electrical and Electronic Engineers
IES:	Illuminating Engineering Society
IME:	Institute of Makers of Explosives
IP:	Institute of Petroleum (London)
IPC:	Institute of Printed Circuits
IPCEA:	Insulated Power Cable Engineers Association
ISA:	Instrument Society of America
ISO:	International Organization of Standardization
ITE:	Institute of Traffic Engineers
MBMA:	Metal Building Manufacturer's Association
MPTA:	Mechanical Power Transmission of Association
MTI:	Marine Testing Institute
MSS:	Manufacturers Standardization Society
NACE:	National Association of Corrosion Engineers, Standards
NASSCO	National Association of Sewer Service Companies
NBS:	National Bureau of Standards
NCCLS:	National Committee for Clinical Laboratory Standards
NEC:	National Electric Code
NEMA:	National Electrical Manufacturers' Association, Standards
NFPA:	National Fire Protection Association
NFPA:	National Forest Products Association
NGLI:	National Lubricating Grease Institute
NMA:	National Microfilm Association
NWMA:	National Woodwork Manufacturers Association

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OSHA:	Occupational Safety and Health Administration
PCA:	Portland Cement Association
PCI:	Prestressed Concrete Institute
RIS:	Redwood Inspection Service, Standard Specifications
RVIA:	Recreational Vehicle Industry Association
RWMA:	Resistance Welder Manufacturer's Association
SAE:	Society of Automotive Engineers
SAMA:	Scientific Apparatus Makers Association
SDI:	Steel Door Institute
SMA:	Screen Manufacturer's Association
SMACNA:	Sheet Metal and Air Conditioning Contractors National Association
SPR:	Simplified Practice Recommendation
SSBC:	Southern Standard Building Code, Southern Building Code Congress
SSPC:	Steel Structures Painting Council, Specifications
SSPWC:	Standard Specifications for Public Works Construction
TFI:	The Fertilizer Institute
UBC:	Uniform Building Code of the International Conference of Building Officials
UPC:	Uniform Plumbing Code
UL:	Underwriters Laboratories
WIC:	Woodwork Institute of California
WRI:	Wire Reinforcement Institute, Inc.
WWPA:	Western Wood Products Association

1.2 OTHER ABBREVIATIONS

A. Other common abbreviations that may be found in the Specifications are, but may not be limited to:

		cubic feet per second	cfs, ft ³ /s
acrylonitrile butadiene styrene	ABS		
alternating current	a-c, AC	decibel	dB
American wire gauge	AWG	decibels, A-weighted	dBa
ante meridiem	am	degree Centigrade (Celsius)	°C, C
ampere	A, amp	degree Fahrenheit	°F, F
average	avg	diameter	diam, Ø
		direct current	d-c, DC
		dollars	\$
brake horsepower	bhp	ductile iron	DI
British thermal unit	Btu		
		each	ea, @
California Dept of Fish and Wildlife	CDFW	efficiency	eff
California Register of Historical Resources	CRHR	elevation	El., Elev
Centigrade	C	ethylene propylene rubber	EPDM
chlorinated polyvinyl chloride	CPVC	exhaust fan	EF
company	Co	Fahrenheit	F
cubic inch	cu in, in ³	feet	ft
cubic foot	cu ft, CF, ft ³	feet per hour	fph, ft/h
cubic yard	cu yd, CY, yd ³	feet per minute	fpm, ft/min
cubic feet per minute	cfm, ft ³ /min	feet per second	fps, ft/s
		fiberglass reinforced plastic	FRP

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figure	Fig.	motor control center	MCC
flange	flg		
foot-pound	ft-lb	net positive suction head available	NPSHA
		net positive suction head required	NPSHR
gallon	gal	number	No., #
gallons per hour	gph, gal/hr	National Pipe Thread	NPT
gallons per minute	gpm, gal/min	National Register of Historic Places	NRHP
gallons per second	gps, gal/s		
gram	g	Operation and Maintenance	O&M
ground fault current interrupter	GFCI	ounce	oz
		outside diameter	OD
hand/off/automatic heating, ventilating, and air conditioning	HOA HVAC	parts per million	ppm
Hertz	Hz	post meridiem	pm
hour	hr	Placer County Air Pollution Control District	PCAPCD
horsepower	hp	plus or minus	+/-, ±
		polytetrafluorethylene	PTFE
inch	in	polyvinyl chloride	PVC
inch-pound	in-lb	pound	lb
input/output	I/O	pounds per square foot	psf, lb/ft ²
inside diameter	ID	pounds per square inch	psi, lb/in ²
instrumentation and control	I&C	pounds per square inch absolute	psia
		pounds per square inch gage	psig
kilovolt	kV	Process and Instrumentation Diagrams	P&ID
kilovolt-ampere	kVA		
kilowatt	kW	Regional Water Resources Control Board	RWRCB
kilowatt-hour	kWhr	random access memory	RAM
		reinforced concrete pipe	RCP
length	L	reinforced concrete cylinder pipe	RCCP
length to least radius of gyration	L/r	relative humidity	RH
light emitting diode	LED	revolutions per minute	rpm
linear	lin		
linear foot	lin ft	second	sec, s
liter	l	specific gravity	sp gr
		square foot	sq ft, SF, ft ²
manhole	MH	square inch	sq in, in ²
maximum	max	square yard	sq yd, SY, yd ²
mean sea level	MSL	stainless steel	SS
mercury	Hg	standard	std
miles per hour	mph	standard cubic feet per minute	scfm
milli-amp	mA	State Water Resources Control Board	SWRCB
milliampere DC	mAdc	symmetrical	sym.
milligram	mg		
milligrams per liter	mg/l		
milliliter	ml		
millimeter	mm		
million gallon	mil		
million gallons per day	mgd		
minimum	min		

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total dynamic head	tdh	United Auburn Indian Community	UAIC
totally-enclosed, fan-cooled	TEFC	vitrified clay pipe	VCP
totally-enclosed, non-ventilated	TENV	variable frequency drive	VFD, AFD
twisted shielded	TWSH	volt	V
ultraviolet	UV	volts alternating current	VAC
United States	US, USA	volts direct current	VDC
U.S Army Corps of Engineers	USACE	water to cement	W/C, wc
U.S Fish and Wildlife Service	USFW	water column	W.C.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

+ + END OF SECTION + +

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SECTION 01500

TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES

PART 1 - GENERAL

1.1 CONTRACTOR'S STAGING AREA AND WORK ACCESS PLAN

- A. The CONTRACTOR shall limit the location of the storage of equipment and materials to the staging area(s) as approved by the OWNER and the ENGINEER.
- B. The CONTRACTOR shall make their own arrangements for additional space that may be required and shall bear all associated costs.
- C. The CONTRACTOR shall submit a work access plan showing the planned access route for deliveries of supplies and mobilization of work force for ENGINEER's approval prior to mobilization.
- D. On-Site Project Office:
 - 1. The CONTRACTOR shall maintain near the work in progress a suitable office or other protected area in which shall be kept project copies of the Contract Documents, project progress records, project schedule, shop drawings and other relevant documents which shall be accessible to the OWNER and ENGINEER during normal working hours.
 - 2. The CONTRACTOR shall make their own arrangements for additional space that may be required and bear all associated costs.
- E. Temporary Facilities Plan:
 - 1. The CONTRACTOR shall submit to the ENGINEER for approval, as part of the mobilization effort, the proposed plan and layout for all temporary offices, sanitary facilities, temporary construction roads, storage buildings, storage yards, temporary water service and distribution, temporary telephone and temporary power service and distribution.
 - 2. The plan shall show all temporary fencing and gates and all proposed access to the work areas.
 - 3. Prior to the removal of existing fence, the CONTRACTOR shall provide temporary security fencing at least equal to the existing chain link and barbed wire fencing to protect the existing facilities and structures.

1.2 STORAGE - GENERAL

- A. The CONTRACTOR shall provide any temporary storage required for the protection of equipment and materials as recommended by manufacturers of such materials.

1.3 STORAGE BUILDINGS

- A. The CONTRACTOR shall erect or provide temporary storage buildings of the various sizes as required for the protection of mechanical and electrical equipment and materials as recommended by manufacturers of such equipment and materials.

- B. The buildings shall be provided with such environmental control systems that meet recommendations of manufacturers of all equipment and materials stored in the buildings.
- C. The buildings shall be of sufficient size and so arranged or partitioned to provide security for their contents and provide ready access for inspection and inventory.
- D. At or near the completion of the work, and as directed by the ENGINEER, the temporary storage buildings shall be dismantled, removed from the site, and remain the property of the CONTRACTOR.
- E. Combustible materials (paints, solvents, fuels, etc.) shall be safely stored and separated in accordance with the manufacturer's requirements and in compliance with hazardous material storage requirements. CONTRACTOR shall be responsible for providing proper storage buildings for combustible materials.

1.4 STORAGE YARDS

- A. The CONTRACTOR shall provide temporary storage yards as required for the storage of materials that are not subject to damage by weather conditions.
- B. Materials such as pipe, reinforcing and structural steel, shall be stored on pallets or racks, off the ground, and stored in a manner to allow ready access for inspection and inventory.
- C. Temporary gravel surfacing of the storage yards shall meet with the approval of the ENGINEER.

1.5 PARKING AREAS

- A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, OWNER's operations, or construction operations.

1.6 VEHICULAR TRAFFIC

- A. Comply with Laws and Regulations regarding closing or restricting use of public streets or highways. No public or private road shall be closed, except by written permission of proper authority. Assure the least possible obstruction to traffic and normal commercial pursuits.
- B. Conduct the Work to interfere as little as possible with public travel, whether vehicular or pedestrian.
- C. Whenever it is necessary to cross, close, or obstruct roads, driveways, and walks, whether public or private, provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.

1.7 DELIVERY-STORAGE-HANDLING

- A. General:
 - 1. The CONTRACTOR shall deliver, handle, and store materials and equipment in accordance with supplier's written recommendations and by methods and means, which will prevent damage, deterioration, and loss including theft.

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2. Delivery schedules shall be controlled to minimize long-term storage at the site and overcrowding of construction spaces.
 3. In particular, the CONTRACTOR shall provide delivery/ installation coordination to ensure minimum holding or storage for material or equipment recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other sources of loss.
- B. Transportation and Handling:
1. Materials and equipment shall be transported by methods to avoid damage and shall be delivered in dry, undamaged condition in supplier's unopened containers or packaging.
 2. The CONTRACTOR shall provide equipment and personnel to handle the materials, and equipment by methods that will prevent soiling and damage.
 3. The CONTRACTOR shall provide additional protection during handling to prevent marring and otherwise damaging packaging, and surrounding surfaces.
- C. Storage and Protection:
1. Materials and equipment shall be stored in accordance with supplier's written instructions, with seals and labels intact and legible. Exposed metal surfaces of valves, fittings and similar materials shall be coated with grease in accordance with manufacturer's recommendations to prevent corrosion. Sensitive materials and equipment shall be stored in weather-tight enclosures and temperature and humidity ranges shall be maintained within tolerances required by supplier's written instructions.
 2. For exterior storage of fabricated materials, they shall be placed on sloped support above ground. Materials or equipment subject to deterioration shall be covered with impervious sheet covering; ventilation shall be provided to avoid condensation.
 3. Loose granular materials shall be stored on solid surfaces in a well-drained area and shall be prevented from mixing with foreign matter.
 4. Inspection:
 - a. Storage shall be arranged to provide access for inspection.
 - b. The CONTRACTOR shall periodically inspect to assure materials and equipment are undamaged and are maintained under required conditions.
 5. Storage shall be arranged in a manner to provide access for maintenance of stored items.

1.8 PROJECT SECURITY

- A. The CONTRACTOR shall make adequate provision for the protection of the work area against fire, theft and vandalism, and for the protection of the public and OWNER personnel against exposure to injury, and for the security of any off-site storage areas.
- B. All costs for this protection shall be included within the CONTRACTOR's bid.

1.9 TEMPORARY UTILITIES

- A. The CONTRACTOR shall provide and pay for all necessary temporary telephones, fuel, power, potable water, sanitary, and proper toilet accommodations. CONTRACTOR shall not use OWNER-owned utilities.
- B. The temporary facilities to be provided by the CONTRACTOR as described above shall conform to all requirements in regard to operation, safety, and fire hazards of State and local authorities and of Underwriters.

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- C. CONTRACTOR shall return the site and facilities to their original "as-found" condition, unless otherwise specified in the Contract Documents, at the completion of the project.

1.10 SOUND CONTROL

- A. The CONTRACTOR shall comply with all local sound control and noise level rules, regulations and ordinances which apply to any work performed pursuant to the contract.
- B. Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer, so as to produce a maximum noise level of 65 dBA at 23 feet.
- C. No internal combustion engine shall be operated on the project without said muffler.
- D. Special Precautions for Inhabited Areas:
 - 1. In inhabited areas, particularly residential, operations shall be performed in a manner to minimize unnecessary noise generation.
 - 2. In residential areas, special measures shall be taken to suppress noise generated by repair and service activities during the night hours.
 - 3. A sound attenuated pumps and enclosure much be used to reduce the noise level.

1.11 DUST/AIR POLLUTION CONTROL

- A. The CONTRACTOR shall take whatever steps, procedures, or means as are required to prevent dust conditions being caused by operations in connection with the execution of the Work; and on any road which the CONTRACTOR or any of their Subcontractors are using, excavation or fill areas, demolition operations, or other activities.
- B. Control shall be by sprinkling, use of dust palliatives, modification of operations, or any other means acceptable to agencies having jurisdiction.
- C. Damage to personal property, etc., resulting from the CONTRACTOR's construction operations shall be borne by the CONTRACTOR at no cost to the OWNER.
- D. The CONTRACTOR shall keep the streets and work area clean at all times by means of mechanical sweepers or hand sweeping. Water will be used for dust control only, and not for cleaning streets.
- E. Burning of waste, rubbish, or other debris will not be permitted on or adjacent to site.

1.12 WASTE DISPOSAL

- A. The CONTRACTOR shall dispose of surplus materials, waste products, and debris and shall make necessary arrangements for such disposal. The CONTRACTOR shall obtain written permission from property owner prior to disposing surplus materials, waste products, or debris on private property.
- B. All waste disposal shall be done in accordance with applicable laws and regulations.
- C. Landfill Disposal:
 - 1. If the CONTRACTOR proposes to dispose of construction debris, trench spoils, excavation spoils, etc., at a landfill, the CONTRACTOR shall be responsible to provide and pay for all permits and analyses required by the landfill.

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2. If the analyses determine that the material is hazardous, then an equitable adjustment of the Contract for the cost of hazardous waste disposal will be made in accordance with the General Conditions, and the following:
 - a. Time extension or contract costs will not be granted for delays that could have been avoided by the CONTRACTOR redirecting their forces and equipment to perform other work on the contract.
- D. Ditches, washes, or drainageways shall not be filled.
- E. Disposal operations shall not create unsightly or unsanitary nuisances.
- F. The CONTRACTOR shall maintain the disposal site in a condition of good appearance and safety during the construction period.
- G. Prior to final acceptance of the work, the CONTRACTOR shall have completed the leveling and cleanup of the disposal site.

1.13 CLEAN UP

- A. Throughout the period of construction, the CONTRACTOR shall keep the work site free and clean of all rubbish and debris, and shall promptly remove from the site, or from property adjacent to the site of the work, all unused and rejected materials, surplus earth, concrete, plaster, and debris.
- B. Upon completion of the work, and prior to final acceptance, the CONTRACTOR shall remove from the vicinity of the work all plant, surplus material, and equipment belonging to the CONTRACTOR or used under their direction during construction.

1.14 TEMPORARY ENCLOSURES

- A. When dewatering, bypass pumping, rock excavation, spray painting, spraying of insulation, or other activities inconveniencing or dangerous to property or the health of employees, the public or construction workers, are in progress, the area of activity shall be enclosed adequately to contain the dust, sound, or other hazard.
- B. In the event there are no permanent enclosures of the area, or such enclosures are incomplete or inadequate, the CONTRACTOR shall provide suitable temporary enclosures as required by the ENGINEER to meet field conditions in accordance with the recommendations of the owner-furnished equipment supplier (if applicable) and the CONTRACTOR's equipment supplier requirements.
- C. Said temporary or permanent enclosures shall be adequately ventilated to ensure the safety of the workers.

1.15 DRAINAGE

- A. The CONTRACTOR shall take all necessary actions as required to meet discharge requirements of the California Regional Water Quality Control Board and other pertinent local ordinances and regulations pertaining to dewatering and/or site drainage discharged into storm drains and creeks. This may include, but may not be limited to, the use of retention basins and silt basins to settle most of the solids prior to discharge.

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- B. In excavation, fill, and grading operations, care shall be taken to disturb the pre-existing drainage pattern as little as possible.
- C. Particular care shall be taken not to direct drainage water onto private property or into streets or drainageways inadequate for the increased flow.
- D. Drainage means shall be provided to protect the work.

1.16 TEMPORARY LIGHTING

- A. The CONTRACTOR shall provide temporary lighting in all work areas sufficient to maintain a lighting level during working hours not less than the lighting level required by OSHA standards.

1.17 CONSTRUCTION FACILITIES

- A. Construction hoists, elevators, scaffolds, stages, shoring, and similar temporary facilities shall be of ample size and capacity to adequately support and move the loads to which they will be subjected. Railings, enclosures, safety devices, and controls required by law or for adequate protection of life and property shall be provided.
- B. Temporary supports shall be designed with an adequate safety factor to assure adequate load bearing capability. Whenever required by safety regulations, the CONTRACTOR shall submit design calculations for staging and shoring prior to application of loads.

1.18 REMOVAL OF TEMPORARY FACILITIES AND UTILITIES

- A. At such time or times as any temporary construction facilities and utilities are no longer required for the work, the CONTRACTOR shall notify the ENGINEER of their intent and schedule for removal of the temporary facilities and utilities, and obtain the ENGINEER's approval before removing the same.
- B. As approved, the CONTRACTOR shall remove the temporary facilities and utilities from the site as CONTRACTOR's property and leave the site in such condition as specified, as directed by the ENGINEER, and/or as shown on the Drawings.
- C. In unfinished areas, such as planted medians, the condition of the site shall be left in a condition that will restore original drainage, evenly graded, seeded or planted as necessary, and left with an appearance equal to, or better than original.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

+ + END OF SECTION + +

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SECTION 01505

MOBILIZATION

PART 1 - GENERAL

1.1 GENERAL

- A. Mobilization shall include the obtaining of all bonds, insurance, and licenses; moving onto the site of all plant and equipment; furnishing and erecting plants, temporary buildings, and other construction facilities; all as required for the proper performance and completion of the work.
- B. Mobilization shall include but not be limited to the following principal items:
1. Moving on to the site of all CONTRACTOR's plant and equipment.
 2. Installing temporary construction power, wiring, and lighting facilities.
 3. Establishing fire protection system.
 4. Developing construction water supply.
 5. Furnishing the work access plan as specified in Section 01500, Temporary Construction Facilities and Utilities.
 6. Providing all on-site CONTRACTOR communication facilities, including telephones, and radio pagers and any radio communications facilities required for the CONTRACTOR to coordinate their forces.
 7. Providing on-site sanitary facilities and potable water facilities as specified in Section 01500, Temporary Construction Facilities and Utilities.
 8. Arranging for and erection of the CONTRACTOR's work and storage yard, including site security.
 9. Posting all EPA and OSHA required notices and establishment of safety programs.
 10. Post all required labor and EEOE notices.
 11. Have the CONTRACTOR's superintendent at the job site full time.
 12. Submittal and OWNER acceptance of the Construction Schedule.
 13. Establishing site security, lighting, fencing, and signing.
 14. Obtaining all bonds, insurance and licenses.
 15. Providing an organization chart of the project and for the CONTRACTOR's firm. The project chart shall include the name, title and responsibilities of each position which is involved in the work.
 16. Other mobilization items approved by the ENGINEER required to support the complete work (e.g., Health and Safety Plans for Hazardous Waste).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

+ + END OF SECTION + +

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SECTION 01725

PIPELINE TESTING AND CLEANING

PART 1 - GENERAL

1.1 GENERAL

- A. Scope:
1. This Section covers pipeline testing and cleaning requirements and special coordinating services required of the CONTRACTOR that shall apply during construction and training of the OWNER's personnel for facilities operation.
 2. The CONTRACTOR shall confirm pipeline and appurtenance testing and cleaning as per OWNER'S Standard Specifications.
- B. The CONTRACTOR shall inform all Subcontractors and manufacturers of the requirements herein and include the required services in their costs for the work specified in these Contract Documents. Where a minimum amount of time is stated in the Technical Specifications for manufacturers' services, any additional time required to perform the specified services shall be provided at no additional cost to the OWNER.
- C. Scheduling:
1. Pipeline testing and cleaning are requisite to satisfactory completion of the Contract and, therefore, shall be completed within the contract time.
 2. All pipeline testing and cleaning activities shall be shown on the CONTRACTOR's Construction Schedule, in accordance with Section 01320, Progress Schedule.
 3. Testing procedures have been submitted in writing and accepted by the ENGINEER in accordance with Section 01330, Submittal Procedures. All testing procedures and results shall be submitted in writing.

1.2 STARTUP AND TESTING

- A. General:
1. The CONTRACTOR shall meet all of the cleaning and testing requirements listed in OWNER's General Conditions.
 2. The CONTRACTOR shall provide the effective coordination of all parties necessary for the successful project startup.
 3. The CONTRACTOR shall furnish all labor, consumables (power, water, chemicals, air, etc.) tools, equipment, instruments, and services required and incidental to completing all functional, performance and operational testing of installed equipment.
 4. The CONTRACTOR shall submit the proposed test procedures to the ENGINEER for review at least 30 days prior to testing.
 5. The CONTRACTOR shall give the ENGINEER written notice confirming the date of testing at least five (5) working days before the time the equipment is scheduled to be tested.
 6. All testing shall be witnessed by the ENGINEER to be considered valid.
 7. CONTRACTOR shall submit written detailed results of all functional, performance and operational testing.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL

- A. All storm drain lines shall be tested in accordance to this specification.
- B. CONTRACTOR shall notify OWNER and ENGINEER minimum five (5) days prior to scheduled tests.
- C. Following tests shall be conducted prior to acceptance of the pipeline:
 - 1. Manhole Vacuum Test
 - a. All storm drain manholes shall be vacuum tested for leakage after assembly but prior to backfilling around the manhole.
 - 1) The CONTRACTOR shall furnish all labor, tools, and equipment necessary to make the test and perform any work incidental thereto.
 - 2) The CONTRACTOR shall correct any excess leakage, and repair any damage to the manhole and its appurtenances at his expense.
 - b. Prior to testing, all lift holes shall be plugged with an approved nonshrink grout.
 - 1) All outside joints shall be wrapped with approved external concrete joint wrap.
 - 2) All channels in precast bases that are not intended to be used shall be abandoned by installing a mechanical, water-tight plug and filling the channel with concrete prior to performing the vacuum test.
 - 3) Boots for inside drops shall be installed prior to performing the vacuum test.
 - c. All pipes entering the manhole shall be plugged, taking care to securely brace the plug(s) from being drawn inside the manhole.
 - 1) The test head shall be placed at the inside of the top of the cone section and the seal inflated in accordance with the manufacturer's recommendation.
 - 2) A vacuum of 10 inches of mercury shall be drawn and the vacuum pump shut off.
 - 3) With the valves closed, the time shall be measured for the vacuum to drop to 9 inches.
 - 4) The manhole shall pass if the time is greater than:
 - 60 seconds for a 48 inch diameter manhole
 - 75 seconds for a 60 inch diameter manhole
 - 90 seconds for a 72 inch diameter manhole
 - 120 seconds for a 84 inch diameter manhole
 - d. If the manhole fails the initial test, necessary repairs shall be made with a non-shrink grout while the test is still being drawn.
 - 1) Retesting shall proceed until a satisfactory test is obtained.
 - 2. Visual (CCTV) Test
 - a. Visual internal inspection of all storm drain pipes and laterals installed by the CONTRACTOR shall be performed in the presence of the OWNER using CONTRACTOR furnished and operated closed circuit television (CCTV) survey equipment, all at the expense of the CONTRACTOR.
 - 1) The storm drain pipe shall be cleaned prior to CCTV.
 - 2) The television test shall be done after compacting sub-grade, after all other utilities and subsurface structures have been installed.
 - 3) Immediately prior to CCTV, under the direction and in the presence of the OWNER, an ample amount of water to fill all low spots or sags shall be introduced into the line.

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- 4) Any standing water or defects observed shall be repaired in the presence of the OWNER.
 - b. The CONTRACTOR shall perform CCTV inspections on all storm drain pipes placed for this project and at all connection points with the existing storm drain pipes to check for any damage done to the storm drain pipe.
 - 1) The CCTV test will be completed after the construction of storm drain mains and lateral lines connecting to the existing conditions.
 - 2) The second test will be completed after placing and compacting base rock but prior to placing the final course.
 - 3) Any damage observed during the second CCTV test shall be repaired by the CONTRACTOR at his expense in the presence of the OWNER.
 - 4) Repairs shall again be CCTV inspected to the satisfaction of the OWNER.
 - c. CCTV equipment shall be specifically designed and constructed for operation in connection with storm drain system inspection.
 - 1) The CCTV system shall include all equipment necessary for color monitoring and DVD recording.
 - 2) Lighting and camera quality shall be suitable to provide a clear, in-focus picture of the inside periphery of the pipe and, the camera shall be mounted on skids or transporter suitable for the size pipe under investigation.
 - 3) CCTV shall be performed using either 'Rotating Head' or 'Pan & Tilt' or any other camera capable of providing an undistorted full view inspection up storm drain laterals, services and manholes.
 - 4) The camera shall provide a 360-degree undistorted wall view perpendicular to the camera.
 - 5) An accurate water depth gauge, satisfactory to the OWNER, shall be an integral part of the system.
 - d. The camera shall travel with the flow, from manhole to manhole in one continuous pull unless directed otherwise by the OWNER.
 - 1) In no case shall the camera move at a speed greater than 30 feet per minute.
 - e. The Monitor/DVD recorder shall indicate: Report or Job Number; Setup Number; Date of Inspection; and Distances.
 - 1) Color digital recordings of the TV monitor shall be made of each entire stretch and provided to the OWNER, immediately upon completion of the work, on DVD format, acceptable to the OWNER, with protective case and the disk clearly marked to indicate the content and the disk finalized in such a way as to prevent accidental erasure.
 - 2) The Disk shall be labeled indicating the project name, the date of the inspection and, if more than one disk is required for a project, each disk shall be numbered indicating Disk 1 of 2, Disk 2 of 2, etc.
 - 3) CONTRACTOR shall provide digital CCTV data acquisition software program for collection of the CCTV data shall be Granite XP using NASSCO PACP standards as required by the OWNER.
 - f. Written reports of the CCTV inspection shall be kept on each stretch TV'd.
 - 1) Reports shall be on forms provided or approved by the OWNER.
 - 2) Each report shall include the project name, the date of the inspection, the manhole ID's, the pipe diameter and the pipe type.
 - 3) Each log shall be filled out completely and contain remarks indicating, the inspection starting and ending points; all damaged or defective pipe, changed conditions, lower lateral locations and the corresponding footages and other information as required by the OWNER.
3. Final Cleaning and Flush
- a. Acceptable methods for cleaning storm drain pipes include the Ball & Flush method and the use of Combination High Pressure/Vacuum cleaners.

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- 1) Ball & Flush
 - a) All storm drain pipes shall be tested for obstructions and cleaned by balling and flushing.
 - b) The test shall be done with a commercial storm drain cleaning ball.
 - c) The ball shall be controlled by either a tag line, rope or storm drain rods and permitted to move slowly through the storm drain pipe.
 - d) Balling and Flushing shall be done after paving or other final surface work and all other work, including mortar work, repairs to manholes, channeling, paving, etc., is accomplished and prior to final acceptance of the storm drain pipes by the OWNER.
 - e) An approved sand trap shall be used to catch all debris during balling and flushing.
- 2) No water or debris shall be allowed to enter OWNER maintained storm drain lines.
- 3) Pipes up to and including 24-inch diameter shall be cleaned by the controlled balling method, except where cover over the top of the pipe at the upstream manhole is 3 feet or less, alternate means of cleaning may be used if approved by the OWNER.
 - a) Pipes over 24 inches diameter shall be cleaned as approved by the OWNER.
 - b) Temporary plugs shall be installed and maintained during cleaning operations at points of connection to existing storm drain facilities to prevent water, dirt, and debris from entering the existing facility.
 - c) Temporary plugs for storm drain systems shall be used as approved by the ENGINEER.
- 4) Any obstructions or irregularities shall be removed or repaired by the CONTRACTOR.
 - a) All testing, cleaning and repairing shall be done to the satisfaction and in the presence of the OWNER.
 - b) The CONTRACTOR shall provide all necessary materials and utilities for the tests and shall dispose of all waste, including water, at his own expense.
 - c) Contractor shall be responsible and repair or replace, at no cost to the District, any damage to lines, facilities or property caused as a result of the cleaning operations.

3.2 RECORD KEEPING

- A. The CONTRACTOR shall maintain as a minimum, the following records:
 1. Daily logs indicating all equipment testing and startup activities.
 2. Records of pipeline cleaning.
 3. Hydrostatic and pressure test records.
 4. Daily work reports.
- B. Cleaning Pipelines:
 1. As pipe laying progresses and at the conclusion of the work thoroughly clean all new pipelines by flushing with water or other means to remove all dirt, stones, pieces of wood or other material which may have entered during the construction period. If, after this cleaning, obstructions remain, they shall be removed.
- C. Pipeline Testing:
 1. All storm drain pipes and storm drain manhole (SDMH) testing shall be in accordance to OWNER's General Condition section 7.8 – Testing and Inspection.

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2. After successful testing of the piping, slowly drain the system and then flush the system. Orifice plates shall be installed after testing. If installed with the piping, they will be removed and replaced with spacers or pipe spools of equal length prior to the pressure test.
3. Dewater the system, remove blind flanges, and perform tightness tests, as required by the ENGINEER.

+ + END OF SECTION + +

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SECTION 01800

OPERATIONAL COMPLETION AND PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 GENERAL

- A. The Work will be considered operationally complete when all technical and administrative submittals, testing, training and startup are completed satisfactorily in accordance with the Contract Documents.
- B. Operational completion shall apply to the project in its entirety.

1.2 CERTIFICATION OF OPERATIONAL COMPLETION

- A. Prior to requesting the ENGINEER's inspection for certification of each phase as operationally complete, the CONTRACTOR shall certify in writing that each phase of the Work is operationally complete and shall submit a list of known items still to be completed or corrected (punchlist) prior to Contract Completion.
- B. The following items shall be completed:
 - 1. OWNER has been advised of any pending insurance changeover requirements.
 - 2. Specific warranties, maintenance agreements, final certifications and similar documents have been submitted.
 - 3. All tools, spare parts, extra stocks of materials, and similar physical items have been delivered to OWNER.
 - 4. Instruction of OWNER's operation/maintenance personnel, and start up testing has been completed.
 - 5. Submittal and acceptance of all O&M manuals.
 - 6. Changeover of locks to OWNER's cores/keys.
- C. Punchlist:
 - 1. When the CONTRACTOR considers that the Work, or a portion or phase thereof, which the OWNER agrees to accept separately, is operationally complete, the CONTRACTOR shall certify in writing that the work is operationally complete and shall prepare and submit to the ENGINEER a comprehensive list of items to be completed or corrected prior to Contract Completion (punchlist).
 - 2. The ENGINEER may add additional work items to the punchlist.
 - 3. Failure to include an item on the punchlist does not alter the responsibility of the CONTRACTOR to complete all Work in accordance with the Contract Documents.
 - 4. Upon receipt of the CONTRACTOR's punchlist, the OWNER and the ENGINEER will make an inspection to determine whether the Work or designated portion thereof is operationally complete.
 - 5. If the OWNER and the ENGINEER's inspection discloses any item, whether or not included on the CONTRACTOR's list, that is not in accordance with the requirements of the Contract Documents, the CONTRACTOR shall, upon notification by the ENGINEER and before an issuance of the Certificate of Operational Completion is provided, complete or correct such item.
 - 6. The CONTRACTOR shall then submit a request for another inspection by the OWNER and the ENGINEER.

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7. When the Work or designated portion thereof is accepted by the OWNER and the ENGINEER to be operationally complete, the OWNER will prepare a Certificate of Operational Completion.
8. The date of Operational Completion shall be the date of the ENGINEER's inspection and acceptance.

1.3 DESCRIPTION OF PROJECT CLOSEOUT

- A. Closeout is hereby defined to include general requirements near the end of the Contract Time, in preparation for Final Acceptance, Final Payment, normal termination of Contract, occupancy by OWNER and similar actions evidencing completion of the Work.
- B. Specific requirements for individual units of Work are specified in Sections of Divisions 2 through 16.

1.4 FINAL CLEANUP

- A. At completion, leave project clean and ready for use.
 1. Legally dispose of waste materials, debris and rubbish off the site.
 2. Remove grease, dust, dirt, stains, labels, fingerprints and other foreign materials from exposed and enclosed surfaces.
 3. Repair, patch and touch up all affected curbs, gutters, and sidewalks to match adjacent surfaces.
 4. Broom clean paved surfaces, rake clean other surfaces of grounds. Vacuum clean all interior surfaces, rake clean other surfaces of grounds.
- B. CONTRACTOR shall comply with OWNER's General Conditions section 7.9 – Cleanup.

1.5 RECORD DRAWINGS

- A. Prepare record drawings as per OWNER's General Conditions section 7.11 – As-built Drawings. The CONTRACTOR shall prepare and submit Contract Record Drawings for the OWNER.

1.6 GUARANTEES

- A. The General Conditions cover the CONTRACTOR's responsibility to remedy defects due to faulty workmanship and materials, which appear within one year from the date of Final Acceptance.
- B. Special guarantees are required by various Sections of the Specifications. Assemble written guarantees, label and submit to the ENGINEER.
 1. Provide the "Warranty Form" included in the General Conditions.
 2. Equipment guarantees shall be written in the manufacturer's standard form and shall be countersigned by the Subcontractor or supplier and the CONTRACTOR.
 3. All other guarantees shall be written on the Subcontractor's or supplier's letterhead and shall be countersigned by the CONTRACTOR.

1.7 FINAL INSPECTION

- A. Prior to requesting ENGINEER's final inspection for certification of Final Acceptance and Final Payment, complete the following and list known exceptions (if any):

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1. Submit Final Payment request with final releases and supporting documentation not previously submitted and accepted.
 2. Submit copy of final punchlist of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by ENGINEER.
 3. Submit Consent of Surety.
 4. Revise and submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Certify in writing that the work has been completed in accordance with the Contract Documents, and request ENGINEER's final inspection.
- C. Reinspection:
1. Within seven (7) days after receipt of the CONTRACTOR's notice that the work has been completed, including punchlist items resulting from earlier inspections, and excepting incomplete items delayed because of acceptable circumstance, the ENGINEER will reinspect the work.
 2. Upon completion of reinspection, ENGINEER will either prepare a certificate of Final Acceptance or advise the CONTRACTOR of work not complete or obligations not fulfilled as required for Final Acceptance.
 3. If necessary, inspection procedure will be repeated.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

+ + END OF SECTION + +

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DIVISION 02

SECTION 02200
SITE PREPARATION

PART 1 - GENERAL

1.1 DEFINITIONS

- A. Interfering or Objectionable Material: Trash, rubbish, and junk; vegetation and other organic matter, whether alive, dead, or decaying; topsoil.
- B. Clearing: Removal of interfering or objectionable material lying on or protruding above ground surface.
- C. Grubbing: Removal of vegetation and other organic matter including stumps, buried logs, and roots greater than 3-inch caliper to a depth of 6 inches below subgrade and as shown on the Contract Drawings.
- D. Stripping: Removal of topsoil remaining after applicable scalping is completed.
- E. Project Limits: Areas, as shown or specified, within which Work is to be performed. The Project Limits are within the designated Public Right-of-Way (ROW) and Temporary Construction Easement (TCE) as shown on the Contract Drawings.
- F. Excavation Limits: Area, as shown or specified, within which excavation is to be performed. The Excavation Limits are within the designated Permanent Easement (PE) as shown on the Contract Drawings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL

- A. Clear, grub, and strip areas actually needed for waste disposal, borrow, or site improvements within limits shown or specified.
- B. Do not injure or deface vegetation that is not designated for removal.

3.2 LIMITS

- A. As follows, but not to extend beyond Excavation limits.
 - 1. Excavation 5 feet beyond top of cut slopes.
 - 2. Trench Excavation: 2 feet from trench centerline, regardless of actual trench width.
 - 3. Waste Disposal:
 - a. Clearing: 5 feet beyond perimeter.
 - b. Scalping and Stripping: Not required.
 - c. Grubbing: Around perimeter as necessary for neat finished appearance.
 - 4. Structures: 5 feet outside of new structures.
 - 5. Roadways: Clearing, grubbing and stripping 30 feet from centerline.

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6. Overhead Utilities:
 - a. Clearing and Grubbing: Entire width of easements and rights-of-way.
 - b. Scalping and Stripping: Wherever grading is required.
7. Other Areas: As shown.

- B. Remove rubbish, trash, and junk from entire area within Excavation Limits.
- C. The CONTRACTOR must not clear, grub and strip beyond the Excavation Limits unless approved by the OWNER and the ENGINEER.

3.3 CLEARING

- A. Clear areas within limits shown or specified.
- B. Fell trees so that they fall away from facilities and vegetation not designated for removal.
- C. Cut stumps not designated for grubbing flush with ground surface.
- D. Cut off shrubs, brush, weeds, and grasses to within 2 inches of ground surface.

3.4 GRUBBING

- A. Grub areas within limits shown or specified.

3.5 STRIPPING

- A. Do not remove topsoil until after scalping is completed.
- B. Strip areas within limits to minimum depths shown or specified. Do not remove subsoil with topsoil.

3.6 DISPOSAL

- A. Clearing and Grubbing Debris: Dispose of debris offsite.
- B. Strippings:
 1. Dispose of strippings that are unsuitable for topsoil or that exceed quantity required for topsoil offsite or approved by ENGINEER.
 2. Stockpile topsoil in sufficient quantity to meet Project needs. Dispose of excess strippings as specified for clearing and grubbing.

+ + END OF SECTION + +

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SECTION 02220

DEMOLITION

PART 1 - GENERAL

1.1 DEFINITIONS

- A. "Demolish": CONTRACTOR shall remove from the site as property of CONTRACTOR. Demolition includes disconnecting, removal, loading, repairs, cleanup, transportation, unloading, disposal permits and fees, disposal, and all other items required to remove the material from the site.
- B. "Salvage": CONTRACTOR shall remove from area of Work and place in location designated by ENGINEER. Equipment is property of OWNER. Salvage includes disconnecting, removal, repairs, cleanup, loading, transportation, unloading, and all other items required to remove and relocate the material.
- C. "OWNER to Remove": OWNER will remove from area of Work prior to CONTRACTOR commencing demolition Work for this area.
- D. "Relocate": CONTRACTOR shall relocate material shown to new locations shown on Drawings or stated herein. Relocation includes disconnecting, removal, reconnecting, attaching, repairs, and all other items required to relocate material to new location.
- E. "Abandon": CONTRACTOR shall disconnect and leave in place as specified.
- F. "Materials": Any and all items and objects that are scheduled, specified, or shown to be demolished, salvaged, removed, relocated, or abandoned.

1.2 SUBMITTALS

- A. Action Submittals:
 - 1. Product Information: Grout, sealants, and bonding agents to be used for patching.
- B. Informational Submittals:
 - 1. Plan and schedule phased demolition, including limits of demolition, as part of and consistent with the progress schedule specified in OWNER's General Conditions.
 - 2. Methods of demolition and equipment proposed to demolish materials.
 - 3. Copies of any authorizations and permits required to perform Work.
 - 4. Copies of Hazardous Materials Inspection Reports.
 - 5. Repair procedures for demolition of materials beyond limits shown on Drawings.

PART 2 - PRODUCTS

2.1 GENERAL

- A. The CONTRACTOR shall provide all materials and equipment in suitable and adequate quantity as required to accomplish the Work shown, specified herein, and as required to complete the Project.

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PART 3 - EXECUTION

3.1 GENERAL

- A. Contract Drawings are based on available information. The Work may differ slightly from what is shown. CONTRACTOR shall be responsible for determining the work required by inspecting the site.

3.2 SAFETY REQUIREMENTS

- A. All Work shall be done in conformance with all applicable rules and regulations pertaining to safety.
- B. Hazardous Materials:
 - 1. See General Conditions.
 - 2. Existing facilities, or portions thereof, to be demolished may contain hazardous materials such as asbestos cement piping, residual chemicals in existing or abandoned piping, lead-based paint, mercury seals, or other unknown hazardous materials.

3.3 SEQUENCE

- A. Be responsible for the sequence of Work.
- B. Conform to constraints as specified in Specs Section 01130 - SPECIAL PROJECT CONSTRAINTS.

3.4 COORDINATION

- A. Coordination with ENGINEER:
 - 1. Only materials specified herein, shown on the Demolition Photographs or the Drawings, or approved by ENGINEER in the field shall be demolished, salvaged, removed, relocated, or abandoned.
 - 2. Verify materials scheduled to be demolished, salvaged, removed, relocated, or abandoned with ENGINEER prior to performing Work.
 - 3. Do not remove materials without prior approval of ENGINEER.
 - 4. Provide at least 3 working days' notice to ENGINEER prior to start of Work.
 - 5. Notify ENGINEER to turn off affected services or facilities before starting Work.
 - 6. Provide temporary services during interruptions to affected services or facilities as acceptable to ENGINEER.
 - 7. ENGINEER will indicate limits of Work if not clearly shown.
- B. Coordination with Utility Owners:
 - 1. Notify utility owners to turn off affected services or facilities before starting Work.
 - 2. Provide not less than 72 hours notice to utility owners prior to shutdown, unless otherwise directed by utility owners.
 - 3. Provide temporary services during interruptions to affected services or facilities as acceptable to utility owners.

3.5 LIMITS

- A. Drawings define minimum portions of materials to be demolished. Unless otherwise shown, rough cuts or breaks may be made to limits of demolition shown. If rough cuts or

breaks are made exceeding limits shown, CONTRACTOR shall repair the cuts or breaks back to the dimensions shown on Drawings at CONTRACTOR's expense.

- B. If limits are not clear on the Drawings or Demolition Photographs, limits shall be as directed by ENGINEER.
- C. All areas not within the limits of demolition Work shown on the Drawings, or as specified herein, shall be left undisturbed, unless necessary for demolition of materials.

3.6 DEMOLITION

A. General:

- 1. Inspect condition of materials to be demolished prior to bidding to assess potential for salvage value.
- 2. Remove all materials associated with existing equipment that is to be demolished.
- 3. Materials within limits of demolition will become the property of CONTRACTOR.
- 4. All materials from the demolition process shall be removed safely from the project site as soon as possible. They shall be disposed of in accordance with applicable federal, state, and city regulations. CONTRACTOR is responsible for determining these regulations and shall bear all costs associated with disposal of the materials.

B. Pavement and Curbs:

- 1. Provide saw cut at all concrete and pavement surfaces and curb removal limits and where neat connection lines are required.
- 2. Surfaces exposed by demolition activities shall be repaired and finished to provide a uniform, smooth, level transition between adjacent surfaces.

C. Concrete, CMU, and Reinforcing:

- 1. In areas where concrete or CMU portions are to be removed from a structure, the edge of removal shall be cut with a concrete saw to leave a perpendicular edge or by core-drilling where a circular hole is required.
- 2. Damaged concrete shall be removed to solid concrete. Damaged concrete shall include concrete that is soft, spalled, cracked, or otherwise damaged as determined by ENGINEER.
- 3. Depth of removal shall be as determined by ENGINEER unless otherwise shown or specified.
- 4. Reinforcing shall be cut and removed unless otherwise shown or instructed by ENGINEER.
- 5. Spalled edges may be required to be resawn at the discretion of the ENGINEER.
- 6. Protect adjacent structures and equipment from damage during Work.
- 7. Exposed surfaces following demolition activities shall be repaired and finished to provide a uniform, smooth, and level transition between adjacent surfaces.
- 8. Remove and repair designated cracked and damaged concrete areas shown in accordance with this section and Contract Specification section 03300, CAST-IN-PLACE CONCRETE.
- 9. Remove existing SSMH base, cones, frame and cover. The OWNER may require to recycle or salvage some or all of the parts of the existing SSMH.
- 10. The OWNER shall designate salvage parts prior to the beginning of the demolition of the existing SSMHs.

D. Concrete Embedded Items:

- 1. Except for core drills, demolish anchor bolts, reinforcing steel, conduit, and other materials that are concrete embedded to a minimum of 1 inch below final finished

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surface. For core drills, coat rebar exposed by core drilling with System No. 304 in accordance with Contract Specification section 09900, PAINTING.

2. Plug empty pipes and conduits with fireproof sealant to maintain fire ratings for floors or walls.
 3. Patching:
 - a. Demolish damaged concrete. Damaged concrete shall be removed to solid concrete. Damaged concrete shall include concrete that is soft, spalled, cracked, or otherwise damaged as determined by ENGINEER.
 - b. Coat with approved bonding agent.
 - c. Patch with nonshrink, nonmetallic grout.
- E. Piping:
1. Pressurized Services: Install restrained caps or plugs at the demolished ends, unless otherwise shown.
 2. Gravity Services:
 - a. Coordinate with the OWNER and the ENGINEER prior to its removal.
 - b. Hydro-clean existing pipe prior to its removal.
 - c. Pipeline shall be completely removed from the existing trench.
 - d. Backfill and compact existing trench in accordance with the Specs Section 02300.
- F. Utilities:
1. Excavate utility lines serving structures to be demolished.
 2. Demolish electrical, sanitary, and storm drainage lines serving structures to be demolished.
 3. Support or relocate utility lines exposed by Work.
 4. For water and gas lines to be demolished or capped and terminated, provide a permanent leakproof closure. Closure type shall be as recommended by utility owner.
- G. Electrical:
1. Remove conduits and wiring from materials to be demolished back to nearest junction box.
 2. For existing circuits to remain operational, intercept existing conduit at the most convenient location, or as shown, and splice and extend conduit to new location. Install new conductors as required to accomplish intended results. New conductors shall be continuous without splices between junction boxes.
 3. For existing circuits no longer needed, demolish conductors from conduits.
 4. Demolish all surface-mounted conduit which is no longer needed.
 5. For conduit below grade or concealed within walls, cap and abandon in place.

3.7 SALVAGE

- A. Salvage materials for OWNER's own use where shown.
- B. Remove materials with extreme care so as not to damage.
- C. Promptly remove materials from Work area.
- D. Store materials in location designated by ENGINEER.
- E. Clean and protect materials from dust, dirt, natural elements, and store as directed.

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3.8 RELOCATION

- A. ENGINEER will determine condition of materials prior to removal.
- B. Remove all materials associated with items to be relocated.
- C. Existing materials shall not be damaged during removal.
- D. Properly store and maintain materials in same condition as when removed.
- E. Clean and protect materials from dust, dirt, natural elements, and store as directed.

3.9 ABANDONMENT

- A. Structures:
 - 1. Break holes into or core drill floor slabs, catch basins, SDMHs and other below-grade concrete structures to be abandoned in place to allow water to freely migrate through.
 - 2. Remove top cone, frame and cover of the SDMH.
 - 3. Backfill and compact in accordance with the Specs Section 02300.
- B. Piping and Conduits:
 - 1. General: Piping and conduits to be abandoned shall be capped with a watertight plug at demolished end in a manner that will prevent entrance of soil, groundwater, or moisture.
 - 2. Pressurized Services: Install restrained caps or plugs at the demolished ends, unless otherwise shown.
 - 3. Gravity Services:
 - a. CCTV first 50 feet of existing pipe from existing discharge in presence of a biologist and in accordance with Specs Section 01725.
 - 1) Biologist needs to sign off before we abandon existing pipe.
 - 2) Only work in dry area.
 - 3) Catchment device to capture debris must be solid to ensure no debris can get through. Others use perforated materials such as nets which she doesn't want.
 - 4) Work during the low-flow part of the year.
 - 5) Work shall be done outside the nesting bird period.
 - b. Remove any damage section of the pipe prior to its abandonment.
 - c. Install concrete plugs, 5-foot minimum length on both sides of the pipeline.

3.10 REPAIR AND REPLACEMENT

- A. Any damaged materials scheduled to be salvaged or relocated shall be repaired by the CONTRACTOR to the satisfaction of ENGINEER or replaced at the CONTRACTOR's expense.
- B. Any damage to areas not within the limits of demolition Work shown on the Demolition Photographs, Drawings, or as specified herein shall be repaired or replaced to original precontract conditions at the CONTRACTOR's sole expense.

3.11 DISPOSAL

- A. Dispose of materials offsite in licensed landfills and in accordance with all local, state, and federal regulations. CONTRACTOR is responsible for obtaining any and all necessary permits for disposal.

+ + END OF SECTION + +

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SECTION 02300

EARTHWORK

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Section includes: All excavating, backfilling, filling, grading, subgrade preparation and disposing of earth materials as required. It also includes all temporary means needed to prevent discharge of sediment to watercourses from dewatering systems or erosion.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM C33, Standard Specification for Aggregate Material.
 - 2. ASTM D422, Method for Particle-Size Analysis of Soils.
 - 3. ASTM D423, Liquid Limit of Soils.
 - 4. ASTM D427, Shrinkage Factors of Soils.
 - 5. ASTM D698, Test Method for Laboratory Compaction Characteristics of Soil.
 - 6. ASTM D1556, Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
 - 7. ASTM D2922, Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 8. ASTM D2166, unconfined compressive strength of soils.
- B. Occupational Safety and Health Administration (OSHA)
 - 1. Title 29, Code of Federal Regulations, Part 1926

1.3 SYSTEM DESCRIPTION

- A. Permits and Regulations:
 - 1. Perform excavation Work in compliance with applicable requirements of governing authorities having jurisdiction.
 - 2. Obtain all necessary permits for Work in roads, rights-of-way, railroads, etc. Also, obtain permits as required by local, state and federal agencies for discharging water from excavations, for erosion control, and for prevention of air and water pollution.

1.4 SUBMITTALS

- A. Test Reports - Borrow, Backfill, and Grading: Testing laboratory shall submit copies of the following reports directly to ENGINEER:
 - 1. Tests on borrow material.
 - 2. Tests on footing subgrade.
 - 3. Field density tests.
 - 4. Optimum moisture - maximum density curve for each soil used for backfill.
 - 5. Reports of observations for conformance of borrow material to the Project Geotechnical Report.
 - 6. Quality Control Plan: Names and phone numbers of independent testing companies that will be used to perform soil and asphalt concrete testing, qualifications, and proposed procedures for performing tests and providing test results to ENGINEER.

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- B. Submit to the ENGINEER samples of all materials, including select backfill, general backfill, bedding, crushed stone, sand and topsoil. Submit samples of the proposed material at least seven days in advance of its anticipated use.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General:
 - 1. All material will be tested by the laboratory and approved by the ENGINEER.
 - 2. No material shall be placed without the approval of the ENGINEER.

- B. Marking Tape:
 - 1. Metallic:
 - a. Solid aluminum foil, visible on unprinted side, encased in a protective high visibility, inert polyethylene plastic jacket.
 - b. Foil Thickness: Minimum 5.5 mils.
 - c. Width: 12 inches.
 - d. Identifying Lettering: Minimum 1-inch high, permanent black lettering imprinted continuously over entire length.
 - e. Joining Clips: Tin or nickel-coated, furnished by tape manufacturer.
 - f. Manufacturers and Products:
 - 1) Reef Industries; Terra "D".
 - 2) Allen; Detectatape.
 - 3) Or equal.
 - 2. Marking tape shall be marked with the following statements:
 - a. Storm Drain Pipeline: "CAUTION – STORM DRAIN LINE BURIED BELOW."
 - b. For Existing Utilities Within Trench Limits: "CAUTION – BURIED PIPELINE/CONDUIT" or as specified by utility owner.
 - 3. Color:
 - a. Storm Drain Pipeline: Green, as specified in ANSI Z53.1 Safety Color Code.
 - b. Others Disturbed: Color, as specified for specific utility in ANSI Z53.1 Safety Color Code.

- C. Fill Material:
 - 1. Classification:
 - a. Fill adjacent to structures to a distance measured horizontally from the structure that is equal to the depth from the finished grade is classified as Select Fill.
 - b. Outside these limits, the fill is classified as Common Fill, unless otherwise specified.
 - 2. Common Fill:
 - a. Common Fill materials shall consist of soils obtained from on-site excavations or off-site sources that are uniformly mixed, contain no organic material, and have been passed through a 3" screen with the following gradation.

<u>Sieve Sizes</u>	<u>Percentage Passing</u>
<u>3"</u>	<u>100</u>
<u>No. 4</u>	<u>35-100</u>
<u>No. 30</u>	<u>20-100</u>

- b. The maximum expansion of off-site materials shall be 1.5% as performed on a sample remolded to approximately 9% of the maximum dry density as determined in accordance with ASTM D 698 at 2% below optimum moisture content under a 100 psf surcharge pressure.
 - c. Per Geotechnical Report, on-site material is unsuitable as determined by the Geotechnical Engineer. ENGINEER recommends imported fill shall be used.
 - 3. Select Fill:
 - a. Select fill or backfill is material selected by the ENGINEER from the excavation.
 - b. Select material shall be free of organic or other unsuitable materials and shall not contain rocks, or unbroken masses of soil larger than 4" in greatest dimension.
 - c. Select fill material shall consists of ¾-inch crushed stone with 100% passing of ¾-inch sieve size and not more than 10% passing the No. 8 sieve size.
- D. Aggregate Base:
 - 1. Class 2, ¾" maximum conforming to Section 26 of the Caltrans Standard Specifications.
- E. Granular Bedding:
 - 1. Well-graded sand and gravel materials.
 - 2. Unfrozen, friable, and no clay balls, roots, or other organic material.
 - 3. Clean or gravelly sand with less than 5 percent passing No. 200 sieve, as determined in accordance with ASTM D1140, or gravel or crushed rock within maximum particle size and other requirements as follows unless otherwise specified.
 - 4. ¾-inch maximum particle size, except ¼ inch for stainless steel pipe, copper pipe, tubing, and plastic pipe under 3-inch diameter.
 - 5. Conduit and Direct-Buried Cable:
 - a. Sand, clean or clean to silty, less than 12 percent passing No. 200 sieve.
 - b. Individual Particles: Free of sharp edges.
 - c. Maximum Size Particle: Pass a No. 4 sieve.
 - d. If more than 5 percent passes No. 200 sieve, the fraction that passes No. 40 sieve shall be non-plastic as determined in accordance with ASTM D4318.
- F. Crushed Stone (1/2" Crushed Rock or ¾" Crushed Rock):
 - 1. 1/2" Crushed Rock
 - a. Well-graded sand and gravel materials.
 - b. Unfrozen, friable, and no clay balls, roots, or other organic material.
 - c. 1/2 -inch maximum particle size, 100% passing.
 - d. Crushed stone will be crushed rock or gravel conforming to the requirements of ASTM C33-03, Size #7.
 - 2. ¾" Crushed Rock
 - a. Well-graded sand and gravel materials
 - b. ¾-inch maximum particle size, 100% passing and no more than 10% passing No.8 sieve size
 - c. Shall conform to Sections 5.12, and other applicable Sections of SPMUD Standard Specification.
- G. Sand:
 - 1. Natural or manufactured granular material, containing no organic material.
 - 2. Sand will be non-plastic, when tested in accordance with ASTM D 4318, 100% passing a 1/2" screen and no more than 20% passing a No. 200 screen.
- H. Controlled Low Strength Material (CLSM):

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1. Select and proportion ingredients to obtain compressive strength between 50 and 150 psi at 7 days in accordance with ASTM D4832. Sufficient cement shall be added to meet the strength and material requirements given below and as required to provide sufficient strength for compacting overlying trench backfill. Provide certified mix design and test results in accordance with submittal requirements.
2. Materials:
 - a. Cement: ASTM C150, Type I or II, two sacks minimum per cubic yard.
 - b. Aggregate: ASTM C33, maximum Size 7. The amount of material passing a No. 200 sieve shall not exceed 12 percent. The above No. 200 sieve material shall be well graded so as to avoid segregation. The minus #200 sieve fraction shall be nonplastic.
 - c. Fly Ash (if used): ASTM C618, Class C or F.
 - d. Water: Clean, potable, containing less than 500 ppm of chlorides.
3. Mix Design:
 - a. The CONTRACTOR and its suppliers shall determine the materials and proportions used to meet the requirements of these Specifications. Make daily checks of the aggregate gradation and adjust the mix design as required. Modify the CLSM mix as necessary to meet the flowability, pumpability, and set time requirements for each individual pour.
 - b. At least 30 days before placing CLSM, submit to the ENGINEER a mix design for each CLSM to be used. The mix design shall include trial lab and field data, with pairs of 6-inch by 12-inch cylinder breaks performed at 7, 14, and 28 days. Molds shall be plastic or waxed cardboard. The mix design shall be performed by an independent laboratory under the direction of an engineer licensed in California.
 - c. No CLSM shall be placed until the ENGINEER has approved the mix design. The ENGINEER's approval of the mix design shall be understood to indicate conditional acceptance. Final acceptance will be based on tests conducted on field samples and conformance with these Specifications.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Inspection:
 1. Provide ENGINEER with sufficient notice and with means to examine the areas and conditions under which excavating, filling, and grading are to be performed.
 2. ENGINEER will notify CONTRACTOR if conditions are found that may be detrimental to the proper and timely completion of the Work.
 3. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.
- B. "Pot-holing":
 1. Excavate and backfill, in advance of the construction, test pits to determine conditions or location of the existing utilities and structures.
 2. Define the location of each existing facility involved within the area of his excavation for Work under this Contract.
 3. Exercise care during such location work to avoid damaging and/or disrupting the affected facility.
 4. CONTRACTOR is responsible for repairing, at his expense, damage to any structure, piping, or utility caused by his Work.
- C. Temporary Fencing:

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1. Furnish and install a temporary fence surrounding excavations and work area, including the stockpile and storage areas.
2. Provide fence openings only at vehicular, equipment and worker access points.

3.2 EROSION CONTROL

- A. General: Implement the construction procedures outlined herein to assure minimum damage to the environment during construction. Take all additional measures required to conform to the requirements of applicable codes and regulations.
 1. Whenever possible, locate and construct access and temporary roads to avoid environmental damage. Make provisions to regulate drainage, avoid erosion and minimize damage to vegetation.
 2. Where areas must be cleared for storage of materials or temporary structures, provisions will be made for regulating drainage and controlling erosion, subject to the ENGINEER'S approval.
 3. Remove only those shrubs and grasses that must be removed for construction. Protect the remainder to preserve their erosion-control value.
- B. Control Measures: Apply measures to control erosion and to minimize the siltation of the existing waterways, and natural ponding areas. Such measures include, but are not limited to, the use of berms, baled straw silt barriers, gravel or crushed stone, mulch, slope drains and other methods.
 1. Install erosion and sediment control practices where shown and according to applicable standards, codes and specifications. The practices will be maintained in effective working condition during construction and until the drainage area has been permanently stabilized.
 2. Temporary measures will be coordinated with the construction of permanent drainage facilities and other Work to the extent practicable to assure economical, effective, and continuous erosion and siltation control.
 3. CONTRACTOR will provide special care in areas with steep slopes. Disturbance of vegetation will be kept to a minimum to maintain stability.
 4. After stabilization, remove all straw bale dikes, debris, etc., from the site.
- C. Dust Control:
 1. Prevent blowing and movement of dust from exposed soil surfaces and access roads to reduce on- and off-site damage and health hazards.
 2. Control may be achieved by irrigation in which the site is sprinkled with water until the surface is moist.
 3. Repeat the process as needed.
- D. Failure to Comply: In the event CONTRACTOR repeatedly fails to satisfactorily control erosion and siltation, the OWNER reserves the right to employ outside assistance or to use its own forces to provide the corrective measures indicated. The cost of such work, plus engineering costs, will be deducted from monies due CONTRACTOR.

3.3 GROUND WATER CONTROL:

- A. The CONTRACTOR shall appropriately manage dewatering operations in compliance with all permits obtained for the Project or approved Control Plans applicable to this activity.
- B. The CONTRACTOR shall also implement any Monitoring and Reporting Programs as required by applicable permits.

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- C. Provide, operate and maintain dewatering system to permit excavation and subsequent construction activities in a dry, safe environment.
- D. System shall be of sufficient size and capacity to maintain groundwater level a minimum of 2 feet below the lowest point of excavation.
- E. CONTRACTOR shall make an assessment of the potential for dewatering induced settlement of surrounding soils and structures. CONTRACTOR shall provide all necessary equipment and facilities, including re-injection wells, cutoff walls, infiltration trenches, etc, to prevent damage to adjacent structures.
- F. In no event shall water rise to cause unbalanced pressure on structures until the concrete or mortar has set at least 24 hours. Prevent flotation of the pipe by promptly placing backfill.
- G. Excavation dewatering shall at all times be conducted in such a manner as to preserve the natural undisturbed condition of the subgrade soils at the proposed bottom of excavation.
- H. If the subgrade of the trench or excavation bottom becomes disturbed due to inadequate dewatering or drainage, excavate below normal grade as directed by the ENGINEER and refill with trench stabilization material as approved by the ENGINEER at the CONTRACTOR's expense.
- I. It is expected that the initial dewatering plan may have to be modified to suit the variable soil/water conditions to be encountered during construction. Dewater and excavate, at all times, in a manner which does not cause loss of ground or disturbance to the pipe bearing soil or soil which supports overlying or adjacent structures or instability of the excavation.
- J. CONTRACTOR shall prepare a dewatering plan and submit to the ENGINEER for acceptance in accordance with OWNER's General Conditions and Special Conditions of the project.

3.4 EXCAVATION SUPPORT SYSTEMS

- A. Trench Support
 - 1. Provide, install and maintain trench shields for all trench excavations for which trench shields are required (at a minimum, as required by OSHA).
 - 2. Follow all OSHA guidelines and other applicable laws and ordinances.
 - 3. Elevation of Bottom:
 - a. Excavation of earth material below the bottom of a shield will not exceed the limits established by ordinances, codes, laws and regulations.
 - b. When using a shield for pipe installation, the bottom of the shield will not extend below the mid-diameter of installed pipe at any time.
 - c. When using a shield for the installation of structures, the bottom of the shield shall not extend below the top of the bedding for the structures.
 - 4. Moving Shield: When a shield is removed or moved ahead, extreme care will be taken to prevent the movement of pipe or structures or the disturbance of the bedding for pipe or structures. Pipe or structures that are disturbed are to be removed and reinstalled as specified.
- B. Below Grade Structure Excavation Support

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1. Provide, install and maintain excavation support systems for all structural excavations where excavation support is required (at a minimum, as required by OSHA).
2. Follow all OSHA guidelines and other applicable laws and ordinances.
3. Prepare excavation support plan addressing the following topics:
 - a. Details of shoring, bracing, sloping or other provisions for worker protection from the hazards of caving ground
 - b. Design assumptions and calculations
 - c. Methods and sequencing of installing excavation support
 - d. Proposed locations of stockpiled excavated materials
 - e. Minimum lateral distance from the crest of slopes for vehicles, equipment and materials
 - f. Location of vertical and horizontal monitoring points on structures and recommended frequency of monitoring for excavation support system stability and performance
4. Design of excavation support systems and excavation support plan shall be prepared by a civil or structural engineer registered in the state in which the system is installed.
 - a. Excavation support system shall consist of h-pile and lagging, sheet piles, or other reliable method of excavation support.
 - b. The use of below-ground tiebacks is allowed, however, Contractor is responsible for locating and avoiding potential conflicts with existing utilities in the area in which the tie-backs are installed. All tiebacks shall be further than 3 feet from any conflicting utility. Tiebacks shall not use existing structures for support.

C. Removal of Excavation Support

1. Completely remove all excavation support unless ENGINEER specifically allows requested excavation support to remain in place after backfill.
2. Remove all excavation support in a manner that will maintain support as excavation is backfilled and will not leave voids in the backfill.

3.5 EXCAVATION

A. General:

1. Material removed: Excavations include earth, sand, clay, gravel, hardpan, pavements, rubbish and all other materials within the excavation limits.
2. Excavations for structures and pipelines will be open excavations. Provide excavation protection system(s) required by ordinances, codes, law and regulations to prevent injury to workmen and to prevent damage to new and existing structures or pipelines. Unless shown or specified otherwise, protection system(s) will be utilized under the following conditions.
 - a. Excavation Less Than 5' deep: Excavations in stable rock or in soil conditions where there is no potential for a cave-in may be made with vertical sides. Under all other conditions, excavations will be sloped and benched, shielded, or shored and braced.
 - b. Excavations More Than 5' deep: Excavations in stable rock where there is no potential for a cave-in may be made with vertical sides. Under all other conditions, excavations will be sloped and benched, shielded or shored and braced.
 - c. Excavation protection system(s) will be installed and maintained in accordance with the excavation plan submitted in accordance with the OWNER's General Conditions and Special Conditions of the project.

B. Structural Excavation:

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1. The elevation of the bottom of footings shown is approximate only. ENGINEER may order such changes in dimensions, and elevations as may be required to secure a satisfactory footing.
 2. Hand-trim all structure excavations to permit the placing of full widths and lengths of footings on horizontal beds. Rounded and undercut edges will not be permitted.
 3. Excavations shall allow for aggregate base, forms, working space, installation of shoring or bracing or the safe sloping of banks.
- C. Pipe Trench Excavation:
1. No more than 75' of trench may be opened in advance of pipe laying.
 2. Minimize trench width to the greatest extent practical, but conform to the following:
 - a. Sufficient to provide room for installing, jointing and inspecting piping, but in no case wider at top of pipe than pipe barrel outside diameter plus 2'.
 - b. Enlargements at pipe joints may be made, if required, and approved by ENGINEER.
 - c. Sufficient for shoring and bracing, or shielding and dewatering.
 - d. Sufficient to allow thorough compaction of backfill adjacent to bottom half of pipe.
 3. Depth of trench will be as shown. If required and approved by ENGINEER, depths may be revised.
- D. Subgrades:
1. Subgrades for roadways, structures and trench bottoms shall be firm, dense, and thoroughly compacted and consolidated; free from mud, muck, and other soft or unsuitable materials; and remain firm and intact under all construction operations.
 2. Subgrades that are otherwise solid, but which become soft or mucky on top due to construction operations, shall be reinforced with select fill.
 3. The finished elevation of stabilized subgrades shall not be above subgrade elevations shown.
- E. Material Storage: Stockpile satisfactory excavated materials in approved areas, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.
1. Locate and retain soil materials away from edge of excavations.
 2. Dispose of excess soil material and waste materials as specified hereinafter.
- F. Unauthorized Excavation:
1. All excavation outside the lines and grades shown, and which is not approved by ENGINEER, together with the removal and disposal of the associated material is at the CONTRACTOR'S expense.
 2. Unauthorized excavations shall be filled and compacted with select fill by the CONTRACTOR at his expense.

3.6 PLACEMENT OF FILL AND BACKFILL

- A. General:
1. Backfill excavations as promptly as Work permits, but not until completion of the following:
 - a. Acceptance by the ENGINEER of construction below finish grade.
 - b. Inspection, testing, approval, and recording of locations of underground piping and ductwork.
 - c. Removal of concrete formwork.
 - d. Removal of shoring and bracing, and backfilling of voids with satisfactory materials.
 - e. Removal of trash and debris.

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2. Remove and replace with approved fill material, as specified, fill containing organic materials or other unacceptable material.
 3. Compact all fill and backfill as specified in Subsection 3.7.
- B. Structural Backfill:
1. Select fill shall be placed as structural backfill where shown on the Drawings or indicated herein.
 2. Constraints:
 - a. Backfill water-holding basins or structures only after satisfactory leakage tests have been conducted as specified in Sections Concrete and Precast Concrete.
 - b. No backfill or fill material shall be placed when free water is standing on the surface of the area.
 - c. No compaction of fill will be permitted with free water on any portion of the fill to be compacted.
 - d. No fill shall be placed or compacted in a frozen condition or on top of frozen material.
 - e. Any fill containing organic materials or other unacceptable material previously described shall be removed and replaced with approved fill material prior to compaction.
 3. Levels of backfill against concrete walls are not to differ by more than 2' on either side of walls, unless walls are adequately braced or all floor framing is in place up to and including grade level slabs.
 4. Wherever a pipe passes through a structure backfill, the structure backfill shall be placed and compacted to an elevation 12" above the top of the pipe before the trench is excavated.
 5. CLSM can be used as structural fill.
- C. Backfill in Pipe Trenches:
1. Pipeline trenches may be backfilled prior to pressure testing, but no structure shall be constructed over any pipeline until it has been tested.
 2. Unless otherwise shown, place all pipe on a minimum 6" thick layer of Granular Bedding. The bedding shall extend 12" above the top of the pipe.
 3. Install bedding as follows:
 - a. Spread bedding and grade to provide a uniform and continuous support beneath the pipe at all points between bell holes or pipe joints.
 - b. After each pipe section is placed, deposit and compact sufficient bedding material under and around each side of the pipe to hold the pipe in proper position and to maintain alignment during subsequent pipe jointing and bedding operations.
 - c. Bedding material shall be deposited and compacted uniformly and simultaneously on each side of the pipe to prevent lateral displacement. Then place and compact the bedding material to an elevation 12" above the top of pipe.
 4. Above the level of bedding, place Select or Common Fill, as specified elsewhere in these specifications.
 5. Controlled Low Strength Material (CLSM):
 - a. When CLSM pipe zone material is indicated, the pipe may be supported above the trench floor on pea gravel bags or sandbag supports. The CONTRACTOR shall demonstrate to the ENGINEER, 7 days prior to full pipeline backfill installation, placement of CLSM as described below. The CLSM pipe zone material shall be installed as indicated.
 - 1) Bedding and Embedment: Place and compact CLSM pipe zone material using the following techniques:

- a) Following placement and anchoring of the pipe, remove all loose soil from trench walls and floor. Remove any unstable soil at the top of the trench which might fall into the trench during placement of the CLSM.
- b) Deliver the CLSM to the trench in ready mix trucks or traveling pug mill and utilize pumps or chutes to place the CLSM in the trench. Direct CLSM to one side of the pipe, taking care not to displace the pipe at any time. Continue placing CLSM on one side of the pipe until CLSM has gone under the pipe and up the other side to a depth of 6 inches above the pipe bottom. Use at least two handheld vibrators to continuously liquefy and move CLSM into all voids. Adjust water in mixture to maintain fluid consistency but maintain strength requirements. Continue placing CLSM on both sides of the pipe continuously using two vibrators for every 30 feet of pipe run.
- c) Maintain stability of pipe and conduit throughout CLSM placement and curing. CLSM will likely require placement in lifts to prevent pipe flotation. No movement of the pipe caused by flotation will be allowed. If any movement occurs, the CLSM material shall be removed and/or repaired in full conformance with these Contract Documents at no additional cost to the OWNER. Remove all sloughed material or other debris from top of previously placed CLSM.
- d) CLSM shall be allowed to cure a minimum of 4 hours prior to placing each lift as well as trench zone material. A smaller cure period will be allowed if it can be demonstrated to the ENGINEER that it will support the individual lift or trench zone material. The CLSM shall be sufficiently strong to support trench backfill material and the compaction effort required to achieve the specified compaction.

D. Marking Tape:

1. Continuously install marking tape along centerline of all buried piping, on top of last lift of pipe zone material unless otherwise shown. Coordinate with piping installation drawings. Install in accordance with manufacturer's recommendations.

Metallic Marking Tape: Install with nonmetallic piping and waterlines. Join ends with clips provided by the manufacturer.

E. Resume backfilling operations using the techniques described above to complete the pipe zone backfill. ENGINEER will approve the pipe zone backfill prior to initiating the trench zone backfill.

F. Embankments:

1. To the maximum extent available, use excess earth obtained from structure and trench excavations for construction of embankments. Obtain additional material from borrow pits, if such pits are shown, otherwise obtain additional material from offsite sources as necessary.
2. Strip, scarify, level and roll the subgrade so that surface materials of the subgrade will be compact and well bonded with the first layer of the embankment.
3. Wherever a pipe is to pass through a fill or embankment, place and compact the fill or embankment material to an elevation 12" above the top of the pipe before the trench is excavated.

G. Crushed Stone:

1. Place where shown on the Drawings, to the limits shown.
2. Place in hand-tamped lifts, not to exceed 6".

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H. Replacement of Unacceptable Excavated Materials: In cases where over-excavation for the replacement of unacceptable soil materials is required, backfill the excavation to the required subgrade with select backfill material and thoroughly compacted.

3.7 COMPACTION

A. General:

1. Compaction by inundation with water will not be permitted.
2. Provide equipment capable of discing, aerating, and mixing the soil to ensure reasonable uniformity of moisture content throughout the material and to reduce the moisture content by air drying, if necessary.
3. Perform compaction with equipment suitable for the type of fill material being placed. Select equipment that is capable of providing the minimum density required by these Specifications. Use hand-operated compacting equipment within a distance of 10 feet from the wall of any completed below grade structure. Provide equipment that is capable of compacting in restricted areas next to structures and around piping.

B. Compaction Density Requirements: The degree of compaction required for several types of fill is listed below. Moistened or aerated material as necessary to provide the moisture content specified, or if not specified, that will facilitate obtaining the specified compaction.

MATERIAL	Required Minimum Density (ASTM D 1557)	Maximum Uncompacted Lift*
Common Fill/Prepared Subgrade:	90%	8"
Select Fill/Trench Backfill above pipe:		
More than 2 feet below final grade	90%	8"
Less than 2 feet below final grade	95%	8"
Aggregate Base:	95%	8"
Granular Bedding	90%	6"
Sand	90%	6"

*Where large areas of backfill allow for use of large, heavy equipment, ENGINEER may, at their option, allow uncompacted lifts up to 12".

C. Moisture Content: All fill and backfill shall be prepared and thoroughly mixed to achieve optimum moisture content, ±3%, with the following exception: On site clayey soils optimum to +3%.

D. Testing: Testing will be as specified under Paragraph 3.10, "Field Quality Control".

3.8 GRADING

A. General:

1. Uniformly grade areas within limits of grading under this Section, including adjacent transition areas.
2. Smooth subgrade surfaces within specified tolerances, and compact with uniform levels or slopes between points where elevations are shown or between such points and existing grades.

- B. Adjacent to Structures: Grade areas adjacent to structures to drain away from structures (including masonry fences) and to prevent ponding.
- C. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 1" above or below the required subgrade elevation.
- D. Pavements: Shape surface of areas under pavement to line, and grade and cross-section with finish surface not more than 1/2" above or below the required subgrade elevation.
- E. Under Building Slabs: Grade smooth and even, free of voids, compacted as specified and to required elevation. Provide final grades within a tolerance of 1/2" when tested with a 10' straightedge.
- F. Special Areas: In turfed areas or areas covered with gravel, stone, wood chips, or other special cover, grade to within not more than 1-inch above or below the required subgrade elevations.
- G. Compaction: After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.

Area	Required Minimum Density (ASTM D 1557)
Beneath Treatment Structures and Buildings	95%
Beneath Pavement	90%
Landscaped and other areas	90%

3.9 PAVEMENT BASE COURSE

- A. Shoulders:
 1. Place shoulders along edges of base course to prevent lateral movement.
 2. Construct shoulders of acceptable soil materials, placed in such quantity to compact to thickness of each base course layer.
 3. Compact and roll at least a 12" width of shoulder simultaneously with compacting and rolling of each layer of base course.
- B. Placing:
 1. Place base course material on prepared subgrade in layers of uniform thickness conforming to indicated cross-section and thickness.
 2. Maintain optimum moisture content for compacting base material during placement operations.

3.10 FIELD QUALITY CONTROL:

- A. General: Testing by a testing laboratory of materials, testing for moisture content during placement and compaction of fill materials, and of compaction requirements for compliance with technical requirements of the Specifications.
- B. The CONTRACTOR shall retain one or more independent testing agencies to perform all quality control testing required for all materials except portland cement concrete. The required testing is for soil, aggregates, imported gravel, aggregate base, asphalt concrete, and CLSM. Each independent testing agency shall perform the testing under the supervision of an engineer registered in California. Technicians performing the testing

shall be certified to operate the equipment and have at least 1 full year of experience in the type of tests being performed.

- C. A Quality Control Plan shall be submitted by the CONTRACTOR to the ENGINEER at least 30 days before field testing is required. It shall include the names, addresses, and phone number of the companies, the major personnel that will be involved, and resumes of the individuals that will be supervising and performing the tests. Copies of certificates held by the companies and the testing personnel shall be included.
- D. CONTRACTOR's independent testing agency shall perform all field and laboratory testing as described in these Specifications. Test shall include specific gravity, sand equivalent, durability, abrasion resistance, soundness, gradation, compaction curves, lab and field moisture contents, compressive strength, and field density. Other tests shall be performed by the CONTRACTOR's independent testing agency as may be required to meet the Specifications. Mix design testing for portland cement concrete, CLSM, and asphalt concrete shall also be performed by the CONTRACTOR. Field testing for portland cement concrete will be performed by the ENGINEER.
- E. CONTRACTOR shall schedule all lab testing so that materials arriving at the site have been approved by the ENGINEER for use on the Project.
- F. All lab tests shall be performed on Samples obtained from the source of actual material that will be used on the Project. No test results more than 90 days old shall be submitted for review.
- G. The location of field density tests shall be determined by the ENGINEER.
- H. Frequency of tests: Frequency will be not less than as follows:
 - 1. For trenches:
 - a. In open fields: 2 locations every 200 linear feet, for each layer
 - b. Along dirt, gravel, or paved roads or off traveled right-of-way: 2 locations every 100 linear feet, for each layer
 - c. Crossing roads: 2 locations along each crossing, for each layer
 - 2. For structural backfill: 1 every 50 cubic yards.
 - 3. In embankment or fill: 1 every 50 cubic yards.
 - 4. Base material: 1 every 50 cubic yards.
 - 5. Footing Subgrade: 1 every 50 linear feet, for each layer.
 - 6. Paved Areas and Building Slab Subgrade: 1 every 500 square feet, but in no case less than 3 tests, for each layer.
- I. The ENGINEER may modify the frequency or spacing of tests to provide for testing at specific structures or locations where the ENGINEER deems additional testing is required. The CONTRACTOR shall perform such additional testing up to 10 percent above the frequency and total number of tests specified at no additional cost to the OWNER.
- J. Verbal and hand-written test results shall be provided to the ENGINEER and CONTRACTOR immediately following the field testing. Written test data sheets shall be provided to the ENGINEER not more than 12 hours following completion of the field test. Typed lab test results shall be provided to the ENGINEER not more than 7 calendar days following completion of the tests; however, the results must be reviewed and approved by the ENGINEER prior to placing the material in the trenches or incorporating it in the Work.

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- A. Any location where a failing test occurs shall be recompact and retested until a passing test is obtained. Specified testing values are minimums and no tests shall be accepted below the specified minimums. No material shall be placed over the failing test area until the failing material is recompact and a passing test is obtained, and the area is approved by the ENGINEER. The limits of the failing test shall be assumed to be halfway between the failing location and the nearest passing location. Additional tests may be taken to determine the limits of unsatisfactory compaction.
- B. At the first of each month, the CONTRACTOR shall provide to the ENGINEER a typed summary of all tests performed for the previous month including test location by station, depth below finished grade, material tested, wet density, moisture content, dry density, maximum density curve used, and percent relative compaction. Lab test results shall also be included in the monthly report with clear description of material tested, intended use on the Project, and a statement of compliance or noncompliance with the Project Specifications.
- C. Any material which does not meet the Specifications shall be removed from the site and replaced with material in compliance.
- D. Material which has been softened or modified prior to placing the overlying lift shall be removed down to material which is in compliance.

3.11 DISPOSAL OF EXCAVATED MATERIALS

- A. Material removed from the excavations that does not conform to the requirements for fill or is in excess of that required for backfill shall be hauled away from the Work site and disposed of by CONTRACTOR in compliance with ordinances, codes, laws and regulations at no additional cost to the OWNER.
- B. A site is not available to dispose of excess material.

+ + END OF SECTION + +

SECTION 02770

ASPHALT CONCRETE PAVING

PART 1 - GENERAL

1.1 SUBMITTALS

A. Information Submittals:

1. Asphalt Concrete Mix Formula:
 - a. Submit minimum of 15 days prior to start of production.
 - b. Submittal to include the following information:
 - 1) Gradation and portion for each aggregate constituent used in mixture to produce a single gradation of aggregate within specified limits.
 - 2) Bulk specific gravity for each aggregate constituent.
 - 3) Measured maximum specific gravity of mix at optimum asphalt content determined in accordance with ASTM D2041.
 - 4) Percent of asphalt lost due to absorption by aggregate.
 - 5) Percentage of asphalt cement, to nearest 0.1 percent, to be added to mixture.
 - 6) Optimum mixing temperature.
 - 7) Optimum compaction temperature.
 - 8) Temperature-viscosity curve of asphalt cement to be used.
2. Test Report for Asphalt Cement:
 - a. Submit minimum 10 days prior to start of production.
 - b. Show appropriate test method(s) for each material and the test results.
3. Statement of qualification for independent testing laboratory.
4. Test Results:
 - a. Mix design.
 - b. Asphalt concrete core.
 - c. Gradation and asphalt content of uncompacted mix.

1.2 QUALITY ASSURANCE

A. Qualifications:

1. Independent Testing Laboratory: In accordance with ASTM E329.
2. Asphalt concrete mix formula shall be prepared by approved certified independent laboratory under the supervision of a certified asphalt technician.

1.3 ENVIRONMENTAL REQUIREMENTS

- A. Temperature: Do not apply asphalt materials or place asphalt mixes when ground temperature is lower than 10 degrees C (50 degrees F) or air temperature is lower than 4 degrees C (40 degrees F). Measure ground and air temperature in shaded areas away from heat sources or wet surfaces.
- B. Moisture: Do not apply asphalt materials or place asphalt mixes when application surface is wet.

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PART 2 - PRODUCTS

2.1 MATERIALS

- A. Asphalt Material: Conform to the following specification:
 - 1. Asphalt Material shall be a hot mix asphalt concrete, consisting of a mixture of mineral aggregate and paving asphalt conforming to Section 92 of the Caltrans Standard Specifications, PG 64-10.
- B. Seal Coat: Conform to the following specification:
 - 1. Seal coat material shall be conforming to Section 37 of the Caltrans Standard Specifications.

PART 3 - EXECUTION

3.1 GENERAL

- A. Traffic Control:
 - 1. In accordance with all applicable specification sections and laws.
 - 2. Minimize inconvenience to traffic, but keep vehicles off freshly treated or paved surfaces to avoid pickup and tracking of asphalt.
- B. Driveways: Repave driveways from which pavement was removed. Leave driveways in as good or better condition than before start of construction.

3.2 LINE AND GRADE

- A. Provide and maintain intermediate control of line and grade, independent of underlying base, to meet finish surface grades and minimum thickness.
- B. Shoulders: Construct to line, grade, and cross-section shown.

3.3 PREPARATION

- A. Prepare subgrade as specified.
- B. Thoroughly coat edges of contact surfaces with emulsified asphalt or asphalt cement prior to laying new pavement. Prevent staining of adjacent surfaces.

3.4 PAVEMENT APPLICATION

- A. General: Place asphalt concrete mixture on approved, prepared base in conformance with this section.
- B. Pavement Mix:
 - 1. Prior to Paving:
 - a. Sweep primed surface free of dirt, dust, or other foreign matter.
 - b. Patch holes in primed surface with asphalt concrete pavement mix.
 - 2. Place asphalt concrete pavement mix in one single lift.
 - 3. Total Compacted Thickness: 3 inches.
 - 4. Apply such that meet lines are straight and edges are vertical.

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5. Collect and dispose of segregated aggregate from raking process. Do not scatter material over finished surface.
 6. After placement of pavement, seal meet line by painting a minimum of 150 millimeters (6 inches) on each side of joint with cut-back or emulsified asphalt. Cover immediately with sand.
- C. Compaction: Roll until roller marks are eliminated and density of 92 percent of measured maximum density determined in accordance with ASTM D2041.
- D. Tolerances:
1. General: Conduct measurements for conformity with crown and grade immediately after initial compression. Correct variations immediately by removal or addition of materials and by continuous rolling.
 2. Completed Surface or Wearing Layer Smoothness:
 - a. Uniform texture, smooth, and uniform to crown and grade.
 - b. Maximum Deviation: 1/8 inch from lower edge of a 3.6-meter (12-foot) straightedge, measured continuously parallel and at right angle to centerline.
 - c. If surface of completed pavement deviates by more than twice specified tolerances, remove and replace wearing surface.
 3. Transverse Slope Maximum Deviation: 1/4 inch.
- E. Seal Coat:
1. General: Apply seal coat of paving grade or emulsified asphalt to finished surface at longitudinal and transverse joints, joints at abutting pavements, areas where asphalt concrete was placed by hand, patched surfaces, and other areas as directed by ENGINEER.
 2. Preparation:
 - a. Surfaces that are to be sealed shall be maintained free of holes, dry, and clean of dust and loose material.
 - b. Seal in dry weather and when temperature is above 2 degrees C (35 degrees F).
 3. Application:
 - a. Fill cracks over 1.5 millimeters (1/16 inch) in width with asphalt-sand slurry or approved crack sealer prior to sealing.
 - b. When sealing patched surfaces and joints with existing pavements, extend minimum 150 millimeters (6 inches) beyond edges of patches.

+ + END OF SECTION + +

SECTION 02830

FENCING

PART 1 - GENERAL

1.1 SUBMITTALS

- A. Shop Drawings: Detailed information and specifications for materials, finishes, and dimensions.
- B. Samples: Approximately 6 inches square, or 6 inches long of posts, rails, braces, fabric, wire, ties, and fittings.
- C. Quality Control Submittals:
 - 1. Manufacturer's recommended installation instructions.
 - 2. Evidence of Supplier and installer qualifications.

1.2 SCHEDULING AND SEQUENCING

- A. Complete necessary site preparation and grading before installing chain link fence.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Match style, finish, and color of each fence component with that of other fence components.

2.2 CHAIN LINK FENCE

- A. Fabric:
 - 1. PVC-coated galvanized fabric conforming to ASTM F668, Class 1 or 29.
 - a. Color: Black.
 - b. Manufacturers and Products:
 - 1) Colorbond Corp., Raritan, NJ; Colorbond II.
 - 2) Cyclone Fence, United States Steel, Chicago, IL; Cyclone Color Fence System.
 - 2. Height: 72 inches, unless otherwise shown.
 - 3. Wire Gauge: No. 9.
 - 4. Pattern: 2-inch diamond-mesh.
 - 5. Diamond Count: Manufacturer's standard and consistent for fabric furnished of same height.
 - 6. Loops of Knuckled Selvages: Closed or nearly closed with space not exceeding diameter of wire.
 - 7. Wires of Twisted Selvages:
 - a. Twisted in a closed helix three full turns.
 - b. Cut at an angle to provide sharp barbs that extend minimum 1/4-inch beyond twist.
- B. Posts:
 - 1. General:

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- a. Strength and Stiffness Requirements: ASTM F669, Heavy Industrial Fence, except as modified in this section.
 - b. Steel Pipe: ASTM F1083.
 - c. Roll-Formed Steel Shapes: Roll-formed from ASTM A570, Grade 45, steel.
 - d. Protective Coatings:
 - 1) Zinc Coating: ASTM F1234, Type A external and internal coating.
 - e. Color Coating: ASTM F1043, minimum 10 mils thickness over zinc coating to match color of chain link fabric.
2. Line Posts:
- a. Steel Pipe:
 - 1) Outside Diameter: 2.375-inch.
 - 2) Weight: 3.65 pounds per foot.
 - b. Roll-Formed Steel C Shape:
 - 1) Outside Dimensions: 2.25-inch by 1.625-inch.
 - 2) Weight: 2.70 pounds per foot.
 - c. Steel H-Section:
 - 1) Outside Dimensions: 2.25-inch by 1.70-inch.
 - 2) Weight: 3.26 pounds per foot.
3. End, Corner, Angle, and Pull Posts:
- a. Steel Pipe:
 - 1) Outside Diameter: 2.875-inch.
 - 2) Weight: 5.79 pounds per foot.
4. Posts for Removable Fence Panels: As specified for end, corner, angle, and pull posts.
- C. Top Rails and Brace Rails:
- 1. Galvanized steel pipe or roll-formed steel C shapes, color-coated.
 - 2. Protective Coatings: As specified for posts.
 - 3. Color Coating: ASTM F1043, minimum 10 mils thickness over zinc coating to match color of chain link fabric.
 - 4. Strength and Stiffness Requirements: ASTM F669, Top Rail, Heavy or Light Industrial Fence.
 - 5. Steel Pipe:
 - a. ASTM F1083.
 - b. Outside Diameter: 1.66-inch.
 - c. Weight: 2.27 pounds per foot.
 - 6. Roll-Formed Steel C Shapes:
 - a. Roll formed from ASTM A570, Grade 45.
 - b. Outside Dimensions: 1.625-inch by 1.25-inch.
 - c. Weight: 1.40 pounds per foot.
- D. Fence Fittings:
- 1. General: In conformance with ASTM F626, except as modified by this article.
 - 2. Post and Line Caps: Designed to accommodate passage of top rail through cap, where top rail required.
 - 3. Tension and Brace Bands: No exceptions to ASTM F626.
 - 4. Tension Bars:
 - a. One-piece.
 - b. Equal in length to full height of fabric.
 - 5. Truss Rod Assembly: 3/8-inch diameter.
 - 6. Barb Arms: 45-degree arms for supporting three strands of barbed wire.
- E. Tension Wire:
- 1. Zinc-coated steel marcelled tension wire conforming to ASTM A824, Type II, Class 2.

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- 2. Fabric Salvage: Knuckled.
 - 3. Appurtenances and Framework: As specified.
- F. Removable Fence Panels:
- 1. Panel Length:
 - a. Equal division of total length of removable fence section.
 - b. Maximum 10 feet.
 - 2. Frames: ASTM F1184, Type I.
- G. Concrete:
- 1. Provide as specified in Section 03300, CAST-IN-PLACE CONCRETE.

2.3 TEMPORARY RAILING, TYPE K

- A. K-rail shall meet the requirements of Caltrans temporary railing, Type K.

2.4 HIGH VISIBILITY FENCE

- A. A heavy-duty knitted HDPE with UV additives coupled with high-grade material that will be installed on the chain-link fence.
- B. Bright Orange color.
- C. FenceScreen.com, 200 Series or Equal.

PART 3 - EXECUTION

3.1 CHAIN LINK FENCING

- A. General
 - 1. Install chain link fences in accordance with ASTM F567, except as modified in this section, and in accordance with fence manufacturer's recommendations, as approved by ENGINEER. Erect fencing in straight lines between angle points.
 - 2. Provide all necessary hardware for a complete fence installation.
 - 3. CONTRACTOR shall install chain link fences around the construction access limits on the private property and within the ground disturbance areas.
- B. Preparation
 - 1. Establish locations of fence lines, and terminal posts.
- C. Post Setting
 - 1. Driven posts are not acceptable.
 - 2. Post Hole Depth:
 - a. Minimum 3 feet below finished grade.
 - b. 2 inches deeper than post embedment depth below finish grade.
 - 3. Backfill post holes with concrete to 2 inches above finished grade.
 - 4. Before concrete sets, crown and finish top of concrete to readily shed water.
- D. Bracing
 - 1. Brace gate and corner posts diagonally to adjacent line posts to ensure stability.
- E. Top Rails

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1. Install top rail sleeves with springs at 105 feet maximum spacing to permit expansion in rail.

F. Chain Link Fabric

1. Do not install fabric until concrete has cured minimum 7 days.
2. Install fabric with twisted and barbed selvage at top.

3.2 TEMPORARY RAILING, TYPE K

- A. Install where the near edge of the excavation is within 15 feet from the edge of an open traffic lane.

3.3 HIGH VISIBILITY FENCING

- A. Install high visibility fencing around the protected trees.

+ + END OF SECTION + +

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DIVISION 03

SECTION 03100
CONCRETE FORMWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Falsework and formwork, as required to construct cast-in-place concrete, including placing of all items such as sleeves, anchor bolts, inserts and all other items to be embedded in concrete for which placement is not specifically provided under other Sections.

- B. REFERENCES

- C. American Concrete Institute (ACI)
 - 1. ACI 301, Specifications for Structural Concrete for Buildings.
 - 2. ACI 347, Guide for Concrete Formwork.

1.2 SYSTEM DESCRIPTION

- A. Coordination:
 - 1. Review installation procedures under other Sections and coordinate the installation of items that must be installed with the formwork.
 - 2. Coordinate formwork specifications herein with the requirements for finished surfaces specified in Section 03300, Cast-In-Place Concrete.

1.3 SUBMITTALS

- A. Submit for information purposes the following: Copies of manufacturer's data and installation instructions for all proprietary materials, including form coatings, manufactured form systems, ties and accessories.

- B. Shop Drawings: Forming, shoring and bracing drawings for footings, walls and roofs.

1.4 QUALITY ASSURANCE

- A. Allowable Tolerances: Construct formwork to provide completed concrete surfaces complying with tolerances specified in ACI 347, Chapter 3.3, except as otherwise specified.

- B. Furnish and install all items for permanent or temporary facilities in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Forms for Exposed Finish Concrete: Unless otherwise shown or specified, construct formwork for exposed concrete surfaces with plywood overlaid with MDO or HDO specifically designed for concrete forms, metal, metal-framed plywood-faced or other

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acceptable panel materials, to provide continuous, straight, smooth as-cast surfaces. Furnish in largest practical sizes to minimize number of joints. Provide form material with sufficient thickness to remain watertight and withstand pressure of newly placed concrete without bow or deflection.

1. At circular structures wall forms shall conform to the circular shape of the structure. Straight panels not exceeding 2 feet in horizontal width and installed with angular deflection not greater than 3-1/2 degrees per joint may be substituted for circular forms.
- B. Forms for Unexposed Finish Concrete: Form concrete surfaces that will be unexposed in the finished structure with plywood, lumber, metal, or other acceptable material. Provide lumber that is dressed on at least 2 edges and 1 side.
- C. Form Ties:
1. Form ties on exposed surfaces shall be located in a uniform pattern or as indicated on the Drawings. Form ties shall be constructed so that the tie remains embedded in the wall, except for a removable portion at each end. Form ties shall have conical or spherical type inserts, inserts shall be fixed so that they remain in contact with forming material, and shall be constructed so that no metal is within 1 inch of the concrete surface when the forms, inserts, and tie ends are removed. Wire ties will not be permitted. Ties shall withstand all pressures and limit deflection of forms to acceptable limits.
 2. Flat bar ties for panel forms shall have plastic or rubber inserts having a minimum depth of 1 inch and sufficient dimensions to permit proper patching of the tie hole.
 3. Ties for water-holding structures or dry structures with access such as basements, pipe galleries, etc., that are below finish grade, shall have either an integral steel water stop 0.103-inch thick and 0.625 inch in diameter that is tightly and continuously welded to the tie, or a neoprene water stop 3/16-inch thick and 15/16 inch in diameter whose center hole is 1/2 the diameter of the snap tie, or a molded plastic water stop of comparable size. Flat snap ties complying with above requirements and other sections of this Specification may be used. The water stop shall be considerably larger in area than the tie cross sectional area, and shall be oriented perpendicular to the tie and symmetrical about the center of the tie. The ties shall be constructed to provide a positive means of preventing rotation or disturbance of the center portion of the tie during removal of the ends.
- D. Alternative Form Ties – Through-Bolts:
1. Alternate form ties consisting of tapered through-bolts at least 1 inch in diameter at smallest end, or through-bolts that utilize a removable tapered sleeve of the same minimum size may be used at the CONTRACTOR's option. Clean and roughen, fill, and seal form tie hole as shown on the Drawings; or where not shown on the Drawings, the CONTRACTOR shall provide a shop drawing submittal of his proposed method of sealing the through-bolt hole by sandblasting or mechanically cleaning and roughening the entire interior surface of the hole, epoxy coating the roughened surface and driving a vinyl plug and then dry packing the entire hole on each side of the plug with nonshrink grout, meeting these Specifications. Dry packing shall be done while the epoxy is tacky or remove the epoxy by mechanical means and reapply new epoxy. The CONTRACTOR shall be responsible for watertightness and any repair needed. Any leaks or dampness on the exterior of through-bolt patches during or after water testing shall require repair or replacement of the patch.
 2. The elastic plug to be inserted into the form tie hole as shown on the Drawings shall be a Dayton Sure Plug, or approved equal, sized to allow insertion using the insertion tool to elongate the plug, place it at the correct location, and allow the plug to return

to its original length and diameter upon removal to form a watertight seal. The plugs shall be as manufactured and supplied by Dayton Superior, Dayton OH, phone: 888/977-9500.

- E. Forms Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain, nor adversely affect concrete surfaces, and will not impair subsequent treatment of concrete surfaces requiring bond or adhesion, nor impede the wetting of surfaces to be cured with water or curing compounds.

2.2 DESIGN OF FORMWORK

- A. The CONTRACTOR shall design all formwork prior to fabrication. The design shall account for all the tolerances, form ties, finishes, architectural features, rebar supports, construction joint locations, and other features and other nonstructural formwork requirements specified. Forms shall contain pouring and observation windows to allow placement of concrete through windows or shall be staged to allow visual observation at all times of the fresh concrete to ensure correct placement and vibration. Provide a formwork and placement design that will limit free fall of concrete in forms 8-inch or less in width to 5 feet; and for forms wider than 8 inches, limit this fall to 8 feet, except as hereinafter specified. Review methods with ENGINEER prior to start of work. Use placement devices, such as chutes, pouring spouts, pumps, as required.
- B. Wall forms shall be designed such that wall sections can be poured full height without creating horizontal cold joints and without causing snapping of form ties which shall be of sufficient strength and number to prevent spreading of the forms during the placement of concrete and which shall permit ready removal of the forms without spalling or damaging the concrete.
- C. Reuse of forms will be permitted only if a "like new" condition, unless otherwise approved in writing, is maintained. The ENGINEER shall be notified 1 full working day prior to concrete placement so that the forms can be inspected. The CONTRACTOR shall correct any defective work, found in the ENGINEER's inspection, prior to delivery of concrete to the project. Formwork surfaces that were in good condition and accepted for use, but were damaged during removal and handling shall not be reused on additional pours. The CONTRACTOR is expected to take care in the handling of forms and to obtain approval of form surfaces prior to each reuse.
- D. Roof forms and falsework supports for structural slabs shall be sufficiently rigid and strong to support the wet concrete and the men and equipment necessary for its placement without appreciable deflections. A minimum of 50 PSF for live load shall be allowed in the design.
- E. All forms, falsework, shoring, and other structural formwork required shall be structurally designed by the CONTRACTOR and the design shall comply with all applicable safety regulations, current OSHA regulations, and other codes. Where federal or state agencies require a licensed engineer to prepare and/or seal all formwork, falsework or shoring designs, the CONTRACTOR shall hire this engineer and pay all costs. The designs shall be made available to any governing agency upon request. Comply with applicable portions of ACI 347, ACI 318 current edition, and these Specifications. All design, supervision, and construction for safety of property and personnel shall be the CONTRACTOR's full responsibility.

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PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine the substrate and the conditions under which Work is to be performed with installer and notify ENGINEER, in writing, of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.

3.2 FORM CONSTRUCTION

- A. Construct forms complying with ACI 347; to the exact sizes, shapes, lines and dimensions shown; as required to obtain accurate alignment, location and grades; to tolerances specified; and to obtain level and plumb work in finish structures. Provide for openings, offsets, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required. Use selected materials to obtain required finishes. Finish shall be as determined by approved mock-up or sample panel, if specified.
- B. Fabricate forms for easy removal without damaging concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where the slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and assure ease of removal.
- C. Provide temporary form windows where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Brace temporary closures and set tightly to forms to prevent loss of concrete mortar. Locate form windows on forms in locations as inconspicuous as possible, consistent with requirements of the Work. Form intersecting planes of openings to provide true, clean-cut corners, with edge grain of plywood not exposed as form for concrete.
- D. Forms for Exposed To View Concrete:
 1. Do not use metal cover plates for patching holes or defects in forms.
 2. Provide sharp, clean corners at intersecting planes, without visible edges or offsets. Back joints with extra studs or girts to maintain true, square intersections.
 3. Use extra studs, walers and bracing to prevent bowing of forms between studs and to avoid bowed appearance in concrete. Do not use narrow strips of form material that will produce bow.
 4. Assemble forms so they may be readily removed without damage to exposed concrete surfaces.
 5. Form molding shapes, recesses, rustication joints and projections with smooth-finish materials, and install in forms with sealed joints to prevent displacement.
- E. Corner Treatment:
 1. Form exposed corners of beams, walls, foundations, bases and columns to produce smooth, solid, unbroken lines, except as otherwise shown. Except as specified below for reentrant or internal corners, exposed corners shall be chamfered.
 2. Form chamfers with 3/4" x 3/4" strips, unless otherwise shown, accurately formed and surfaced to produce uniformly straight lines and tight edge joints. Use rigid PVC chamfers for all architecturally formed concrete. Extend terminal edges to require limit and miter chamfer strips at changes in direction.
 3. Reentrant or internal corners and unexposed corners need not be formed chamfered.

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- F. Openings and Built-In Work:
 1. Provide openings in concrete formwork shown or required by other Sections or other contracts.
 2. Accurately place and securely support items to be built into forms.
- G. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is to be placed. Retighten forms immediately after concrete placement as required to eliminate mortar leaks.

3.3 FORM COATINGS

- A. Coat form contact surfaces with a non-staining form-coating compound before reinforcement is placed. Do not allow excess form coating material to accumulate in the forms or to come into contact with surfaces that will be bonded to fresh concrete. Apply in compliance with manufacturer's instructions.
- B. Coat steel forms with a non-staining, rust-preventative form oil or otherwise protect against rusting. Rust-stained steel formwork is not acceptable.

3.4 INSTALLATION OF EMBEDDED ITEMS

- A. Set and build into the formwork, anchorage devices and other embedded items, shown, specified or required by other Sections and other contracts. Use necessary setting drawings, diagrams, instructions and directions.
- B. Edge Forms and Screeds Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in the finished slab surface. Provide and secure units to support screeds.

3.5 FIELD QUALITY CONTROL

- A. Before concrete placement, check the formwork, including tolerances, lines, ties, tie cones, and form coatings. Make corrections and adjustments to ensure proper size and location of concrete members and stability of forming systems.
- B. During concrete placement check formwork and related supports to ensure that forms are not displaced and that completed Work is within specified tolerances.
- C. If forms are unsatisfactory in any way, either before or during placing of concrete, postpone or stop placement of concrete until the defects have been corrected, and reviewed by ENGINEER.

3.6 REMOVAL OF FORMS

- A. Conform to the requirements of ACI 301, Chapter 2 and ACI 347, Chapter 3.7 except as specified below.
 1. Removal of Forms and Supports: Continue curing in accordance with Section 03300, Cast-In-Place Concrete, Paragraph 3.7. Forms are to remain in-place for the time specified below. The temperature cited is the average of the daily high and low.

<u>Temperature:</u>	<u>Above 50°F</u>	<u>Below 50°F or when retarders are used</u>
Walls	24 hours	48 hours

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Columns	24 hours	48 hours
Sides of Beams and Slabs	24 hours	24 hours
Joist or Beam Soffits	21 days	Do not remove forms until site-cured
Structural Floor or Roof Slabs	21 days	test cylinders develop 90% of 28 day strength.

2. When wall or column forms also support formwork for slab or beam soffits, the removal times of the latter should govern.
 3. When high-early strength concrete is specified, a schedule for removal of forms will be developed in the field from the age/ strength relationships established for the materials and proportions used by tests in accordance with ACI 301, Section 2.3.4.
 4. When construction loads are approximately equal to the structural live load, the forms for structural slabs, joists, and beams shall remain in place until the concrete has reached the specified compressive strength.
- B. Leave form-facing material in place a minimum of 4 days after concrete placement, unless otherwise approved by ENGINEER.

3.7 RE-USE OF FORMS

- A. Clean and repair surfaces of forms to be re-used in the Work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable. Apply new form coating compound material to concrete contact surfaces as specified for new formwork.
- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close all joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces. Form surfaces shall be subject to ENGINEER'S approval.

+ + END OF SECTION + +

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Fabrication and placement of reinforcement including bars, ties and supports, and welded wire fabric for concrete, encasements and fireproofing.

1.2 SUBMITTALS

- A. Shop Drawings:
 - 1. Manufacturer's specifications and installation instructions for all materials and reinforcement accessories.
 - 2. Drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315, Parts A and B. For walls, show elevations to a minimum scale of 1/4-inch to 1 foot. For slabs, show top and bottom reinforcing on separate plan views. Show bar schedules, stirrup spacing, diagrams of bent bars, arrangements and assemblies, as required for the fabrication and placement of concrete reinforcement, unless otherwise noted. Keep splices to a minimum. Avoid splices in regions of maximum tension stresses whenever possible.
- B. Certificates: Submit one (1) copy of steel producer's certificates of mill analysis, tensile and bend tests for reinforcing steel.

1.3 QUALITY ASSURANCE

- A. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified:
 - 1. American Concrete Institute (ACI):
 - a. ACI 315, Manual of Engineering and Placing Drawings for Reinforced Concrete Structures.
 - b. ACI 318, Building Code Requirements for Reinforced Concrete.
 - 2. Concrete Reinforcing Steel Institute:
 - a. Manual of Standard Practice, includes ASTM standards referred to herein.
- B. Allowable Placing Tolerances: Comply with ACI 318, Chapter 7 - Details of Reinforcement.

1.4 DELIVERY, HANDLING AND STORAGE

- A. Deliver concrete reinforcement materials to the site bundled, tagged and marked. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on placement diagrams.
- B. Store concrete reinforcement material at the site to prevent damage and accumulation of dirt or excessive rust. Store on heavy wood blocking so that no part of it will come in contact with the ground.

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PART 2 - PRODUCTS

2.1 MATERIALS

- A. Reinforcing Bars: ASTM A615, Grade 60 for all non-welded bars. ASTM A706, Grade 60 for welded bars.
- B. Smooth Steel Dowels: ASTM A36.
 - 1. Epoxy coated conforming to ASTM A775 or ASTM A934.
- C. Mechanical Couplers: Reinforcement bars may be spliced with a mechanical connection. Provide a full mechanical connection which shall develop in tension or compression, as required, at least 125% of specified yield strength (f_y) of the bar in accordance with ACI 318 Section 12.14.3.4. The locations of the connections are subject to the approval of the ENGINEER.
- D. Steel Wire: ASTM A82.
- E. Welded Wire Fabric: ASTM A185. Furnish in flat sheets, not rolls.
- F. Column Spirals: Hot-rolled rods for spirals, ASTM A615.
- G. Supports for Reinforcement: Bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcement in place.
 - 1. Use wire bar type supports complying with CRSI recommendations, except as specified below. Do not use wood, brick, or other unacceptable materials.
 - 2. For slabs on grade, use 5000 psi concrete blocks.
 - 3. At all formed surfaces, provide supports complying with CRSI "Manual of Standard Practice" as follows: Plastic protected or stainless steel legs.
 - 4. For all PVC lined concrete surfaces, provide supports complying with CRSI "Manual of Standard Practice" as follows: Either plastic or metal plastic protected legs.

2.2 FABRICATION

- A. General: Fabricate reinforcing bars to conform to required shapes and dimensions, with fabrication tolerances complying with CRSI, "Manual of Standard Practice". In case of fabricating errors, do not re-bend or straighten reinforcement in a manner that will injure or weaken the material.
- B. Unacceptable Materials: Reinforcement with any of the following defects will not be permitted in the Work:
 - 1. Bar lengths, bends, and other dimensions exceeding specified fabrication tolerances.
 - 2. Bends or kinks not shown on approved Shop Drawings.
 - 3. Bars with reduced cross-section due to excessive rusting or other cause.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine substrate and conditions under which concrete reinforcement is to be placed with installer, and notify ENGINEER, in writing, of unsatisfactory conditions. Do not

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proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.

3.2 INSTALLATION

- A. Comply with the applicable recommendations of specified codes and standards, and CRSI, Manual of Standard Practice, for details and methods of reinforcement placement and supports.
- B. Clean reinforcement to remove loose rust and mill scale, oil, earth, ice, and other materials that reduce or destroy bond with concrete.
- C. Position, support, and secure reinforcement against displacement during formwork construction or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers, as required.
 - 1. Place reinforcement to obtain the minimum concrete cover as shown. Arrange, space, and securely tie bars and bar supports together with 16-gage wire to hold reinforcement accurately in position during concrete placement operations. Slab and wall bars shall be tied at every intersection around the periphery of the slab or wall and not less than every 48 inches in the field at walls and 60 inches in the field at slabs.
 - 2. Bar supports shall be placed no further than 4 feet apart in each direction. Supports must be completely concealed in the concrete and shall not discolor or otherwise mar the surface of the concrete.
 - 3. Set wire ties so that twisted ends are directed away from exposed concrete surfaces.
 - 4. Do not secure reinforcing steel to forms with wire, nails or other ferrous metal. Do not permit metal supports subject to corrosion to touch or be within the required clearance to formed or exposed concrete surfaces.
- D. Install welded wire fabric in as long lengths as practical. Lap adjoining pieces at least one full mesh and lace splices with wire. Do not make end laps midway between supporting beams or directly over beams of continuous structures. Offset end laps in adjacent widths to prevent continuous laps.
- E. Provide sufficient numbers of supports of strength required to carry reinforcement. Do not place reinforcing bars more than 2-inches beyond the last leg of any continuous bar support. Do not use supports as bases for runways for concrete conveying equipment or similar construction loads.
- F. Splices: Provide reinforcement lap splices by placing bars in contact, and tying tightly with wire. Comply with requirements shown for minimum lap of spliced bars.
- G. Mechanical Couplers in Lieu of Lap Splicing:
 - 1. Provide mechanical butt splices in accordance with the recommendation of the manufacturer of the mechanical splicing device. Butt splices shall develop 125 percent of the specified minimum yield tensile strength of the spliced bars or of the smaller bar in transition splices. Flame dry bars before butt splicing. Provide adequate jigs and clamps or other devices to support, align, and hold the longitudinal centerline of the bars to be butt spliced in a straight line.
 - 2. Product and Manufacturer: Provide one of the following:
 - a. Bar-Lock (MBT) Coupler, as manufactured by Bar-Lock (MBT) Coupler Systems.
 - b. Dayton-Superior DBR Coupler - Allow for the reduction of bar area at threads.
 - c. Or approved equal.

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- H. Reinforcement Around Openings: Place an equivalent area of steel around the pipe or opening and extend on each side sufficiently to develop bond in each bar. See the Details on Drawings for bar extension length each side of opening. Where welded wire fabric is used, provide extra reinforcing using fabric or deformed bars.
- I. Field Bending: Field bending of reinforcing steel bars is not permitted when rebending will later be required to straighten bars. Rebending of bars at the same place where strain hardening has taken place due to the original bend will damage the bar. Consult with the ENGINEER prior to any pour if the CONTRACTOR foresees a need to work out a solution to prevent field bending.

3.3 INSPECTION OF REINFORCEMENT

- A. Do not place concrete until the reinforcing steel is inspected and permission for placing concrete is granted by ENGINEER. All concrete placed in violation of this provision will be rejected.

+ + END OF SECTION + +

SECTION 03251
CONCRETE JOINTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes installation of concrete joints including, construction joints, expansion joints and fillers, waterstops, and contraction (control) joints.

1.2 REFERENCES

- A. American Concrete Institute (ACI)
 - 1. ACI 301, Specifications for Structural Concrete for Buildings.
- B. American Society for Testing and Materials (ASTM)
 - 1. ASTM A36, Standard Specification for Structural Steel.
 - 2. ASTM D1752, Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
- C. United States Army Corps of Engineers
 - 1. CRD-C572, Specifications for Polyvinyl-Chloride Waterstop.

1.3 SYSTEM DESCRIPTION

- A. All joints subject to hydrostatic pressure shall be provided with continuous waterstop.

1.4 SUBMITTALS

- A. Product Data: Submit for approval, Manufacturer's specifications and installation instructions for all materials required.
- B. Shop Drawings: Submit for approval:
 - 1. Layout of all construction joint locations prior to the submittal of steel reinforcing drawings. The concrete pour sequence and placement schedule shall be stated in the construction joint shop drawing layout.
 - 2. Detail for joining polyvinyl chloride to steel waterstops.
- C. Samples: Submit for approval:
 - 1. Waterstops for joints.
 - 2. Expansion joint fillers.

1.5 QUALITY ASSURANCE

- A. Install all manufactured items in accordance with manufacturer's instructions.
- B. Store materials off the ground and protected from moisture, dirt and other contaminants. Protect installed and uninstalled materials from UV exposure in accordance with manufacturer's instruction.

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PART 2 - PRODUCTS

2.1 WATERSTOPS

- A. Polyvinyl Chloride:
 - 1. Reference Standard: CRD-C572.
 - 2. Construction Joints: Minimum of 3/8" thick, ribbed, center bulb type, width as shown, or if not shown, 6-inch minimum.
 - 3. Expansion Joints: Minimum thickness of 1/4", 9" minimum width. Provide with "O" or "U" shaped center bulb. The "O" shall have an outside diameter of 3/4" minimum.
 - 4. Product and Manufacturer: Provide polyvinyl chloride waterstops of one of the following:
 - a. W.R. Meadows, Incorporated.
 - b. Greenstreak Group, Incorporated.
 - c. Or approved equal.

- B. Hydrophilic:
 - 1. Provide chloroprene rubber waterstops, 3/8" thick.
 - 2. Product and Manufacturer: Provide one of the following:
 - a. Greenstreak Hydrotite.
 - b. Or approved equal.

- C. Retrofit Waterstop
 - 1. Polyvinyl chloride or thermoplastic vulcanizate waterstop used between existing concrete and new concrete: Minimum of 3/8-inch thick, ribbed, 4-inch minimum width, 3-inch minimum height, T or L shaped.
 - 2. Provide epoxy gel bed below retrofit waterstop.
 - 3. Attach waterstop to existing concrete with stainless steel expansion anchors or concrete screws and stainless steel batten bar with minimum dimensions of 1 1/2-inch by 3/16-inch.
 - 4. Product and Manufacturer: Provide one of the following:
 - a. Greenstreak 581.
 - b. Earth Shield JP 320L.
 - c. Or approved equal.

2.2 CONCRETE CONSTRUCTION JOINT ROUGHENER

- A. Provide a water-soluble non-flammable, surface-retardant roughener.

- B. Product and Manufacturer: Provide one of the following:
 - 1. Rugasol-S, as manufactured by Sika Corporation for horizontal joints.
 - 2. MBT EAC-S, as manufactured by Master Builders for horizontal joints.
 - 3. MBT Tuf-Cote (Deep Etch), as manufactured by Master Builders for vertical joints.
 - 4. Or approved equal.

2.3 EPOXY BONDING AGENT

- A. Provide an epoxy-resin bonding agent, two component type.

- B. Product and Manufacturer: Provide one of the following:
 - 1. Sikadur 32 Hi-Mod LPL, as manufactured by Sika Corporation.
 - 2. Eucopoxy LPL, as manufactured by the Euclid Chemical Company.
 - 3. Epoxite Binder (Code # 2390), as manufactured by A.C. Horn, Incorporated.

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4. Or approved equal.

2.4 RUBBER BONDING AGENT

- A. Product and Manufacturer: Provide one of the following:
 1. Scotch-Grip 1300 Rubber Adhesive, as manufactured by 3M Company.
 2. Or approved equal.

2.5 MORTAR

- A. Mortar must be composed of cement, sand and water. Materials for mortar must comply with Section 03300. The proportion of sand to cement measured by volume must be 2 to 1 respectively. Mortar must contain only enough water to allow placing.

2.6 BOND BREAKER

- A. Tape for Joints: Adhesive-backed glazed butyl or polyethylene tape, same width as joint that will adhere to premolded joint material or concrete surface.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine substrate and conditions under which Work is to be performed with installer and notify ENGINEER, in writing, of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.

3.2 CONSTRUCTION JOINTS

- A. Comply with ACI 301, Chapter 2.2, and as specified below.
- B. Locate and install construction joints as shown. Locate additional construction joints as required to satisfactorily complete all Work.
- C. Horizontal Joints:
 1. Roughen concrete at the interface of construction joints by sandblasting to expose the aggregate (1/4-inch minimum amplitude) and remove accumulated concrete on rebar immediately subsequent to form stripping. When sandblasting adjacent to installed waterstops, shield installed waterstops from the sandblasting operation. Immediately before placing fresh concrete, thoroughly clean the existing contact surface using a stiff brush or other tools and a stream of water under pressure. The surface shall be clean and wet, but free from pools of water at the moment the fresh concrete is placed.
 2. Remove laitance, waste mortar or other substance that may prevent complete adhesion.
 3. Place a 3" thick coat of mortar over the surface of the old concrete. Place fresh concrete before the mortar has attained its initial set.
- D. Vertical Joints:
 1. Apply roughener to the form in a thin, even film by brush, spray or roller in accordance with the manufacturer's instructions. After roughener is dry, concrete may be placed.

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2. When concrete has been placed and the form removed, wash loosened material off with high-pressure water spray to obtain roughened surface subject to approval by ENGINEER.

3.3 EXPANSION JOINTS

- A. Locate and install expansion joints as shown. Install bituminous joint filler in accordance with manufacturer's instructions. Install caulking and sealants as specified in Section 07900, Joint Sealants.

3.4 WATERSTOPS

- A. General:
 1. Comply with ACI 301, Chapter 2, and as specified below. Make all joints in accordance with manufacturer's instructions.
 2. Obtain ENGINEER'S approval for waterstop locations not shown.
 3. Provide waterstops in all basements, tanks and other substructures up to an elevation at least 12" above grade or to an elevation at least 12" above highest liquid level in tanks, whichever is higher, except where otherwise shown or noted.
- B. Polyvinyl Chloride Waterstop:
 1. Tie waterstops to reinforcing steel at 12-inches on center, in each direction, so that it is securely and rigidly supported in the proper position, centered in the joint, during concrete placement. Hog rings shall be used to facilitate placing and tying of waterstops to reinforcing steel forms or form-ties.
 2. Continuously inspect waterstops during concrete placement to ensure their proper positioning.
 3. Provide fused waterstops using equipment as supplied by or recommended by the manufacturer. Joints shall be inspected for strength and pinholes after splicing. Splices shall be strong enough to develop a pulling force of 75 percent of the strength of the waterstop, and shall be watertight.
 4. Cover and protect installed waterstops from UV if the pour of concrete will be delayed more than 30 days.
 5. Shield installed waterstops from sandblasting when performing surface roughening adjacent to installed waterstops.
- C. Hydrophilic Waterstop: Install where shown in accordance with manufacturer's recommendations.

3.5 BONDING WITH EPOXY ADHESIVE

- A. Use adhesive for the following:
 1. Bonding of fresh concrete to concrete cured at least 45 days or to existing concrete.
 2. Bonding of horizontal surfaces, which will receive a topping.
- B. Handle and store epoxy adhesive in compliance with the manufacturer's printed instructions, including safety precautions.
- C. Mix the epoxy adhesive in complete accordance with the instructions of the manufacturer.
- D. Before placing fresh concrete, thoroughly roughen and clean hardened concrete surfaces and coat with epoxy adhesive not less than 1/16" thick. Place fresh concrete while the

epoxy material is still tacky, without removing the in-place grout coat, and as directed by the epoxy manufacturer.

+ + END OF SECTION + +

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SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Place, finish, cure, strip, and repair concrete.

1.2 REFERENCES

- A. American Concrete Institute (ACI)
1. ACI 211.1, Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
 2. ACI 214, Recommended Practice for Evaluation of Strength Test Results of Concrete.
 3. ACI 301, Specifications for Structural Concrete for Buildings, (includes ASTM Standards referred to herein).
 4. ACI 304, Guide for Measuring, Mixing, Transporting and Placing Concrete.
 5. ACI 305, Hot Weather Concreting.
 6. ACI 306, Cold Weather Concreting.
 7. ACI 309, Guide for Consolidation of Concrete.
 8. ACI 311, Guide for Concrete Inspection.
 9. ACI 318, Building Code Requirements for Reinforced Concrete.
 10. ACI 347, Guide to Formwork for Concrete
 11. ACI 350, Environmental Engineering Concrete Structures.

1.3 SYSTEM DESCRIPTION

- A. Class A Concrete shall be steel reinforced and includes:
1. Foundations.
 2. Walls.
 3. Slabs.
 4. Beams.
 5. Girders.
 6. Columns.
 7. Equipment bases.
 8. Pipe supports.
- B. Class B Concrete shall be placed without forms or with simple forms, with little or no reinforcing, and includes:
1. Concrete fill.
 2. Curbs and gutters.
 3. Sidewalks.
 4. Thrust blocks.
 5. Encasements.

1.4 SUBMITTALS

- A. Samples: Submit samples of materials as specified and as otherwise may be requested by ENGINEER, including names, sources and descriptions.

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- B. Product Data: Submit for approval the following:
 - 1. Manufacturer's specifications with application and installation instructions for proprietary materials and items, including admixtures and bonding agents.
 - 2. List of concrete materials and concrete mix designs proposed for use. Include the results of all tests performed to qualify the materials and to establish the mix designs.
- C. Laboratory Test Reports: Submit copies of laboratory test reports for materials and mix design tests
- D. Delivery Tickets: Furnish to ENGINEER copies of all weighmaster certificate delivery tickets for each load of concrete delivered to the site. Provide items of information as specified in ASTM C94, Section 16. Delivery tickets shall be signed by a Certified Weighmaster.

1.5 QUALITY ASSURANCE

- A. Tests for Concrete Materials: Submit written reports to ENGINEER, for each material sampled and tested, prior to the start of Work. Provide the Project identification name and number, date of report, name of CONTRACTOR, name of concrete testing service, source of concrete aggregates, material manufacturer and brand name for manufactured materials, values specified in the referenced specification for each material, and test results. Indicate whether or not material is acceptable for intended use.
- B. If the concrete mix designs specified herein have not been used previously by the ready-mix supplier, mix proportions and concrete strength curves for regular cylinder tests shall be established by an approved ready-mix supplier or an independent testing laboratory based on the relationship of 7, 14 and 28 day strengths versus slump values of 2, 4 and 6 inches, all conforming to these Specifications. A laboratory, independent of the ready-mix supplier, shall be required to prepare and test all concrete cylinders. The costs for preparation of mix designs, not previously used by the ready-mix supplier, and testing of concrete and materials shall be borne by CONTRACTOR.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

- A. Cement:
 - 1. Portland cement, ASTM C150, Type II; or blended hydraulic cement, ASTM C595, Type 1P (MS).
 - 2. Do not use cement which has deteriorated because of improper storage or handling.
- B. Aggregates: ASTM C33 and as herein specified.
 - 1. Do not use aggregates containing soluble salts, substances such as iron sulfides, pyrite, marcasite, ochre, or other materials that can cause stains on exposed concrete surfaces.
 - 2. Fine Aggregate: Provide clean, sharp, natural sand free from loam, clay, lumps or other deleterious substances.
 - 3. Coarse Aggregate: Provide clean, uncoated, processed aggregate containing no clay, mud, loam, or foreign matter, as follows:
 - a. Crushed stone, processed from natural rock or stone.
 - b. Coarse Aggregate Size: Size to be ASTM C33, Nos. 57 or 67, except that No. 467 may be used for footings, foundation mats and walls 16" or greater in thickness.

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- C. Water: Clean, free from injurious amounts of oils, acids, alkalis, organic materials or other substances that may be deleterious to concrete or steel.

2.2 CONCRETE ADMIXTURES

- A. Provide admixtures produced by established reputable manufacturers, and use in compliance with the manufacturer's printed instruction. Do not use admixtures that have not been incorporated and tested in the accepted mixes, unless otherwise authorized in writing by ENGINEER.
- B. Air-Entraining Admixtures: ASTM C260.
 - 1. Product and Manufacturer: Provide one of the following:
 - a. SIKA AER, as manufactured by Sika Corporation.
 - b. Micro Air, as manufactured by BASF.
 - c. Daravair, as manufactured by W.R. Grace & Conn.
 - d. Or approved equal.
- C. High-Range Water-Reducing Admixture ("Superplasticizer"): ASTM C494, Type F/G.
 - 1. Superplasticizer shall be used in all Class A Concrete. Do not use high range water-reducing admixture containing more chloride ions than are contained in municipal drinking water. Add only at the job site to concrete in compliance with the manufacturer's printed instruction.
 - 2. Product and Manufacturer: Provide one of the following:
 - a. Sikament 320, as manufactured by Sika Corporation.
 - b. Glenium, as manufactured by BASF.
 - c. Daracem-100, as manufactured by W.R. Grace & Conn.
 - d. Or approved equal.
- D. Water-Reducing Admixture: ASTM C 494, Type A.
 - 1. A water-reducing, aqueous solution of a modification of the salt of polyhydroxylated organic acids. Do not use admixture containing any lignin, nitrates or chlorides added during manufacture.
 - 2. Product and Manufacturer: Provide one of the following:
 - a. Eucon WR-75, as manufactured by The Euclid Chemical Company.
 - b. Pozzolith, as manufactured by BASF.
 - c. WRDA series, as manufactured by W.R. Grace & Conn.
 - d. Or approved equal.
- E. Pozzolanic Admixtures:
 - 1. Pozzolanic admixtures shall be used in water-retaining structures, and may be used in other concrete.
 - 2. Provide Mineral admixtures, when used, meeting the requirements of ASTM C618 Class F.
 - 3. A substitution by weight, of the portland cement by pozzolan, so that the total tricalcium aluminate content of the resulting cement plus pozzolan is not greater than 8%, will be considered. However, the pozzolan shall not exceed 20% by weight of the cement plus pozzolan.
- F. Set-Control Admixtures: ASTM C494, as follows:
 - 1. Type B, Retarding.
 - 2. Type C, Accelerating.
 - 3. Type D, Water-reducing and Retarding.
 - 4. Type E, Water-reducing and Accelerating.

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- 5. Type F, Water-reducing, high range admixtures.
 - 6. Type G, Water-reducing, high range, and retarding admixtures.
- G. Color Pigments:
- 1. Color pigments for colored concrete must be of iron oxides complying with ASTM C979.
- H. Calcium Chloride: Do not use calcium chloride in concrete, unless otherwise authorized in writing by ENGINEER. Do not use admixtures containing calcium chloride where concrete is placed against galvanized steel.

2.3 PROPORTIONING AND DESIGN OF MIXES

- A. Prepare design mixes of concrete. Mixes subject to the following limitations:
- 1. Class A Concrete
 - a. Specified 28-day Compressive Strength: 4,000 psi.
 - b. Air content: 5% ± 1%. For concrete placed at least 2 feet below the adjacent grade, an air-entraining admixture is not required unless otherwise specified.
 - c. Slump, before addition of superplasticizer: 3½" ± ½"
 - d. Slump, after addition of superplasticizer: 8" maximum

Coarse Aggregate Size	Cementitious Content-Pounds Per Cubic Yard	Water-Cement Ratio With Superplasticizer
¾"	625 min, 800 max	0.375
1"	600 min, 800 max	0.385
1 ½"	590 min, 800 max	0.400

- e. Use superplasticizer in all Class A Concrete. Use water reducers in combination with superplasticizers as required for mixing.
- 2. Class B Concrete
 - a. Specified 28-day Compressive Strength: 2,500 psi.
 - b. Maximum Water-Cement Ratio by Weight: 0.49.
 - c. Slump: 3" Minimum, 5" Maximum.
- B. Use an independent testing facility acceptable to ENGINEER for preparing and reporting proposed mix designs.
- C. Admixtures:
- 1. Use air-entraining admixture in all concrete, except interior slabs subject to abrasion, unless otherwise shown or specified. Add air-entraining admixture at the manufacturer's prescribed rate to result in concrete at the point of placement having air content within the prescribed limits.
 - 2. Use amounts of admixtures as recommended by the manufacturer for climatic conditions prevailing at the time of placing. Adjust quantities and types of admixtures as required to maintain quality control.

2.4 EPOXY BONDING AGENT

- A. For use in all dry-packed holes, concrete repair and for unplanned cold-joints.
- B. Provide an epoxy-resin bonding agent, two component, polysulfide type.

- C. Product and Manufacturer: Provide one of the following:
 - 1. Sikadur 32, Hi-Mod LPL, as manufactured by Sika Corporation.
 - 2. Eucopoxy LPL, as manufactured by the Euclid Chemical Company.
 - 3. Or approved equal.

2.5 CONCRETE CURING MATERIALS

- A. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 10 ounces per square yard and complying with AASHTO M182, Class 3.
- B. Moisture-Retaining Cover: One of the following, complying with ASTM C171.
 - 1. Waterproof paper.
 - 2. Polyethylene film.
 - 3. White burlap-polyethylene sheet.
- C. Curing Compound: ASTM C309 Type 1-D (water retention requirements):
 - 1. Product and Manufacturer: Provide one of the following:
 - a. Super Aqua Cure VOX, as manufactured by The Euclid Chemical Company.
 - b. Sealtight 1100, as manufactured by W.R. Meadows, Incorporated.
 - c. Or approved equal.
- D. Concrete Densifier and Chemical Hardener (Surface Applied)
 - 1. Product and Manufacturer: Provide one of the following:
 - a. LS, as manufactured by Consolideck.
 - b. Liqui-Hard, as manufactured by W. R. Meadows.
 - c. Duro-Nox LS, as manufactured by Nox-Crete.
 - d. Or approved equal.

2.6 EMBEDDED ITEMS

- A. Provide and install items such as plates, angles, inserts, bolts and similar items not specified elsewhere under this Section. Carbon steel embedded items shall be hot dip galvanized after fabrication.
- B. Abrasive Stair Nosings
 - 1. Provide single-component stair nosing
 - 2. 3-inch width
 - 3. Aluminum Extrusion, with provisions for anchoring into concrete
 - 4. Extruded with multiple channels, dovetail shaped, filled with black aluminum oxide grit set in epoxy resin
 - 5. Designed for installation before concrete sets, at the front edge of the stair
 - 6. Provide continuous stair nosings, width of stairway less 3 inches on each side. No splices in stair nosings.
 - 7. Manufacturers/Models:
 - a. Balco; Model R315P
 - b. Arden Architectural Specialties; Model N-B30
 - c. Or Equal

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PART 3 - EXECUTION

3.1 CONCRETE MIXING

- A. Provide concrete produced by the ready-mixed process.
- B. Comply with the requirements of ASTM C 94, and as herein specified. Proposed changes in mixing procedures, other than herein specified, must be accepted by ENGINEER before implementation.
 - 1. Plant equipment and facilities: Conform to National Ready- Mix Concrete Association "Plant and Delivery Equipment Specification."
 - 2. Mix concrete in revolving type truck mixers that are in good condition and which produce thoroughly mixed concrete of the specified consistency and strength.
 - 3. Do not exceed the proper capacity of the mixer.
 - 4. Mix concrete for a minimum of two minutes after arrival at the job site, or as recommended by the mixer manufacturer.
 - 5. Mix concrete during transit only as recommended by the mixer manufacturer.
 - 6. Mix at proper speed until concrete is discharged.
 - 7. Maintain adequate facilities at the job site for continuous delivery of concrete at the required rates.
 - 8. Provide access to the mixing plant for ENGINEER at all times.

3.2 TRANSPORTING CONCRETE

- A. Transport and place concrete not more than 90 minutes after water has been added to the dry ingredients or before 250 revolutions of the drum or blades, whichever occurs first.
- B. If an admixture is used to retard the set time and the concrete temperature does not exceed 85 degrees F, the travel and placing time may be extended to 120 minutes or 300 revolutions of the drum or blades, whichever occurs first.
- C. Take care to avoid spilling and separation of the mixture during transportation.
- D. Do not place concrete in which the ingredients have been separated.
- E. Do not retemper partially set concrete.
- F. Use suitable and approved equipment for transporting concrete from mixer to forms.

3.3 CONCRETE PLACEMENT

- A. General: Place concrete continuously so that no concrete will be placed on concrete, which has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, provide construction joints as specified in Section 03251, Concrete Joints. Deposit concrete as nearly as practical in its final location to avoid segregation due to rehandling or flowing. Do not subject concrete to any procedure that will cause segregation.
 - 1. Screed concrete that is to receive other construction to the proper level to avoid excessive skimming or grouting.
 - 2. Do not use concrete which becomes non-plastic and unworkable, or does not meet the required quality control limits, or which has been contaminated by foreign

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materials. Do not use retempered concrete. Remove rejected concrete from the job site and dispose of it in an acceptable location.

3. Do not place concrete until all forms, bracing, reinforcement, and embedded items are in final and secure position.
4. Do not place in cold weather, unless adequate precautions are taken against frost action.
5. Do not place footings, piers or pile caps on frozen soil.
6. Unless otherwise approved, place concrete only when ENGINEER is present.
7. Allow a minimum of 3 days before placing concrete against a slab or wall already in place.

B. Concrete Conveying:

1. Handle concrete from the point of delivery and transfer to the concrete conveying equipment and to the locations of final deposit as rapidly as practical by methods that will prevent segregation and loss of concrete mix materials.
2. Provide mechanical equipment for conveying concrete to ensure a continuous flow of concrete at the delivery end. Provide runways for wheeled concrete conveying equipment from the concrete delivery point to the locations of final deposit. Keep interior surfaces of conveying equipment, including chutes, free of hardened concrete, debris, water, ice and other deleterious materials.
3. Pumping concrete is permitted, however do not use aluminum pipe for conveying.

C. Placing Concrete into Forms:

1. Deposit concrete in wall forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place concrete at such a rate that concrete that is being integrated with fresh concrete is still plastic.
2. Do not permit concrete to free fall within the form from a distance exceeding 5'-0". Use "elephant trunks" or "wall pipes" to prevent free fall and excessive splashing on forms and reinforcement.
3. Remove temporary spreaders in forms when concrete placing has reached the elevation of such spreaders.
4. Consolidate concrete placed in forms by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with the applicable recommended practices of ACI 309. Vibration of forms and reinforcing will not be permitted.
5. Vibrators shall have a frequency of at least 8,000 vpm, with amplitude required to consolidate the concrete in the section being placed. At least one stand-by vibrator in operable condition shall be at the placement site prior to initiating placement of the concrete.
6. Do not use vibrators to transport concrete inside of forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate the layer of concrete and at least 6" into the preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit the duration of vibration to the time necessary to consolidate the concrete and complete embedment of reinforcement and other embedded items without causing segregation of the mix.
7. The forms shall contain sufficient windows or be limited in height to allow visual observation of the concrete and the vibrator operators shall be required to see the concrete being consolidated to ensure good quality workmanship or the CONTRACTOR shall have a person who is actually observing the vibration of the concrete at all times and advising the vibrator operators of any changes needed to assure complete consolidation.

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8. Do not place concrete in beam and slab forms until the concrete previously placed in columns and walls is no longer plastic.
 9. Force concrete under pipes, sleeves, openings and inserts from one side until visible from the other side to prevent voids.
- D. Bonding for Next Concrete Pour: Per Section 03251, Concrete Joints.
- E. Quality of Concrete Work:
1. Make all concrete solid, compact and smooth, and free of laitance, cracks and cold joints.
 2. All concrete for liquid retaining structures, and all concrete in contact with earth, water, or exposed directly to the elements shall be watertight.
 3. Cut out and properly replace to the extent ordered by ENGINEER, or repair to the satisfaction of ENGINEER, surfaces which contain cracks or voids, are unduly rough, or are in any way defective. Thin patches or plastering will not be acceptable.
 4. Repair all leaks through concrete, and cracks, holes or other defective concrete in areas of potential leakage and make watertight.
 5. Repair, remove, and replace defective concrete as ordered by ENGINEER at no additional cost to OWNER.
- F. Cold Weather Placing:
1. Protect all concrete Work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures, in compliance with the requirements of ACI 306 and as herein specified.
 2. When the air temperature has fallen to or may be expected to fall below 40°F, provide adequate means to maintain the temperature, in the area where concrete is being placed, at between 50°F and 70°F for at least seven days after placing. Provide temporary housings or coverings including tarpaulins or plastic film. Maintain the heat and protection, if necessary, to ensure that the ambient temperature does not fall more than 30°F in the 24 hours following the seven-day period. Avoid rapid dry-out of concrete due to overheating, and avoid thermal shock due to sudden cooling or heating.
 3. When air temperature has fallen to or is expected to fall below 40°F, uniformly heat all water and aggregates before mixing as required to obtain a concrete mixture temperature of not less than 55°F and not more than 85°F at point of placement.
 4. Do not use frozen materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials. Ascertain that forms, reinforcing steel, and adjacent concrete surfaces are entirely free of frost and ice before placing concrete.
 5. When temperatures are expected to be below 32°F the night before the concrete is placed, then all reinforcing steel, forms and the ground shall be preheated, for a minimum of 12 hours, under a minimum temperature of 50°F.
 6. Do not use salt and other materials containing antifreeze agents or chemical accelerators, or set-control admixtures, unless approved by ENGINEER, in mix designs.
 7. Weather predictions made by the nearest NOAA station, and corrected for the local elevation and environmental conditions, may be used to determine whether cold weather protection shall be required. Thermometers will be used by ENGINEER and these readings shall determine whether cold weather protection shall be required and whether cold weather protection is adequate.
- G. Hot Weather Placing:

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1. When hot weather conditions exist as any combination of high air temperature, low relative humidity and wind velocity that would seriously impair the quality and strength of concrete, place concrete as recommended by ACI 305 and as herein specified.
 2. Cool ingredients before mixing to maintain concrete temperature at time of placement below 85°F. No concrete shall be placed if its temperature exceeds 90°F. Mixing water may be chilled, or chopped ice may be used, or liquid nitrogen may be added. Ice, when introduced into the mixer shall be in such form that it will be completely melted and dispersed throughout the mix at the completion of the mixing time. The addition of ice shall not increase the specified water to cement ratio.
 3. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that the steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
 4. Thoroughly wet forms before placing concrete. Forms shall be free of standing water when concrete is placed.
 5. Do not use set-control admixtures, unless approved by ENGINEER in mix designs.
 6. Fog spray shall be used during finishing operations whenever necessary to avoid surface plastic shrinkage cracking. Fog spray shall also be used after finishing and before the specified curing is commenced to avoid surface plastic shrinkage cracking.
 7. Obtain ENGINEER'S approval of other methods and materials proposed for use.
- H. Removal of Forms:
1. The CONTRACTOR shall be responsible for all damage resulting from improper and premature removal of forms. Satisfy all applicable OSHA requirements with regard to safety of personnel and property.
 2. Forms and shoring for elevated structural slabs or beams shall remain in place in accordance with ACI 318, Chapter 6, and until the concrete has reached a compressive strength equal to the specified 28-day compressive strength as determined by test cylinders unless noted otherwise in Section 03100 - Concrete Formwork. Removal of all supports prior to obtaining adequate field cured cylinder results and reshoring shall not be permitted.
- I. Backfill Against Walls:
1. Do not place backfill against walls until the concrete has obtained a compressive strength equal to the specified 28-day compressive strength. Where backfill is to be placed on both sides of the wall, the backfill shall be placed simultaneously on both sides to prevent differential pressures.
 2. Since the walls of some structures are laterally restrained or supported by suspended slabs and/or slabs on grade and are not designed as cantilever retaining walls, the CONTRACTOR shall submit a schedule of wall shoring, bracing, and backfilling that is coordinated with the concrete curing, test cylinder reports and the design assumptions and obtain a review from the ENGINEER prior to proceeding.
- J. Patching:
1. Patching of concrete shall provide an acceptable and structurally sound surface finish uniform in appearance or the CONTRACTOR shall upgrade the finish by other means at no additional cost.
 2. Tie Holes: All tie holes, except where sealant is indicated, shall be filled with dry pack nonshrink grout. White cement shall be added as needed so the color of grout after curing matches the color of adjacent concrete. Tie holes shall be thoroughly sandblasted or roughened. Flush the patch area with water and allow to dry. Coat the surface of the existing concrete with an approved bonding agent prior to filling with nonshrink grout. Complete the repair in the time duration specified by the

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bonding agent manufacturer. The grout shall be rammed into place in thin layers and leveled to the plane of the surrounding concrete. Cure in accordance with the manufacturer's recommendations.

3. Defective Areas: Remove all defective concrete such as honeycombed areas and rock pockets out to sound concrete. Small shallow holes caused by air entrapment at the surface of the forms shall not be considered defects unless the amount is so great as to be considered not the standard of the industry and due primarily of poor workmanship. If chipping is required, the edges shall be perpendicular to the surface. Feather edges shall not be permitted. The defective area shall be filled with a nonshrink, nonmetallic, grout. Use an approved bonding agent on horizontal patches prior to placing nonmetallic, non-shrink grout. Since some bonding agents may not be compatible for some vertical surface patching techniques, demonstrate all methods for repair of vertical surfaces using the actual materials, methods, and curing procedures required by the manufactures of the materials on the project site. The CONTRACTOR shall consult with representatives of the bonding agent manufacturer and the nonshrink grout manufacturer, and these representatives shall be onsite and assist in the demonstration.
4. Blockouts at Pipes or Other Penetrations: Conform to details shown or submit proposed blockouts for review. Use nonshrink, nonmetallic grout.

3.4 FINISH OF FORMED SURFACES

A. Rough Form Finish:

1. Standard rough form finish is with concrete surface having the texture imparted by the form material, with tie holes and defective areas repaired and patched with mortar of 1 part cement to 1½ parts sand & all fins and other projections exceeding 1/4" in height rubbed down or chipped off.
2. Use rough form finish for the following:
 - a. Exterior vertical surfaces up to 1' below grade.
 - b. Interior exposed vertical surfaces of liquid containers up to 1' below liquid level.
 - c. Interior and exterior exposed beams and undersides of slabs.
 - d. Other areas shown.

B. Smooth Form Finish:

1. Produce smooth form finish (Class A, as defined by ACI-347) by selecting form materials that will impart a smooth, hard, uniform texture. Arrange panels in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas as above with all fins or other projections completely removed and smoothed.
2. Use smooth form finish for surfaces that are to be covered with a coating material. The material may be applied directly to the concrete or may be a covering bonded to the concrete such as waterproofing, damp proofing, painting or other similar system.

C. Smooth Rubbed Finish:

1. Provide smooth, rubbed finish to concrete surfaces which have received smooth form finish as follows:
 - a. Rubbing of concrete surfaces not later than the day after form removal.
 - b. Moistening of concrete surfaces and rubbing with carborundum brick or other abrasive until a uniform color and texture is produced. Do not apply cement grout other than that created by the rubbing process.
2. Except where surfaces have been previously covered as specified above, use smooth rubbed finish for the following:
 - a. Interior exposed walls and other vertical surfaces.

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- b. Exterior exposed walls and other vertical surfaces down to 1' below grade.
- c. Interior and exterior horizontal surfaces, except exterior exposed slabs and steps.
- d. Interior exposed vertical surfaces of liquid containers down to 1' below liquid level.
- e. Other areas shown.

D. Sack Rubbed Finish:

1. Before applying the sack-rubbed finish, fill all tie rod holes and large cavities and remove or correct all fins and irregularities as specified in the Smooth Rubbed Finish.
2. Produce a sack rubbed finish by rubbing the concrete surface with a clean rubber float or wad of burlap and mortar. Use mortar made of premixed sacking mortar or one part portland cement and 1.5 parts, by volume, clean sand passing a No. 16 sieve, mixed with sufficient water to provide a consistency equal to that of a thick cream. Use the same type and brand cement as used in the concrete or colored premixed sacking mortar. The mortar finish color shall match the surrounding concrete. If necessary, blend white cement into the mortar to match the surrounding concrete surface.
3. Thoroughly wet the surface of the concrete and then perform sack rubbing while the surface is damp but not wet. Thoroughly rub the mortar over the area with a rubber float or wad of burlap, filling all pits. While the mortar is still plastic in the pits, rub the surface with the rubber float or burlap using a dry mix of the above proportions, removing all excess plastic material and placing enough dry material in the pits to stiffen and solidify the mortar, then finish the mortar fillings flush with the surface. At the end of the rubbing, no mortar or material shall remain on the surface other than that within the pits.
4. Ensure the completed surface is free of surface voids and blemishes, and is uniform in appearance and texture, except for the difference in texture between the filled voids and the remainder of the surface.
5. A thorough wash-down with stiff bristle brushes shall follow the final bagging or stoning operation. No extraneous materials shall remain on the surface of the wall. The wall shall be sprayed with a fine fog spray periodically to maintain a continually damp condition for at least 3 days after the application.
6. Use a sack rubbed finish for the following areas or as indicated in the Drawings:
 - a. Interior exposed walls and other vertical surfaces.
 - b. Exterior exposed walls and other vertical surfaces down to 1' below grade.
 - c. Interior and exterior horizontal surfaces, except exterior exposed slabs and steps.
 - d. Or other areas shown.

E. Related Unformed Surfaces:

1. At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike off smooth and finish with a texture matching the adjacent formed surfaces. Continue the final surface treatment of formed surfaces uniformly across the adjacent unformed surfaces, unless otherwise shown.

3.5 MONOLITHIC SLAB FINISHES

A. Float Finish:

1. After placing concrete slabs, do not work the surface further until ready for floating. Begin floating when the surface water has disappeared or when the concrete has stiffened sufficiently. Check and level the surface plane to a tolerance not exceeding 1/4" in 10' when tested with a 10' straightedge. Cut down high spots and fill all low spots. Uniformly slope surface to drains as shown. Immediately after leveling, refloat the surface to a uniform, smooth, granular texture.
2. Use float finish for the following:

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- a. Interior horizontal surfaces of liquid containers, except those to receive grout topping.
 - b. Exterior below grade horizontal surfaces.
 - c. Surfaces to receive additional finishes, except as shown or specified.
- B. Trowel Finish:
- 1. After floating, begin the first trowel finish operation using a power-driven trowel. Begin final troweling when the surface produces a ringing sound as the trowel is moved over the surface.
 - 2. Consolidate the concrete surface by the final hand troweling operation. Finish shall be free of trowel marks, uniform in texture and appearance, and with a surface plane tolerance not exceeding 1/8" in 10' when tested with a 10' straight edge. Grind smooth surface defects that would telegraph through applied floor covering system.
 - 3. Use trowel finish for the following:
 - a. Interior exposed slabs, unless otherwise shown or specified.
 - b. Slabs to receive resilient floor finishes.
- C. Non-Slip Broom Finish:
- 1. Immediately after float finishing, slightly roughen the concrete surface by brooming in the direction perpendicular to the main traffic route. Use fiber-bristle broom, unless otherwise directed. Coordinate the required final finish with ENGINEER before application.
 - 2. Use Non-Slip Broom Finish for the following:
 - a. Exterior exposed horizontal surfaces subject to light foot traffic.
 - b. Interior and exterior concrete steps and ramps.
 - c. Horizontal surfaces which will receive a grout topping or a concrete equipment base slab.

3.6 CONCRETE CURING AND PROTECTION

- A. General:
- 1. Protect freshly placed concrete from premature drying and excessive cold or hot temperature, and maintain without drying at a relatively constant temperature for the period of time necessary for hydration of the cement and proper hardening of the concrete.
 - 2. Start initial curing after placing and finishing concrete as soon as free moisture has disappeared from the concrete surface. Keep continuously moist for not less than 72 hours.
 - 3. Begin final curing procedures immediately following initial curing and before the concrete has dried. Continue final curing for at least seven (7) days and in accordance with ACI 301 procedures. For concrete sections over 30" thick, continue final curing for an additional seven (7) days, minimum. Avoid rapid drying at the end of the final curing period.
- B. Curing Methods:
- 1. Perform curing of concrete by moist curing, or by moisture- retaining cover curing. Use curing compound only in cold weather and only when permitted by ENGINEER. When daytime highs might exceed 90°F, only moist curing shall be used.
 - a. For curing, use water that is free of impurities that could etch or discolor exposed, natural concrete surfaces.
 - 2. Provide moist curing, to provide a constant application of excess water by any of the following:
 - a. Inundation.

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- b. Continuous fog spray.
 - c. Covering the concrete surface with the specified absorptive cover, thoroughly saturating the cover with water, and keeping the absorptive cover continuously wet with sprinklers or porous hoses. Place absorptive cover so as to provide coverage of the concrete surfaces and edges, with a 3" lap over adjacent absorptive covers.
3. Provide moisture-retaining cover curing as follows:
 - a. Cover the concrete surfaces with the specified moisture-retaining cover for curing concrete, placed in the widest practical width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during the curing period using cover material and waterproof tape.
 - b. Water must be introduced between the moisture-retaining cover and the concrete whenever moist drops cannot be detected on the concrete side of the cover or the concrete surface is noticeably dry.
 4. Provide liquid curing compound as follows:
 - a. Apply the specified curing compound to all concrete surfaces when permitted by ENGINEER. Slabs to receive terrazzo floors, chemical resistant heavy duty concrete topping or ceramic tile, shall not be cured with liquid curing compound. The compounds shall be applied immediately after final finishing in a continuous operation by power spray equipment in accordance with the manufacturer's directions. Recoat areas, which are subjected to heavy rainfall within 3 hours after initial application. Maintain the continuity of the coating and repair damage to the coat during the entire curing period. For concrete surfaces, which will be in contact with potable water, the manufacturer shall certify that the curing compound used is EPA approved.
- C. Curing Formed Surfaces: Cure formed concrete surfaces, including the undersides of girders, beams, supported slabs and other similar surfaces by moist curing with the forms in place for the full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.
- D. Curing Unformed Surfaces: Initially cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by using the appropriate method specified above. Final cure unformed surfaces, unless otherwise specified, by utilizing methods specified above, as applicable.
- E. Temperature of Concrete During Curing:
1. When the nighttime low temperature may drop to 40°F or below, maintain the concrete temperature between 50°F and 70°F continuously throughout the curing period, by heating, covering, insulation or housing as required.
 2. When the daytime high temperature may rise to 90°F or above, maintain the concrete temperature at a minimum and reduce temperature variations by providing moist curing continuously for the concrete curing period.
 3. During either of the conditions specified above, the minimum curing time shall be 10 days (240 hours), after which coverings, housings, and insulation shall remain on the work for an additional 3 days, to allow gradual temperature equalization with the atmosphere.
- F. Protection from Mechanical Injury: During the curing period, protect concrete from damaging mechanical disturbances including load stresses, heavy shock, excessive vibration, and from damage caused by rain or flowing water. Protect all finished concrete surfaces from damage by subsequent construction operations.

3.7 FIELD QUALITY CONTROL

- A. The CONTRACTOR will employ a testing laboratory to perform field quality control testing. ENGINEER will direct the number of tests and cylinders required. Furnish all necessary assistance required by ENGINEER.
- B. Quality Control Testing During Construction:
1. Perform sampling and testing for field quality control during the placement of concrete, as follows:
 - a. Sampling Fresh Concrete: ASTM C172.
 - b. Slump: ASTM C143; one test for each concrete load at point of discharge; and one for each set of compressive strength test specimens.
 - c. Air Content: ASTM C231; one for the first concrete load, and one for every two concrete loads thereafter, or when required by an indication of change. Adjust mix if test results are unsatisfactory and resubmit for ENGINEER'S approval.
 - d. Compressive Strength Tests: ASTM C39; one set of 4 standard compression cylinders for each 50 cubic yards or fraction thereof, of each mix design placed in any one day; 1 specimen tested at 7 days, and 2 specimens tested at 28 days, 1 held. Cast, store and cure specimens as specified in ASTM C31.
 - 1) Adjust mix if test results are unsatisfactory and resubmit for ENGINEER'S approval.
 - 2) Concrete that does not meet the strength requirements is subject to rejection and removal from the Work, or to other such corrective measures as directed by ENGINEER, at the expense of CONTRACTOR.
 - e. Concrete Temperature: Test each time a slump test is made.
 2. Where questionable field conditions may exist during placing concrete or immediately thereafter, strength tests of specimens cured under field conditions will be required by ENGINEER to check the adequacy of curing and protecting of the concrete placed. Specimens shall be molded at the same time and from the same samples as the laboratory cured specimens.
 - a. Provide improved means and procedures for protecting concrete when the 28-day compressive strength of field- cured cylinders is less than 85% of companion laboratory-cured cylinders.
 - b. When laboratory-cured cylinder strengths are appreciably higher than the minimum required compressive strength, field-cured cylinder strengths need not exceed the minimum required compressive strength by more than 500 psi even though the 85 percent criterion is not met.
 3. The testing laboratory shall submit certified copies of test results directly to ENGINEER and CONTRACTOR after tests are made.
- C. Evaluation of Quality Control Tests:
1. Do not use concrete delivered to the final point of placement that has slump or temperature outside the specified values, nor that which is older than 90 minutes from batching.
 2. Compressive strength tests for laboratory-cured cylinders will be considered satisfactory if the averages of all sets of three consecutive compressive strength tests results equal or exceed the 28 day design compressive strength of the type or class of concrete; and, no individual strength test falls below the required compressive strength by more than 500 psi.
 3. If the compressive strength tests fail to meet the minimum requirements specified, the concrete represented by such tests will be considered deficient in strength and subject to replacement, reconstruction or to other action approved by ENGINEER.

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D. Testing Concrete Structure for Strength:

1. When there is evidence that the strength of the in-place concrete does not meet specification requirements, provide the services of a concrete testing service to take cores drilled from hardened concrete for compressive strength determination at no additional expense to OWNER. Provide tests complying with ASTM C42 and the following:
 - a. Take at least three (3) representative cores from each member or suspect area at locations directed by ENGINEER.
 - b. Strength of concrete for each series of cores will be considered satisfactory if their average compressive strength is at least 85% and no single core is less than 75% of the 28 day required compressive strength.
 - c. Report test results, in writing, to ENGINEER on the same day that tests are made. Include in test reports the Project identification name and number, date, name of CONTRACTOR, name of concrete testing service, location of test core in the structure, type or class of concrete represented by core sample, nominal maximum size aggregate, design compressive strength, compression breaking strength and type of break (corrected for length-diameter ratio), direction of applied load to core with respect to horizontal plane of the concrete as placed, and the moisture condition of the core at time of testing.
2. Fill core holes solid with non-shrink, high strength grout, and finish to match adjacent concrete surfaces.

E. Water Leakage Tests for All Water-Holding Structures:

1. All water-holding structures shall be subjected to leakage tests after the concrete has been cured and obtained its design strength, and before backfill, brick facing, or other work which will cover the concrete surfaces of the walls is begun. Water leakage tests shall be conducted by the CONTRACTOR as follows:
 - a. All water-holding structures shall be filled with water to the maximum liquid level shown on the Drawings prior to leak testing. After these structures have been kept full for 48-hours, it will be assumed for the purpose of the test that the absorption of moisture by the concrete in the basin is complete. All valves and gates to the structure shall then be closed and the change in water surface measured for a 24-hour period.
 - b. During the test period, all exposed portions of the structure shall be examined for dampness or leaks and all visible leaks or damp spots shall be marked; such leaks or damp spots shall be later patched or corrected in a manner acceptable to the ENGINEER prior to additional leakage testing. If the drop in water surface in the 24-hour period exceeds 1/10 of 1 percent of the normal volume of liquid contained in the water-holding structure, after accounting for evaporation and precipitation in open basins, or if damp spots or any seepage is present on the walls or other areas exposed to view, the leakage shall be considered excessive and the leakage test will be considered to have failed. Evaporation shall be determined by floating an evaporation pan in the structure during the test period.
 - c. If the leakage is excessive, and if damp spots and observed seepage is present on exposed surfaces, the water-holding structure shall be drained, all leaks and damp spots previously marked shall be patched, and the necessary repairs made, and the basin shall be retested. The CONTRACTOR's method of repair shall be subject to the requirements of these specifications and submitted for review by the ENGINEER.
 - d. The water-holding structure shall then be refilled and again tested for leakage and this testing and repair process shall be repeated as many times as necessary until the leakage test passes. This process shall be continued until the drop in water surface in a 24-hour period with the basin full is less than 1/10 of 1 percent of the

volume of liquid held in the basin and all damp spots and seepage disappears when the structures are full of water. All repairs of faulty workmanship and materials, and additional tests, shall be made by the CONTRACTOR in an acceptable manner, at no additional cost to the OWNER. Both the correction for excessive leakage and the removal of the damp or wet spots on wall shall be required to pass the leakage test.

- e. The purpose of this test is to determine the integrity of the finished concrete and to show that the exposed wall surfaces are visually acceptable. Therefore, all other equipment. e.g., stop gates, sluice gates, etc. or temporary bulkheads, should be made watertight prior to the test.
- f. As an alternative to having watertight bulkheads, gates or valves, the CONTRACTOR shall accurately measure the leakage through gates, valves, and bulkheads with methods acceptable to the ENGINEER.
- g. An assumed leakage through gates and valves based on the manufacturer's recommendations is not acceptable.

3.8 MISCELLANEOUS CONCRETE ITEMS

- A. Filling-In: Fill-in holes and openings left in concrete structures for the passage of work by other contractors, unless otherwise shown or directed, after the work of other contractors is in place. Mix, place and cure concrete as herein specified, to blend with in-place construction. Provide all other miscellaneous concrete filling shown or required to complete the Work.
- B. Curbs:
 - 1. Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
 - 2. Exterior curbs shall have rubbed finish for vertical surfaces and a broomed finish for top surfaces.
- C. Equipment Bases:
 - 1. Unless specifically shown otherwise, provide concrete bases for all pumps and other equipment. Construct bases to the dimensions shown, or as required to meet manufacturers' requirements and drawing elevations. Where no specific elevations are shown, bases shall be 6-inches thick and extend 3-inches outside the metal equipment base or supports. Bases to have smooth trowel finish, unless a special finish such as terrazzo, ceramic tile or heavy duty concrete topping is required. In those cases, provide appropriate concrete finish.
 - 2. Include all concrete equipment base work not specifically included under other Sections.
 - 3. In general, place bases up to 1-inch below the metal base. Properly shim equipment to grade and fill 1-inch void with non-shrink grout as specified in Section 03600, Grout.
- D. Installation of embedded items
 - 1. Install all embedded items prior to concrete placement, or, if necessary, as soon after concrete placement as possible, before concrete is set.
 - 2. Use temporary support and bracing to keep embedded items in place while concrete cures.
 - 3. Protect all embedded items from damage during concrete installation.

3.9 CONCRETE REPAIRS

A. Repair of Formed surfaces:

1. Repair exposed-to-view formed concrete surfaces that contain defects which adversely affect the appearance of the finish. Surface defects that require repair include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, and holes left by the rods and bolts; fins and other projections on the surface; and stains and other discolorations that cannot be removed by cleaning.
2. Repair concealed formed concrete surfaces that may contain defects that adversely affect the durability of the concrete. Surface defects that require repair include cracks in excess of 0.01-inch wide, cracks of any width and other surface deficiencies which penetrate to the reinforcement or completely through non-reinforced sections, honeycomb, rock pockets, holes left by tie rods and bolts, and spalls except minor breakage at corner.
3. Repair structural cracks and cracks in water-holding structures.

B. Method of Repair of Formed Surfaces:

1. Repair and patch defective areas with cement mortar immediately after removal of forms and as directed by ENGINEER.
2. Cut out honeycomb, rock pockets, voids over 1/2" diameter, and holes left by tie rods and bolts, down to solid concrete but, in no case, to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Before placing the cement mortar, thoroughly clean, dampen with water, and brush-coat the area to be patched with the specified bonding agent.
 - a. For exposed-to-view surfaces, blend white portland cement and standard portland cement so that, when dry, the patching mortar color will match the color of the surrounding concrete. CONTRACTOR shall impart texture to repaired surfaces to match texture of existing adjacent surfaces. Provide test areas at inconspicuous locations to verify mixture, texture and color match before proceeding with the patching. Compact mortar in place and strike off slightly higher than the surrounding surface.
3. Cracks which require repair shall be pressure grouted, epoxy injected, using one of the following in accordance with Section 03740. Apply in accordance with the manufacturer's directions and recommendations.
 - a. Sikadur 35, Hi-Mod L.V. and Sikadur 31, Hi-Mod Gel, as manufactured by Sika Corporation Company.
 - b. Euco Epoxy #452 Epoxy System, as manufactured by The Euclid Chemical Company.
 - c. Or approved equal.
4. Fill holes extending through concrete by means of a plunger- type gun or other suitable device from the least exposed face, using a flush stop held at the exposed face to ensure completely filling.
5. Sandblast exposed-to-view surfaces that require removal of stains, grout accumulations, sealing compounds, and other substances marring the surfaces. Use sand finer than No. 30 and air pressure from 15 to 25 psi.

C. Repair of Unformed Surfaces:

1. Test unformed surfaces, such as monolithic slabs, for smoothness and to verify surface plane to the tolerances specified for each surface and finish. Correct low and high areas as herein specified.
2. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness, using a template having the required slope. Correct high and low areas as herein specified.

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3. Repair finish of unformed surfaces that contain defects which adversely affect the durability of the concrete. Surface defects, as such, include crazing, cracks in excess of 0.01-inch wide or which penetrate to the reinforcement or completely through non-reinforced sections regardless of width, spalling, popouts, honeycomb, rock pockets, and other objectionable conditions.
4. Repair structural cracks and cracks in water-holding structures.

D. Methods of Repair of Unformed Surfaces:

1. Correct high areas in unformed surfaces by grinding, after the concrete has cured sufficiently so that repairs can be made without damage to adjacent areas.
2. Correct low areas in unformed surfaces during, or immediately after completion of surface finishing operations by cutting out the low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Use one of the following. Apply in accordance with the manufacturer's directions and recommendations.
 - a. Euco Poly-Patch, as manufactured by The Euclid Chemical Company.
 - b. Sikatop 122, as manufactured by Sika Corporation.
 - c. Or approved equal.
3. Repair defective areas, except random cracks and single holes not exceeding 2" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts, and expose reinforcing steel with at least 3/4" clearance all around. Dampen all concrete surfaces in contact with patching concrete and brush with the specified bonding agent. Place patching concrete before grout takes its initial set. Mix patching concrete of the same materials and proportions to provide concrete of the same type or class as the original adjacent concrete. Place, compact and finish as required to blend with adjacent finished concrete. Cure in the same manner as adjacent concrete.
4. Repair isolated random cracks, as approved by ENGINEER, and single holes not over 2" diameter, by the dry-pack method. Groove the top of cracks, and cut out holes to sound concrete and clean of dust, dirt and loose particles. Dampen all cleaned concrete surfaces and brush with the specified bonding agent. Place dry-pack before the cement grout takes its initial set. Mix dry-pack, consisting of 1 part portland cement to 2½ parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched areas continuously moist for not less than 72 hours.
5. Cracks which extend through the full member section, or any cracks determined by ENGINEER to require pressure grouting repair, shall be pressure grouted, epoxy injected, using one of the following in accordance with Section 03740. Apply in accordance with the manufacturer's directions and recommendations.
 - a. Sikadur 35, Hi-Mod L.V. and Sikadur 31, Hi-Mod Gel, as manufactured by Sika Corporation.
 - b. Euco Epoxy #452 Epoxy System, as manufactured by The Euclid Chemical Company.
 - c. Or approved equal.
6. Assure that surface is acceptable for flooring material to be installed in accordance with manufacturer's recommendations.

E. Other Methods of Repair:

1. Repair methods not specified above may be used if approved by ENGINEER.

+ + END OF SECTION + +

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SECTION 03400

PRECAST CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Section includes all plant-precast products, including wet wells, catch basins, manholes, vaults, and wheel stops.

1.2 SYSTEM DESCRIPTION

- A. Precast products shall be designed for the indicated service, the loadings specified in the Contract Documents, and all transportation, handling, and erection loads, in accordance with requirements and recommendations of the references.
 - 1. Precast products shall be designed to meet and exceed the requirements of ACI 318-11.
 - 2. Liquid containing precast products shall be designed for the additional requirements of ACI 350-06.
- B. If precast products are proposed as substitutes for cast-in-place designed structures, such precast products shall meet the above requirements and any other requirements for which the cast-in-place structures were designed by the ENGINEER. Such products shall be designed by an engineer licensed to practice in the State where the project is performed.
- C. Items located in or adjacent to traffic areas shall be designed to resist AASHTO H-20-44 loading, unless otherwise indicated.
- D. Lifting inserts shall have a minimum safety factor of 4.

1.3 QUALIFICATIONS

- A. Manufacturer:
 - 1. Manufacturer shall have at least 5 years of experience in the design and manufacture of precast concrete products substantially similar to those required for this project.
 - 2. The precast manufacturing plant shall be certified by the Precast/ Prestressed Concrete Institute Plant Certification Program or the International Code Council as an Approved Fabricator for Group C3 or C4. Manufacturer shall comply with the testing provisions in PCI MNL-116, Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products.
- B. Installer:
 - 1. Precast Items shall be installed by the Manufacturer or by an installer regularly engaged for at least 5 years in erection of precast products similar to those required on this project.

1.4 SUBMITTALS

- A. Shop Drawings:

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1. Submit to the Engineer for review, shop drawings of the proposed details, and design calculations; all calculations and shop drawings shall be stamped and signed by a Civil or Structural Engineer registered in the State of California.
 2. Material specifications.
 3. All dead, live and other applicable loads used in the design.
 4. Applicable standards (from "References") met by the item(s).
 5. Setting plans locating and designating all items furnished by the manufacturer, with all major openings shown and located.
 6. Details to indicate quantities, location and type of reinforcing and prestressing steel.
 7. Sections and details showing connections, edge conditions, support conditions, and connections of the items.
 8. Description of all embeds, including stripping, lifting and erection inserts, with piece mark and location, including those cast into products or sent loose to the job site.
 9. Description and drawings of all frames and covers.
 10. Dimensions and special finishes.
- B. Mix Designs: Submit all precast mix designs for approval. Mix designs shall be prepared by an independent testing facility or qualified employee of the Precast Manufacturer.
- C. Design Modifications:
1. Submit design modifications necessary to meet performance requirements and field conditions.
 2. Variations in details or materials shall not adversely affect the appearance, durability or strength of products.
 3. Maintain general design concept without altering size of members, profiles and alignment unless otherwise approved by the Architect/Engineer.

1.5 QUALITY ASSURANCE

- A. In-Plant Quality Control
1. The Manufacturer shall have an established PCI quality control program in effect prior to bidding. If requested, a copy of this program shall be submitted to the ENGINEER.
 2. Testing of materials and inspection of production techniques shall be the responsibility of the Manufacturer's Quality Control Department.
 3. Keep quality control records available for two years after final acceptance.
 4. Keep certificates of compliance available for five (5) years after final acceptance.
- B. All other testing and inspection, if any, to be provided by OWNER.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Handle and transport products in a position consistent with their shape and design in order to avoid excessive stresses or damage.
- B. Lift or support products only at the points shown on the Shop Drawings.
- C. Installer shall be responsible for the repair of damage to items except that caused by others.
- D. After items are installed in their final positions, the CONTRACTOR shall be responsible for their protection. The CONTRACTOR shall be responsible for the repair of any damage to the items caused by someone other than the Manufacturer/Installer.

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PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

- A. Portland Cement ASTM C150 Type I, II or III cement.
- B. Aggregates:
 - 1. Fine and coarse aggregate for mix shall conform to ASTM C33 or C330.
 - 2. Aggregates shall be clean, hard, strong, durable, inert, and free of staining and deleterious materials.
- C. Water Potable, free from deleterious material.
- D. Admixtures:
 - 1. Conforming to ASTM C260 and/or ASTM C494.
 - 2. Calcium chloride or admixtures containing chlorides shall not be used.
- E. Concrete Strength: Concrete strength shall be determined by design with a minimum 28-day design strength of 4,000 psi.

2.2 STEEL MATERIALS

- A. Products:
 - 1. Structural Shapes, Bars & Plates (1.6mm and thicker): ASTM A36
 - 2. Pipe: ASTM A53 Grades A or B
 - 3. Tube Steel: ASTM A500 Grades A or B
 - 4. Reinforcing Steel: ASTM A615 Grades 300 & 420 or ASTM A706
 - 5. Prestressing Strand: ASTM A416 Grade 270, low relaxation
 - 6. Deformed Steel Bar Mats: ASTM A184
 - 7. Deformed Bar Anchors: ASTM A496
 - 8. Deformed Welded Wire Fabric: ASTM A497
 - 9. Plain Welded Wire Fabric: ASTM A185
 - 10. Welded Headed Studs: AWS D1.1 Type B
 - 11. Standard Machine Bolts: ASTM A307 Grade A or SAE J429 Grade 2
 - 12. Standard Studs/Threaded Round Stock: ASTM A307 Grade C, ASTM A572 Grade 345
 - 13. Nuts for Standard Machine Bolts and Threaded Studs: ASTM A563 Grade A Hex Nuts
 - 14. High Strength Bolts: ASTM A325 Type 1, ASTM A449 Type 1, or SAE J429 Grade 5
 - 15. Nuts for High-Strength Bolts and Threaded Studs: ASTM A563 Grade DH Heavy Hex Nuts
 - 16. Coil Rods and Bolts: ASTM A108 - SAE 1016 to 1026, $F_u/F_y = 480/380$ MPa minimum
 - 17. Coil Nuts for Coil Rods and Bolts: Nuts passing a proof load stress of 80 ksi, based on the tensile stress area of the matching coil rods and bolts.
 - 18. Carbon Steel Castings: ASTM A27 Grade 415-205
- B. Protective Coatings:
 - 1. All connection hardware permanently exposed to weather after completion shall be protected. All connection hardware not exposed to weather after completion may be uncoated, except as otherwise explicitly required by the contract drawings. Fasteners can have either an electroplated zinc or cadmium coating.
 - 2. Alkyd Rust Inhibitive Primers (shop primers such as red iron oxide) :
 - a. Tnemec Series FD88 Azerox Primer
 - b. Ameron 5105
 - c. Weld-Thru Primer, Red, 2-0101 & Gray, 2-0102

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3. Zinc Coatings:
 - a. Hot-Dip Galvanizing: ASTM A123, or ASTM A153
 - b. Electroplated Zinc for Steel Products and Steel Hardware: ASTM B633
 - c. Zinc Rich Paints: DOD-P-21035
4. Cadmium Coatings:
 - a. Electrodeposited Coatings of Cadmium: ASTM B766

2.3 MISCELLANEOUS PRODUCTS

- A. Grout:
 1. Cement Grout: Portland cement, sand and water sufficient for placement and hydration.
 2. Non-Shrink Grout: Premixed, packaged non-ferrous aggregate shrink resistant.
 3. Epoxy Resin Grout: Two-component mineral-filled resin: ASTM C881.
- B. Joint Sealing Compound: The joint sealing compound shall be a permanently flexible plastic material complying in every detail to Federal Specification SS S-00210 (GSA-FSS) dated July 26, 1965. "Quickseal", or approved equal.
- C. Frames and Covers: Catch basins, manholes, and vaults shall be provided with fabricated aluminum or steel frames and covers as specified or shown on the drawings and shall be built up so that the cover is flush with the surrounding surface unless otherwise specified.

2.4 FABRICATION

- A. Unless otherwise noted, precast concrete structure dimensions called out on the Drawings are interior dimensions.
- B. Manufacturing procedures shall be in general compliance with PCI MNL-116.
- C. Manufacturer shall provide for those openings 10 in. or larger, round or square as shown on the drawings. Other openings shall be located and field drilled or cut by the trade requiring them after the units have been erected. Openings and/or cutting of prestressing strand shall be approved by ENGINEER and manufacturer before drilling or cutting.
- D. Forms:
 1. Forms for precast products shall be rigid and constructed of materials that will result in finished products conforming to the profiles, dimensions and tolerances indicated by this Section, the Contract Documents and the reviewed Shop Drawings.
 2. Construct forms to withstand vibration method selected.
 3. Release agents shall be applied and used according to manufacturer's instructions.
- E. Plastic Liner:
 1. Where called for on the Drawings, provide cast-in-place plastic liner system.
 2. Install liner system per manufacturer's instructions.
 3. Follow all requirements of Specification Section 06640, Plastic Liner for Concrete Pipe and Structures.
- F. Concreting:
 1. Batching of Concrete shall be in accordance with approved Mix Design(s).
 2. Convey concrete by methods which will prevent separation, segregation or loss of material.
 3. Consolidate all concrete in the form to minimize honeycombing or entrapped air.

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- G. Curing: Procedures sufficient to insure specified concrete strength of all products must be employed. Stripping of a panel shall not occur until concrete strength is sufficient to prevent cracking or damage of the panel.
- H. Manufacturing Tolerances:
1. Cross Sectional Dimensions:
 - a. Less than 24 inches: $\pm 1/4$ "
 - b. 24 to 36 inches: $\pm 3/8$ "
 - c. Over 36 inches: $\pm 1/2$ "
 2. Length:
 - a. Less than 25 ft: $\pm 1/2$ "
 - b. 25 to 50 ft: $\pm 3/4$ "
 - c. Over 50 ft: ± 1 "
 3. Variation from square or designed skew (difference in length of two diagonal measurements): Max. $\pm 3/4$ "
- I. Identification: Mark each precast item to correspond to identification mark on Shop Drawings for product location, and with casting date.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Access: Clear unloading areas and access roadways to point of component placement shall be provided and maintained by the CONTRACTOR. The CONTRACTOR shall provide all required traffic controls, barricades, warning lights and/or signs to insure a safe installation.
- B. Sitework: The CONTRACTOR shall excavate and prepare the subgrade, including 2 inches of clean sand, graded level and to the proper elevation.
- C. Installer Responsibility: Prior to installation of the precast products, notify the CONTRACTOR of any discrepancies discovered which affect the work under this contract.

3.2 INSTALLATION

- A. General: Precast products shall be lifted with suitable lifting devices at points provided by the Manufacturer to prevent excessive stresses or damage to the products. Brace and secure items before unhooking.
- B. Sitework:
1. Openings or "knockouts" shall be located as shown on the 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 walls around pipes shall be filled with 4,000-psi concrete or mortar, using an approved epoxy for bonding concrete surfaces.
 2. All joints between precast sections shall be made watertight using preformed mastic material. 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. All joints shall be filled with dry-pack non-shrink grout. If plastic liner system is used, after the joint has been made and is cured, install plastic liner weld strip at all joints and seams.

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3. Frames and covers shall be built up so that the cover is flush with the surrounding surface unless otherwise specified. The CONTRACTOR is responsible for placing the cover at the proper elevation where paving is to be installed and shall make all necessary adjustments so that the cover meets these requirements.
4. After the structure and all appurtenances are in place and approved, and after any required disinfection or testing, backfill shall be placed to the original ground line or to the limits designated on the plans.

3.3 FIELD QUALITY CONTROL

A. Hydrostatic Testing:

1. All Manholes, Wetwells, Junction Boxes, or other water bearing structures shall be hydrostatically tested prior to acceptance.
2. Test Procedure:
 - a. Plug all inlets and outlets with temporary plugs
 - b. Fill water bearing structure with clean, potable water
 - c. Let stand for 24 hours, if desired, to allow for "soaking-in"
 - d. Fill to rim elevation
 - e. Let stand for a minimum of 2 hours
 - f. Check distance from rim to water surface
 - g. Calculate water loss. Leakage in each manhole may not exceed 0.1-gallon per hour per foot of water depth during the test.
3. Repair all manholes which do not meet the above test requirements with a method approved by the ENGINEER and re-test until passing.

3.4 PATCHES AND REPAIRS:

- A. Patching of products, when required, shall be performed to industry standards for structural concrete. Repairs shall be sound, permanent and flush with adjacent surface.

3.5 WARRANTY:

- A. All labor and materials under the Precast Manufacturers contract shall be warranted by the Precast Manufacturer for a period of one (1) year after substantial completion.

+ + END OF SECTION + +

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SECTION 03600

GROUT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes epoxy, non-metallic, non-shrink, and ordinary Portland cement-sand grouts.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 1. ASTM C33, Standard Specification for Concrete Aggregates.
 2. ASTM C150, Standard Specification for Portland Cement.
 3. ASTM C595, Standard Specification for Blended Hydraulic Cements.
 4. ASTM C1107, Standard Specification for Packaged Dry, Hydraulic-Cement Grout.

1.3 SYSTEM DESCRIPTION

- A. Furnish ordinary cement-sand grout for the following:
 1. Foundation grout.
 2. Construction joint grout.
 3. As shown in the Drawings.
- B. Furnish non-shrink, non-metallic grout for the following:
 1. Equipment bases, 25 hp or less.
 2. Base plates.
 3. Guardrail and railings.
 4. Through-bolt and form tie openings.
 5. As shown in the Drawings.

1.4 SUBMITTALS

- A. Product Data:
 1. Manufacturer's specifications and installation instructions for all proprietary materials.
 2. Proposed method for keeping existing concrete surfaces wet prior to placing grout.
 3. Forming method for fluid grout placements.
 4. Curing method for grout.
- B. Laboratory Test Reports and Certificates:
 1. For proprietary materials, submit copies of reports on quality control tests.
 2. Submit certification that materials meet specification requirements for nonproprietary materials.
 3. For ordinary cement-sand grout, copies of grout mix design and laboratory strength test reports.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Delivery of Materials: Deliver grout materials from manufacturers in unopened containers and bearing intact manufacturer's labels.

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- B. Storage of Materials: Store grout materials in a dry shelter and protected from moisture.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Non-shrink, Non-metallic Grout:
1. Prepackaged non-staining cementitious grout which shall meet the minimum requirements of ASTM C1107 and requiring only the addition of water at the jobsite.
 2. Product and Manufacturer: Provide one of the following:
 - a. NS, as manufactured by The Euclid Chemical Company.
 - b. Five Star Grout, as manufactured by Five Star Products, Incorporated.
 - c. Sika Grout 212, as manufactured by Sika Corporation.
 - d. Or approved equal.
- B. Ordinary Cement-Sand Grout: Prepare design mixes of ordinary cement grout.
1. Cement: Portland cement, ASTM C150, Type II; or blended hydraulic cement, ASTM C595, Type 1P.
 2. Aggregates: ASTM C33 and as herein specified.
 - a. Do not use aggregates containing soluble salts or other substances such as iron sulfides, pyrite, marcasite, ochre, or other materials that can cause stains on exposed concrete surfaces.
 - b. Fine Aggregate: Clean, sharp, natural sand, free from loam, clay, lumps or other deleterious substances.
 - 1) Dune sand, bank run sand and manufactured sand are not acceptable.
 - c. Coarse Aggregate: Clean, uncoated, processed aggregate containing no clay, mud, loam, or foreign matter, as follows:
 - 1) Crushed stone, processed from natural rock or stone.
 - 2) Washed gravel, either natural or crushed. Use of slag and pit or bank run gravel is not permitted.
 - 3) Coarse Aggregate Size: Size to be ASTM C33, No. 7 for Class B grout. Coarse aggregate not permitted in Class A grout.
 3. Admixtures: Provide admixtures produced by established reputable manufacturers and use in compliance with the manufacturer's printed instruction. Do not use admixtures that have not been incorporated and tested in the accepted mixes, unless otherwise authorized in writing by ENGINEER. Refer to Section 03300 - Cast-In-Place Concrete, for additional admixture requirements.
 4. Proportioning and Design of Mixes: Prepare design mixes for each class of grout. Mixes are subject to the following limitations:
 - a. Specified 28-day Compressive Strength: 4,000 psi.
 - b. Minimum amount of water necessary for the mixture to flow under its own weight.
 - c. Fine Aggregate meeting ASTM C33.
 - d. Air Content Percentage: $\pm 1.5\%$.
 - e. Minimum Cement Content in Pounds per Cubic Yard: 658.
 - f. Slump at point of placement: $5" \pm 1"$.
 5. Proportion mixes by either laboratory trial batch or field experience methods, using materials to be employed on the Project for grout required. Comply with ACI 211.1 and provide a complete report, from an independent testing laboratory, to ENGINEER, at least 30 days prior to start of Work. Do not begin grout production until ENGINEER has approved mixes.

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6. Laboratory Trial Batches: When laboratory trial batches are used to select grout proportions, prepare test specimens and conduct strength tests as specified in ACI 301, Chapter 3 - Proportioning.
7. Field Experience Method: When field experience methods are used to select grout proportions, establish proportions as specified in ACI 301, Chapter 4.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine the substrate and conditions under which grout is to be placed with installer and notify ENGINEER, in writing, of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.

3.2 INSTALLATION

- A. General:
 1. Mix, place and cure grout as shown and in accordance with manufacturer's instructions. If manufacturer's instructions conflict with the Specifications, do not proceed until ENGINEER provides clarification.
 2. Manufacturers of proprietary products shall make available upon 72 hours notification the services of a qualified, full time employee to aid in assuring proper use of the product under job conditions. The cost of this service, if any, shall be borne by CONTRACTOR.
 3. When placing grout conform to temperature and weather limitations in Section 03300 - Cast-In-Place Concrete.
- B. Through-bolt and form-tie holes: Fill space with dry pack dense grout hammered in with steel tool and hammer. Coordinate dry pack dense grout application with bonding agent in Section 03251 - Concrete Joints.
- C. Columns, Beams and Equipment Bases: Prepare concrete surface by sandblasting, chipping, or by mechanical means to remove any soft material prior to setting base plates and machinery. After shimming columns, beams and equipment indicated to be grouted on the plans to proper grade, securely tighten anchor bolts. Properly form around the base plates allowing sufficient room around the edges for placing the grout. Adequate depth between the bottom of the base plate and the top of concrete base must be provided to assure that the void is completely filled with grout.
- D. Guardrails and Railings: After posts and rails have been properly inserted into holes or sleeves, fill the annular space between posts and cast-in-place sleeves and/or below base plates with non-shrink grout. Bevel grout at juncture with post so that moisture flows away from posts.
- E. Construction Joints: Class A cement grout may be used in place of mortar over the contact surface of the old concrete at the interface of horizontal construction joints as outlined in Section 03251 - Concrete Joints, and Section 03300 - Cast-In-Place Concrete, of these Specifications.
- F. Curing: Cure all grout in accordance with manufacturer's written instructions. Wet cure ordinary cement-sand grout and non-shrink non-metallic grout for a minimum of three (3) days unless directed otherwise by the ENGINEER.

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+ + END OF SECTION + +

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DIVISION 15

SECTION 15100
PIPE AND FITTINGS

PART 1 - GENERAL

1.1 SUBMITTALS

- A. Shop Drawings:
1. Product data sheets for each piping system.
 - a. Include information on pipe, fittings and joint systems.
 2. Complete catalog information, descriptive literature, specifications, and identification of materials of construction.
 3. Complete descriptions and data for all coatings and linings.
 4. Tests and inspection data for pipe and coatings/linings.
 5. Qualifications for welders and/or technicians performing joining processes that requires specialized equipment to perform the work or as specifically identified herein.

1.2 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. In accordance with manufacturer's directions.

PART 2 - PRODUCTS

2.1 PIPING SYSTEM DATA SHEETS

- A. Piping system data sheets (PSDS) have been attached to this Specification and are incorporated herein by reference. Provide piping systems in accordance with piping system data sheets.

2.2 PIPE FITTINGS

- A. Provide rigid joints and fittings for all piping systems specified with a test pressure in the Pipe Schedule.

PART 3 - EXECUTION

3.1 PIPE SCHEDULE

- A. A Pipe Schedule has been attached to this Specification and is incorporated herein by reference. Install piping systems in accordance with Pipe Schedule.
- B. For pipes shown on the Drawings, but not referenced in the Pipe Schedule, CONTRACTOR to provide pipe material and fittings which are appropriate for the intended service and acceptable to the ENGINEER.

3.2 PREPARATION

- A. Inspect pipe and fittings before installation, clean ends thoroughly, and remove foreign matter and dirt from inside.

3.3 INSTALLATION

A. General:

1. Join pipe and fittings in accordance with manufacturer's instructions, unless otherwise shown or specified.

B. Joint Assembly:

1. Push-On Joints (PO):
 - a. Pipe and accessories shall be inspected for defects and cleanliness prior to lowering in the trench.
 - b. Spigot end shall be lubricated as per the manufacture approved lubricant prior to inserting in the bell end of the pipe.
 - c. The coating should be the equivalent of a brush coat of enamel paint. Lubricant can be applied to the pipe by hand, cloth, pad, sponge or glove. Lubrication of the gasket and/or ring groove may result in displacement during assembly.
 - d. Insert the beveled spigot end into the bell so that it is in contact with the gasket. Stabbing is not recommended and should be avoided to prevent damage to the gasket and joint.

C. Buried Pipe Installation:

1. Pipe Placement:
 - a. Keep trench dry until pipe laying and joining are completed.
 - b. Exercise care when lowering pipe into trench to prevent twisting or damage to pipe.
 - c. Prevent foreign material from entering pipe during placement.
 - 1) Close and block open end of last laid pipe section when placement operations are not in progress and at close of day's work.
 - d. Lay pipe upgrade with bell ends pointing in direction of laying.
 - e. Deflect pipe at joints for pipelines laid on a curve using unsymmetrical closure of spigot into bell. Utilize a maximum of 75 percent of manufacturer's recommended allowable joint deflection.
 - 1) If joint deflection of standard pipe lengths will not accommodate horizontal or vertical curves in alignment, provide:
 - a) Shorter pipe lengths.
 - f. Secure pipe, which has been placed from movement or damage while placing the next section of pipe.
 - g. Prevent uplift and floating of pipe prior to backfilling.

3.4 TESTING

- A. Refer to Section 01725 for pipeline testing and acceptance.

3.5 SUPPLEMENTS

- A. The following supplements are attached to this Specification section and incorporated herein by reference:
 1. 15100 PS – Pipe Schedule
 2. 15100 PSDS PVC2 – PVC Pressure Pipe
 3. 15100 PSDS WSP – Welded Steel Pipe
 4. 15100 PSDS DIP – Ductile Iron Pipe
 5. 15100 PSDS RCP – Reinforced Concrete Pipe

+ + END OF SECTION + +

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SECTION 15100 PS

PIPE SCHEDULE

1.1 DESCRIPTION

A. General:

1. This schedule is provided for the convenience of the CONTRACTOR. Some flow streams may be shown on the drawings, but not listed here.

B. Flow Stream IDs:

1. D – Drain

C. Pipe Materials:

1. PVC2 – PVC Pressure Pipe
2. WSP – Welded Steel Pipe
3. DIP – Ductile Iron Pipe

D. Joint Types:

1. B&S – Bell and Spigot
2. PO – Push On

1.2 PIPE SCHEDULE

Contractor shall install piping systems in accordance with the following pipe schedule:

FLOW STREAM I.D.	DESCRIPTION	SERVICE	EXPOSURE	SIZE RANGE	MATERIAL	JOINT TYPE	TEST PRESSURE	LINING	COATING SYSTEM/ COLOR	NOTES
D	Drain	Storm Drain	Buried	All	PVC2, DIP	B&S	5 psi	None	None	
Casing	Casing Pipe	Storm Drain	Buried	All	WSP	-	None	None	None	

SECTION 15100 PSDS DIP

PIPING SYSTEM DATA SHEET – DUCTILE IRON PIPE

ITEM	DESCRIPTION
Pipe	<p>Buried Piping: Pressure class as indicated in the pipe schedule. If not indicated:</p> <ul style="list-style-type: none"> • All pipe 14" through 20" shall be pressure class 250. <p>Flanged Piping: Special Thickness Class 53</p> <p>Pressure class shall be per AWWA C150/A21.50 and AWWA C151/A21.51</p>
Lining	N/A
Coating	<p>Unless otherwise specified in the Pipe Schedule, piping shall be coated as follows:</p> <p>Buried Piping:</p> <p>AWWA C151/A21.51: Minimum 1-mil asphaltic coating.</p>
Fittings	<p>Coated same as pipe.</p> <p>Push-On (PO): AWWA C110/A21.10 and C111/A21.11, gray or ductile iron, 250 psi minimum working pressure. American Cast Iron Pipe Co., Fastite Joint; U.S. Pipe and Foundry, Tyton Joint.</p> <p>Mechanical (MJ): AWWA C110/A21.10, C111/A21.11, and C153/A21.53 gray or ductile iron, 250 psi minimum working pressure. Follower glands shall be ductile iron.</p>
Joints	<p>Push-On (PO): 250 psi minimum working pressure, AWWA C110/A21.10 and C111/A21.11. American Cast Iron Pipe Co., Fastite Joint; U.S. Pipe and Foundry, Tyton Joint.</p> <p>Mechanical (MJ): 250 psi minimum working pressure.</p>
Bolting	<p>T-Bolts and other specialty bolts: Manufacturer's standard.</p> <p>Hex Bolts: ASTM A307, Grade B carbon steel hex head bolts</p> <p>Nuts: ASTM A563, Grade A carbon steel hex head nuts.</p>
Gaskets	<p>Push-On, Mechanical, and Proprietary Restrained Joints: Red Rubber (SBR) conforming to ANSI/AWWA C111/A21.11.</p>
Joint Lubricant	Manufacturer's standard.

SECTION 15100 PSDS PVC2

PIPING SYSTEM DATA SHEET – POLYVINYL CHLORIDE PRESSURE PIPE

ITEM	DESCRIPTION
Pipe	Conform to the requirements of AWWA C900 (4 to 42-inch) DR25 for PVC water transmission pipe, pressure class as shown in pipe schedule. If no pressure class is shown in pipe schedule, provide pressure class adequate to accommodate test pressure shown in pipe schedule.
Fittings	Ductile Iron per 15100 PSDS DIP – Ductile Iron Pipe. Transition fittings necessary for the proper connection shall be the standard of, and provided by, the manufacturer of the fittings.
Joints	Rubber-gasketed bell and spigot.
Gaskets	Conforming to the requirements of ASTM F477.
Joint Lubricant	Manufacturer’s standard.

SECTION 15100 PSDS WSP

PIPING SYSTEM DATA SHEET – WELDED STEEL PIPE

ITEM	DESCRIPTION
Pipe	Carbon steel ASTM A283/A283M Rev A Grade C or ASTM A285/A285M Grade C, sheet or coil, fabricated in accordance with AWWA C200, straight or spiral seam, thickness designed for 66 percent of minimum yield stress at hydrostatic test pressure, minimum thickness 1/4-inch, sizes are to be nominal outside diameters conforming to ASME B36.10M.
Coatings	Factory Applied Coating: Fusion Bonded Epoxy per AWWA C-213, 16 mil thickness. 3M Scotchkote 206N, or equal.
Joints	N/A
Fittings	N/A
Flanges	N/A
Bolting	N/A
Gaskets	<u>N/A</u>

SECTION 15120
PIPING SPECIALTIES

PART 1 - GENERAL

1.1 SUBMITTALS

- A. Shop Drawings:
 - 1. Manufacturer's data on materials, construction, end connections, ratings, overall lengths, etc.

PART 2 - PRODUCTS

2.1 MODULAR MECHANICAL SEAL

- A. Type: Interconnecting synthetic rubber links shaped and sized to continuously fill annular space between pipe and sleeve, blockout, or core-drilled opening in concrete slabs or walls.
- B. Features:
 - 1. Links: EPDM
 - 2. Bolts and nuts: Type 316 stainless steel
 - 3. Pressure plates: composite
 - 4. Temperature range: -40 to 250 degrees Fahrenheit
 - 5. Pressure rating: guaranteed by the manufacturer to provide a water-tight seal with a differential hydrostatic head of 40-feet of water
- C. Manufacturers and Products:
 - 1. PSI-Thunderline; Link-seal, Type S-316
 - 2. Or equal

2.2 PIPE TO MANHOLE CONNECTORS

- A. Type: Resilient rubber male-to-female wedge-style flexible connector between a circular gravity pipe and a circular opening core-drilled into a precast or cast-in-place concrete structure.
- B. Performance Requirements:
 - 1. Able to hold 10 psi head pressure for 10 minutes with no leakage
 - 2. Load Rating: 150 lbs per inch pipe diameter
- C. Materials:
 - 1. Body: resilient rubber material conforming to ASTM C923
 - 2. Hardware: 300 Series Stainless Steel conforming to ASTM C923, ASTM A666 and ASTM A240
- D. Manufacturer and Products
 - 1. Trelleborg Pipe Seals Milford, Inc., Model Kor-N-Seal I – 106 Series for pipes up to 18" diameter and Kor-N-Seal II – 206 Series for pipes from 20" to 54" in diameter.
 - 2. Or Equal

15120-1

PART 3 - EXECUTION

3.1 INSTALLATION

A. General

1. Follow all manufacturer's directions

+ + END OF SECTION + +

SECTION 15200

VALVES AND OPERATORS

PART 1 - GENERAL

1.1 SUBMITTALS

- A. Shop Drawings:
 - 1. Product data sheets for make and model.
 - 2. Complete catalog information, descriptive literature, specifications, and identification of materials of construction.
- B. Tests and inspection data.
- C. Operation and Maintenance Data as specified in Section 01330, SUBMITTAL PROCEDURES.

1.2 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. In accordance with manufacturer's directions.

PART 2 - PRODUCTS

2.1 GENERAL

- A. All valves shall be the same size as the pipe in which they are installed, unless specifically noted otherwise on the Drawings.
- B. All valves shall include all appurtenant parts (operators, chainwheels, handwheels, valve stems, floor stands, gear boxes, operating nut, etc.) for a complete operating valve.
 - 1. Valve shall be, as much as practical, fully factory assembled.
- C. Where Lead-Free Bronze or Brass is specified, materials shall be in compliance with California Health & Safety Code Section 116875. Not more than a weighted average of 0.25 percent of the wetted surface of the valve shall be lead. Valve shall be provided with a "hang tag" or other marking that easily identifies the valve as Lead-Free.
- D. Nuts, Bolts and Washers
 - 1. Hex Bolts: ASTM A320/A320M, Type 304 stainless steel, [Grade B8, Class 2](#)
 - 2. Nuts: ASTM F594, Type 304 stainless steel, [Grade B8, Class 2](#)
 - 3. Washers: Type 304 stainless steel

2.2 CHECK VALVES

- A. **CKV-01:** Flap Gate, 4 Inches to 60 Inches
 - 1. Service: Stormwater.
 - 2. Features:
 - a. Cast iron construction
 - b. Automatic operation
 - c. Fully adjustable linkage

15200-1

- d. Stainless steel studs, bolts and pins
- e. Bronze or rubber bushings
- f. Minimum 2.5-degree seating angle
- g. 125 lb ANSI flange drilling
- h. Resilient seat
- 3. Coatings and Linings:
 - a. Liquid epoxy, 12 mil minimum, for valve interior and exterior.
 - b. For potable water applications, epoxy lining shall be NSF 61 approved.
- 4. Manufacturer:
 - a. Waterman; F-25 Drainage Gate
 - b. HydroGate; Model 10C
 - c. Or equal.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Cleaning:
 - 1. Clean all mating faces of valve (threads, flange faces, etc.) prior to assembly.
 - 2. Remove all debris from valve body prior to assembly.
 - 3. Take extra care to clean mating faces of existing pipe and fittings which may have corrosion, dirt, debris and mineral build-up which should be removed for a proper fit.
- B. Apply joint compound, lubricant, etc. as recommended by valve manufacturer for proper installation prior to installation.
- C. Install valves in accordance with the Drawings and manufacturer's requirements.

3.2 INSTALLATION

- A. Install valves per manufacturer's recommendations.
- B. Install valves so handles operate from fully open to fully closed without encountering obstructions.
- C. Install valves in location and orientation for easy access for routine operation and maintenance. Access should be such that an operator can operate the valve by reaching a handle, chain, etc. at a height between 2'-6" and 5'-0" above adjacent work surface (for buried valves, this is accomplished with a t-handle wrench and the operating nut being within 12" of finished grade).

3.3 TESTS AND INSPECTION

- A. Valve may be either tested while testing pipelines, or as a separate step.
- B. Test that valves open and close smoothly under operating pressure conditions.
- C. Count and record number of turns to open and close valve; account for any discrepancies with manufacturer's data.

+ + END OF SECTION + +

15200-2

APPENDICES



CONSTRUCTION & DEMOLITION DEBRIS RECYCLING

APN: _____ Building Permit #: _____ J# _____ (if applicable) Date: _____

Owner Name: _____ Owner Mailing Address: _____ Phone () _____

Jobsite Contact: _____ Company: _____ Phone () _____

Jobsite Address: _____ Building Type: SF Res.-New NonRes-New NonRes-Addt./renov. Multifamily

1 Does your project meet any of the below criteria?

YES → Fill out the rest of this form. If no, check this box: The below criteria do not apply to my project.

- | | |
|------------------------|--|
| Non-residential | <ul style="list-style-type: none"> • Any new construction project that requires a permit • Any demolition projects that require a permit • Any additions that require a permit • Any alterations that require a permit |
|------------------------|--|

- | | |
|--------------------|---|
| Residential | <ul style="list-style-type: none"> • Any new construction project that requires a permit • Any demolition projects that require a permit • Any additions or alterations that increase the building's conditioned area, volume, or size |
|--------------------|---|

2 Will you use a Richmond Sanitary Service debris box?

YES → When setting up service, tell Richmond Sanitary Service this is for "C&D Recycling." When scheduling final inspection, bring in or send in receipts and weight tickets from the transfer station showing that your waste material went to "C&D Recycling." Remember, never put garbage in construction waste!

NO ↓

3 Will you haul your construction & demolition waste yourself?

YES → At final inspection, show receipts and weight tickets from the transfer station showing that your waste material went to "C&D Recycling." Remember, never put garbage in construction waste!

NO ↓

4 Fill out the next page.

Pre-

Construction Waste Management Plan (WMP) Instructions

Effective January 1, 2016, certain residential and non-residential building construction and demolition projects must meet Title 24 California Green Building Standards Code (CALGreen). For these projects, 65% of all waste generated must be recycled.

Specify in the table below the types and quantities of materials expected to be generated in your project. Indicate whether they will be reused on-site, recycled or disposed by completing the form below.

Material	Reuse	Recycle	Dispose	Facility/Service Providers to be used
Asphalt				
Brick				
Cardboard				
Carpet				
Concrete/Shotcrete				
Dirt/Clean Fill				
Gypsum Dry Wall **				
Job office paper, glass & plastic bottles, cans – Collect separately				
Metals				
Plant/ Tree Debris				
Roofing – asphalt composition shingle, tile, wood shake, tar or gravel				
Rock/Stone				
Wood (Pallets, lumber) **				
Other				



CITY OF SAN PABLO
City of New Directions

Construction Waste Management Report – Post Construction/Demolition

Final Inspection will not be scheduled until completed plan is submitted

APN: _____ Building Permit #: _____ J# _____ (if applicable) Date: _____

Owner Name: _____ Owner Mailing Address: _____ Phone () _____

Jobsite Contact: _____ Company: _____ Phone () _____

Jobsite Address: _____ Building Type: SF Res.-New NonRes-New NonRes-Addt./renov. Multifamily

Identify which materials were reused, recycled or disposed by completing the table below. If the materials were reused on site, describe the reuse application under the facilities/service providers' column. Salvaged materials from deconstruction should be designated as reuse. **Further instructions are on the back of form.**

Material	Reuse	Recycle	Dispose	Actual Facility/Service Providers Used	Weight (tons)
Asphalt					
Brick					
Cardboard					
Concrete/ Shotcrete					
Dirt/Clean Fill					
Gypsum Dry Wall					
Job office paper, glass & plastic bottles, cans, other					
Metal					
Plant /Tree Debris					
Roofing - asphalt composition shingle, tile, wood shake, tar or gravel					
Rock/stone					
Wood (pallets, lumber, etc)					
Other					
Other					

Material Recovery Summary

Total tons of materials disposed (not recycled): _____

Total tons of materials salvaged, reused, or recycled: _____

Percentage of materials recycled/reused: _____ %

Calculate pounds disposed per square footage of project _____

I certify that I have read the CalGreen Title 24 Building Code and understand the requirements of Section 4.408, 5.408, 301.1.1 and 301.3. The information I have provided is accurate to the best of my ability and meets the regulations.

Contractor signature: _____ Date: _____

Contractor license #: _____

Construction Waste Management Report (CWMMR) Post-Construction/Demolition Instructions

CWMMR (Post-Construction/Demolition):

This form must be filled out if contractor does not use Richmond Sanitary Service debris box service.

- Indicate the types and quantity of debris that were **actually** generated from the project (tons).
- Specify whether each material was reused, recycled or disposed
- Provide the name of each facility or service that was actually used for each type of material
- Attach receipts or gate-tags for all materials to verify their destination including subcontractors loads
- If using the "Waste Stream Reduction Alternative" method, add together all waste disposed and divide by the square footage of project. Residential projects must be less than 4lbs/sf and non-residential and high rise buildings (4 stories or more) must be less than 2 lbs/sf.
- Provide any additional information (including photographs) that are relevant to determining compliance with the code
- Sign at the bottom

Upon completion of construction and demolition activities, but before the final inspection, the person responsible for the project shall submit the CWM Report and the required documentation (listed above) to demonstrate achievement of the diversion requirement. Submit the report to the building department for approval.

The CWM Report will be reviewed and a determination made as to whether the project manager achieved the diversion requirement and demonstrated compliance with the code. Questions can be directed to the city's building department.



Sheetrock

Mixed C&D materials are sorted, recycled, and reused if garbage is kept separated.

Metals



Cardboard



Wood



TEMPORARY ACCESS AGREEMENT AND RIGHT OF ENTRY

APN _____ or street address ("Property")

This Temporary Access Agreement and Right of Entry ("Agreement") is entered into as of _____ 201_ between the City of San Pablo, a municipal corporation ("City") and _____. ("Grantee"). By this Agreement, City grants to Grantee the right to enter upon the Property shown on the attached and incorporated Exhibit "A" subject to the following terms and conditions:

1. **Purpose.** Grantee desires to _____ on the Property, as described [in the Temporary Use Permit attached as Exhibit "B"]. This Right of Entry and Temporary Access is granted to Grantee solely for the purpose of allowing Grantee and its representatives, contractors, consultants and agents (collectively "Grantee" for purposes of this Agreement) to _____ as further described in Grantee's application to the extent not inconsistent with the terms of this Agreement. This Agreement does not allow for any other use or work of any other nature on the Property. No hazardous materials shall be brought or handled at any time on the Property.

2. **Term.** The Grantee's right of entry and right of access to the Property shall commence on _____ 20__ and shall automatically terminate on _____. This Agreement is revocable immediate upon notice by City. Upon notice of revocation, Grantee shall suspend all activity on the Property immediately.

3. **Condition of Property.** Grantee shall make no improvements to the Property without City's approval. Grantee shall be responsible for all damage to the Property and shall immediately restore the Property to its current condition at the expiration or termination of this Agreement, as directed by City. Grantee shall provide _____ as security to ensure the property is restored.

4. **Notice to City.** The day that Grantee desires access to the Property, Grantee shall first contact _____. City retains the right to enter the Property at all times.

5. **Utilities and Other Expenses.** Grantee agrees to pay for all costs related to use of the Property, including any utility costs.

6. **Assumption of Risk Releases and Indemnity.** On behalf of itself and its agents, representatives, assigns, employees and contractors, Grantee assumes all risk of loss or injury arising from its entry onto the Property. City, its officers, agents, contractors, volunteers and employees shall not be liable for any injury, sickness, disease or death or any person or damage to property directly or indirectly related to any act or failure to act arising from Grantee's entry or use of the Property. Grantee shall indemnify, hold harmless, and defend City, its officers, agents, contractors, volunteers and employees from and against any and all liability, costs, or expense for loss of or damage to property, or for liability, costs, or for injuries to, sickness, disease or death of any person (including, but not limited to, the property and employees of each party to this Agreement) arising or resulting from Grantee's entry on and use of the Property. This provision shall survive termination of this Agreement.

7. **Insurance.** This right to enter the Property shall not be effective until evidence of insurance acceptable to the City is provided. Grantee shall procure and maintain for the duration of the contract, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the Lessee's operation and use of the leased premises. The cost of such insurance shall be borne by the Lessee.

a. **Minimum Scope of Insurance.** Coverage shall be at least as broad as:

i. Insurance Services Office Commercial General Liability coverage (occurrence Form CG 20 11 01 96).

ii. Workers' Compensation insurance as required by the State of California and Employer's Liability Insurance (for lessees with employees).

iii. Property Insurance against all risks of loss to any tenant improvements or betterments.

b. Minimum Limits of Insurance. Grantee shall maintain limits no less than:

i. General Liability: \$2,000,000 per occurrence for bodily injury, personal injury, property damage and contractual liability. If Commercial General Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location, or the general aggregate limit shall be twice the required occurrence limit. If Grantee's is working within 50 feet of a railroad right of way, the Grantee shall have removed any exclusion on their liability policy limiting coverage for work near a railroad, or shall provide a Railroad Protective Liability policy in favor of the City. Limits for such coverage shall be no less than \$5,000,000.

ii. Workers' Compensation as required by the State of California. The Workers' Compensation policy shall be endorsed with a waiver of subrogation in favor of the entity for all work performed by the contractor, its employees, agents, and subcontractors.

iii. Employer's Liability: \$1,000,000 each accident, \$1,000,000 policy limit bodily injury by disease, \$1,000,000 each employee bodily injury by disease.

iv. Property Insurance: Full replacement cost with no coinsurance penalty provision for all personal property.

c. Deductibles and Self-Insured Retentions. Any deductibles or self-insured retentions must be declared to and approved by the City. At the option of the City, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the City, its officers, officials, employees and volunteers; or the Grantee shall provide a financial guarantee satisfactory to the City guaranteeing payment of losses and related investigations, claim administration, and defense expenses.

d. Other Insurance Provisions. The general liability policy is to contain, or be endorsed to contain, the following provisions:

i. The City, its officers, officials, employees, volunteers, contractors and agents are to be covered as insureds with respect to liability arising out of ownership, maintenance, or use of that part of the premises leased to the lessee.

ii. The Grantee's insurance coverage shall be primary insurance as respects the City, its officers, officials, employees, volunteers, contractors and agents. Any insurance or self-insurance maintained by the City its officers, officials, employees, volunteers, contractors and agents shall be in excess of the Grantee's insurance and shall not contribute with it.

iii. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be cancelled, except after thirty (30) day's prior written notice has been provided to the City.

e. Acceptability of Insurers. Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII, unless otherwise acceptable by City.

f. Verification of Coverage. Lessee shall furnish City with original certificates and amendatory endorsements affecting coverage required by this clause. The endorsements should be on forms provided by the City or on other than the City's forms, provided those endorsements or policies conform to the requirements. All certificates and endorsements are to be received and approved by the City before work commences. However, failure to do so shall not operate as a waiver of these insurance requirements. The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements affecting the coverage required by these specifications at any time.

g. Contractors and Subcontractors. Grantee's insurance shall cover work by its contractors and subcontractors or the contractors and subcontractors must provide evidence of meeting the insurance requirements set forth above.

h. Higher limits. If Grantee maintains higher limits than the minimums above, City requires and shall be entitled to coverage for the higher limits maintained. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to City.

i. Subrogation. Grantee hereby grants to City a waiver of any right to subrogation which any insurer of Grantee may acquire against City by virtue of the payment of any loss under such insurance. Grantee agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation, but this provision applies regardless of whether or not the City has received a waiver of subrogation endorsement from the insurer.

j. Modification. Grantee reserves the right to modify these requirements at any time, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstance.

8. **No Assignment.** Grantee shall not assign or otherwise transfer any rights under this Agreement, and any purported assignment or transfer shall automatically revoke the right to enter the Property.

9. **Compliance with Laws.** Grantee shall obtain and maintain all permits and approvals required for the activities under this Agreement and shall comply with all laws and regulations now in effect or that may become effective during the term of this Agreement. Duties and obligations imposed by this Agreement and rights and remedies available under this Agreement are in addition to, and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

Should any discharge, leakage, spillage, emission or pollution of any type occur upon or from the Property due to Grantee's entry and use of the Property, then Grantee, at its sole cost, shall clean all affected property to the satisfaction of the City and any governmental body having jurisdiction.

10. **No Dedication.** Nothing contained in this Agreement shall be deemed a gift or dedication of any portion of the Property to or for the general public or for any public purpose whatsoever.

11. **Possessory Interest Tax.** Grantee acknowledges that Contra Costa County may impose a possessory interest tax for its use of the Property, and if such tax is imposed that Grantee shall be responsible for its payment.

12. **Governing Law:** This Agreement shall be construed and enforced in accordance with the laws of the State of California.

13. **Attorneys' Fees.** In the event that either party institutes any action, suit or other

dispute resolution proceeding based on this Agreement against the other party, the prevailing party is entitled to receive all costs and expenses associated with the actions, suit or proceeding, but not limited to attorneys' fees and court costs.

14. **No waiver.** No waiver by any party, at any time, of any breach of any provision of this Agreement shall be deemed a waiver or breach of any other provision or consent to a subsequent breach of the same or another provision. If any action by any party shall require the consent or approval of another party, such consent or approval of such action on any one occasion shall not be deemed consent to or approval of such action on any subsequent occasion or consent or approval of any other action.

15. **Agreement Construction.** The parties acknowledge that this Agreement, as executed, shall not be construed for or against either party.

16. **Amendment of Agreement.** This Agreement may only be amended by a written instrument signed by both parties.

17. **Entire Agreement.** This Agreement represents the entire agreement between City and Grantee regarding entry upon the Property.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date written above first.

CITY: City of San Pablo

By _____

Date _____, 201_

GRANTEE: _____

By _____

Date _____, 201_

Exhibits:

A – Description of Property

[B – Temporary Use Permit]



City of San Pablo

Employee Holiday Schedule for 2017

Sunday, January 1st Office Closed Monday, January 2nd	New Year's Day <i>(Observed for 1/1/17)</i>
Monday, January 16th	Martin Luther King Jr., Day
Monday, February 20th	President's Day
Monday, May 29th	Memorial Day
Tuesday, July 4th	Independence Day
Monday, September 4th	Labor Day
Monday, October 9th	Columbus Day
Saturday, November 11th Office Closed Thursday, November 9th	Veterans Day <i>(Observed for 11/11/17)</i>
Office Closed Wednesday, November 22nd	<i>(Observed for 11/24/17 for Day After Thanksgiving)</i>
Thursday, November 23rd	Thanksgiving Day

CLOSURE FOR HOLIDAY **

Monday, **December 25, 2017** through Tuesday, **January 2, 2018**

Monday, December 25th	Christmas Day
Tuesday, December 26th	Observed for 12/24/16 (Christmas EVE)
Wednesday, December 27th	Vacation or Comp/Admin. Leave
Thursday, December 28th	Vacation or Comp/Admin. Leave
Monday, January 1st	New Year's Day
Tuesday, January 2nd	Observed for 01/01/18 (New Year's EVE)

****** Dates subject to change

[DATE]

Dear Property Owner:

[NAME OF CONTRACTOR] is the general construction contractor for the City of San Pablo Public Works Department for the project known as [PROJECT NAME] that may affect your property.

The general scope of construction for the above-referenced project includes the following:

- XX
- XX

The overall schedule for construction work is as follows:

Mobilization: **[DATE]**

Construction completion: **[DATE]**

Traffic Control including No Parking Signs will be placed as required for reasons of safety.

Local access will be available at all times but may be subject to delays.

If you have any questions regarding the project construction, please contact our on-site foreman, [NAME OF FOREMAN] of [NAME OF CONTRACTOR] at [PHONE NUMBER] or Leck Sounghanya of the City of San Pablo at (510) 215-3067.

We appreciate your cooperation on this project.

Sincerely,

[NAME]
[TITLE]

ATTACHMENT (0) –
Cc/file: City of San Pablo Public Works Department

APPENDIX A

GEOTECHNICAL DESIGN REPORT

(See CITY'S PUBLIC WORKS OFFICE)

APPENDIX B

**ENVIRONMENTAL INITIAL
STUDY/MITIGATED NEGATIVE
DECLARATION**

(See CITY'S PUBLIC WORKS OFFICE)

APPENDIX C

PERMITS

(See CITY'S PUBLIC WORKS OFFICE)