



**CONTRACT DOCUMENTS
FOR**

**Water Line Improvement – Kent Drive
CIP PROJECT NO. 562-56421**

**Bid Opening
Wednesday, March 26, 2025 at 2:00 p.m.**

**Location of Bid Submittal:
City Hall
City Clerk's Office, 3rd Floor
150 City Park Way
Brentwood, CA 94513**

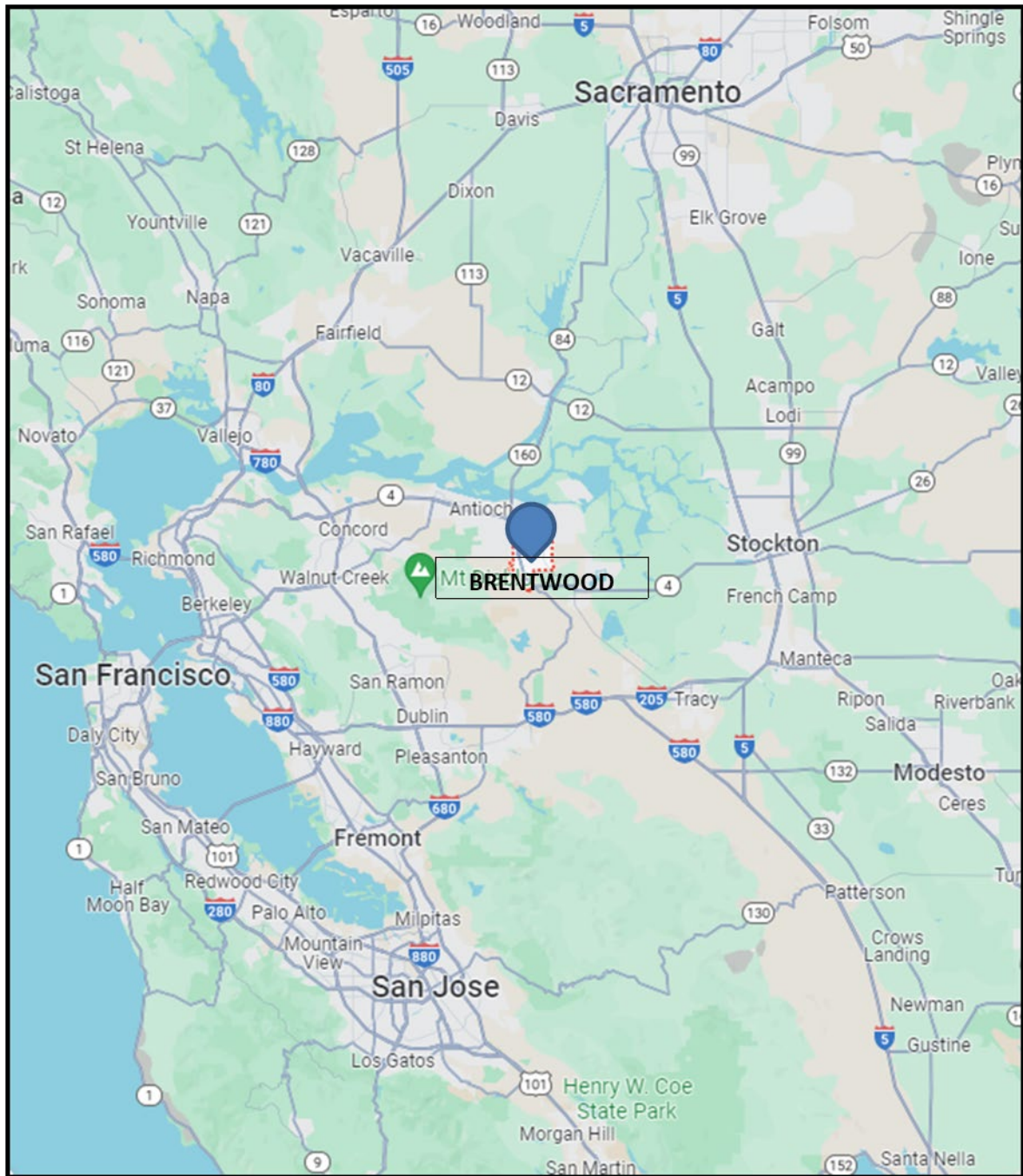
**Approved by:
Allen Baquilar
Director of Engineering/City Engineer**



Signature

2/6/2025

Date



LOCATION MAP
City of Brentwood

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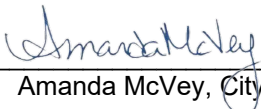
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Notice Inviting Bids

1. **Bid Submission.** The City of Brentwood (“City”) will accept sealed bids for its Water Line Improvement – Kent Drive Project, CIP Project No. 562-56421 (“Project”), by or before Wednesday, March 26, 2025, at 2:00 p.m., at its City Clerk’s office, located at City Hall, Third Floor, 150 City Park Way, Brentwood, California 94513. Shortly thereafter, the bids will be publicly opened and read aloud at City Hall, Council Chamber, 150 City Park Way, Brentwood, CA 94513.
2. **Project Information.**
 - 2.1 **Location and Description.** The Project is located at Kent Drive between Grenadier Way and Tayberry Lane, and is described as follows: Install approximately 600 linear of new 12-inch water main parallel to the existing 8-inch water main along Kent Drive between Grenadier Way and Tayberry Lane.
 - 2.2 **Time for Final Completion.** The Project must be fully completed within 30 calendar days from the start date set forth in the Notice to Proceed. City anticipates that the Work will begin on or about May 5, 2025, but the anticipated start date is provided solely for convenience and is neither certain nor binding.
 - 2.3 **Estimated Cost.** The estimated construction cost is \$317,000.
3. **License and Registration Requirements.**
 - 3.1 **License.** This Project requires a valid California contractor’s license for the following classification(s): Class “A”.
 - 3.2 **DIR Registration.** City may not accept a Bid Proposal from or enter into the Contract with a bidder, without proof that the bidder is registered with the California Department of Industrial Relations (“DIR”) to perform public work pursuant to Labor Code § 1725.5, subject to limited legal exceptions.
4. **Contract Documents.** Bidders must request and obtain an electronic copy of the plans, specifications, bid forms and contract documents for the Project, and any addenda thereto (“Contract Documents”) directly from the City (at no charge) by completing and submitting the “Document Request Form” located on the City’s website [at https://www.brentwoodca.gov/projects-bids-rfps](https://www.brentwoodca.gov/projects-bids-rfps). The City may reject a bid submitted by a bidder that did not obtain the Contract Documents from the City as required.
5. **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 within ten days after City issues the Notice of Potential Award, the successful bidder will execute the Contract and submit the payment and performance bonds, insurance certificates and endorsements, valid Certificates of Reported Compliance as required under the California Air Resources Board’s In-Use Off-Road Diesel-Fueled Fleets Regulation (13 CCR § 2449 et seq.) (“Off-Road Regulation”), if applicable, and any other submittals required by the Contract Documents, including information regarding local purchases and local labor if required by the Instructions to Bidders, using the form provided with the Notice of Potential Award, and as specified in the Notice of Potential Award.
6. **Prevailing Wage Requirements.**
 - 6.1 **General.** Pursuant to California Labor Code § 1720 et seq., 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.** The prevailing rates are on file with the City and 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 DIR, under Labor Code § 1771.4.
- 7. Performance and Payment Bonds.** The successful bidder will be required to provide performance and payment bonds, each for 100% of the Contract Price, as further specified in the Contract Documents.
- 8. Substitution of Securities.** Substitution of appropriate securities in lieu of retention amounts from progress payments is permitted under Public Contract Code § 22300.
- 9. Subcontractor List.** Each Subcontractor must be registered with the DIR to perform work on public projects. Each bidder must submit a completed Subcontractor List form with its Bid Proposal, including the name, location of the place of business, California contractor license number, DIR registration number, and percentage of the Work to be performed (based on the base bid price) for each Subcontractor that 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.** All bidders should carefully review the Instructions to Bidders for more detailed information before submitting a Bid Proposal. The definitions provided in Article 1 of the General Conditions apply to all of the Contract Documents, as defined therein, including this Notice Inviting Bids.

By:  Date: 3/3/2025
Amanda McVey, City Clerk

Publication Date: March 7, 2025

END OF NOTICE INVITING BIDS

Instructions to Bidders

Each Bid Proposal submitted to the City of Brentwood ("City") for its Water Line Improvement – Kent Drive Project, CIP Project No. 562-56421 ("Project") must be submitted in accordance with the following instructions and requirements:

1. Bid Submission.

- 1.1 General.** Each Bid Proposal must be completed, using the form provided in the Contract Documents, signed, and submitted to City in a sealed envelope, with all required forms and attachments, by or before the date and time set forth in Section 1 of 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. City reserves the right to postpone the date or 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 City. The bid price(s) must include all costs to perform the Work as specified, including all labor, material, supplies, and equipment and all other direct or indirect costs such as applicable taxes, insurance and overhead.
- 1.2 Bid Envelope.** The sealed envelope containing the Bid Proposal and all required forms and attachments must be clearly labeled and addressed as follows:

BID PROPOSAL:

Water Line Improvement – Kent Drive Project
CIP Project No. 562-56421

City Clerk
Attn: Amanda McVey
City of Brentwood
150 City Park Way
Brentwood, CA 94513

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 §§ 1725.5 and 1771.1):

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

- 1.3 DIR Registration.** Subject to limited legal exceptions for joint venture bids and federally-funded projects, City may not accept a Bid Proposal from a bidder without proof that the bidder is registered with the DIR to perform public work under Labor Code § 1725.5. If City is unable to confirm that the bidder is currently registered with the DIR, City may disqualify the bidder and return its bid unopened. (Labor Code §§ 1725.5 and 1771.1(a).)
- 2. Bid Proposal Form and Enclosures.** Each Bid Proposal must be completed in ink using the Bid Proposal form included with the Contract Documents. The Bid Proposal form must 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 exceptions or terms such as "negotiable," "will negotiate," or similar, will be considered nonresponsive. Each Bid Proposal must be accompanied by bid security, as set forth in Section 4 below, and by a completed Subcontractor List and Non-Collusion Declaration using the forms included with the Contract Documents, and any other required enclosures, as applicable.

- 3. 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 Corporations Code § 313.
- 4. 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 or certified check, made payable to the City, or bid bond using the form included in the Contract Documents and executed by a surety licensed to do business in the State of California. The bid security must guarantee that, within ten days after issuance of the Notice of Potential Award, the bidder will: execute and submit the enclosed Contract for the bid price; submit payment and performance bonds for 100% of the maximum Contract Price; submit the insurance certificates and endorsements; and submit valid Certificates of Reported Compliance as required by the Off-Road Regulation, if applicable, and any other submittals, if any, required by the Contract Documents, including information regarding local purchases and local labor if required by these Instructions to Bidders, using the form provided with the Notice of Potential Award, and as specified in the Notice of Potential Award. A Bid Proposal may not be withdrawn for a period of 60 days after the bid opening without forfeiture of the bid security, except as authorized for material error under Public Contract Code § 5100 et seq.
- 5. Requests for Information.** Questions or requests for clarifications regarding the Project, the bid procedures, or any of the Contract Documents must be submitted in writing to engineering@brentwoodca.gov. Oral responses are not authorized and are not binding on the City. Bidders should submit any such written inquiries no later than 4:00 p.m. at least five Working Days before the scheduled bid opening. Questions received any later might not be addressed before the bid deadline. An interpretation or clarification by City in response to a written inquiry will be issued in an addendum.
- 6. Pre-Bid Investigation.**

 - 6.1 General.** Each bidder is solely responsible at its sole expense for diligent and thorough review of the Contract Documents, examination of the Project site, and reasonable and prudent inquiry concerning known and potential site and area conditions prior to submitting a Bid Proposal. Each bidder is responsible for knowledge of conditions and requirements which reasonable review and investigation would have disclosed. However, except for any areas that are open to the public at large, bidders may not enter property owned or leased by the City or the Project site without prior written authorization from City.
 - 6.2 Document Review.** Each bidder is responsible for review of the Contract Documents and any informational documents provided "For Reference Only," e.g., as-builts, technical reports, test data, and the like. A bidder is responsible for notifying City of any errors, omissions, inconsistencies, or conflicts it discovers in the Contract Documents, acting solely in its capacity as a contractor and subject to the limitations of Public Contract Code § 1104. Notification of any such errors, omissions, inconsistencies, or conflicts must be submitted in writing to the City no later than five Working Days before the scheduled bid opening. (See Section 5, above.) City expressly disclaims responsibility for assumptions a bidder might draw from the presence or absence of information provided by City.
 - 6.3 Project Site.** Questions regarding the availability of soil test data, water table elevations, and the like should be submitted to the City in writing, as specified in Section 5, above. Any subsurface exploration at the Project site must be done at the bidder's expense, but only with prior written authorization from City. All soil data and analyses available for inspection or provided in the Contract Documents apply only to the test hole locations. Any water table elevation indicated by a soil test report existed on the date the test hole was drilled. The

bidder is responsible for determining and allowing for any differing soil or water table conditions during construction. Because groundwater levels may fluctuate, difference(s) in elevation between ground water shown in soil boring logs and ground water actually encountered during construction will not be considered changed Project site conditions. Actual locations and depths must be determined by bidder's field investigation. The bidder may request access to underlying or background information on the Project site in City's possession that is necessary for the bidder to form its own conclusions, including, if available, record drawings or other documents indicating the location of subsurface lines, utilities, or other structures.

- 6.4 Utility Company Standards.** The Project must be completed in a manner that satisfies the standards and requirements of any affected utility companies or agencies (collectively, "utility owners"). The successful bidder may be required by the third party utility owners to provide detailed plans prepared by a California registered civil engineer showing the necessary temporary support of the utilities during coordinated construction work. Bidders are directed to contact the affected third party utility owners about their requirements before submitting a Bid Proposal.
- 7. 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.
- 8. Addenda.** Any addenda issued prior to the bid opening are part of the Contract Documents. Subject to the limitations of Public Contract Code § 4104.5, City reserves the right to issue addenda prior to bid time. Each bidder is solely responsible for ensuring it has received and reviewed all addenda prior to submitting its bid. Bidders should check City's website periodically for any addenda or updates on the Project at: <http://www.brentwoodca.gov/projects-bids-rfps>.
- 9. 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. A request for substitution must be submitted within 35 days after Notice of Potential Award unless otherwise provided in the Contract Documents. 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 § 3400(c).
- 10. Bid Protest.** Any bid protest against another bidder must be submitted in writing and received by the City Clerk at 150 City Park Way, Brentwood, CA 94513 or sent via email at CityClerk@brentwoodca.gov before 5:00 p.m. no later than two Working Days following bid opening ("Bid Protest Deadline") and must comply with the following requirements:
- 10.1 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. For purposes of this Section 10, a "Working Day" means a day that City is open for normal business, and excludes weekends and holidays observed by City. Pursuant to Public Contract Code § 4104, inadvertent omission of a Subcontractor's DIR registration number on the Subcontractor List form is not grounds for a bid protest, provided it is corrected within 24 hours of the bid opening or as otherwise provided under Labor Code § 1771.1(b).
- 10.2 Protest Contents.** The bid protest must contain a complete statement of the basis for the protest and must include 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 protesting bidder and any person submitting the protest on behalf of or as an authorized representative of the protesting bidder.

- 10.3 Copy to Protested Bidder.** Upon submission of its bid protest to City, the protesting bidder must also concurrently transmit the protest and all supporting documents to the protested bidder, and to any other bidder who has a reasonable prospect of receiving an award depending upon the outcome of the protest, by email or hand delivery to ensure delivery before the Bid Protest Deadline.
- 10.4 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 attach 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 responding on behalf of or representing the protested bidder if different from the protested bidder.
- 10.5 Copy to Protesting Bidder.** Upon submission of its response to the bid protest to the City, the protested bidder must also concurrently transmit by email or hand delivery, by or before the Response Deadline, a copy of its response and all supporting documents to the protesting bidder and to any other bidder who has a reasonable prospect of receiving an award depending upon the outcome of the protest.
- 10.6 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 a 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.
- 10.7 Right to Award.** City reserves the right, acting in its sole discretion, to reject any bid protest that it determines lacks merit, 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.
- 11. Reservation of Rights.** City reserves the unfettered right, acting in its sole discretion, to waive or to decline to waive any immaterial bid irregularities; to accept or reject any or all bids; to cancel or reschedule the bid; to postpone or abandon the Project entirely; or to perform all or part of the Work with its own forces. The Contract will be awarded, if at all, within 60 days after opening of bids or as otherwise specified in the Special Conditions, to the responsible bidder that submitted the lowest responsive bid. Any planned start date for the Project represents the City's expectations at the time the Notice Inviting Bids was first issued. City is not bound to issue a Notice to Proceed by or before such planned start date, and it reserves the right to issue the Notice to Proceed when the City determines, in its sole discretion, the appropriate time for commencing the Work. The City expressly disclaims responsibility for any assumptions a bidder might draw from the presence or absence of information provided by the City in any form. Each bidder is solely responsible for its costs to prepare and submit a bid, including site investigation costs.
- 12. Bonds.** Within ten calendar days following City's issuance of the Notice of Potential Award to the successful bidder, the bidder must submit payment and performance bonds to City 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.

13. **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. The successful bidder must also obtain a City business license within 10 days following City's issuance of the Notice of Potential Award. Subcontractors must also obtain a City business license before performing any Work.
14. **Ineligible Subcontractor.** Any Subcontractor who is ineligible to perform work on a public works project under Labor Code §§ 1777.1 or 1777.7 is prohibited from performing work on the Project.
15. **Safety Orders.** If the Project includes construction of a pipeline, sewer, sewage disposal system, boring and jacking pits, or similar trenches or open excavations, which are five feet or deeper, 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 § 6707.
16. **In-Use Off-Road Diesel-Fueled Fleets.** If the Project involves the use of vehicles subject to the California Air Resources Board's In-Use Off-Road Diesel-Fueled Fleets Regulation (13 CCR § 2449 et seq.) ("Off-Road Regulation"), then within ten calendar days following City's issuance of the Notice of Potential Award to the successful bidder, the bidder must submit to City valid Certificates of Reported Compliance for its fleet and its listed Subcontractors, if applicable, in accordance with the Off-Road Regulation, unless exempt under the Off-Road Regulation.
17. **Bid Schedule.** Each bidder must complete the Bid Schedule form with unit prices as indicated, and submit the completed Bid Schedule with its Bid Proposal.
 - 17.1 **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, the submitted base bid or bid alternate total will be adjusted to reflect the corrected amount as the product of the estimated quantity and the unit cost. 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 § 5100 et seq.
 - 17.2 **Estimated Quantities.** Unless identified as a "Final Pay Quantity," 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, and no increase in the unit price, and without regard to the percentage increase or decrease of the estimated quantity and the actual quantity.

END OF INSTRUCTIONS TO BIDDERS

Bid Proposal

**Water Line Improvement – Kent Drive Project
CIP Project No. 562-56421**

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

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, including all labor, materials, supplies, and equipment and all other direct or indirect costs including, but not limited to, taxes, insurance and all overhead, for the following price (“Base Bid”):
\$ _____.

2. **Addenda.** Bidder agrees that it has confirmed receipt of or access to, and reviewed, all addenda issued for this bid. Bidder waives any claims it might have against the City based on its failure to receive, access, or review any addenda for any reason. Bidder specifically acknowledges receipt of the following addenda:

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

3. **Bidder’s Certifications and Warranties.** By signing and submitting this Bid Proposal, Bidder certifies and 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 § 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 Responsibility.** Bidder is a responsible bidder, with the necessary ability, capacity, experience, skill, qualifications, workforce, equipment, and resources to perform or cause the Work to be performed in accordance with the Contract Documents and within the Contract Time.
- 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. All statements and information provided in this Bid Proposal and enclosures are true and correct to the best of Bidder’s knowledge.
- 3.5 **Nondiscrimination.** In preparing this bid, the Bidder has not engaged in discrimination against any prospective or present employee or Subcontractor on grounds of race, color, ancestry, national origin, ethnicity, religion, sex, sexual orientation, age, disability, or marital status.
- 3.6 **Iran Contracting Act.** If the Contract Price exceeds \$1,000,000, Bidder is not identified on a list created under the Iran Contracting Act, Public Contract Code § 2200 et seq. (the “Act”), as a person engaging in investment activities in Iran, as defined in the Act, or is otherwise expressly exempt under the Act.

4. **Award of Contract.** By signing and submitting this Bid Proposal, Bidder agrees that, if City issues the Notice of Potential Award to Bidder, then within ten days following issuance of the Notice of Potential Award to Bidder, Bidder will do all of the following:
- 4.1 **Execute Contract.** Enter into the Contract with City in accordance with the terms of this Bid Proposal, by signing and submitting to City the Contract prepared by City using the form included with the Contract Documents;
 - 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;
 - 4.3 **Insurance Requirements.** Submit to City the insurance certificate(s) and endorsement(s) as required by the Contract Documents; and
 - 4.4 **Certificates of Reported Compliance.** Submit to City valid Certificates of Reported Compliance for its fleet and its listed Subcontractors, if applicable, if the Project involves the use of vehicles subject to the Off-Road Regulation. (See Section 16 of the Instructions to Bidders.)
 - 4.5 **Local Purchase and Labor Information (If Required).** Submit to City information regarding expected local purchases and local labor for the Project, if required by the Instructions to Bidders, using the form provided with the Notice of Potential Award.
5. **Bid Security.** As a guarantee that, if awarded the Contract, Bidder 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 one of the following forms (check one):

_____ A cashier's check or certified check payable to City and issued by _____ [Bank name] 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.

[Signatures are on the following page.]

This Bid Proposal is hereby submitted on _____, 2025.

s/ _____

Name and Title

s/ _____
[See Section 3 of Instructions to Bidders]

Name and Title

Company Name

License #, Expiration Date, and Classification

Address

DIR Registration #

City, State, Zip

Phone

Contact Name

Contact Email

END OF BID PROPOSAL

Bid Schedule

This Bid Schedule must be completed in ink and included with the sealed Bid Proposal. Pricing must be provided for each Bid Item as indicated. Items marked "(SW)" are Specialty Work that must be performed by a qualified Subcontractor. The lump sum or 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.

AL = Allowance CF = Cubic Feet CY = Cubic Yard EA = Each LB = Pounds
 LF = Linear Foot LS = Lump Sum SF = Square Feet TON = Ton (2000 lbs)

| BID ITEM NO. | ITEM DESCRIPTION | EST. QTY. | UNIT | UNIT COST | EXTENDED TOTAL AMOUNT |
|--------------|---|-----------|------|-----------|-----------------------|
| 1 | Temporary Traffic Control System | 2 | LS | \$ | \$ |
| 2 | Mobilization | 1 | LS | \$ | \$ |
| 3 | Construction Surveying | 1 | LS | \$ | \$ |
| 4 | Clearing and Grubbing | 1 | LS | \$ | \$ |
| 5 | Monument Preservation and Restoration | 1 | LS | \$ | \$ |
| 6 | Water Pollution Control | 1 | LS | \$ | \$ |
| 7 | Property Owner Notifications + HOA Coordination | 1 | LS | \$ | \$ |
| 8 | Potholing | 1 | LS | \$ | \$ |
| 9 | Replace Striping, Pavement Markers, and Pavement Markings | 1 | LS | \$ | \$ |
| 10 | Trench Sheet piling, Shoring & Bracing per Cal/OSHA | 1 | LS | \$ | \$ |
| 11 | New Water Main Tie-in to Existing Water Main | 2 | EA | \$ | \$ |
| 12 | 8" Gate Valve | 2 | EA | \$ | \$ |
| 13 | 8" PVC C-900 DR14 (305 psi) + Trench Restoration | 577 | LF | \$ | \$ |
| 14 | Flushing, Hydrostatic Testing, Disinfection & Bac-T Testing | 1 | LS | \$ | \$ |

* Final Pay Quantity

TOTAL BASE BID: Items 1 through 14 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 _____ [title] of _____
[business name], 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 not paid and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

This declaration is intended to comply with California Public Contract Code § 7106 and Title 23 U.S.C § 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 [print]

END OF NONCOLLUSION DECLARATION

Bid Bond

_____ (“Bidder”) has submitted a bid, dated _____, 2025 (“Bid”), to the City of Brentwood (“City”) for work on the Water Line Improvement – Kent Drive Project, CIP Project No. 562-56421 (“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 City in accordance with the terms of the Bid.
2. **Submittals.** Within ten days following issuance of the Notice of Potential Award to Bidder, Bidder must submit to City the following:
 - 2.1 **Contract.** The executed Contract, using the form provided by City in the Project contract documents (“Contract Documents”);
 - 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;
 - 2.4 **Insurance.** The insurance certificate(s) and endorsement(s) required by the Contract Documents;
 - 2.5 **Certificates of Reported Compliance.** Valid Certificates of Reported Compliance for its fleet and its listed Subcontractors, if applicable, in accordance with the In-Use Off-Road Diesel-Fueled Fleets Regulation (13 CCR § 2449 et seq.) (“Off-Road Regulation”), if the Project involves the use of vehicles subject to the Off-Road Regulation; and any other documents required by the Instructions to Bidders or Notice of Potential Award, including the submittal for local purchase and local labor information if required by the Instructions to Bidders, using the form provided with the Notice of Potential Award.
3. **Enforcement.** If Bidder fails to execute the Contract or to submit the bonds, insurance certificates, and valid Certificates of Reported Compliance 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 and 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 60 days

following the bid opening or until this Bid Bond is returned to Bidder, whichever occurs first.
Surety waives the provisions of Civil Code §§ 2819 and 2845.

This Bid Bond is entered into and effective on _____, 2025

SURETY:

Business Name

s/ _____

Date

Name, Title

(Attach Acknowledgment with Notary Seal and Power of Attorney)

BIDDER:

Business Name

s/ _____

Date

Name, Title

END OF BID BOND

Bidder's Questionnaire

**Water Line Improvement - Kent Drive
CIP Project No. 562-56421**

Within 48 hours following a request by City, a bidder must submit to City a completed, signed Bidder's Questionnaire using this form and all required attachments, including clearly labeled additional sheets as needed. City may request the Questionnaire from one or more of the apparent low bidders following the bid opening, and may use the completed Questionnaire as part of its investigation 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 A: General Information

Bidder Business Name: _____ ("Bidder")

Check One: Corporation (State of incorporation: _____)
 Partnership
 Sole Proprietorship
 Joint Venture of: _____
 Other: _____

Main Office Address and Phone: _____

Local Office Address and Phone: _____

Website Address: _____

Owner of Business: _____

Contact Name and Title: _____

Contact Phone and Email: _____

Bidder's California Contractor's License Number(s): _____

Bidder's DIR Registration Number: _____

Part B: Bidder Experience

1. How many years has Bidder been in business under its present business name? ____ years
2. Has Bidder completed projects similar in type and size to this Project as a general contractor?
____ Yes ____ No
3. Has Bidder ever been disqualified from a bid on grounds that it is not responsible, or otherwise disqualified or debarred from bidding under state or federal law?
____ Yes ____ No

If yes, provide additional information on a separate sheet regarding the disqualification or debarment, including the name and address of the agency or owner of the project, the type and size of the project, the reasons that Bidder was disqualified or debarred, and the month and year in which the disqualification or debarment occurred.

4. Has Bidder ever been terminated for cause, alleged default, or legal violation from a construction project, either as a general contractor or as a subcontractor?

_____ Yes _____ No

If yes, provide additional information on a separate sheet 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. Provide information about Bidder's past projects performed as general contractor as follows:

- 5.1 Six most recently completed public works projects within the last three years;
- 5.2 Three largest completed projects within the last three years; and
- 5.3 Any project which is similar to this Project including scope and character of the work.

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

- 6.1 Project name, location, and description;
- 6.2 Owner (name, address, email, and phone number);
- 6.3 Prime contractor, if applicable (name, address, email, and phone number);
- 6.4 Architect or engineer (name, email, and phone number);
- 6.5 Project and/or construction manager (name, email, and phone number);
- 6.6 Scope of work performed (as general contractor or as subcontractor);
- 6.7 Initial contract price and final contract price (including change orders);
- 6.8 Original scheduled completion date and actual date of completion;
- 6.9 Time extensions granted (number of days);
- 6.10 Number and amount of stop notices or mechanic's liens filed;
- 6.11 Amount of any liquidated damages assessed against Bidder; and
- 6.12 Nature and resolution of any project-related claim, lawsuit, mediation, or arbitration involving Bidder.

Part C: Safety

1. Provide Bidder's Experience Modification Rate (EMR) for the last three years:

| Year | EMR |
|------|-----|
| | |
| | |
| | |

2. Complete the following, based on information provided in Bidder's CalOSHA Form 300 or Form 300A, Annual Summary of Work-Related Illnesses and Injuries, from the most recent past calendar year:

- 2.1 Number of lost workday cases: _____
- 2.2 Number of medical treatment cases: _____
- 2.3 Number of deaths: _____

3. Has Bidder ever been cited, fined, or prosecuted by any local, state, or federal agency, including OSHA, CalOSHA, or EPA, for violation of any law, regulation, or requirements pertaining to health and safety?

_____ Yes _____ No

If yes, provide additional information on a separate sheet regarding each such citation, fine, or prosecution, including the name and address of the agency or owner of the project, the type and size of the project, the reasons for and nature of the citation, fine, or prosecution, and the month and year in which the incident giving rise to the citation, fine, or prosecution occurred.

4. Name, title, and email for person responsible for Bidder's safety program:

Name Title Email

Part D: 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 and Title

END OF BIDDER'S QUESTIONNAIRE

Contract

This public works contract ("Contract") is entered into by and between the City of Brentwood ("City") and _____ ("Contractor"), for work on the Water Line Improvement – Kent Drive Project, CIP Project No. 562-56421 ("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 the Work to construct the Project. On _____, 2025 City authorized award of this Contract to Contractor for the amount set forth in Section 4, below. City has elected to include the following Project alternate(s) in the Contract: No alternatives.
2. **Contract Documents.** The Contract Documents incorporated into this Contract include and are comprised of all of the documents listed below. The definitions provided in Article 1 of the General Conditions apply to all of the Contract Documents, including this Contract.
 - 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 Plans and Specifications;
 - 2.10 Change Orders, if any;
 - 2.11 Notice of Potential Award;
 - 2.12 Notice to Proceed; and
 - 2.13 The following: No other documents.
3. **Contractor's Obligations.** Contractor will 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, supplies, tools, equipment, transportation, onsite facilities, and utilities, unless otherwise specified in the Contract Documents. Contractor must use its best efforts to diligently prosecute and 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") for all of Contractor's direct and indirect costs to perform the Work, including all labor, materials, supplies, equipment, taxes, insurance, bonds and all overhead costs, in accordance with the payment provisions in the General Conditions.
5. **Time for Completion.** Contractor will fully complete the Work for the Project, meeting all requirements for Final Completion, within 30 calendar days from the start date set forth in the Notice to Proceed ("Contract Time"). By signing below, Contractor expressly waives any claim for delayed early completion.

6. **Liquidated Damages.** As further specified in Section 5.4 of the General Conditions, if Contractor fails to complete the Work within the Contract Time, City will assess liquidated damages in the amount of \$2,500 per day for each day of unexcused delay in achieving Final Completion, and such liquidated damages may be deducted from City's payments due or to become due to Contractor under this Contract.
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, as further specified in Article 9 of the General Conditions.
 - 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 may 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 to perform public work pursuant to Labor Code § 1725.5, subject to limited legal exceptions.
8. **Workers' Compensation Certification.** Pursuant to Labor Code § 1861, by signing this Contract, Contractor certifies as follows: "I am aware of the provisions of Labor Code § 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. **Conflicts of Interest.** Contractor, its employees, Subcontractors, and agents may not have, maintain, or acquire a conflict of interest in relation to this Contract in violation of any City ordinance or requirement, or in violation of any California law, including Government Code § 1090 et seq., or the Political Reform Act, as set forth in Government Code § 81000 et seq. and its accompanying regulations. Any violation of this Section constitutes a material breach of the Contract.
10. **Independent Contractor.** Contractor is an independent contractor under this Contract and will have control of the Work and the means and methods by which it is performed. Contractor and its Subcontractors are not employees of City and are not entitled to participate in any health, retirement, or any other employee benefits from City.
11. **Notice.** Any notice, billing, or payment required by or pursuant to the Contract Documents must be made in writing, signed, dated, and sent to the other party by personal delivery, U.S. Mail, a reliable overnight delivery service, or by email as a PDF file. Notice is deemed effective upon delivery, except that service by U.S. Mail is deemed effective on the second working day after deposit for delivery. Notice for each party must be given as follows:

City:

City of Brentwood
Engineering Department
150 City Park Way, Brentwood CA 94513

925.516.5420
Attn: Vatsal Patel, Engineering Manager
vpatel@brentwoodca.gov

Contractor:

Name: _____
Address: _____
City/State/Zip: _____
Phone: _____
Attn: _____
Email: _____
Copy to: _____

12. General Provisions.

- 12.1 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 and City's lawful heirs, successors and permitted assigns.
- 12.2 Third Party Beneficiaries.** There are no intended third party beneficiaries to this Contract.
- 12.3 Governing Law and Venue.** This Contract will be governed by California law and venue will be in the Contra Costa County Superior Court, and no other place. Contractor waives any right it may have pursuant to Code of Civil Procedure § 394, to file a motion to transfer any action arising from or relating to this Contract to a venue outside of Contra Costa County, California.
- 12.4 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.
- 12.5 Integration.** 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.
- 12.6 Severability.** If any provision of the Contract Documents is determined to be illegal, invalid, or unenforceable, in whole or in part, the remaining provisions of the Contract Documents will remain in full force and effect.
- 12.7 Iran Contracting Act.** If the Contract Price exceeds \$1,000,000, Contractor certifies, by signing below, that it is not identified on a list created under the Iran Contracting Act, Public Contract Code § 2200 et seq. (the "Act"), as a person engaging in investment activities in Iran, as defined in the Act, or is otherwise expressly exempt under the Act.
- 12.8 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 Corporations Code § 313.
- 12.9 Digital/Electronic Signatures.** Using a City-approved method, this Contract may be executed through the use of digital or electronic signatures in accordance with

Government Code Section 16.5. The presence of an electronic signature on this Contract will be construed as the Parties' consent to do business electronically.

[Signatures are on the following page.]

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

CITY:

Approved as to form:

s/ _____

s/ _____

Tim Y. Ogden, City Manager

Katherine Wisinski, City Attorney

Date: _____

Date: _____

Attest:

s/ _____

Amanda McVey, City Clerk

Date: _____

CONTRACTOR: _____
Business Name

s/ _____

Seal:

Name, Title

Date: _____

Second Signature (See Section 12.8):

s/ _____

Name, Title

Date: _____

Contractor's California License Number(s) and Expiration Date(s)

END OF CONTRACT

Payment Bond

The City of Brentwood ("City") and _____ ("Contractor") have entered into a contract for work on the Water Line Improvement – Kent Drive Project, CIP Project No. 562-56421 ("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 \$ _____, under California Civil Code § 9550 et seq., to ensure payment to authorized claimants. This Bond is binding on the respective successors, assigns, owners, heirs, or executors of Surety and Contractor.
- 2. Surety's Obligation.** If Contractor or any of its Subcontractors fails to pay a person authorized in California Civil Code § 9100 to assert a claim against a payment bond, any amounts due under the Unemployment Insurance Code with respect to work or labor performed under the Contract, or any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of Contractor and its Subcontractors under California Unemployment Insurance Code § 13020 with respect to the work and labor, then Surety will pay the obligation.
- 3. Beneficiaries.** This Bond inures to the benefit of any of the persons named in California Civil Code § 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 §§ 2819 and 2845. City waives the requirement of a new bond for any supplemental contract under Civil Code § 9550. Any notice to Surety may be given in the manner specified in the Contract and sent to Surety as follows:

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

- 6. Law and Venue.** This Bond will be governed by California law, and venue for any dispute pursuant to this Bond will be in the Contra Costa County Superior Court, 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.

[Signatures are on the following page.]

7. **Effective Date; Execution.** This Bond is entered into and is effective on _____, 2025.

SURETY:

Business Name

s/ _____

Date

Name, Title

(Attach Acknowledgment with Notary Seal and Power of Attorney)

CONTRACTOR:

Business Name

s/ _____

Date

Name, Title

APPROVED BY CITY:

City of Brentwood

s/ _____

Tim Y. Ogden, City Manager

Date

END OF PAYMENT BOND

Performance Bond

The City of Brentwood ("City") and _____ ("Contractor") have entered into a contract for work on the Water Line Improvement – Kent Drive Project, CIP Project No. 562-56421 ("Project"). The Contract is incorporated by reference into this Performance Bond ("Bond").

1. **General.** Under this Bond, Contractor as principal and _____, its surety ("Surety"), are bound to City as obligee for an amount not less than \$_____ to ensure Contractor's faithful performance of its obligations under the Contract. This Bond is binding on the respective successors, assigns, owners, heirs, or executors of Surety and Contractor.
2. **Surety's Obligations.** Surety's obligations are co-extensive with Contractor's obligations under the Contract. 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. Otherwise, Surety's obligations will remain in full force and effect.
3. **Waiver.** 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 §§ 2819 and 2845.
4. **Application of Contract Balance.** Upon making a demand on this Bond for completion of the Work prior to acceptance of the Project, 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 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.
5. **Contractor Default.** Upon written notification from City of Contractor's termination for 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:
 - 5.1 Arrange for completion of the Work under the Contract by Contractor, with City's consent, but only if Contractor is in default solely due to its financial inability to complete the Work;
 - 5.2 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
 - 5.3 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.
6. **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.
7. **Notice.** Any notice to Surety may be given in the manner specified in the Contract and sent to Surety as follows:

Attn: _____

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

8. **Law and Venue.** This Bond will be governed by California law, and venue for any dispute pursuant to this Bond will be in the Contra Costa County Superior Court, 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.
9. **Effective Date; Execution.** This Bond is entered into and effective on _____, 2025.

SURETY:

Business Name

s/ _____

Date

Name, Title

(Attach Acknowledgment with Notary Seal and Power of Attorney)

CONTRACTOR:

Business Name

s/ _____

Date

Name, Title

APPROVED BY CITY:

City of Brentwood

s/ _____
Tim Y. Ogden, City Manager

Date

END OF PERFORMANCE BOND

General Conditions

Article 1 - Definitions

Definitions. The following definitions apply to all of the Contract Documents unless otherwise indicated, e.g., additional definitions that apply solely to the Specifications or other technical documents. Defined terms and titles of documents are capitalized in the Contract Documents, with the exception of the following (in any tense or form): “day,” “furnish,” “including,” “install,” “work day,” or “working day.”

Allowance means a specific amount that must be included in the Bid Proposal for a specified purpose.

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 municipality which has entered into the Contract with Contractor for performance of the Work, acting through its City Council, officers, employees, City Engineer, and any other authorized representatives.

City Engineer means the City Engineer for City and their authorized delegee(s).

Claim means a separate demand by Contractor for a 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 for performing the Work required for the Project, and all documents expressly incorporated therein.

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 Potential Award and Notice to Proceed; the payment and performance bonds; the General Conditions; the Special Conditions; the Project Plans and Specifications; any Change Orders; and any other documents which are clearly and unambiguously made part of the Contract Documents. The Contract Documents do not include documents provided “For Reference Only,” or documents that are intended solely to provide information regarding existing conditions.

Contract Price means the total compensation to be paid to Contractor for performance of the Work, as set forth in the Contract and as may be 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, supplies, or equipment following submission of the Bid Proposal.

Contract Time means the time specified for complete performance of the Work, as set forth in the Contract and as may be amended by Change Order.

Contractor means the individual, partnership, corporation, or joint-venture that 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, engineering, or other design professional 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.

DIR means the California Department of Industrial Relations.

Drawings has the same meaning as Plans.

Engineer means the City Engineer for the City of Brentwood and their authorized delegees.

Excusable Delay is defined in Section 5.3(B), Excusable Delay.

Extra Work means new or unforeseen work added to the Project, as determined by the Engineer in their sole discretion, including Work that was not part of or incidental to the scope of the Work when the Contractor's bid was submitted; Work that is substantially different from the Work as described in the Contract Documents at bid time; or Work that results from a substantially differing and unforeseeable condition.

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

Final Payment means payment to Contractor of the unpaid Contract Price, including release of undisputed retention, less amounts withheld or deducted pursuant to the Contract Documents.

Furnish means to purchase and deliver for the Project.

Government Code Claim means a claim submitted pursuant to California Government Code § 900 et seq.

Hazardous Materials means any substance or material identified now or in the future as hazardous under any Laws, or any other substance or material that may be considered hazardous or otherwise subject to Laws governing handling, disposal, or cleanup.

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

Inspector means the individual(s) or firm(s) retained or employed 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 Laws.

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

Laws means all applicable local, state, and federal laws, regulations, rules, codes, ordinances, permits, orders, and the like enacted or imposed by or under the auspices of any governmental entity with jurisdiction over any of the Work or any performance of the Work, including health and safety requirements.

Non-Excusable Delay is defined in Section 5.3(D), Non-Excusable Delay.

Plans means the City-provided plans, drawings, details, or graphical depictions of the Project requirements, but does not include Shop Drawings.

Project means the public works project referenced in the Contract, as modified by any Project alternates elected by City, if any.

Project Manager means the individual designated by City to oversee and manage the Project on City's behalf and may include their 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.

Recoverable Costs is defined in Section 5.3(F), Recoverable Costs.

Request for Information or **RFI** means Contractor's written request for information about the Contract Documents, the Work or the Project, submitted to City in the manner and format specified by City.

Section, when capitalized in these General Conditions, means a numbered section or subsection of the General Conditions, unless the context clearly indicates otherwise.

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

Specialty Work means Work that must be performed by a specialized Subcontractor with the specified license or other special certification, and that the Contractor is not qualified to self-perform.

Specifications means the technical, text specifications describing the Project requirements, which are prepared for and incorporated into the Contract 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 of all tiers, unless otherwise indicated by the context. A third party such as a utility performing related work on the Project is not a Subcontractor, even if Contractor must coordinate its Work with the third party.

Technical Specifications has the same meaning as Specifications.

Work means all of the construction and services necessary for 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 when the City is open for business, and does not include holidays observed by the City.

Worksite means the place or places where the Work is performed, which includes, but may extend beyond the Project site, including separate locations for staging, storage, or fabrication.

Article 2 - Roles and Responsibilities

2.1 City.

(A) **City Council.** The City Council has final authority in all matters affecting the Project, except to the extent it has delegated authority to the Engineer.

(B) **Engineer.** The Engineer, acting within the authority conferred by the City Council, is responsible for administration of the Project on behalf of City, including

authority to provide directions to the Design Professional and to Contractor to ensure proper and timely completion of the Project. The Engineer's decisions are final and conclusive within the scope of their authority, including interpretation of the Contract Documents.

(C) **Project Manager.** The Project Manager assigned to the Project will be the primary point of contact for the Contractor and will serve as City's representative for daily administration of the Project on behalf of City. Unless otherwise specified, all of Contractor's communications to City (in any form) will go to or through the Project Manager. City reserves the right to reassign the Project Manager role at any time or to delegate duties to additional City representatives, without prior notice to or consent of Contractor.

(D) **Design Professional.** The Design Professional 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 Plans and Specifications, including any design changes authorized by Change Order. The Design Professional's duties may include review of Contractor's submittals, visits to any Worksite, inspecting the Work, evaluating test and inspection results, and participation in Project-related meetings, including any pre-construction conference, weekly meetings, and coordination meetings. The Design Professional's interpretation of the Plans or Specifications is final and conclusive.

2.2 Contractor.

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

(B) **Responsibility for the Work and Risk of Loss.** 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 the Work, including the construction means, methods, techniques, sequences, procedures, safety precautions and programs, 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. Contractor's responsibilities extend to any plan, method or sequence suggested, but not required by City or specified in the Contract Documents. From the date of commencement of the Work until either the date on which City formally accepts the Project or the effective date of termination of the Contract, whichever is later, Contractor bears all risks of injury or damage to the Work and the materials and equipment delivered to any Worksite, by any cause including fire, earthquake, wind, weather, vandalism, or theft.

(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. Before starting the Work, Contractor must designate in writing and provide complete contact information, including telephone 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.

(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. The superintendent must have full authority to act and communicate on behalf of Contractor, and Contractor will be bound by the superintendent's communications to City. City's approval of the superintendent is required before the Work commences. If City is not satisfied with the superintendent's performance, City may request a qualified replacement of the superintendent. Failure to comply may result in temporary suspension of the Work, at Contractor's sole expense and with no extension of Contract Time, until an approved 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.** Contractor must, at all times, ensure that the Work is performed in an efficient, skillful manner following best practices and in full compliance with the Contract Documents, Laws, and applicable manufacturer's recommendations. Contractor has a material and ongoing obligation to provide true and complete information, to the best of its knowledge, with respect to all records, documents, or communications pertaining to the Project, including oral or written reports, statements, certifications, Change Order requests, or Claims.

(F) **Meetings.** Contractor, its project manager, superintendent and any primary Subcontractors requested by City, must attend a pre-construction conference, if requested by City, as well as weekly Project progress meetings scheduled with City. If applicable, Contractor may also be required to participate in coordination meetings with other parties relating to other work being performed on or near the Project site or in relation to the Project, including work or activities performed by City, other contractors, or other utility owners.

(G) **Construction Records.** Contractor will maintain up-to-date, thorough, legible, and dated daily job reports, which document all significant activity on the Project for each day that Work is performed on the Project. The daily report for each day must include the number of workers at the Project site; primary Work activities; major deliveries; problems encountered, including injuries, if any; weather and site conditions; and delays, if any. Contractor will take date and time-stamped photographs to document general progress of the Project, including site conditions prior to construction activities, before and after photographs at offset trench laterals, existing improvements and utilities, damage and restoration. Contractor will maintain copies of all subcontracts, Project-related correspondence with Subcontractors, and records of meetings with Subcontractors. Upon request by the City, Contractor will permit review of and/or provide copies of any of these construction records.

(H) **Responsible Party.** Contractor is solely responsible to City for the acts or omissions of any Subcontractors, or any other party or parties performing portions of the Work or providing equipment, materials or services for or on behalf of Contractor or the Subcontractors. Upon City's written request, Contractor must promptly and permanently remove from the Project, at no cost to City, any employee or Subcontractor or employee of a Subcontractor who the Engineer has determined to be incompetent, intemperate or disorderly, or who has failed or refused to perform the Work as required under the Contract Documents.

(I) **Correction of Defects.** Contractor must promptly correct, at Contractor's sole expense, any Work that is determined by City to be deficient or defective in any way, including workmanship, materials, parts, or equipment. Workmanship, materials, parts, or equipment that do not conform to the requirements under the Plans, Specifications, and other Contract Documents, as determined by City, will be considered defective and subject to rejection. Contractor must also promptly correct, at Contractor's sole expense, any Work performed beyond the lines and grades shown on the Plans or established by City, and any Extra Work performed without City's prior written approval. If Contractor

fails to correct or to take reasonable steps toward correcting defective Work within five days following notice from City, or within the time specified in City's notice to correct, City may elect to have the defective Work corrected by its own forces or by a third party, in which case the cost of correction will be deducted from the Contract Price. If City elects to correct defective Work due to Contractor's failure or refusal to do so, City or its agents will have the right to take possession of and use any equipment, supplies, or materials available at the Project site or any Worksite on City property, in order to effectuate the correction, at no extra cost to City. Contractor's warranty obligations under Section 11.2, Warranty, will not be waived nor limited by City's actions to correct defective Work under these circumstances. Alternatively, City may elect to retain defective Work, and deduct the difference in value, as determined by the Engineer, from payments otherwise due to Contractor. This paragraph applies to any defective Work performed by Contractor during the one-year warranty period under Section 11.2.

(J) **Contractor's Records.** Contractor must maintain all of its records relating to the Project in any form, including paper documents, photos, videos, electronic records, approved samples, and the construction records required pursuant to paragraph (G), above. Project records subject to this provision include complete Project cost records and records relating to preparation of Contractor's bid, including estimates, take-offs, and price quotes or bids.

(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-related records in an organized manner for a period of five years after City's acceptance of the Project or following Contract termination, whichever occurs first. Subject to prior notice to Contractor, City is entitled to inspect or audit any of Contractor's records relating to the Project during Contractor's normal business hours. Contractor's records may also be subject to examination and audit by the California State Auditor, pursuant to Government Code § 8546.7. The record-keeping requirements set forth in this subsection 2.2(J) will survive expiration or termination of the Contract.

(K) **Copies of Project Documents.** Contractor and its Subcontractors must keep copies, at the Project site, of all Work-related documents, including the Contract, permit(s), Plans, Specifications, addenda, Contract amendments, Change Orders, RFIs and RFI responses, Shop Drawings, as-built drawings, schedules, daily records, testing and inspection reports or results, and any related written interpretations. These documents must be available to City for reference at all times during construction of the Project.

2.3 Subcontractors.

(A) **General.** 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, for reasons including the Subcontractor's poor reputation, lack of relevant experience, financial instability, and lack of technical

ability or adequate trained workforce. Each Subcontractor must obtain a City business license before performing any Work.

(B) **Contractual Obligations.** Contractor must require each Subcontractor to comply with the provisions of the Contract Documents as they apply to the Subcontractor's portion(s) of the Work, including the generally applicable terms of the Contract Documents, and to likewise bind their subcontractors. Contractor will provide that the rights that each Subcontractor may have against any manufacturer or supplier for breach of warranty or guarantee relating to items provided by the Subcontractor for the Project, will be assigned to City. 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, but only if and to the extent that City accepts, in writing, 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 § 4107, Contractor is solely responsible for all costs City incurs in responding to the request, including legal fees and costs to conduct a hearing, and any increased subcontract cost to perform the Work that was to be performed by the listed Subcontractor. If City determines that a Subcontractor is unacceptable to City based on the Subcontractor's failure to satisfactorily perform its Work, or for any of the grounds for substitution listed in Public Contract Code § 4107(a), City may request removal of the Subcontractor from the Project. Upon receipt of a written request from City to remove a Subcontractor pursuant to this paragraph, Contractor will immediately remove the Subcontractor from the Project and, at no further cost to City, will either (1) self-perform the remaining Work to the extent that Contractor is duly licensed and qualified to do so, or (2) substitute a Subcontractor that is acceptable to City, in compliance with Public Contract Code § 4107, as applicable.

2.4 Coordination of Work.

(A) **Concurrent Work.** City reserves the right to perform, have performed, or permit performance of other work on or adjacent to the Project site while the Work is being performed for the Project. Contractor is responsible for coordinating its Work with other work being performed on or adjacent to the Project site, including by any utility companies or agencies, and must avoid hindering, delaying, or interfering with the work of other contractors, individuals, or entities, and must ensure safe and reasonable site access and use as required or authorized by City. To the full extent permitted by law, Contractor must hold harmless and indemnify City 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 any utility company or agency or another contractor or subcontractor.

(B) **Coordination.** If Contractor's Work will connect or interface with work performed by others, Contractor is responsible for independently measuring and visually inspecting such work to ensure a correct connection and interface. Contractor is responsible for any failure by Contractor or its Subcontractors to confirm measurements before proceeding with connecting Work. Before proceeding with any portion of the Work affected by the construction or operations of others, Contractor must give the Project Manager prompt written notification of any defects Contractor discovers which will prevent the proper execution of the Work. Failure to give notice of any known or reasonably discoverable 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. Contractor must also promptly notify City if work performed by others, including work or activities performed by City's own forces, is operating to hinder, delay, or interfere with Contractor's timely performance of the Work. City reserves the right to backcharge Contractor for any additional costs incurred due to Contractor's failure to comply with the requirements in this Section 2.4.

2.5 Submittals. Unless otherwise specified, Contractor must submit to the Engineer for review and acceptance, all schedules, Shop Drawings, samples, product data, and similar submittals required by the Contract Documents, or upon request by the Engineer. Unless otherwise specified, all submittals, including Requests for Information, are subject to the general provisions of this Section, as well as specific submittal requirements that may be included elsewhere in the Contract Documents, including the Special Conditions or Specifications. The Engineer may require submission of a submittal schedule at or before a pre-construction conference, as may be specified in the Notice to Proceed.

(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 City-accepted schedule for the Work and within the applicable time specified 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 as specified in full conformance with the requirements of this Section, or other requirements that apply to that submittal.

(E) **Effect of Review and Acceptance.** Review and acceptance of a submittal by 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 acceptance of a submittal by City is not an assumption of risk or liability by City.

(F) **Enforcement.** Any Work performed or any material furnished, installed, fabricated or used without City's prior acceptance of a required submittal is performed or provided 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 or material, and the cost of additional time or services required of City, including costs for the Design Professional, Project Manager, or Inspector.

(G) **Excessive RFIs.** A RFI will be considered excessive or unnecessary if City determines that the explanation or response to the RFI is clearly and unambiguously discernable from the Contract Documents. City's costs to review and respond to excessive or unnecessary RFIs may be deducted from payments otherwise due to Contractor.

2.6 Shop Drawings. When Shop Drawings are required by the Specifications or requested by the Engineer, they must be prepared according to best practices at Contractor's expense. The Shop Drawings must be of a size and scale to clearly show all necessary details. Unless otherwise specified by City, Shop Drawings must be provided to the

Engineer for review and acceptance at least 30 days before the Work will be performed. If City requires changes, the corrected Shop Drawings must be resubmitted to the Engineer for review within the time specified by the Engineer. For all Project components requiring Shop Drawings, Contractor will not furnish materials or perform any Work until the Shop Drawings for those components are accepted by City. Contractor is responsible for any errors or omissions in the Shop Drawings, shop fits and field corrections; any deviations from the Contract Documents; and for the results obtained by the use of Shop Drawings. Acceptance of Shop Drawings by City does not relieve Contractor of Contractor's responsibility.

- 2.7 Access to Work.** Contractor must afford prompt and safe access to any Worksite by City and its employees, agents, or consultants authorized by City; and upon request by City, Contractor must promptly arrange for City representatives to visit or inspect manufacturing sites or fabrication facilities for items to be incorporated into the Work.
- 2.8 Personnel.** Contractor and its Subcontractors must employ only competent and skillful personnel to perform the Work. Contractor and its Subcontractor's supervisors, security or safety personnel, and employees who have unescorted access to the Project site must possess proficiency in English sufficient to read, understand, receive, and implement oral or written communications or instructions relating to their respective job functions, including safety and security requirements. Upon written notification from the Engineer, Contractor and its Subcontractors must immediately discharge any personnel who are incompetent, disorderly, disruptive, threatening, abusive, or profane, or otherwise refuse or fail to comply with the requirements of the Contract Documents or Laws, including Laws pertaining to health and safety. Any such discharged personnel may not be re-employed or permitted on the Project in any capacity without City's prior written consent.

Article 3 - Contract Documents

3.1 Interpretation of Contract Documents.

(A) **Plans and Specifications.** The Plans 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 Plans 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 Plans and Specifications, the Specifications will control, unless the drawing(s) at issue are dated later than the Specification(s) at issue. Detailed drawings take precedence over general drawings, and large-scale drawings take precedence over smaller scale drawings. Any arrangement or division of the Plans and Specifications into sections is for convenience and is not intended to limit the Work required by separate trades. A conclusion presented in the Plans or Specifications is only a recommendation. Actual locations and depths must be determined by Contractor's field investigation. Contractor may request access to underlying or background information in City's possession that is necessary for Contractor to form its own conclusions.

(B) **Duty to Notify and Seek Direction.** If Contractor becomes aware of a changed condition in the Project, or of any ambiguity, conflict, inconsistency, discrepancy, omission, or error in the Contract Documents, including the Plans or Specifications, Contractor must promptly submit a Request for Information to the Engineer and wait for a response from City before proceeding further with the related Work. The RFI must notify City of the issue and request clarification, interpretation or direction. The Engineer's

clarification, interpretation or direction will be final and binding on Contractor. If Contractor proceeds with the related Work before obtaining City's response, Contractor will be responsible for any resulting costs, including the cost of correcting any incorrect or defective Work that results. Timely submission of a clear and complete RFI is essential to avoiding delay. Delay resulting from Contractor's failure to submit a timely and complete RFI to the Engineer is Non-Excusable Delay. If Contractor believes that City's response to an RFI justifies a change to the Contract Price or Contract Time, Contractor must perform the Work as directed, but may submit a timely Change Order request in accordance with the Contract Documents. (See Articles 5 and 6.)

(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 in the Contract Documents and at the Project site before ordering any material or performing any Work, and will be responsible for the correctness of those measurements or for costs that could have been avoided by independently verifying measurements.

(F) **Compliance with Laws.** The Contract Documents are intended to comply with Laws and will be interpreted to comply with Laws.

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, with the most recent version taking precedent over an earlier version:

- (A) Change Orders;
- (B) Addenda;
- (C) Contract;
- (D) Notice to Proceed;
- (E) Attachment B – Federal Contract Requirements (only if used);
- (F) Special Conditions;
- (G) General Conditions;
- (H) Payment and Performance Bonds;
- (I) Specifications;
- (J) Plans;
- (K) Notice of Potential Award;
- (L) Notice Inviting Bids;
- (M) Attachment A – Federal Bidding Requirements (only if used);
- (N) Instructions to Bidders;
- (O) Contractor's Bid Proposal and attachments;
- (P) the City's standard specifications, as applicable; and
- (Q) Any generic documents prepared by and on behalf of a third party, that were not prepared specifically for this Project, such as the 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 ("Caltrans 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 Caltrans Standard Specifications or Special Provisions:

(A) **Limitations.** The “General Provisions” of the Caltrans Standard Specifications, i.e., sections 1 through 9, do not apply 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 Caltrans Standard Specifications or Special Provisions and a provision of these Contract Documents, as determined by City, the provision in the Contract Documents will govern.

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

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

(2) Any reference to the “Special Provisions” is deemed to mean the Special Conditions, unless the Caltrans Special Provisions are expressly included in the Contract Documents listed in Section 2 of the Contract.

(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 provided by City or 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. 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. Any record drawings or similar final or accepted drawings or maps that are not part of the Contract Documents are deemed to be For Reference Only. The provisions of the Contract Documents are not modified by any perceived or actual conflict with provisions in any document that is provided For Reference Only.

3.5 Current Versions. Unless otherwise specified by City, any reference to standard specifications, technical specifications, or any City or state codes or regulations means the latest specification, code, or regulation in effect on the date that bids were due.

3.6 Conformed Copies. If City prepares a conformed set of the Contract Documents following award of the Contract, it will provide Contractor with two hard copy (paper) sets and one copy of the electronic file in PDF format. It is Contractor’s responsibility to ensure that all Subcontractors, including fabricators, are provided with the conformed set of the Contract Documents at Contractor’s sole expense.

3.7 Ownership. No portion of the Contract Documents may be used for any purpose other than construction of the Project, without prior written consent from City. Contractor is deemed to have conveyed the copyright in any designs, drawings, specifications, Shop Drawings, or other documents (in paper or electronic form) developed by Contractor for the Project, and City will retain all rights to such works, including the right to possession.

Article 4 - Bonds, Indemnity, and Insurance

- 4.1 Payment and Performance Bonds.** Within ten days following issuance of the Notice of Potential Award, 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, and each executed by Contractor and its surety using the bond forms included with the Contract Documents.
- (A) **Surety.** Each bond must be issued and executed 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.
- (B) **Supplemental Bonds for Increase in Contract Price.** If the Contract Price increases during construction by five percent or more over the original Contract Price, Contractor must provide supplemental or replacement bonds within ten days of written notice from City pursuant to this Section, covering 100% of the increased Contract Price and using the bond forms included with the Contract Documents.
- 4.2 Indemnity.** To the fullest extent permitted by law, Contractor must indemnify, defend, and hold harmless City, its Council, officers, officials, employees, agents, volunteers, and consultants (individually, an "Indemnitee," and collectively the "Indemnitees") from and against any and all liability, loss, damage, claims, causes of action, demands, charges, fines, costs, and 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 acts or omissions of Contractor, its employees, Subcontractors, representatives, or agents, in bidding or performing the Work or in failing to comply with any obligation of Contractor 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 Contractor's bid for the Contract. Contractor's failure or refusal to timely accept a tender of defense pursuant to this Contract will be deemed a material breach of the Contract. City will timely notify Contractor upon receipt of any third-party claim relating to the Contract, as required by Public Contract Code § 9201. Contractor waives any right to express or implied indemnity against any Indemnitee. Contractor's indemnity obligations under this Contract will survive the expiration or any early termination of the Contract.
- 4.3 Insurance.** No later than ten days following issuance of the Notice of Potential Award, Contractor must procure and provide proof of the insurance coverage required by this Section in the form of certificates and endorsements acceptable to City. 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, through the date of City's acceptance of the Project. 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. The procurement of the required insurance will not be construed to limit Contractor's liability under this Contract or to fulfill Contractor's indemnification obligations under this Contract.

(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 (“CGL”) Insurance:** The CGL insurance 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 acts or omissions in the performance of the Work, including contractor’s protective coverage, contractual liability, products and completed operations, and broad form property damage, with limits of at least \$5,000,000 per occurrence and at least \$10,000,000 general aggregate. The CGL insurance 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 in this Section, including required endorsements. This policy does not exclude explosion, collapse, underground excavation hazard, or removal of lateral support.

(2) **Automobile Liability Insurance:** The automobile liability insurance policy must provide coverage of at least \$2,000,000 combined single-limit per accident for bodily injury, death, or property damage, including hired and non-owned auto liability.

(3) **Workers’ Compensation Insurance and Employer’s Liability:** The workers’ compensation and employer’s liability insurance policy must comply with the requirements of the California Labor Code, providing coverage of at least \$1,000,000 or as otherwise required by the statute. If Contractor is self-insured, Contractor must provide its Certificate of Permission to Self-Insure, duly authorized by the DIR.

(4) **Pollution Liability Insurance:** The pollution liability insurance policy must be issued on an occurrence basis, providing coverage of at least \$2,000,000 for all loss arising out of claims for bodily injury, death, property damage, or environmental damage caused by pollution conditions resulting from the Work.

(5) **Builder’s Risk Insurance:** The builder’s risk insurance policy must be issued on an occurrence basis, for all-risk or “all perils” coverage on a 100% completed value basis on the insurable portion of the Project for the benefit of City.

(6) 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

(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 will waive any right of subrogation it may have against City.

(D) **Required Endorsements.** The CGL policy, automobile liability policy, pollution liability policy, and builder’s risk policy must include the following specific endorsements:

(1) The City, including its Council, officials, officers, employees, agents, volunteers and consultants (collectively, “Additional Insured”) must be named as an additional insured for all liability arising out of the operations by or on behalf of

the named insured, and the policy must protect the Additional Insured 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 or equivalent form(s) approved by the City.

(2) The insurance provided by Contractor is primary and no insurance held or owned by any Additional Insured may be called upon to contribute to a loss.

(E) **Contractor's Responsibilities.** This Section 4.3 establishes the minimum requirements for Contractor's insurance coverage in relation to this Project, but is not intended to limit Contractor's ability to procure additional or greater coverage. Contractor is responsible for its own risk assessment and needs and is encouraged to consult its insurance provider to determine what coverage it may wish to carry beyond the minimum requirements of this Section. Contractor is solely responsible for the cost of its insurance coverage, including premium payments, deductibles, or self-insured retentions, and no Additional Insured will be responsible or liable for any of the cost of Contractor's insurance coverage.

(F) **Deductibles and Self-Insured Retentions.** Any deductibles or self-insured retentions that apply to the required insurance (collectively, "deductibles") in excess of \$100,000 are subject to approval by the City's Risk Manager, acting in their sole discretion, and must be declared by Contractor when it submits its certificates of insurance and endorsements pursuant to this Section 4.3. If the City's Risk Manager 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; or must provide a financial guarantee, to City's satisfaction, guaranteeing payment of losses and related investigation, claim administration, and legal expenses.

(G) **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, but excluding pollution liability or builder's risk insurance unless otherwise specified in the Special Conditions. A Subcontractor may be eligible for reduced insurance coverage or limits, but only to the extent approved in writing in advance by the City's Risk Manager. 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.

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. Contractor may not begin performing the Work before the date specified in the Notice to Proceed.

(B) **Authorization.** Contractor is not entitled to compensation or credit for any Work performed before the date specified in the Notice to Proceed, with the exception of any

schedules, submittals, or other requirements, if any, that must be provided or performed before issuance of the Notice to Proceed.

(C) **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. Contractor must prepare all schedules using standard, commercial scheduling software acceptable to the Engineer, and must provide the schedules in electronic and paper form as requested by the Engineer. In addition to the general scheduling requirements set forth below, Contractor must also comply with any scheduling requirements included in the Special Conditions or in the Technical Specifications.

(A) **Baseline (As-Planned) Schedule.** Within ten calendar days following City's issuance of the Notice to Proceed (or as otherwise specified in the Notice to Proceed), Contractor must submit to City for review and acceptance a baseline (as-planned) schedule using critical path methodology showing in detail how Contractor plans to perform and fully complete the Work within the Contract Time, including labor, equipment, materials, and fabricated items. The baseline schedule must show the order of the major items of Work and the dates of start and completion of each item, including when the materials and equipment will be procured. The schedule must also include the work of all trades, reflecting anticipated labor or crew hours and equipment loading for the construction activities, and must be sufficiently comprehensive and detailed to enable progress to be monitored on a day-by-day basis. For each activity, the baseline schedule must be dated, provided in the format specified in the Contract Documents or as required by City, and must include, at a minimum, a description of the activity, the start and completion dates of the activity, and the duration of the activity.

(1) **Specialized Materials Ordering.** Within five calendar days following issuance of the Notice to Proceed, Contractor must order any specialized material or equipment for the Work that is not readily available from material suppliers. Contractor must also retain documentation of the purchase order date(s).

(B) **City's Review of Schedules.** City will review and may note exceptions to the baseline schedule, and to the progress schedules submitted as required below, to assure completion of the Work within the Contract Time. Contractor is solely responsible for resolving any exceptions noted in a schedule and, within seven days, must correct the schedule to address the exceptions. City's review or acceptance of Contractor's schedules will not operate to waive or limit Contractor's duty to complete the Project within the Contract Time, nor to waive or limit City's right to assess liquidated damages for Contractor's unexcused failure to do so.

(C) **Progress Schedules.** After City accepts the final baseline schedule with no exceptions, Contractor must submit an updated progress schedule and three-week look-ahead schedule, in the format specified by City, for review and acceptance with each application for a progress payment, or when otherwise specified by City, until completion of the Work. The updated progress schedule must: show how the actual progress of the Work as constructed to date compares to the baseline schedule; reflect any proposed

changes in the construction schedule or method of operations, including to achieve Project milestones within the Contract Time; and identify any actual or potential impacts to the critical path. Contractor must also submit periodic reports to City of any changes in the projected material or equipment delivery dates for the Project.

(1) **Float.** The progress schedule must show early and late completion dates for each task. The number of days between those dates will be designated as the "float." Any float belongs to the Project and may be allocated by the Engineer to best serve timely completion of the Project.

(2) **Failure to Submit Schedule.** Reliable, up-to-date schedules are essential to efficient and cost-effective administration of the Project and timely completion. If Contractor fails to submit a schedule within the time periods specified in this Section, or submits a schedule to which City has noted exceptions that are not corrected, City may withhold up to five percent from payment(s) otherwise due to Contractor until the exceptions are resolved, the schedule is corrected and resubmitted, and City has accepted the schedule. In addition, Contractor's failure to comply with the schedule requirements in this Section 5.2 will be deemed a material default and a waiver of any claims for Excusable Delay or loss of productivity arising during any period when Contractor is out of compliance, subject only to the limits of Public Contract Code § 7102.

(D) **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 Contractor intends to perform and complete the Work within the Contract Time, based on actual progress to date.

(E) **Effect of Acceptance.** Contractor and its Subcontractors must perform the Work in accordance with the most current City-accepted schedule unless otherwise directed by City. City's acceptance 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.

(F) **Posting.** Contractor must at all times prominently post a copy of the most current City-accepted progress or recovery schedule in its on-site office.

(G) **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.

(H) **Authorized Working Days and Times.** Contractor is limited to working Monday through Friday, excluding holidays, during City's normal business hours, except as 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 the Contract Documents, including reimbursement of costs incurred for inspection, testing, and construction management services.

5.3 Delay and Extensions of Contract Time.

(A) **Notice of Delay.** If Contractor becomes aware of any actual or potential delay affecting the critical path, Contractor must promptly notify the Engineer in writing,

regardless of the nature or cause of the delay, so that City has a reasonable opportunity to mitigate or avoid the delay.

(B) **Excusable Delay.** The Contract Time may be extended if Contractor encounters "Excusable Delay," which is 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 reasonable care, planning, foresight, and diligence, provided that Contractor is otherwise fully performing its obligations under the Contract Documents. Grounds for Excusable Delay may include fire, natural disasters including earthquake or unusually severe weather, acts of terror or vandalism, epidemic, unforeseeable adverse government actions, unforeseeable actions of third parties, encountering unforeseeable hazardous materials, unforeseeable site conditions, or suspension for convenience under Article 13. The Contract Time will not be extended based on circumstances which will not unavoidably delay completing the Work within the Contract Time based on critical path analysis.

(C) **Weather Delays.** A "Weather Delay Day" is a Working Day during which Contractor and its forces, including Subcontractors, are unable to perform more than 40% of the critical path Work scheduled for that day due to adverse weather conditions which impair the ability to safely or effectively perform the scheduled critical path Work that day. Adverse weather conditions may include rain, saturated soil, and Project site clean-up required due to adverse weather. Determination of what constitutes critical path Work scheduled for that day will be based on the most current, City-approved schedule. Contractor will be entitled to a non-compensable extension of the Contract Time for each Weather Delay Day in excess of the normal Weather Delay Days within a given month as determined by reliable records, including monthly rainfall averages, for the preceding ten years (or as otherwise specified in the Special Conditions or Specifications).

(1) Contractor must fully comply with the applicable procedures in Articles 5 and 6 of the General Conditions regarding requests to modify the Contract Time.

(2) Contractor will not be entitled to an extension of time for a Weather Delay Day to the extent Contractor is responsible for concurrent delay on that day.

(3) Contractor must take reasonable steps to mitigate the consequences of Weather Delay Days, including prudent workforce management and protecting the Work, Project Site, materials, and equipment.

(D) **Non-Excusable Delay.** Delay which Contractor could have avoided or mitigated through reasonable care, planning, foresight, and diligence is "Non-Excusable Delay." Contractor is not entitled to an extension of Contract Time or any compensation for Non-Excusable Delay, or for Excusable Delay that is concurrent with Non-Excusable Delay. Non-Excusable Delay 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 completion of the Work within the Contract Time;

(3) Contractor's failure to provide adequate notification to utility companies or agencies for connections or services necessary for completion of the Work within the Contract Time;

- (4) foreseeable conditions which Contractor could have ascertained from reasonably diligent inspection of the Project site or review of the Contract Documents or other information provided or available to Contractor;
- (5) Contractor's failure, refusal, or financial inability to perform the Work within the Contract Time, including insufficient funds to pay its Subcontractors or suppliers;
- (6) performance or non-performance by Contractor's Subcontractors or suppliers;
- (7) the time required to respond to excessive RFIs (see Section 2.5(G));
- (8) delayed submission of required submittals, or the time required for correction and resubmission of defective submittals;
- (9) time required for repair of, re-testing, or re-inspection of defective Work;
- (10) enforcement of Laws by City, or outside agencies with jurisdiction over the Work; or
- (11) City's exercise or enforcement of any of its rights or Contractor's duties pursuant to the Contract Documents, including correction of defective Work, extra inspections or testing due to non-compliance with Contract requirements, safety compliance, environmental compliance, or rejection and return of defective or deficient submittals.

(E) **Compensable Delay.** Pursuant to Public Contract Code § 7102, in addition to entitlement to an extension of Contract Time, Contractor is entitled to compensation for costs incurred due to delay caused solely by City, when that delay is unreasonable under the circumstances involved and not within the contemplation of the parties ("Compensable Delay"). Contractor is not entitled to an extension of Contract Time or recovery of costs for Compensable Delay that is concurrent with Non-Excusable Delay. Delay due to causes that are beyond the control of either City or Contractor, including Weather Delay Days, discovery of Historic or Archeological Items pursuant to Section 7.18, or the actions or inactions of third parties or other agencies, is not Compensable Delay, and will only entitle Contractor to an extension of time commensurate with the time lost due to such delay.

(F) **Recoverable Costs.** Contractor is not entitled to compensation for Excusable Delay unless it is Compensable Delay, as defined above. Contractor is entitled to recover only the actual, direct, reasonable, and substantiated costs ("Recoverable Costs") for each working day that the Compensable Delay prevents Contractor from proceeding with more than 50% of the critical path Work scheduled for that day, based on the most recent progress schedule accepted by City. Recoverable Costs will not include home office overhead or lost profit.

(G) **Request for Extension of Contract Time or Recoverable Costs.** A request for an extension of Contract Time or any associated Recoverable Costs must be submitted in writing to City 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 any entitlement to the Contract Time extension or to the Recoverable Costs will 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 consequences of delay 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 Contract Time or Recoverable Costs that does not strictly comply with all of 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, such as by workforce management or by a change in sequencing. 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. If Contractor believes it is entitled to Recoverable Costs for Compensable Delay, the request must specify the amount and basis for the Recoverable 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. The maximum extension of Contract Time will be the number of days, if any, by which an Excusable Delay or a Compensable Delay exceeds any concurrent Non-Excusable Delay. Contractor is entitled to an extension of Contract Time, or compensation for Recoverable Costs, only if, and only to the extent that, such delay will unavoidably delay Final Completion.

(3) *Supporting Documentation.* The request must also include any and all supporting documentation necessary to evidence the delay and its actual impacts, including scheduling and cost impacts with a time impact analysis using critical path methodology and demonstrating the 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 that: the delay was an Excusable Delay or Compensable Delay, as defined above; Contractor has fully complied with its scheduling obligations in Section 5.2, Schedule Requirements; Contractor has made reasonable efforts to mitigate the delay and its schedule and cost impacts; the delay will unavoidably result in delaying Final Completion; and any Recoverable Costs claimed by Contractor were actually incurred and were reasonable under the circumstances.

(5) *Legal Compliance.* Nothing in this Section 5.3 is intended to require the waiver, alteration, or limitation of the applicability of Public Contract Code § 7102.

(6) *No Waiver.* Any grant of an extension of Contract Time, or compensation for Recoverable Costs due to Compensable Delay, will not operate as a waiver of City's right to assess liquidated damages for Non-Excusable Delay.

(7) *Dispute Resolution.* In the event of a dispute over entitlement to an extension of Contract Time or compensation for Recoverable Costs, Contractor may not stop 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. Contractor's sole recourse for an unresolved dispute based on City's rejection of a Change Order request for an extension of Contract Time or compensation for Recoverable 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 from the delay that are difficult to determine and accurately specify. Pursuant to Public Contract Code § 7203, if Contractor fails to achieve Final Completion within the Contract Time due to Contractor's Non-Excusable Delay, City will charge Contractor in the amount specified in the Contract for each calendar day that Final Completion is delayed beyond the Contract Time, as liquidated damages and not as a penalty. Any waiver of accrued liquidated damages, in whole or in part, is subject to approval of the City Council or its authorized delegee.

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

(B) **Milestones.** Liquidated damages may also be separately assessed for failure to meet milestones specified elsewhere in the Contract Documents.

(C) **Setoff.** City is entitled to deduct the amount of liquidated damages assessed against any payments otherwise due to Contractor, including progress payments, Final Payment, or unreleased 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 Non-Excusable Delay in achieving Final Completion.

(E) **Other Remedies.** City's right to liquidated damages under this Section applies only to damages arising from Contractor's Non-Excusable Delay or failure to complete the Work within the Contract Time. City retains its right to pursue all other remedies under the Contract for other types of damage, including damage to property or persons, costs or diminution in value from defective materials or workmanship, costs to repair or complete the Work, or other liability caused by Contractor.

Article 6 - Contract Modification

6.1 Contract Modification. Subject to the limited exception set forth in subsection (D) below, any change in the Work or the Contract Documents, including the Contract Price or Contract Time, will not be a valid and binding change to the Contract unless it is formalized in a Change Order, including a "no-cost" Change Order or a unilateral Change Order. Changes in the Work pursuant to this Article 6 will not operate to release, limit, or abridge Contractor's warranty obligations pursuant to Article 11 or any obligations of Contractor's bond sureties.

(A) **City-Directed Changes.** City may direct changes in the scope or sequence of Work or the requirements of the Contract Documents, without invalidating the Contract. Such changes may include Extra Work as set forth in subsection (C) below, or deletion or modification of portions of the Work. Contractor must promptly comply with City-directed changes in the Work in accordance with the original Contract Documents, even if Contractor and City have not yet reached agreement as to adjustments to the Contract Price or Contract Time for the change in the Work or for the Extra Work. Contractor is not entitled to extra compensation for cost savings resulting from "value engineering" pursuant to Public Contract Code § 7101, except to the extent authorized in advance by City in writing, and subject to any applicable procedural requirements for submitting a proposal for value engineering cost savings.

(B) **Disputes.** 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 a City-directed change in the 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. Likewise, in the event that City and Contractor dispute whether a portion or portions of the Work are already required by the Contract Documents or constitute Extra Work, or otherwise dispute the interpretation of any portion(s) of the Contract Documents, 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, as directed by City. If Contractor refuses to perform the Work in dispute, City may, acting in its sole discretion, elect to delete the Work from the Contract and reduce the Contract Price accordingly, and self-perform the Work or direct that the Work be performed by others. Alternatively, City may elect to terminate the Contract for convenience or for cause. Contractor's sole recourse for an unresolved dispute related to changes in the Work or performance of any Extra Work is to comply with the dispute resolution provisions set forth in Article 12, below.

(C) **Extra Work.** City may direct Contractor to perform Extra Work related to the Project. Contractor must promptly perform any Extra Work as directed or authorized by City in accordance with the original Contract Documents, even if Contractor and City have not yet reached agreement on adjustments to the Contract Price or Contract Time for such Extra Work. If Contractor believes it is necessary to perform Extra Work due to changed conditions, Contractor must promptly notify the Engineer in writing, specifically identifying the Extra Work and the reason(s) the Contractor believes it is Extra Work. This notification requirement does not constitute a Change Order request pursuant to Section 6.2, below. Contractor must maintain detailed daily records that itemize the cost of each element of Extra Work, and sufficiently distinguish the direct cost of the Extra Work from the cost of other Work performed. For each day that Contractor performs Extra Work, or Work that Contractor contends is Extra Work, Contractor must submit no later than the following Working Day, a daily report of the Extra Work performed that day and the related costs, together with copies of certified payroll, invoices, and other documentation substantiating the costs ("Extra Work Report"). The Engineer will make any adjustments to Contractor's Extra Work Report(s) based on the Engineer's records of the Work. When an Extra Work Report(s) is agreed on and signed by both City and Contractor, the Extra Work Report(s) will become the basis for payment under a duly authorized and signed Change Order. Failure to submit the required documentation by close of business on the next Working Day is deemed a full and complete waiver for any change in the Contract Price or Contract Time for any Extra Work performed that day.

(D) **Minor Changes and RFIs.** Minor field changes, including RFI replies from City, that do not affect the Contract Price or Contract Time and that are approved by the Engineer acting within their scope of authority, do not require a Change Order. By executing an RFI reply from City, Contractor agrees that it will perform the Work as clarified therein, with no change to the Contract Price or Contract Time.

(E) **Remedy for Non-Compliance.** Contractor's failure to promptly comply with a 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.

6.2 Contractor Change Order Requests. Contractor must submit a request or proposal for a change in the Work, compensation for Extra 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 or the Contract Time must be submitted in writing to the Engineer 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. If City requests that Contractor propose the terms of a Change Order, unless otherwise specified in City's request, Contractor must provide the Engineer with a written proposal for the change in the Contract Price or Contract Time within five working days of receiving City's request, in a form satisfactory to the Engineer.

(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, subcontract amounts, and, if applicable, Extra Work Reports. 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. Upon request, Contractor must permit City to inspect its original and unaltered bidding records, subcontract agreements, subcontract change orders, purchase orders, invoices, or receipts associated with the claimed costs.

(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 as to the Work or changes referenced herein, and agrees that any known or foreseeable costs, expenses, or time extension requests not included herein, are deemed waived."

6.3 Adjustments to Contract Price. The amount of any increase or decrease in the Contract Price will be determined based on one of the following methods listed below, in the order listed with unit pricing taking precedence over the other methods. Markup applies only to City-authorized time and material Work, and does not apply to any other payments to Contractor. For Work items or components that are deleted in their entirety, Contractor will only be entitled to compensation for those direct, actual, and documented costs (including restocking fees), reasonably incurred before Contractor was notified of the City's intent to delete the Work, with no markup for overhead, profit, or other indirect costs.

(A) **Unit Pricing.** Amounts previously provided by Contractor in the form of unit prices, either in a bid schedule or in a post-award schedule of values pursuant to Section 8.1, Schedule of Values, will apply to determine the price for the affected Work, to the extent applicable unit prices have been provided for that type of Work. No additional markup for overhead, profit, or other indirect costs will be added to the calculation.

(B) **Lump Sum.** A mutually agreed upon, all-inclusive lump sum price for the affected Work with no additional markup for overhead, profit, or other indirect costs.

(C) **Time and Materials.** On a time and materials basis, if and only to the extent compensation on a time and materials basis is expressly authorized by City in advance of Contractor's performance of the Work and subject to any not-to-exceed limit. Time and materials compensation for increased costs or Extra Work (but not decreased costs or deleted Work), will include allowed markup for overhead, profit, and other indirect costs, calculated as the total of the following sums, the cumulative total of which may not exceed the maximum markup rate of 15%:

- (1) All direct labor costs provided by the Contractor, excluding superintendence, project management, or administrative costs, plus 15% markup;
- (2) All direct material costs provided by the Contractor, including sales tax, plus 15% markup;
- (3) All direct plant and equipment rental costs provided by the Contractor, plus 15% markup;
- (4) All direct additional subcontract costs plus 10% markup for Work performed by Subcontractors; 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 the parties dispute the terms of a proposed Change Order, including disputes over the amount of compensation or extension of time that Contractor has requested, the value of deleted or changed Work, what constitutes Extra Work, or quantities used, 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 for the adjustment to compensation or time that the 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, Fees, Business License, and Taxes.

(A) **Permits, Fees, and City Business License.** Contractor must obtain and pay for all permits, fees, and licenses required to perform the Work, including a City business license. Contractor must cooperate with and provide notifications to all government agencies with jurisdiction over the Project, as may be required. Contractor must provide City with copies of all records of permits and permit applications, payment of required fees, and any licenses required for the Work.

(B) **Taxes.** 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 for the Project, including an onsite staging area for materials and equipment, a field office, sanitary facilities, utilities, storage, scaffolds, barricades, walkways, and any other temporary structure required to safely perform the Work along with any incidental utility services. The location of all temporary facilities must be

approved by the City prior to installation. Temporary facilities must be safe and adequate for the intended use and installed and maintained in accordance with Laws and the Contract Documents. Contractor must fence and screen the Project site and, if applicable, any separate Worksites, including the staging area, and its operation must minimize inconvenience to neighboring properties. Additional provisions pertaining to temporary facilities may be included in the Specifications or Special Conditions.

(A) **Utilities.** Contractor must install and maintain the power, water, sewer, and all other utilities required for the Project site, including the piping, wiring, internet and wifi connections, and any related equipment necessary to maintain the temporary facilities.

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

7.3 Noninterference and Site Management. Contractor must 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. Contractor must also minimize disruption of access to private property in the Project vicinity. Contractor must coordinate with affected property owners, tenants, and businesses, and maintain some vehicle and pedestrian access to their residences or properties at all times. Temporary access ramps, fencing or other measures must be provided as needed. Before blocking access to a private driveway or parking lot, Contractor must provide effective notice to the affected parties at least 48 hours in advance of the pending closure and allow them to remove vehicles. Private driveways, residences and parking lots must have access to a roadway during non-Work hours.

(A) **Offsite Acquisition.** Unless otherwise provided by City, Contractor must acquire, use, and dispose of, at its sole expense, any Worksites, licenses, easements, and temporary facilities necessary to access and perform the Work.

(B) **Offsite Staging Area and Field Office.** If additional space beyond the Project site is needed, such as for the staging area or the field office, Contractor may need to make arrangements with the nearby property owner(s) to secure the space. Before using or occupying any property owned by a third party, Contractor must provide City with a copy of the necessary license agreement, easement, or other written authorization from the property owner, together with a written release from the property owner holding City harmless from any related liability, in a form acceptable to the City Attorney.

(C) **Traffic Management.** Contractor must provide traffic management and traffic controls as specified in the Contract Documents, as required by Laws, and as otherwise required to ensure public and worker safety, and to avoid interference with public or private operations or the normal flow of vehicular, bicycle, or pedestrian traffic.

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

7.5 Project Site and Nearby Property Protections.

(A) **General.** Contractor is responsible at all times, on a 24-hour basis and at its sole cost, for protecting the Work, the Project site, and the materials and equipment to be incorporated into the Work, until the City has accepted the Project, excluding any exceptions to acceptance, if any. Except as specifically authorized by City, Contractor

must confine its operations to the area of the Project site indicated in the Plans and Specifications. Contractor is liable for any damage caused by Contractor or its Subcontractors to the Work, City's property, the property of adjacent or nearby property owners and the work or personal property of other contractors working for City, including damage related to Contractor's failure to adequately secure the Work or any Worksite.

(1) Subject to City's approval, Contractor will provide and install safeguards to protect the Work; any Worksite, including the Project site; City's real or personal property and the real or personal property of adjacent or nearby property owners, including plant and tree protections.

(2) City wastewater systems may not be interrupted. If the Work disrupts existing sewer facilities, Contractor must immediately notify City and establish a plan, subject to City's approval, to convey the sewage in closed conduits back into the sanitary sewer system. Sewage must not be permitted to flow in trenches or be covered by backfill.

(3) Contractor must remove with due care, and store at City's request, any objects or material from the Project site that City will salvage or reuse at another location.

(4) If directed by Engineer, Contractor must promptly repair or replace any property damage, as specified by the Engineer. However, acting in its sole discretion, City may elect to have the property damage remedied otherwise, and may deduct the cost to repair or replace the damaged property from payment otherwise due to Contractor.

(5) Contractor will not permit any structure or infrastructure to be loaded in a manner that will damage or endanger the integrity of the structure or infrastructure.

(B) **Securing Project Site.** After completion of Work each day, Contractor must secure the Project site and, to the extent feasible, make the area reasonably accessible to the public unless City approves otherwise. All excess materials and equipment not protected by approved traffic control devices must be relocated to the staging area or demobilized. Trench spoils must be hauled off the Project site daily and open excavations must be protected with steel plates. Contractor and Subcontractor personnel may not occupy or use the Project site for any purpose during non-Work hours, except as may be provided in the Contract Documents or pursuant to prior written authorization from City.

(C) **Unforeseen Conditions.** If Contractor encounters facilities, utilities, or other unknown conditions not shown on or reasonably inferable from the Plans or apparent from inspection of the Project site, Contractor must immediately notify the City and promptly submit a Request for Information to obtain further directions from the Engineer. Contractor must avoid taking any action which could cause damage to the facilities or utilities pending further direction from the Engineer. The Engineer's written response will be final and binding on Contractor. If the Engineer'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.

(D) **Support; Adjacent Properties.** Contractor must provide, install, and maintain all shoring, bracing, and underpinning 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 Laws. See also, Section 7.15, Trenching of Five Feet or More.

(E) **Notification of Property Damage.** Contractor must immediately notify the City of damage to any real or personal property resulting from Work on the Project. Contractor must immediately provide a written report to City of any such property damage in excess of \$500 (based on estimated cost to repair or replace) within 24 hours of the occurrence. The written report must include: (1) the location and nature of the damage, and the owner of the property, if known; (2) the name and address of each employee of Contractor or any Subcontractor involved in the damage; (3) a detailed description of the incident, including precise location, time, and names and contact information for known witnesses; and (4) a police or first responder report, if applicable. If Contractor is required to file an accident report with another government agency, Contractor will provide a copy of the report to City.

7.6 Materials and Equipment.

(A) **General.** Unless otherwise specified, all materials and equipment required for the Work must be new, free from defects, and of the best grade for the intended purpose, and furnished in sufficient quantities to ensure the proper and expeditious performance of the Work. Contractor must employ measures to preserve the specified quality and fitness of the materials and equipment. 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 recommendations or instructions. Contractor is responsible for all shipping, handling, and storage costs associated with the materials and equipment required for the Work. Contractor is responsible for providing security and protecting the Work and all of the required materials, supplies, tools and equipment at Contractor's sole cost until City has formally accepted the Project as set forth in Section 11.1, Final Completion. Contractor will not assign, sell, mortgage, or hypothecate any materials or equipment for the Project, or remove any materials or equipment that have been installed or delivered.

(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 in accordance with the Contract Documents. Contractor must notify City of any defects discovered in City-provided materials or equipment, sufficiently in advance of scheduled use or installation to afford adequate time to procure replacement materials or equipment as needed. 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 or license required for use of patented or copyright-protected materials, equipment, devices, or processes that are incorporated into the Work. Contractor's indemnity obligations in Article 4 apply 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, or thing (collectively, "item") or service by specific brand or trade name, followed by the words "or equal," is intended only to indicate the quality and type of item or service desired, and Contractor may request use of any equal item or service. Unless otherwise stated in the Specifications, any reference to a specific brand or trade name for an item or service that is used solely for the purpose of describing the type of item or service desired, will be deemed to be followed by the words "or equal." A substitution will only be approved if it is a true "equal" item or service in every aspect of design, function, and quality, as

determined by City, including dimensions, weight, maintenance requirements, durability, fit with other elements, and schedule impacts.

(B) **Request for Substitution.** A post-award request for substitution of an item or service must be submitted in writing to the Engineer for approval in advance, 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.** Any available data substantiating the proposed substitute as an equal item or service must be submitted with the written request for substitution. Contractor's failure to timely provide all necessary substantiation, including any required test results as soon as they are available, is grounds 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 at Contractor's sole cost. City has sole discretion to determine whether a proposed substitution is equal, and City's determination is final.

(E) **Approval or Rejection.** If the proposed substitution is approved, Contractor is solely responsible for any additional costs or time associated with the substituted item or service. If the proposed substitution is rejected, Contractor must, without delay, install the item or use the service as specified by City.

(F) **Contractor's Obligations.** City's approval 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 and testing by City at all times and at all locations during construction and/or fabrication, including at any Worksite, shops, and yards. 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 testing or inspection. Neither City's inspection or testing of Work, nor its failure to do so, operate to waive or limit Contractor's duty to complete the Work in accordance with the Contract Documents.

(B) **Scheduling and Notification.** Contractor must cooperate with City in coordinating the inspections and testing. Contractor must submit samples of materials, at Contractor's expense, and schedule all tests required by the Contract Documents in time to avoid any delay to the progress of the Work. Contractor must notify the Engineer no later than noon of the Working Day before any inspection or testing and must provide timely notice to the other necessary parties as specified in the Contract Documents. If Contractor schedules an inspection or test beyond regular Work hours, or on a Saturday, Sunday, or recognized City holiday, Contractor must notify the Engineer at least two Working Days in advance for approval. If approved, Contractor must reimburse City for the cost of the overtime inspection or testing. Such costs, including the City's hourly costs for required personnel, may be deducted from payments otherwise due to Contractor.

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

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

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

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

(4) Contractor is responsible for properly shoring all compaction test sites deeper than five feet below grade, as required under Section 7.15 below.

(5) Any Work or material that is defective or fails to comply with the requirements of the Contract Documents must be promptly repaired, removed, replaced, or corrected by Contractor, at Contractor's sole expense, even if that Work or material was previously inspected or included in a progress payment.

(D) **Contractor's Obligations.** Contractor is solely responsible for any delay occasioned by remediation of defective or noncompliant Work or material. Inspection or testing of the Work does not in any way relieve Contractor of its obligations to perform the Work as specified. Any Work done without the inspection(s) or testing required by the Contract Documents will be subject to rejection by City.

(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 also apply to final inspection under Article 11, Completion and Warranty Provisions.

7.9 Project Site Conditions and Maintenance. Contractor must at all times, on a 24-hour basis and at its sole cost, maintain the Project site and staging and storage areas in clean, neat, and sanitary condition and in compliance with all Laws pertaining to safety, air quality, and dust control. Adequate toilets must be provided, and properly maintained and serviced for all workers on the Project site, located in a suitably secluded area, subject to City's prior approval. Contractor must also, on a daily basis and at its sole cost, remove and properly dispose of the debris and waste materials from the Project site.

(A) **Air Emissions Control.** Contractor must not discharge smoke or other air contaminants into the atmosphere in violation of any Laws. Contractor must comply with all Laws, including the California Air Resources Board's In-Use Off-Road Diesel-Fueled Fleets Regulation (13 CCR § 2449 et seq.).

(B) **Dust and Debris.** Contractor must minimize and confine dust and debris resulting from the Work. Contractor must abate dust nuisance by cleaning, sweeping, and immediately sprinkling with water excavated areas of dirt or other materials prone to cause dust, and within one hour after the Engineer notifies Contractor that an airborne

nuisance exists. The Engineer may direct that Contractor provide an approved water-spraying truck for this purpose. If water is used for dust control, Contractor will only use the minimum necessary. Contractor must take all necessary steps to keep waste water out of streets, gutters, or storm drains. See Section 7.19, Environmental Control. If City determines that the dust control is not adequate, City may have the work done by others and deduct the cost from the Contract Price. Contractor will immediately remove any excess excavated material from the Project site and any dirt deposited on public streets.

(C) **Clean up.** Before discontinuing Work in an area, Contractor must clean the area and remove all debris and waste along with the construction equipment, tools, machinery, and surplus materials.

(1) Except as otherwise specified, all excess Project materials, and the materials removed from existing improvements on the Project site with no salvage value or intended reuse by City, will be Contractor's property.

(2) Hauling trucks and other vehicles leaving the Project site must be cleaned of exterior mud or dirt before traveling on City streets. Materials and loose debris must be delivered and loaded to prevent dropping materials or debris. Contractor must immediately remove spillage from hauling on any publicly traveled way. Streets affected by Work on the Project must be kept clean by street sweeping.

(D) **Disposal.** Contractor must dispose of all Project debris and waste materials in a safe and legal manner. Contractor may not burn or bury waste materials on the Project site. Contractor will not allow any dirt, refuse, excavated material, surplus concrete or mortar, or any associated washings, to be disposed of onto streets, into manholes or into the storm drain system.

(E) **Completion.** At the completion of the Work, Contractor must remove from the Project site all of its equipment, tools, surplus materials, waste materials and debris, presenting a clean and neat appearance. Before demobilizing from the Project site, 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. Contractor must ensure that all parts of the construction are properly joined with the previously existing and adjacent improvements and conditions. Contractor must provide all cutting, fitting and patching needed to accomplish that requirement. Contractor must also repair or replace all existing improvements that are damaged or removed during the Work, both on and off the Project site, including curbs, sidewalks, driveways, fences, signs, landscaping, utilities, street surfaces and structures. Repairs and replacements must be at least equal to the previously existing improvements, and the condition, finish and dimensions must match the previously existing improvements. Contractor must restore to original condition all property or items that are not designated for alteration under the Contract Documents and leave each Worksite clean and ready for occupancy or use by City.

(F) **Non-Compliance.** If Contractor fails to comply with its maintenance and cleanup obligations or any City clean up order, City may, acting in its sole discretion, elect to suspend the Work until the condition(s) is corrected with no increase in the Contract Time or Contract Price, or undertake appropriate cleanup measures without further notice and deduct the cost from any amounts due or to become due to Contractor.

7.10 Instructions and Manuals. Contractor must provide to City 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 City at least ten days prior to the first such application. The instructions and manuals, along with any required guarantees, must be delivered to City for review.

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

7.11 As-built Drawings. Contractor and its Subcontractors must prepare and maintain at the Project site a detailed, complete and accurate as-built set of the Plans which will be used solely for the purpose of recording changes made in any portion of the original Plans 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. City may withhold the estimated cost for City to have the as-built drawings prepared from payments otherwise due to Contractor, until the as-built drawings are brought up to date to the satisfaction of City. Actual locations to scale must be identified on the as-built drawings for all runs of mechanical and electrical work, including all site utilities installed underground, in walls, floors, or otherwise concealed. Deviations from the original Plans must be shown in detail. The exact location of all main runs, whether piping, conduit, ductwork or drain lines, must be shown by dimension and elevation. The location of all buried pipelines, appurtenances, or other improvements must be represented by coordinates and by the horizontal distance from visible above-ground improvements.

(B) **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 Engineer for review and acceptance as a condition precedent to Final Completion and Final Payment.

7.12 Existing Utilities.

(A) **General.** The Work may be performed in developed, urban areas with existing utilities, both above and below ground, including utilities identified in the Contract Documents or in other informational documents or records. Contractor must take due care to locate identified or reasonably identifiable utilities before proceeding with trenching, excavation, or any other activity that could damage or disrupt existing utilities. This may include excavation with small equipment, potholing, or hand excavation, and, if practical, using white paint or other suitable markings to delineate the area to be excavated. Except as otherwise provided herein, Contractor will be responsible for costs resulting from damage to identified or reasonably identifiable utilities due to Contractor's negligence or failure to comply with the Contract Documents, including the requirements in this Article 7.

(B) **Unidentified Utilities.** Pursuant to Government Code § 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 utility facilities not indicated in the Plans 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 the delay was caused by City's failure to provide for removal or relocation of the utility facilities.

7.13 Notice of Excavation. Contractor must comply with all applicable requirements in Government Code § 4216 et seq., which are incorporated by reference herein.

7.14 Trenching and Excavations of Four Feet or More. As required by Public Contract Code § 7104, if the Work includes digging trenches or other excavations that extend deeper than four feet below the surface, the provisions in this Section apply to the Work and the Project.

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

(1) Material that Contractor believes may be a hazardous waste, as defined in § 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 Laws;

(2) Subsurface or latent physical conditions at the Project site differing from those indicated by information about the Project site made available to bidders prior to the deadline for submitting bids; or

(3) Unknown physical conditions at the Project site 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 materially differ from those indicated, apparent, or reasonably inferred from information about the Project site made available to bidders, or 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 City and Contractor regarding any of the conditions specified in subsection (B) above, or the terms of a Change Order issued by City, Contractor will not be excused from completing the Work within the Contract Time, 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 Laws which pertain to the resolution of disputes between Contractor and City.

7.15 Trenching of Five Feet or More. As required by Labor Code § 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 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 California 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. Except as otherwise specified, 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 the Engineer. Unless otherwise specified in the Contract Documents, Contractor must provide all lines and grades required to execute the Work. Contractor must also provide, preserve, and replace if necessary, all construction stakes required for the Project. All stakes or marks must be set by a California licensed surveyor or a California registered civil engineer. Contractor must notify the Engineer of any discrepancies found between Contractor's staking and grading and information provided by the Contract Documents. Upon completion, all Work must conform to the lines, elevations, and grades shown in the Plans, including any changes directed by a Change Order.

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, a burial ground, 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 City. If required by City, Contractor must assist in protecting or recovering the Historic or Archeological Items, with any such assistance to be compensated as Extra Work on a time and materials basis under Article 6, Contract Modification. At City's discretion, a suspension of Work required due to discovery of Historic or Archeological Items may be treated as Excusable Delay pursuant to Article 5, or 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 must prevent the release of any hazardous material or hazardous waste into the soil or groundwater, and prevent the unlawful discharge of pollutants into City's storm drain system and watercourses as required below. Contractor and its Subcontractors must at all times in the performance of the Work comply with all Laws 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 Contractor must comply with it without adjustment of the Contract Price or the Contract Time. Contractor must timely and completely submit required reports and monitoring information required by the conditions of the Stormwater Permit. Contractor also must comply with all other Laws governing discharge of stormwater, including applicable municipal stormwater management programs.

7.20 Noise Control. Contractor must comply with all applicable noise control Laws. Noise control requirements apply to all equipment used for the Work or related to the Work, including trucks, transit mixers or transient equipment that may or may not be owned by Contractor.

- 7.21 Mined Materials.** Pursuant to the Surface Mining and Reclamation Act of 1975, Public Resources Code § 2710 et seq., any purchase of mined materials, such as construction aggregate, sand, gravel, crushed stone, road base, fill materials, and any other mineral materials must originate from a surface mining operation included on the AB 3098 List, which may be accessed online at: <https://www.conservation.ca.gov/smgb/Pages/AB-3098-List.aspx>.

Article 8 - Payment

- 8.1 Schedule of Values.** Prior to submitting its first application for payment, Contractor must prepare and submit to the Project Manager a schedule of values apportioned to the various divisions and phases of the Work, including mobilization and demobilization. If a Bid Schedule was submitted with Contractor's bid, the amounts in the schedule of values must be consistent with the Bid Schedule. 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.

(A) **Measurements for Unit Price Work.** Materials and items of Work to be paid for on the basis of unit pricing will be measured according to the methods specified in the Contract Documents.

(B) **Deleted or Reduced Work.** Contractor will not be compensated for Work that City has deleted or reduced in scope, except for any labor, material, or equipment costs for such Work that Contractor reasonably incurred before Contractor learned that the Work could be deleted or reduced. Contractor will only be compensated for those actual, direct and documented costs incurred, and will not be entitled to any mark up for overhead or lost profits.

- 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 the 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 Project site, as well as authorized and approved Change Orders. Each payment application must be supported by the unit prices submitted with Contractor's Bid Schedule and/or 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 within 30 days after Contractor has submitted a complete and accurate payment application, subject to Public Contract Code § 20104.50. City will deduct a percentage from each progress payment as retention, as set forth in Section 8.5, below, and may deduct or withhold additional amounts as set forth in Section 8.3, below.

- 8.3 Adjustment of Payment Application.** City may adjust or reject the amount requested in a payment application, including application for Final Payment, in whole or in part, if the amount requested is disputed or unsubstantiated. Contractor will be notified in writing of the basis for the modification to the amount requested. City may also deduct or withhold from payment otherwise due based upon any of the circumstances and amounts listed

below. Sums withheld from payment otherwise due will be released when the basis for that withholding has been remedied and no longer exists.

(A) For Contractor's unexcused failure to perform the Work as required by the Contract Documents, including correction or completion of punch list items, City may withhold or deduct an amount based on the City's estimated cost to correct or complete the Work.

(B) For loss or damage caused by Contractor or its Subcontractors arising out of or relating to performance of the Work or any failure to protect the Project site, City may deduct an amount based on the estimated cost to repair or replace.

(C) For Contractor's failure to pay its Subcontractors and suppliers when payment is due, City may withhold an amount equal to the total of past due payments and may opt to pay that amount separately via joint check pursuant to Section 8.6(B), Joint Checks.

(D) For Contractor's failure to timely correct rejected, nonconforming, or defective Work, City may withhold or deduct an amount based on the City's estimated cost to correct or complete the Work.

(E) For any unreleased stop notice, City may withhold 125% of the amount claimed.

(F) For Contractor's failure to submit any required schedule or schedule update in the manner specified or within the time specified in the Contract Documents, City may withhold an amount equal to five percent of the total amount requested until Contractor complies with its schedule submittal obligations.

(G) For Contractor's failure to maintain or submit as-built documents in the manner specified or within the time specified in the Contract Documents, City may withhold or deduct an amount based on the City's cost to prepare the as-builts.

(H) For Work performed without Shop Drawings that have been accepted by City, when accepted Shop Drawings are required before proceeding with the Work, City may deduct an amount based on the estimated cost to correct unsatisfactory Work or diminution in value.

(I) For fines, payments, or penalties assessed under the Labor Code, City may deduct from payments due to Contractor as required by Laws and as directed by the Division of Labor Standards Enforcement.

(J) For any other costs or charges that may be withheld or deducted from payments to Contractor, as provided in the Contract Documents, including liquidated damages, City may withhold or deduct such amounts from payment otherwise due to Contractor.

8.4 Early Occupancy. 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 full amount due on each progress payment (i.e., the amount due before any withholding or deductions pursuant to Section 8.3, Adjustment of Payment Application), or the percentage stated in the Notice Inviting Bids, whichever is greater, as retention to ensure full and satisfactory performance of the Work. Contractor is not entitled to any reduction in the rate of withholding at any time, nor to release of any retention before 35 days following City's acceptance of the Project.

(A) **Substitution of Securities.** As provided by Public Contract Code § 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 must fully comply with Public Contract Code § 22300 and will be subject to approval as to form by City's legal counsel. If City exercises its right to draw upon such securities in the event of default pursuant to section (7) of the statutory Escrow Agreement for Security Deposits in Lieu of Retention, pursuant to subdivision (g) of Public Contract Code § 22300 ("Escrow Agreement"), and if Contractor disputes that it is in default, its sole remedy is to comply with the dispute resolution procedures in Article 12 and the provisions therein. It is agreed that for purposes of this paragraph, an event of default includes City's rights pursuant to these Contract Documents to withhold or deduct sums from retention, including withholding or deduction for liquidated damages, incomplete or defective Work, stop payment notices, or backcharges. It is further agreed that if any individual authorized to give or receive written notice on behalf of a party pursuant to section (10) of the Escrow Agreement are unavailable to give or receive notice on behalf of that party due to separation from employment, retirement, death, or other circumstances, the successor or delegee of the named individual is deemed to be the individual authorized to give or receive notice pursuant to section (10) of the Escrow Agreement.

(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 pursuant to Section 8.3, Adjustment of Payment Application, 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 pursuant to Section 11.1(C), Acceptance, or, if the Project has not been accepted, no later than 60 days after the Project is otherwise considered complete pursuant to Public Contract Code § 7107(c).

8.6 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 Project site by the Subcontractor or supplier during the preceding month. Such payments must be made in accordance with the requirements of Laws pertaining to such payments, and those of the Contract Documents and applicable subcontract or supplier contract.

(A) **Withholding for Stop Notice.** Pursuant to Civil Code § 9358, 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, acting in its sole discretion, to issue joint checks made payable to Contractor and a Subcontractor or supplier, if City determines this is necessary to ensure fair and timely payment for a Subcontractor or supplier who has provided services or goods for the Project. 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 the City Attorney's Office. 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.

8.7 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. Corrections to previous progress payments, including adjustments to estimated quantities for unit priced items, may be included in the Final Payment. If Contractor fails to submit a timely application for Final Payment, City reserves the right to unilaterally process and issue Final Payment without an application from Contractor in

order to close out the Project. For the purposes of determining the deadline for Claim submission pursuant to Article 12, the date of Final Payment is deemed to be the date that City acts to release undisputed retention as final payment to Contractor, or otherwise provides written notice to Contractor of Final Payment or that no undisputed funds remain available for Final Payment due to offsetting withholdings or deductions pursuant to Section 8.3, Adjustment of Payment Application. 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.

- 8.8 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 waiver and release of all claims against City arising from or related to the portion of Work covered by those undisputed amounts subject to the limitations of Public Contract Code § 7100. Any disputed amounts may be specifically excluded from the release.
- 8.9 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 Laws prohibiting discrimination, including the California Fair Employment and Housing Act (Govt. Code § 12900 et seq.), Government Code § 11135, and Labor Code §§ 1735, 1777.5, 1777.6, and 3077.5.
- 9.2 Labor Code Requirements.**
- (A) **Eight Hour Day.** Pursuant to Labor Code § 1810, eight hours of labor constitute a legal day's work under this Contract.
- (B) **Penalty.** Pursuant to Labor Code § 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 § 1815.
- (C) **Apprentices.** Contractor is responsible for compliance with the requirements governing employment and payment of apprentices, as set forth in Labor Code § 1777.5, which is fully incorporated by reference.
- (D) **Notices.** Pursuant to Labor Code § 1771.4, Contractor is required to post all job site notices prescribed by Laws.
- 9.3 Prevailing Wages.** Each worker performing Work under this Contract that is covered under Labor Code §§ 1720, 1720.3, or 1720.9, including cleanup at the Project site, must be paid at a rate not less than the prevailing wage as defined in §§ 1771 and 1774 of the Labor Code. The prevailing wage rates are on file with the City and available online at <http://www.dir.ca.gov/dlsr>. Contractor must post a copy of the applicable prevailing rates at the Project site.

(A) **Penalties.** Pursuant to Labor Code § 1775, Contractor and any Subcontractor will forfeit to City as a penalty up to \$200.00 for each calendar day, or portion thereof, 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 currently applicable state or federal prevailing wage rates.

9.4 Payroll Records. Contractor must comply with the provisions of Labor Code §§ 1771.4, 1776, and 1812 and all implementing regulations, which are fully incorporated by this reference, including requirements for monthly electronic submission of payroll records to the DIR.

(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; and
- (2) Contractor or the Subcontractor has complied with the requirements of Labor Code §§ 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 their authorized representative on request, to City, to the Division of Labor Standards Enforcement, to the Division of Apprenticeship Standards of the DIR, and as further required by the Labor Code.

(C) **Enforcement.** Upon notice of noncompliance with Labor Code § 1776, Contractor or Subcontractor has ten days in which to comply with the 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 thereof, 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 payments then due to Contractor.

9.5 Labor Compliance. Pursuant to Labor Code § 1771.4, the Contract for this Project is subject to compliance monitoring and enforcement by the DIR.

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 at all times comply with all applicable health and safety Laws and seek to avoid injury, loss, or damage to persons or property by taking reasonable steps to protect its employees and

other persons at any Worksite, materials and equipment stored on or off site, and property at or adjacent to any Worksite.

(A) **Reporting Requirements.** Contractor must immediately notify the City of any death, serious injury or illness resulting from Work on the Project. Contractor must immediately provide a written report to City of each recordable accident or injury occurring at any Worksite within 24 hours of the occurrence. The written report must include: (1) the name and address of the injured or deceased person; (2) the name and address of each employee of Contractor or of any Subcontractor involved in the incident; (3) a detailed description of the incident, including precise location, time, and names and contact information for known witnesses; and (4) a police or first responder report, if applicable. 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 Laws.

(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 Project site 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 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 City's request for corrective measures pursuant to this provision.

10.2 Hazardous Materials. Unless otherwise specified in the Contract Documents, this Contract does not include the removal, handling, or disturbance of any asbestos or other Hazardous Materials. If Contractor encounters materials on the Project site 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 City. No asbestos, asbestos-containing products or other Hazardous Materials may be used in performance of the Work.

10.3 Material Safety. Contractor is solely responsible for complying with § 5194 of Title 8 of the California Code of Regulations, including by providing information to Contractor's employees about any hazardous chemicals to which they may be exposed in the course of the Work. A hazard communication program and other forms of warning and training about such exposure must be used. Contractor must also maintain Safety Data Sheets ("SDS") at the Project site, as required by Laws, for materials or substances used or consumed in the performance of the Work. The SDS will be accessible and available to Contractor's employees, Subcontractors, and City.

(A) **Contractor Obligations.** Contractor is solely responsible for the proper delivery, handling, use, storage, removal, and disposal of all materials brought to the Project site and/or used in the performance of the Work. Contractor must notify the Engineer if a specified product or material cannot be used safely.

(B) **Labeling.** Contractor must ensure proper labeling on any material brought onto the Project site 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.

10.4 Hazardous Condition. Contractor is solely responsible for determining whether a hazardous condition exists or is created during the course of the Work, involving a risk of bodily harm to any person or risk of damage to any property. If a hazardous condition exists or is created, Contractor must take all precautions necessary to address the condition and ensure that the Work progresses safely under the circumstances. Hazardous conditions may result from, but are not limited to, use of specified materials or equipment, the Work location, the Project site condition, the method of construction, or the way any Work must be performed.

10.5 Emergencies. In an emergency affecting the safety or protection of persons, Work, or property at or adjacent to any Worksite, Contractor must take reasonable and prompt actions to prevent damage, injury, or loss, without prior authorization from the City if, under the circumstances, there is inadequate time to seek prior authorization from the City.

Article 11 - Completion and Warranty Provisions

11.1 Final Completion.

(A) **Final Inspection and Punch List.** When the Work required by this Contract is fully performed, Contractor must provide written notification to City requesting final inspection. The Engineer will schedule the date and time for final inspection, which must include Contractor's primary representative for this Project and its superintendent. Based on that inspection, City will prepare a punch list of any items that are incomplete, missing, defective, incorrectly installed, or otherwise not compliant with the Contract Documents. The punch list to Contractor 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. The omission of any non-compliant item from a punch list will not relieve Contractor from fulfilling all requirements of the Contract Documents. Contractor's failure to complete any punch list item within the time specified in the punch list will not waive or abridge its warranty obligations for any such items that must be completed by the City or by a third party retained by the City due to Contractor's failure to timely complete any such outstanding item.

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

(C) **Acceptance.** The Project will be considered accepted upon City Council action during a public meeting to accept the Project, unless the Engineer is authorized to accept the Project, in which case the Project will be considered accepted upon the date of the Engineer's issuance of a written notice of acceptance. In order to avoid delay of Project close out, the City may elect, acting in its sole discretion, to accept the Project as complete subject to exceptions for punch list items that are not completed within the time specified in the punch list.

(D) **Final Payment and Release of Retention.** 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 withhold up to 150% of City's estimated cost to complete each of the remaining items from Final Payment and may use the withheld retention to pay for the costs to self-perform the outstanding items or to retain a third party to complete any such outstanding punch list item.

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. Contractor warrants that materials or items incorporated into the Work comply with the requirements and standards in the Contract Documents, including compliance with Laws, and that any Hazardous Materials encountered or used were handled as required by Laws. 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 Project acceptance (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 Final Completion, 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 agrees to be 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. Work performed during the Warranty Period ("Warranty Work") will be subject to the warranty provisions in this Section 11.2 for a one-year period that begins upon completion of such Warranty Work to City's satisfaction.

(F) **City's Remedies.** If Contractor or its responsible Subcontractor fails to correct defective Work within ten days following notice by City, or sooner if required by the circumstances, City may correct the defects to conform with the Contract Documents at Contractor's sole expense. Contractor must reimburse City for its costs in accordance with subsection (H), below.

(G) **Emergency Repairs.** In cases of emergency where any delay in correcting defective Work could cause harm, loss or damage, City may immediately correct the defects to conform with the Contract Documents at Contractor's sole expense. Contractor or its surety must reimburse City for its costs in accordance with subsection (H), below.

(H) **Reimbursement.** Contractor must reimburse City for its costs to repair under subsections (F) or (G), above, 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 and its surety are 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 City incurs 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.

(A) **Non-Waiver.** Occupation or use of the Project, in whole or in part, 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 complete the Work within the Contract Time.

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 City acceptance of the Project, 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 by registered or certified mail with return receipt requested, for a change in the Contract Time, including a time extension or relief from liquidated damages, or a change in the Contract Price, when the demand has previously been submitted to City in accordance with the requirements of the Contract Documents, and which has been rejected or disputed by City, in whole or in part. A Claim may also include that portion of a unilateral Change Order that is disputed by the Contractor.

(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 § 9204 and § 20104 et seq., which are incorporated by reference herein.

(D) **No Work Delay.** Notwithstanding the submission of a Claim or any other dispute between the parties related to the Project or the Contract Documents, Contractor must perform the Work and may not delay or cease Work pending resolution of a Claim or other dispute, but must continue to diligently prosecute the performance and timely completion of the Work, including the Work pertaining to the Claim or other dispute.

(E) **Informal Resolution.** Contractor will make a good faith effort to informally resolve a dispute before initiating a Claim, preferably by face-to-face meeting between authorized representatives of Contractor and City.

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, clearly identified as a "Claim" submitted pursuant to this Article 12 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 a copy of City's written rejection that is in dispute. The Claim must clearly identify and describe the dispute, including relevant references to applicable portions of the Contract Documents, and a chronology of relevant events. Any Claim for additional payment must include a complete, itemized breakdown of all known or estimated 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 component of claimed cost. Any Claim for an extension of time or delay costs must be substantiated with a schedule analysis and narrative depicting and explaining claimed time impacts.

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

(1) Provide a cover letter, specifically identifying the submission as a "Claim" submitted under this Article 12 and specifying the requested remedy (e.g., amount of proposed change to Contract Price and/or change to Contract Time).

(2) Provide a summary of each Claim, including underlying facts and the basis for entitlement, and identify each specific demand at issue, including the specific Change Order request (by number and submittal date), and the date of City's rejection of that demand, in whole or in part.

(3) Provide a detailed explanation of each issue in dispute. For multiple issues included within a single Claim or for multiple Claims submitted concurrently, separately number and identify each individual issue or Claim, and include the following for each separate issue or Claim:

a. A succinct statement of the matter in dispute, including Contractor's position and the basis for that position;

b. Identify and attach all documents that substantiate the Claim, including relevant provisions of the Contract Documents, RFIs,

calculations, and schedule analysis (see subsection (A), Substantiation, above);

c. A chronology of relevant events; and

d. Analysis and basis for claimed changes to Contract Price, Contract Time, or any other remedy requested.

(4) Provide a summary of issues and corresponding claimed damages. If, by the time of the Claim submission deadline (below), the precise amount of the requested change in the Contract Price or Contract Time is not yet known, Contractor must provide a good faith estimate, including the basis for that estimate, and must identify the date by which it is anticipated that the Claim will be updated to provide final amounts.

(5) Include 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 submittal are true and correct. Contractor warrants that this Claim submittal is comprehensive and complete as to the matters in dispute, and agrees that any costs, expenses, or delay not included herein are deemed waived."

(C) **Submission Deadlines.**

(1) A Claim disputing rejection of a request for a change in the Contract Time or Contract Price 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. A Claim disputing the terms of a unilateral Change Order must be submitted within 15 days following the date of issuance of the unilateral Change Order. These Claim deadlines apply even if Contractor cannot yet quantify the total amount of any requested change in the Contract Time or Contract Price. If the Contractor cannot quantify those amounts, it must submit an estimate of the amounts claimed pending final determination of the requested remedy by Contractor.

(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 8.7, Final Payment.

(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 City's Response. City will respond within 45 days of receipt of the Claim with a written statement identifying which portion(s) of the Claim are disputed, unless the 45-day period is extended by mutual agreement of City and Contractor or as otherwise allowed under Public Contract Code § 9204. However, if City determines that the Claim is not adequately substantiated pursuant to Section 12.2(A), Substantiation, City 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 the Claim.

(A) **Additional Information.** If additional information is thereafter required, it may be requested and provided upon mutual agreement of City and Contractor. If Contractor's Claim is based on estimated amounts, Contractor has a continuing duty to update its Claim as soon as possible with information on actual amounts in order to facilitate prompt and fair resolution of the Claim.

(B) **Non-Waiver.** Any failure by City to respond within the times specified above will 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 Meet and Confer. If Contractor disputes City's written response, or City fails to respond within the specified time, within 15 days of receipt of City's response or within 15 days of City's failure to respond within the applicable 45-day time period under Section 12.3, respectively, Contractor may notify City of the dispute in writing sent by registered or certified mail, return receipt requested, and demand an informal conference to meet and confer for settlement of the issues in dispute. If Contractor fails to notify City of the dispute and demand an informal conference to meet and confer in writing within the specified time, Contractor's Claim will be deemed waived.

(A) **Schedule Meet and Confer.** 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 each of the individuals that each party requires to represent its interests at the meet and confer conference.

(B) **Location for Meet and Confer.** The meet and confer conference will be scheduled at a location at or near City's principal office.

(C) **Written Statement After Meet and Confer.** Within ten working days after the meet and confer has concluded, City will issue a written statement identifying which portion(s) of the Claim remain in dispute, if any.

(D) **Submission to Mediation.** If the Claim or any portion remains in dispute following the meet and confer conference, within ten working days after the City issues the written statement identifying any portion(s) of the Claim remaining in dispute, the Contractor may identify in writing disputed portion(s) of the Claim, which will be submitted for mediation, as set forth below.

12.5 Mediation and Government Code Claims.

(A) **Mediation.** Within ten working days after the City issues the written statement identifying any portion(s) of the Claim remaining in dispute following the meet and confer, City and Contractor will mutually agree to a mediator, as provided under Public Contract Code § 9204. Mediation will be scheduled to ensure the mutual availability of the selected mediator and all of the individuals that each party requires to represent its interests. If there are multiple Claims in dispute, the parties may agree to schedule the mediation to address all outstanding Claims at the same time. The parties will share the costs of the mediator and mediation fees equally, but each party is otherwise solely and separately responsible for its own costs to prepare for and participate in the mediation, including costs for its legal counsel or any other consultants.

(B) **Government Code Claims.**

(1) Timely presentation of a Government Code Claim is a condition precedent to filing any legal action based on or arising from the Contract. Compliance with the Claim submission requirements in this Article 12 is a condition precedent to filing a Government Code Claim.

(2) The time for filing a Government Code Claim will be tolled from the time Contractor submits its written Claim pursuant to Section 12.2, above, until the time that Claim is denied in whole or in part at the conclusion of the meet and confer process, including any period of time used by the meet and confer process. However, if the Claim is submitted to mediation, the time for filing a Government Code Claim will be tolled until conclusion of the mediation, including any continuations, if the Claim is not fully resolved by mutual agreement of the parties during the mediation or any continuation of the mediation.

12.6 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.

12.7 Arbitration. It is expressly agreed, under Code of Civil Procedure § 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.

12.8 Burden of Proof and Limitations. 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 speculative, special, or consequential damages, including home office overhead or any form of overhead not directly incurred at the Project site or any other 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. The Eichleay Formula or similar formula will not be used for any recovery under the Contract. The City will not be directly liable to any Subcontractor or supplier.

12.9 Legal Proceedings. In any legal proceeding that involves enforcement of any requirements of the Contract Documents, the finder of fact will receive detailed instructions on the meaning and operation of the Contract Documents, including conditions, limitations of liability, remedies, claim procedures, and other provisions bearing on the defenses and theories of liability. Detailed findings of fact will be requested to verify enforcement of the Contract Documents. All of the City's remedies under the Contract Documents will be construed as cumulative, and not exclusive, and the City reserves all rights to all remedies available under law or equity as to any dispute arising from or relating to the Contract Documents or performance of the Work.

12.10 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, including disputes regarding suspension or early termination of the 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, including

non-compliance with applicable environmental or health and safety Laws, City may immediately order the Work, or any portion of it, suspended until the circumstances giving rise to the suspension have been eliminated to City's satisfaction.

(A) **Notice of Suspension.** Upon receipt of City's written notice to suspend the Work, in whole or in part, except as otherwise specified in the notice of suspension, Contractor and its Subcontractors must promptly stop Work as specified in the notice of suspension; comply with directions for cleaning and securing the Worksite; and protect the completed and in-progress Work and materials. Contractor is solely responsible for any damages or loss resulting from its failure to adequately secure and protect the Project.

(B) **Resumption of Work.** Upon receipt of the City's written notice to resume the suspended Work, in whole or in part, except as otherwise specified in the notice to resume, Contractor and its Subcontractors must promptly re-mobilize and resume the Work as specified; and within ten days from the date of the notice to resume, Contractor must submit a recovery schedule, prepared in accordance with the Contract Documents, showing how Contractor will complete the Work within the Contract Time.

(C) **Failure to Comply.** Contractor will not be entitled to an increase in the Contract Time or Contract Price for a suspension occasioned by Contractor's failure to comply with the Contract Documents.

(D) **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. Upon notice by City pursuant to this provision, Contractor must immediately suspend, delay, or interrupt the Work and secure the Project site as directed by City except for taking measures to protect completed or in-progress Work as directed in the suspension notice, and subject to the provisions of Section 13.1(A) and (B), above. If Contractor submits a timely request for a Change Order in compliance with Articles 5 and 6, the Contract Price and the Contract Time will be equitably adjusted by Change Order pursuant to the terms of Articles 5 and 6 to reflect the cost and delay impact occasioned by such suspension for convenience, except to the extent that any such impacts were caused by Contractor's failure to comply with the Contract Documents or the terms of the suspension notice or notice to resume. However, the Contract Time will only be extended if the suspension causes or will cause unavoidable delay in Final Completion. If Contractor disputes the terms of a Change Order issued for such equitable adjustment due to suspension for convenience, its sole recourse is to comply with the Claim procedures in Article 12.

13.3 Termination for Default. City may declare that Contractor is in default of the Contract for a material breach of or inability to fully, promptly, or satisfactorily perform its obligations under the Contract.

(A) **Default.** Events giving rise to a declaration of default include Contractor's refusal or failure to supply sufficient skilled workers, proper materials, or equipment to perform the Work within the Contract Time; Contractor's refusal or failure to make prompt payment to its employees, Subcontractors, or suppliers or to correct defective Work or damage; Contractor's failure to comply with Laws, or orders of any public agency with jurisdiction over the Project; evidence of Contractor's bankruptcy, insolvency, or lack of financial capacity to complete the Work as required within the Contract Time; suspension, revocation, or expiration and nonrenewal of Contractor's license or DIR registration;

dissolution, liquidation, reorganization, or other major change in Contractor's organization, ownership, structure, or existence as a business entity; unauthorized assignment of Contractor's rights or duties under the Contract; or any material breach of the Contract requirements.

(B) **Notice of Default and Opportunity to Cure.** Upon City's declaration that Contractor is in default due to a material breach of the Contract Documents, if City determines that the default is curable, City will afford Contractor the opportunity to cure the default within ten days of City's notice of default, or within a period of time reasonably necessary for such cure, including a shorter period of time if applicable.

(C) **Termination.** If Contractor fails to cure the default or fails to expediently take steps reasonably calculated to cure the default within the time period specified in the notice of default, City may issue written notice to Contractor and its performance bond surety of City's termination of the Contract for default.

(D) **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 pursuant to paragraph (C), 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, where "additional cost" means all cost in excess of the cost City would have incurred if Contractor had timely completed Work without the default and termination. In addition, City will have the right to immediate possession and use of any materials, supplies, and equipment procured for the Project and located at the Project site or any Worksite on City property for the purposes of completing the remaining Work.

(E) **Compensation.** Within 30 days of receipt of updated as-builts, all warranties, manuals, instructions, or other required documents for Work installed to date, and delivery to City of all equipment and materials for the Project for which Contractor has already been compensated, Contractor will be compensated for the Work satisfactorily performed in compliance with the Contract Documents up to the effective date of the termination pursuant to the terms of Article 8, Payment, subject to City's rights to withhold or deduct sums from payment otherwise due pursuant to Section 8.3, and excluding any costs Contractor incurs as a result of the termination, including any cancellation or restocking charges or fees due to third parties. If Contractor disputes the amount of compensation determined by City, its sole recourse is to comply with the Claim Procedures in Article 12, by submitting a Claim no later than 30 days following notice from City of the total compensation to be paid by City.

(F) **Wrongful Termination.** If Contractor disputes the termination, its sole recourse is to comply with the Claim procedures in Article 12. 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 under Section 13.4, below. Contractor waives any claim for any other damages for wrongful termination including special or consequential damages, lost opportunity costs, or lost profits, and any award of damages is subject to Section 12.8, Burden of Proof and Limitations.

13.4 Termination for Convenience. City reserves the right, acting in its sole discretion, to terminate all or part of the Contract for convenience upon written notice to Contractor.

(A) **Compensation to Contractor.** In the event of City's termination for convenience, Contractor waives any claim for damages, including for loss of anticipated profits from the Project. The following will constitute full and fair compensation to Contractor, and Contractor will not be entitled to any additional claim or compensation:

(1) **Completed Work.** The value of its Work satisfactorily performed as of the date notice of termination is received, based on Contractor's schedule of values and unpaid costs for items delivered to the Project site that were fabricated for incorporation in the Work;

(2) **Demobilization.** Demobilization costs specified in the schedule of values, or if demobilization costs were not provided in a schedule of values pursuant to Section 8.1, then based on actual, reasonable, and fully documented demobilization costs; and

(3) **Termination Markup.** Five percent of the total value of the Work performed as of the date of notice of termination, including reasonable, actual, and documented costs to comply with the direction in the notice of termination for convenience, and demobilization costs, which is deemed to cover all overhead and profit to date.

(B) **Disputes.** If Contractor disputes the amount of compensation determined by City pursuant to paragraph (A), above, its sole recourse is to comply with the Claim procedures in Article 12, by submitting a Claim no later than 30 days following notice from City of total compensation to be paid by City.

13.5 Actions Upon Termination for Default or Convenience. The following provisions apply to any termination under this Article, whether for default or convenience, and whether in whole or in part.

(A) **General.** Upon termination, City may immediately enter upon and take possession of the Project and the Work and all tools, equipment, appliances, materials, and supplies procured or fabricated for the Project. Contractor will transfer title to and deliver all completed Work and all Work in progress to City.

(B) **Submittals.** Unless otherwise specified in the notice of termination, Contractor must immediately submit to City all designs, drawings, as-built drawings, Project records, contracts with vendors and Subcontractors, manufacturer warranties, manuals, and other such submittals or Work-related documents required under the terms of the Contract Documents, including incomplete documents or drafts.

(C) **Close Out Requirements.** Except as otherwise specified in the notice of termination, Contractor must comply with all of the following:

(1) Immediately stop the Work, except for any Work that must be completed pursuant to the notice of termination and comply with City's instructions for cessation of labor and securing the Project and any other Worksite(s).

(2) Comply with City's instructions to protect the completed Work and materials, using best efforts to minimize further costs.

(3) Contractor must not place further orders or enter into new subcontracts for materials, equipment, services or facilities, except as may be necessary to complete any portion of the Work that is not terminated.

(4) As directed in the notice, Contractor must assign to City or cancel existing subcontracts that relate to performance of the terminated Work, subject to any prior rights, if any, of the surety for Contractor's performance bond, and settle all outstanding liabilities and claims, subject to City's approval.

(5) As directed in the notice, Contractor must use its best efforts to sell any materials, supplies, or equipment intended solely for the terminated Work in a manner and at market rate prices acceptable to City.

(D) **Payment Upon Termination.** Upon completion of all termination obligations, as specified herein and in the notice of termination, Contractor will submit its request for Final Payment, including any amounts due following termination pursuant to this Article 13. Payment will be made in accordance with the provisions of Article 8, based on the portion of the Work satisfactorily completed, including the close out requirements, and consistent with the previously submitted schedule of values and unit pricing, including demobilization costs. Adjustments to Final Payment may include deductions for the cost of materials, supplies, or equipment retained by Contractor; payments received for sale of any such materials, supplies, or equipment, less re-stocking fees charged; and as otherwise specified in Section 8.3, Adjustment of Payment Application.

(E) **Continuing Obligations.** Regardless of any Contract termination, Contractor's obligations for portions of the Work already performed will continue and the provisions of the Contract Documents will remain in effect as to any claim, indemnity obligation, warranties, guarantees, submittals of as-built drawings, instructions, or manuals, record maintenance, 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 § 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. § 15) or under the Cartwright Act (Chapter 2 (commencing with § 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 any 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 deemed amended accordingly.
- 14.3 Waiver.** City's 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 not be effective unless it is in writing and signed by City. City's waiver of any breach, failure, right, or remedy will not 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 City.
- 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 bids were due.
- 14.6 Survival.** The provisions that survive termination or expiration of this Contract include Contract Section 11, Notice, and subsections 12.1, 12.2, 12.3, 12.4, 12.5, and 12.6 of Section 12, General Provisions; and the following provisions in these General Conditions: Section 2.2(J), Contractor's Records, Section 2.3(C), Termination, Section 3.7, Ownership, Section 4.2, Indemnity, Article 12, Dispute Resolution, and Section 11.2, Warranty.

END OF GENERAL CONDITIONS

Special Conditions

1. Authorized Work Days and Hours.

- 1.1 **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 through Friday.
- 1.2 **Authorized Work Hours.** Except as expressly authorized in writing by City, Contractor is limited to performing Work on the Project during the following hours: 7:30 a.m. to 4:00 p.m. unless otherwise authorized by Homeowner's Association.

2. **Pre-Construction Conference.** City will designate a date and time for a pre-construction conference with Contractor following Contract execution. Project administration procedures and coordination between City and Contractor will be discussed, and Contractor must present City with the following information or documents at the meeting for City's review and acceptance before the Work commences:

- 2.1 Name, 24-hour contact information, and qualifications of the proposed on-site superintendent;
- 2.2 List of all key Project personnel and their complete contact information, including email addresses and telephone numbers during regular hours and after hours;
- 2.3 Staging plans that identify the sequence of the Work, including any phases and alternative sequences or phases, with the goal of minimizing the impacts on residents, businesses and other operations in the Project vicinity;
- 2.4 If required, traffic control plans associated with the staging plans that are signed and stamped by a licensed traffic engineer;
- 2.5 Draft baseline schedule for the Work as required under Section 5.2 of the General Conditions, to be finalized within ten days after City issues the Notice to Proceed;
- 2.6 Breakdown of lump sum bid items, to be used for determining the value of Work completed for future progress payments to Contractor;
- 2.7 Schedule with list of Project submittals that require City review, and list of the proposed material suppliers;
- 2.8 Plan for coordination with affected utility owner(s) and compliance with any related permit requirements;
- 2.9 Videotape and photographs recording the conditions throughout the pre-construction Project site, showing the existing improvements and current condition of the curbs, gutters, sidewalks, signs, landscaping, streetlights, structures near the Project such as building faces, canopies, shades and fences, and any other features within the Project area limits;
- 2.11 Any other documents specified in the Special Conditions or Notice of Potential Award.

3. Close Out Requirements. Contractor's close out requirements include the following, if applicable:

- 3.1** Contractor must replace, with thermoplastic, any existing striping within and adjacent to the Project site that is damaged during the Work. Partially damaged striping must be replaced in its entirety.
- 3.2** Contractor must replace any survey monuments that are damaged or removed during the Work, with a Record of Survey filed by a licensed land surveyor as required by California law.
- 3.3** Before removing any traffic control or street signs on the Project site, Contractor must take photographs showing their original locations. Upon completion of each phase of construction, Contractor must temporarily reset the signs at those locations. Contractor must then replace the signs permanently upon completion of the Work and the cost of their removal and replacement must be included in the Bid Proposal.

END OF SPECIAL CONDITIONS

CITY OF BRENTWOOD

WATERLINE REPLACEMENT ON KENT DRIVE

TECHNICAL SPECIFICATIONS

to be supplemented by most current Caltrans Standard Specifications

BID SUBMITTAL

Date: July 2024



City Representative:

Mr. Vatsal Patel
City of Brentwood, CA
vpatel@brentwoodca.gov
150 City Park Way, Brentwood, California 94513
(925) 516-5420

Design Engineer:

Bellecci & Associates, Inc
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SECTION 01 31 19 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's 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.

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.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 31 19

SECTION 01 32 16 PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. The work specified in this Section includes the Contractor's preparation, submittal, maintenance and use of a computerized Critical Path Method (CPM) Construction Schedule to plan and monitor construction progress for the project.
- B. The computerized CPM schedule shall be completed using Microsoft Project for Windows or another software package acceptable to the Engineer.

1.2 PREPARATION AND SUBMITTAL PROCEDURE

- A. Schedule Preparation and Submittal:
 - 1. The Contractor's on-site construction supervisor (superintendent, project manager, etc.) shall be directly involved in preparation of the Construction Schedule.
 - 2. The Construction Schedule shall be completed and submitted to the Engineer within 30 days after Notice to Proceed.
 - a. By preparing and submitting the Construction Schedule the Contractor represents that the Contractor can and intends to execute the work and portions thereof within the specified times and constraints and that the Contractor's bid covers the costs associated with the execution of work in accordance with the Construction Schedule.
 - 3. At the time of submittal of the Construction Schedule, Contractor's on-site construction supervisor shall review the schedule with Engineer's construction project representative.
 - 4. If the initial Construction Schedule submittal is not acceptable to the Engineer, it shall be revised in coordination with observations and comments from the Engineer and resubmitted within 7 days of the return of the schedule to the Contractor.

1.3 CONSTRUCTION SCHEDULE CONTENT

- A. The Construction Schedule shall be calendar-based, time-scaled, and show the durations of and relationships between the various work activities.
- B. Work activities shall be selected which reflect actual work to be performed for this specific project. No generic work activities shall be allowed.
 - 1. Work activities shall include non-construction activities such as submittal preparation and review, manufacturing, equipment delivery, mobilization, preparation of Contract Record Drawings, etc. for a complete picture of the Contractor's plan for project execution.
 - 2. Information on each activity shall include:
 - a. Concise description of the activity.
 - b. Duration in working days.
 - c. The dates for the beginning and completion of each activity.
 - d. The relationship of each activity to other activities.
 - 3. No work activity shall be longer than 10 working days. Work tasks which will take longer

than 10 working days shall be broken down into several work activities which are no longer than 10 working days.

- a. Each work activity must be defined clearly and measurable. For example, a series of work activities such as “Building 1, east wall piping; Building 1, west wall piping; Building 1, north and south wall piping”, each with a duration less than 10 days would be acceptable. A series of work activities all labeled “Building 1 Piping”, even if each had a duration less than 10 days, would not be acceptable because the tasks are not defined clearly or measurable.
4. Provide a monthly activity for preparation of Contract Record Drawings..
- C. The schedule shall be referenced to calendar dates, and the beginning of the contract time shall be the date of receipt of the Notice to Proceed.
 - D. Failure to include an activity required for the execution of the work shall not excuse the Contractor from completing the work and portions thereof within the specified times and at the price specified in the Agreement, and from meeting the constraints specified for sequence of work and control dates.

1.4 UPDATING THE CONSTRUCTION SCHEDULE

- A. The Contractor shall review and discuss the project progress relative to the most up to date Construction Schedule (updated monthly) at the weekly progress meetings.
- B. The schedule update shall reflect progress to date. The schedule update shall incorporate all revisions to logic and duration.

1.5 ADJUSTMENT OF THE CONTRACT TIME AND CHANGE ORDERS

- A. Adjustments of the contract time due to delays, additional work, or any other cause will only be issued through a contract change order.
 1. The Contractor shall include, as part of each change order proposal for which the Contractor is requesting an adjustment in the contract duration, a proposed revised Construction Schedule.
 2. The proposed revised Construction Schedule shall be compared to the most recent Construction Schedule to assess overall schedule impact.
 3. If a Change Order is issued by the Owner, the Contractor shall incorporate the Change Order into the Construction Schedule.

1.6 VIRUTAL PROJECT MANAGEMENT (VPM)

- A. Virtual Project Manager (VPM) allows for paperless documentation and project administration. All posted information is available to all personnel involved with the project at any time using the internet.
- B. The use of VPM by the Contractor is mandatory. Access to VPM will be provided at no cost to the contractor.
- C. In order to utilize VPM, the contractor needs a computer, internet access, a digital camera, and a scanner. For more information, go to www.virtual-pm.com. To Login, from the homepage, select LOGIN and enter the Username and Password that will be provided to you by the agency.
- D. The contractor shall use the following features:

1. Daily Logs: Contractor's daily reports shall be entered electronically via VPM.
2. Payments: Contractor shall enter payment application quantities and submit for review and payment via VPM.
3. Change Order Manager: Contractor requests for change order shall be submitted electronically via VPM.
4. Transmittals: Schedules, Pay applications, etc. shall be submitted electronically via VPM.
5. Submittals: Submittals requiring approval shall be submitted electronically via VPM.
6. RFIs: Requests for information (RFIs) shall be submitted electronically via VPM.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 32 16

SECTION 01 45 00 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 Owner 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 Engineer.
 - 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 E 329 and ASTM D 3666, respectively.
 - 2) Testing laboratories performing work not in connection with concrete, steel, bituminous materials, soils and non-destructive testing shall comply with ASTM E 548.

- B. 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.
- C. 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.

1.3 TESTS AND INSPECTIONS

- A. The Contractor shall be responsible for scheduling all inspections and tests required.
 - 1. The Engineer shall be given a minimum 48 business hours notice prior to any inspections or tests.
- B. The Owner 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.
 - 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.
 - 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

- F. 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 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 01 45 00

SECTION 01 55 26 TRAFFIC CONTROL SYSTEM

PART 1 – GENERAL

1.1 OBJECTIVES

- A.** The Contractor shall provide for safe movement of vehicular, bicycle, and pedestrian traffic, including persons with disabilities in accordance with the Americans with Disabilities Act of 1990 (ADA), through and around construction operations. Traffic control requirements set forth herein are the minimum requirements imposed. The Contractor shall be solely responsible for providing all necessary protective measures.
- B.** Proper traffic movement through the work area depends upon the driver controlling and directing his/her vehicle properly under unexpected situations. The means of clarifying such conditions to the public include signs, flaggers, pavement markings, barricades, lights, cones and delineators.
- C.** No one standard sequence of signs or control devices will suit all conditions, which may result from construction operations. Even for the same work the conditions may vary from hour to hour, requiring adjustment and revision of the traffic control program in effect.
- D.** The traffic control requirements specified herein are intended to establish general principles to be observed in the control and regulation of traffic through and around construction operations anticipated for this project. All pedestrian and vehicular detours are subject to review by the police chief and the City traffic department, and the Contractor shall revise the detours as ordered at no additional cost.
- E.** Clean up site each day after completing work and remove all traffic hazards. Daily traffic control measures shall continue until cleanup activities have been satisfactorily completed and all of the Contractor's equipment has been removed from the traveled way area.

1.2 DESCRIPTION OF WORK

- A.** Work Included:
 - 1. Engage an outside Traffic Control specialized contractor to:
 - Prepare and stamp Traffic Control and Pedestrian/Bicycle Access Control Plans
 - Install the traffic control devices and implement in the field during construction the Traffic Control and Pedestrian/Bicycle Access Control Plans
 - 2. At all times, provide safe and adequate passage for vehicular, bicycle and pedestrian traffic through, around, and adjacent to all construction operations by use of detours, bridging, backfilling, paving, traffic barriers or other approved means.
 - 3. Establish and maintain detours and conduct construction operations in such a manner as to minimize hazard, inconvenience, and disruption to the public.
 - 4. Provide for protection of pedestrians & cyclists and separation of pedestrians & cyclists from construction operations at all times.
 - 5. Direct, divert and detour traffic through, around and adjacent to construction operations in

accordance with the Traffic Control and Pedestrian/Bicycle Access Control Plans (TC&PAC Plans) as specified herein or in accordance with favorably reviewed TC&PAC Plans. Revise the TC&PAC Plans as necessary only with approval of the Engineer.

1.3 REFERENCES

- A.** Standard Plans and Specifications, California Department of Transportation, latest edition.
- B.** California Manual on Uniform Traffic Controls (CAMUTCD), California Department of Transportation, latest edition.
- C.** Work Area Traffic Control Handbook, Building News Incorporated, P.O. Box 3031, Terminal Annex, Los Angeles, California 90051.

1.4 SUBMITTALS

- A.** Traffic Control and Pedestrian/Bicycle Access Control Plans (TC&PAC Plans):
 - 1. Submit TC&PAC Plans to clearly describe proposed traffic control measures and pedestrian access control measures. The plans shall be in accordance with the Standard Plans and Specifications and the CAMUTCD. TC&PAC Plans shall be prepared by a licensed Civil or Traffic Engineer.
 - 2. The TC&PAC Plans shall provide detailed planning and design for detours and to control traffic through the construction zone, shall conform to current Caltrans and City standards, and will be approved by the City Engineer before construction begins.
 - 3. The submittals shall consist of scaled drawings for each situation anticipated to be encountered, including, intersections, during working and non-working hours.
 - 4. The scaled drawings shall show signs, traffic control devices, and flaggers as required.
 - 5. Assume 1 separate TC&PAC Plan submittals for each separate stage of construction. Assume 1 stages of construction.
 - 6. TC&PAC Plan is permitted to be a neat hand drawing prepared on top the Project Drawings, scanned into a color PDF.

PART 2 – PRODUCTS

2.1 CONSTRUCTION SIGNS

- A.** Construction signs shall conform to the standards of the Standard Plans and Specifications and the CAMUTCD.
- B.** Temporary warning signs in construction areas shall have a black legend and border on an orange background. Color for other signs shall follow the standard for all highway signs.
- C.** All signs used during hours of darkness shall be retroreflective.
- D.** After construction, Contractor to restore the roadway at the locations of the Construction area

signs. Payment for sidewalk of landscape restoration shall be considered included in the construction area sign/traffic control pay items.

2.2 TRAFFIC CONTROL DEVICES

- A.** General: Traffic control devices shall conform to the standards of the Standard Plans and Specifications and the CAMUTCD.
- B.** Cones or Delineators:
1. Cones or delineators shall consist of cylindrical or cone shaped plastic devices, which shall be 18 inches to 48 inches in height.
 2. Cones or delineators shall have a flexible base of suitable weight, which will ensure stability.
 3. Cones or delineators used during hours of darkness shall be affixed with retroreflective sleeves or be internally illuminated meeting the requirements of the CAMUTCD.
- C.** Barricades:
1. Barricades shall conform to the Standard Plans and Specifications and the CAMUTCD.
 2. Barricades used during hours of darkness shall be equipped with flashers.
- D.** Temporary Railing (Type K)
1. Temporary railing (Type K) shall be placed as shown on the plans, as specified in the Standard Specifications or these Special Provisions or where ordered by the Engineer and shall conform to the provisions in Section 12, "Temporary Traffic Control" of the Standard Specifications and these Special Provisions.
 2. Temporary railing (Type K) shall consist of interconnected new or undamaged used precast concrete barrier units as shown on the plans. Exposed surfaces of new and used units shall be freshly coated with a white color paint prior to their first use on the project. The paint shall conform to the provisions in Section 91-4.02B, "Acrylic Emulsion Paint for Exterior Masonry." Repainting of units, when ordered by the Engineer after the units are in place, will be paid for as extra work in conformance with the provisions in Section 4-1.05 "Changes and Extra Work" of the Standard Specifications.
 3. Concrete shall conform to the provisions in Section 90-2, "Minor Concrete." Load tickets and a Certificate of Compliance will not be required.
 4. Reinforcing steel shall conform to the provisions in Section 52, "Reinforcement."
 5. Steel bars to receive bolts at ends of concrete panels shall conform to the requirements in ASTM Designation: A 36/A 36M. The bolts shall conform to the requirements in ASTM Designation: A 307.
 6. A round bar of the same diameter may be substituted for the end-connecting bolt shown on the plans. The bar shall conform to the requirements in ASTM Designation:

A 36/A 36M, shall have a minimum length of 26 inches and shall have a 3-inch diameter by 3/8-inch-thick plate welded on the upper end with a 3/16-inch fillet weld.

7. The final surface finish of temporary railings (Type K) shall conform to the provisions in Section 51-1.03F(2), "Ordinary Surface Finish." Exposed surfaces of concrete elements shall be cured by the water method, the forms-in-place method, or the pigmented curing compound method. The pigmented curing compound shall be curing compound (1) as specified in Section 90-1.03B(3), "Curing Compound Method." The Contractor shall furnish a Certificate of Compliance to the Engineer in conformance with the provisions in Section 6-2.03C "Certificates of Compliance," for all new or used temporary railing (Type K) that is not cast on the project.
8. Temporary railing (Type K) may have the Contractor's name or logo on each panel. The name or logo shall not be more than 4 inches in height and shall be located not more than 12 inches above the bottom of the rail panel.
9. Temporary railing (Type K) shall be set on firm, stable foundation. The foundation shall be graded to provide a uniform bearing throughout the entire length of the railing. Any excavation and backfill shall conform to the provisions in Section 19-3, "Structure Excavation and Backfill," except that compaction of earth fill placed behind the temporary railing (Type K) in a curved layout will not be required.
10. Abutting ends of precast concrete units shall be placed and maintained in alignment without substantial offset to each other. The precast concrete units shall be positioned straight on tangent alignment and on a true arc on curved alignment.
11. At the locations required on the plans, threaded rods or dowels shall be bonded in holes drilled in the existing concrete. Drilling of holes and bonding of threaded rods or dowels shall conform to the provisions for bonding dowels in Section 83-3.01A, "Summary." After removal of the temporary railing (Type K), all threaded rods or dowels shall be removed to a depth of at least one inch below the surface of the concrete. The resulting holes shall be filled with mortar in conformance with the provisions in Section 51-1.02F, "Mortar," except that the mortar shall be cured by either the water method or by the curing compound method. If the curing compound method is used, the curing shall conform to the provisions for curing concrete barrier in Section 83-3.03A(8), "Curing."
12. Each rail unit placed within 10 feet of a traffic lane shall have a reflector installed on top of the rail. Reflectors shall be as specified in the special provisions, and adhesive shall conform to the reflector manufacturer's recommendations. A Type P marker panel shall also be installed at each end of railing installed adjacent to a two-lane, two-way highway and at the end facing traffic of railing installed adjacent to a one-way roadbed. If the railing is placed on a skew, the marker shall be installed at the end of the skew nearest the traveled way. Type P marker panels shall conform to the provisions in Section 82, "Signs and Markers," except that the Contractor shall furnish the marker panels.
13. When temporary railings (Type K) are removed, any area where temporary excavation or embankment was used to accommodate the temporary railing shall be restored to its previous condition or constructed to its planned condition.
14. Prior to each stage of construction, Contractor will provide a layout of the proposed temporary railing, crash cushion locations, and temporary striping/signing for the railing.

E. Water-Filled Barriers:

As an alternative to concrete traffic control barriers (temporary Type K), Contractor has the option of installing water-filled barriers with the following requirements:

1. Waterfilled barriers will be considered in lieu of temporary railings (Type K), upon a written request from the contractor along with proposed details, layout plan, temporary signing & striping and installation.
2. The water filled plastic barriers shall conform to "Plastic Jersey JB-32" or approved equal. (<https://www.plasticjersey.com/> or approved equal). Contractor shall provide corner pieces and continuous longitudinal protection for pedestrians. Contractor shall install reflectors on the barriers. Contractor shall move barriers as needed for each stage of construction. Water-filled barriers may be relocated to subsequent stages of construction after the current stage is completed.
3. Each barrier section shall have the capability of interlocking with other barrier sections when installed in a row through the use of independent clevis devices at the top of the barrier and a built-in male/female coupling at the bottom of the barrier. Each barrier section shall have ports for ground mounting.
4. Each barrier section shall have 2 drain plugs located on opposite sides of the barrier to ensure the separation of workers from traffic when draining barrier sections.
5. Each barrier section shall have forklift holes to allow fully filled sections to be lifted and relocated.
6. Barrier sections shall be colored either orange or white. When installed in a row, the sequence of colors shall be 4 white, 1 orange unless otherwise specified in the drawings.
7. If waterfilled barrier is used, install in accordance with the requirements of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and Item 671 "Traffic Control".

F. Portable Changeable Message Signs:

1. Portable changeable message signs shall be furnished, placed, operated, and maintained at locations shown on the plans or where designated by the Engineer and shall conform to the provisions in Section 12-3.32, "Portable Changeable Message Signs," of the Standard Specifications and these Special Provisions.
2. Messages displayed on the portable changeable message signs shall be as specified on the plans, unless otherwise specified by the Engineer, and shall conform to Section 12-3.32 "Portable Changeable Message Signs," of the Standard Specifications and "Traffic Control" of these specifications. Upon request submit a Certificate of Compliance for each portable changeable message sign under Section 20-3.01A(3)(c), "Certificates of Compliance," of the Standard Specifications.
3. The Contractor shall provide portable changeable message signs as shown on the plans and as directed by the Engineer. These signs shall be placed a minimum of 14 calendar days prior to start of work. These signs will be required in addition to the signs required by the latest version of the CAMUTCD.

4. A portable changeable message sign shall be placed during speed zone reductions. When used in conjunction with a lane closure, use one portable changeable message sign, with both the speed zone reduction and the lane closure messages. Place portable changeable message sign as far from the traveled way as practicable where it is legible to traffic and does not encroach on the traveled way. Where possible, place portable changeable message sign behind guardrail or temporary railing (Type K).
 5. Contractor's representative must be available by cell phone for operations that require portable changeable message signs. Submit to the Engineer two cell phone numbers, for 24-hr contact. When the Engineer contacts you, immediately comply with the Engineer's request to modify the displayed message.
- G. Other Traffic Control Devices:** The project will include portable changeable message signs, concrete barriers or water-filled barriers, and other devices as shown on the approved TC&PAC Plans.

PART 3 - EXECUTION

3.1 DIVERTING PEDESTRIAN & BICYCLE TRAFFIC

- A.** Whenever construction operations obstruct the flow of pedestrian & bicycle traffic or present a hazard to pedestrians & cyclists, the Contractor shall take appropriate action to protect and separate pedestrians & cyclists from the work area and to direct pedestrians & cyclists to alternate routes.
- B.** Such action to protect pedestrians & cyclists may include placement of barricades between pedestrians & bicycles and the work areas, placement of warning signs, and provision of personnel as required to protect pedestrians & cyclists as conditions warrant.
- C.** Pedestrians and bicyclists will be protected at all times, 24 hours per day and seven days per week.

3.2 DIVERTING VEHICULAR TRAFFIC

- A.** Whenever construction operations obstruct the flow of vehicular traffic or present a hazard to vehicles operating in the vicinity of construction operations, the Contractor shall take appropriate action to warn, detour and otherwise protect approaching drivers and vehicles.

3.3 TRAFFIC CONTROL DEVICES

- A. General:**
 1. Provide traffic control devices in sufficient quantities and types as required to provide safe and adequate traffic control.
 2. During hours of darkness approved lights shall be included, in proper working order, to illuminate signs and hazards and alert approaching traffic.
 3. Provide and maintain barricades along all open trenches in contact with traffic.
 4. No work may begin on any day or at any time before traffic control devices have been

placed, test driven and adjusted.

B. Placement:

1. Place all traffic control devices in accordance with the Standard Plans and Specifications, the CAMUTCD, and approved TC&PAC Plans.
2. Adjust locations of devices to suit the conditions and circumstances of each detour situation. In all cases, place signs to most effectively convey their messages to approaching traffic.
3. The Contractor shall adjust and revise all traffic control devices if determined to be required by the City or Police Department.
4. The Contractor shall provide additional traffic control devices if required to maintain the safe flow of traffic through construction operation.

C. Maintenance of Devices:

1. The Contractor shall maintain all traffic control devices, at proper locations, and in proper working order, at all times during construction operations and whenever a hazard resulting from Contractor's operations exists.
2. The Contractor shall adjust and revise traffic control devices, placement, etc., to suit changing conditions around construction operations.

D. Removal of Devices:

1. Traffic control devices shall remain in place at all times required to alert approaching traffic of upcoming hazards.
2. After hazard has been removed, remove all traffic control devices. Remove signs or completely cover their messages.

3.4 FLAGGERS

A. General: The Contractor shall employ flaggers:

1. As required for each specific detour.
2. At all locations on a construction site where barricades and warning signs cannot control the moving traffic.
3. With proper training, to assure safe directing of traffic flow

B. Placement: Where flaggers are required, they shall be logically placed in relation to the equipment or operation so as to give adequate warning and shall be placed in accordance with the Standard Plans and Specifications, the CAMUTCD, and the approved TC&PAC Plan.

C. Warning Signs:

1. Place warning signs ahead of the flagger in accordance with the Standard Plans and Specifications, the CAMUTCD, and the approved TC&PAC Plans. The distance between signs and the flagger shall be based on the posted traffic approach speed.
2. During hours of darkness, illuminate flagger stations such that the flagger will be clearly

visible to approaching traffic. Lights for illuminating the flagger station shall comply with the Standard Plans and Specifications, the CAMUTCD, and the approved TC&PAC Plans.

D. Equipment:

1. Provide flaggers with high-visibility safety apparel in accordance with the Standard Plans and Specifications, and the CAMUTCD at all times. Provide flaggers with hand signs in accordance with the Standard Plans and Specifications, and the CAMUTCD.
2. Provide flaggers with two-way radios for communication when necessary. Red flags shall only be used for traffic control in emergency situations.

3.5 NOTICE TO AGENCIES

A. The Contractor shall notify in writing all agencies having jurisdiction at least 48 hours, excluding holidays and weekends, prior to instituting any lane closure or detour. At the end of each day's work, the Contractor shall inform the ambulance services, police and fire departments of the status of all detours and/or lane or road closures that will be in effect on the next day.

B. List of Agencies/Adjacent Properties:

1. City of Brentwood:
 - a. Fire Department
 - b. Police Department
 - c. Public Works Department - Engineering Departments
2. U.S. Postal Service
3. MAGIC Bus Services, as appropriate
4. Public Transportation
5. School District Transportation Office, as appropriate
6. Homeowner's Association

3.6 EMERGENCY VEHICLE ACCESS THROUGH DETOURS

- A.** During construction in or adjacent to roadways in the project site, maintain at least one lane open in each direction of the road to allow emergency vehicle access for police, fire, and ambulance to the project vicinity.
- B.** During all detours and/or street closures provide for 10' wide clear for movement of emergency vehicles through the work area.
- C.** When temporary traffic control is performed by flaggers, they shall be instructed to give immediate passage to emergency vehicles with active lights or sirens.
- D.** It is essential that the Contractor's work and equipment do not impede ingress and egress from any fire or police station, or hospital, to other areas of their service area.

3.7 ACCESS TO PRIVATE PROPERTY

- A.** General: Schedule operations to minimize disruption of access to private property.
- B.** Notice to Residents: Prior to blocking access to any private driveway or parking lot entrance, or

impacting parking, notify the resident or business owner or tenant of pending closure and allow resident to remove vehicles.

- C. Nights: During non-working hours no driveway, house, or parking lot shall be denied access to a public roadway.

3.8 DETOURS DURING NON-WORKING HOURS

- A. General: The Contractor shall not be permitted to maintain any lane closure or road closure during non-working hours without first obtaining written approval of the Engineer.
- B. Restoration of Pavement:
 - 1. During non-working hours restore travel lanes to their original alignment and configuration by means of backfilling and temporary pavement or bridging in accordance with City Standards and approved by the City.
 - 2. Place warning signs conforming to the Standard Plans and Specifications, and the CAMUTCD at uneven temporary pavement or bridging.

3.9 PARKING RESTRICTIONS

- A. No parking may be closed without prior notification of the property owner AND prior approval from the City.
- B. Post approved "NO PARKING – CONSTRUCTION TOW-AWAY ZONE" signs at all locations necessary to establish work areas and detour traffic.
- C. Signs:
 - 1. Signs shall read: "NO PARKING - CONSTRUCTION TOW-AWAY ZONE".
 - 2. Signs shall be placed at least 48 hours in advance of restriction.

3.10 TRENCH PLATES AND EXCAVATIONS

- A. General: Install Trench Plates across all trenches and excavations in existing streets and at driveways when work is not in progress. Trench plates shall be in accordance with the Standard Plans and Specifications and the CAMUTCD and approved by the City.
- B. Design of Trench Plates:
 - 1. Bridging for vehicular traffic shall be of sufficient width to accommodate the required number of travel lanes.
 - 2. Trench plates shall be designed to support H-20 vehicular traffic.
 - 3. All bridging or trench plates shall be set flush with travel surface.
- C. Embed trench plates flush with the adjacent asphalt.
- D. No trench or holes shall be left open overnight. Use steel plates to protect open trenches overnight.

3.11 TEMPORARY TRAFFIC LANES

- A. See above requirements for the width of Temporary traffic lanes, and the requirement one

lane open in each direction. Provide an additional 2 feet of clearance from curbs. The length of temporary lanes should be limited to the area under construction and the distance necessary to divert traffic in accordance with the Standard Plans and Specifications, the CAMUTCD, and the approved TC&PAC Plans.

3.12 STAGING AREAS

- A.** Provide staging areas for materials and equipment. Prior to the pre-construction meeting Contractor will provide a map exhibit of the proposed staging area as a formal submittal to the City. Water Pollution Control will be required at off-site staging areas.

3.13 NOISE CONTROL

- A.** The Contractor shall comply with local ordinances regulating noise levels. Said 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. This requirement in no way relieves the Contractor from responsibility for complying with local ordinances regulating noise level. Full compensation for conforming to the noise requirements of this section shall be considered as included in the prices paid for the contract items of work involved and no additional compensation will be allowed therefore.

END OF SECTION 01 55 26

SECTION 01 71 13 MOBILIZATION

PART 1 -- GENERAL

1.1 WORK INCLUDED

- A.** Mobilization and demobilization
- B.** Preparatory work and activities those necessary for the movement of personnel, equipment, supplies, and incidentals to the job site
- C.** 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.
- D.** Public notifications in English and Spanish
- E.** Property Owner Notifications and HOA Coordination, including but not limited to preparing schedule notifications, making revisions to schedule per City comments, preparing draft and final flyers, notifying owners of impacts to parking, mail, deliveries, responding to questions from property owners, holding two evening meetings with property owners, preparing agendas and meeting minutes for HOA meetings, calling and emailing HOA contact person for HOA meetings in advance, providing correspondences of all communications with property owners and HOA to the City, and posting of “No Parking” signs.
- F.** Contacting and notifying utility companies
- G.** Fabricating and installing project identification signs
- H.** Private property owner agreement for storage facilities
- I.** All other work and activities which must be performed or costs incurred prior to beginning work on the various contract items on the project site
- J.** Moving on to the site of all Contractor plant and equipment.
- K.** Installing temporary construction power, wiring, and lighting facilities
- L.** Establishing fire protection system
- M.** Developing construction water supply.
- N.** 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.
- O.** Arranging for and erection of the Contractor’s work and storage yard, including site security.
- P.** Posting all EPA and OSHA required notices and establishment of safety programs.

- Q.** Post all required labor and EEOE notices.
- R.** Have the Contractor's superintendent at the job site full time.
- S.** Submittal and City acceptance of the Construction Schedule.
- T.** Establishing site security, lighting, fencing, and signing.
- U.** Obtaining all bonds, insurance and licenses.
- V.** 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.

1.2 REFERENCES

- A.** Cal/OSHA – California Division of Occupation Safety and Health
- B.** Underground Services Alert (USA)

1.3 SUBMITTALS

A. Measurement and Payment:

1. The contract price paid for mobilization shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in mobilization and demobilization including, but not limited to the items listed in Part 1.1 of this Section as specified herein, and no additional compensation shall be made therefor.
2. Mobilization shall be considered as a non-adjustable contract item. Any contract change orders shall be considered as including full compensation for mobilization.
3. As soon as practicable, after receipt of Notice to Proceed, the Contractor shall submit a breakdown showing the estimated value of each major component of Mobilization to the Engineer for approval. When approved by the Engineer, the breakdown will be the basis for initial progress payments in which Mobilization is included.
4. During Construction all RFI's must include a sketch depicting the area in question superimposed on the PDF plan, with the item in question hand drawn with written notes for clarity, and submitted on PDF format.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 MOBILIZATION

- A.** Mobilization shall consist of preparatory work and activities listed in Part 1.1 above.
- B.** Ensure that adequate existing sanitation facilities are available or the Contractor shall provide

and maintain adequate sanitation facilities. All wastes and refuse from sanitary facilities provided by the Contractor's operations shall be disposed of away from the site in accordance with all laws and regulations pertaining thereto.

- C. Mobilization shall also include demobilization upon completion of work and cleanup of the site.
- D. Provide all labor, materials, equipment and incidentals to prepare the site for the timely start and efficient completion of all work. This includes obtaining all necessary licenses and permits, providing required submittals including but not limited to a detailed project schedule.
- E. Notify all existing utility companies shown on the Drawings as first order of work, in writing and by documented telephone call.

END OF SECTION 01 71 13

SECTION 01 71 23 CONSTRUCTION SURVEYING

PART 1 – GENERAL

1.1 WORK INCLUDED

- A.** The project includes 5 categories of Construction Surveying:
 - 1. Control Surveying
 - 2. Pothole Survey
 - 3. Construction Staking
 - 4. CAD file review prior to staking
 - 5. Monument Preservation

1.2 REFERENCES

- A.** City Standard Specifications Section 81 - Monuments

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 CONTROL SURVEY

- A.** As first order of work the surveyor will sign and submit a CAD file release form and perform a separate field move-in to establish project survey control. During separate move-in dedicated for survey control the contractor's surveyor will verify existing topographic survey shots from the CAD file and establish project survey control for the staking. The surveyor will also set a project control line. As part of the price bid, Contractor's surveyor will allow time to coordinate with design surveyor for control points. This work will be performed at least one week prior to the first construction staking operation.

3.2 POTHOLE SURVEY

- A.** During the potholing excavation and exposure of the existing utility, the Contractor's licensed Land Surveyor shall perform a topographic survey of the existing grade, the top/bottom of pipe/duct elevation of each exposed utility pipe (or duct bank), and expose the edge of the trench to determine the depth of the utility. The survey measurements will be on the project coordinate system in CAD. Document the outside diameter of the pipe, thickness, depth and the pipe material. Submit the pothole survey with the above specified information in an AutoCAD Drawing file to the City.

3.3 CONSTRUCTION STAKING

- A.** Construction staking shall be defined as: "Markings set in the field by a Land Surveyor", prior

to construction, with horizontal coordinates and vertical dimensions to the items identified below. All field markings shall be completed under the direction of Land Surveyor licensed by the State of California.” Replace survey points lost or damaged during the course of construction. Provide “Construction Staking” with cuts/fills for the following items by a California Professional Land Surveyor.

Linear Items of work:

All liner items of work will be staked every 25’, at beginning and end, and at BC and EX.

1. Sawcut line stakes at every angle point
2. Existing Water Pipe at connection point
3. Location of new water valves
4. Location of existing utility crossings with new pipe alignment
5. Limits of asphalt removal and replacement
6. Staking of contractor potholes
7. 20 additional stakes not listed above at the discretion of the City. Provide 20 extra stakes in two separate move-ins.

As part of the first construction staking the Contractor operations, paint the control line stationing on the pavement surfacing. The stations will be marked/painted out every 25 feet along the alignment with the stations numbers neatly shown.

3.4 CAD FILE REVIEW PRIOR TO STAKING

- A. For each of the items above, Contractor will provide to the engineer for review the AutoCAD files of the staking points on top of the CAD project layout provided by the Engineer. AutoCAD files will be delivered 2 days prior to each staking operation. Elevations are required to be included on the staking calculation, within the CAD file points, and cut sheets will not be a substitute for this requirement.

3.5 MONUMENT PROTECTION

- A. Preservation: Existing Monuments must be preserved, in accordance with State Business & Professions Code section 8771. Do not disturb survey monuments that may/may not be shown on the plans including railroad spikes, brass tacks, nails or other markers set by surveyors, and advise the City upon discovery of these monuments to determine how they shall be preserved. Exercise caution when working around monuments so as not to disturb them. During milling, grinding, excavation or other operations, work around existing survey monuments unless specifically otherwise indicated on the Plans.
- B. Corner Record: All existing survey monuments will be referenced prior to construction and corner record will be submitted to the City and the County Surveyor.
 1. To comply with this Section, engage the services of a Licensed Land Surveyor to reference all monuments and file timely Pre- and Post-Construction Corner Records with the City and the County Surveyor.

2. Referencing monuments requires setting at least two control points out side of the work area, with a bearing and distance measured from each control point to the monument to be preserved, by a field land survey crew using a total station survey equipment, or approved equal, under the direction of California Licensed Land Surveyor.
 3. Prepare corner record, submit corner record to the City and the County Surveyor.
 4. Obtain from the County Surveyor and submit to the City written acceptance of the required Pre-Construction Corner Records before construction commences on the project
- C.** Discovery & Notification: Contractor will review the site thoroughly to identify monuments in the work area. If existing survey monuments are encountered in the area of work which are not shown on the plans, Contractor will notify City immediately. Contractor will not proceed with work near the survey monument until the Contractor's Licensed Land Surveyor has established reference points to preserve the location of the monument, in accordance with State Business & Professions Code section 8771.
- D.** Record of Survey and Replacement: 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 and filing documents with City and constructing the new monument. A Record of Survey must be submitted to the City and the County Surveyor for review and approval. Conform to City requirements for installation of new monuments.

3.6 CONSTRUCTION SURVEY QUALITY CONTROL

All parties agree that the construction surveying process described herein is a critical aspect of the project quality control and included in the project bid. If any part of this Specification Section is bypassed or omitted from the construction process the design engineer cannot be responsible for the installed concrete and utility grades and/or locations.

END OF SECTION 01 71 23

SECTION 01 90 00 PAY CLAUSES

PART 1 – GENERAL

- A. The bid items listed in the Bid Schedule of the Proposal are not intended to be exclusive and comprehensive descriptions of all the work categories and scope necessary to complete the project. As such, the Contractor shall determine, segregate and include in pricing for each bid item the cost for furnishing and installing all labor, materials, tools, equipment and other incidentals necessary to complete all of the contract work involved in the project, as described by the Contract Documents, complete in place.
- B. Unless otherwise noted, estimated quantities on the bid schedule are believed to be accurate; however, the Contractor should self-verify the quantities as it relates to ordering sufficient material and scheduling work. Actual field measured quantities, complete in place, not the quantities listed in the bid schedule, will govern final payment.

PART 2 – MEASUREMENT

- A. All measurement and payment shall be done as indicated below.

PART 3 – PAYMENT

3.1 GENERAL ITEMS

The contract lump sum price paid for “**Temporary Traffic Control System (incl. construction signs)**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in placing, removing, storing, maintaining, moving to new locations, replacing and disposing of the components of the traffic control system, signs, advance flashing arrow signs, changeable message signs, construction area signs, installing cones, barricades, delineators, or k-rails, flaggers, providing video detection system if necessary as outlined in the Technical Specifications, supervision and compliance with the approved Temporary Traffic Control Plans, installing temporary traffic lines, flaggers, detour plans for bicyclists, pedestrians, and vehicles, coordination with and notifications to the Homeowner’s Association and property owners, temporary striping, temporary signage, preserving pedestrian and bicycle access, preserving driveway access, preserving emergency vehicle access, limiting on-street parking impacts to no more than two (2) consecutive days per stall (more days of parking impacts may be allowed with City approval), and all other work complete in place, as shown on the plans, as specified in the Standard Specifications, the Special Provisions, these Technical Specifications, and as directed by the Engineer.

Contractor will be provided a clean PDF version of the project base map, for use to prepare the Contractor’s Traffic Control Plan for City approval.

Full compensation for flagging costs shall be considered as included in the contract lump sum price paid for Traffic Control System (incl. construction signs) and no additional compensation will be allowed, therefore. The shared cost for providing flagging as specified in 12-1.04 “Payment”, of the Standard Specifications, shall not apply to the item of traffic control.

Full compensation for furnishing, installing, maintaining, and removing when no longer required of the construction area signs shall be considered as included in the contract lump sum paid for “Traffic Control Systems (incl. construction signs)” and no separate payment will be made therefor.

The contract lump sum price paid for **Mobilization**, shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in mobilizing and demobilizing labor, materials and equipment for a timely start and efficient completion of all work, complete in place, including contacting USA North (1-800-227-2600), procuring staging area, obtaining all permits, bonds, and agreements, preparing and distributing notifications to Homeowners’ Association and property owners, providing temporary power, utilities, lighting, portable restrooms, water, power, etc., protecting and securing plant and equipment, preparing and submitting a health and safety plan, and CITY acceptance of the required submittals indicated in Section 013000 - Submittals, as shown on the plans, conforming to the California Contractor's Code, as specified in the Standard Specifications, the Special Provisions, these Technical Specifications and as directed by the Engineer.

The following shall apply if conforming to California Contractor's Code.

City may make partial payments for the mobilization costs of a contract, not to exceed the following:

1. When 5 percent of the original contract amount is earned, 50 percent of the amount bid for Mobilization may be paid.
2. When 10 percent of the original contract amount is earned, 75 percent of the amount bid for Mobilization may be paid.
3. When 20 percent of the original contract amount is earned, 95 percent of the amount bid for Mobilization may be paid.
4. When 50 percent of the original contract amount is earned, 100 percent of the amount bid for Mobilization may be paid.

The contract lump sum price paid for “**Construction Surveying**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in construction surveying, including establishing a control line and control points, construction staking, pothole survey, and performing as-built drawing, complete in place, as shown on the plans, as specified in the Standard Specifications, the Special Provisions, these Technical Specifications, and as directed by the Engineer whether temporary or final construction.

The contract lump sum price paid for “**Clearing & Grubbing**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in clearing and grubbing, including importing and exporting soil and all compaction, scarifying soil and fine grading, protection of trees and plants to remain, roadside clearing during construction and all other work related to excavation, grading, earthwork and demolition, complete in place, as shown on the plans, as specified in the Standard Specifications, the Special Provisions and these Technical Specifications, and as directed by the City Engineer.

The contract lump sum price paid for “**Monument Protection and Restoration**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in protection, referencing all survey monuments and markers, and restoration of monuments by a Licensed Land Surveyor in accordance with State Business and Professions Code

Section 8771 complete in place, including preparing corner records, submitting corners records to the County surveyors and acceptance of the monument by the Contra Costa County Surveyor, as specified in the Standard Specifications, the Special Provisions, these Technical Specifications, and as directed by the Engineer.

The contract lump sum price paid for “**Water Pollution Control**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in street sweeping, installing, maintaining, removal and cleanup of all erosion and sediment control measures within the project site, providing measures to prevent silt or contamination of the City stormwater collection system, including preparing and submitting a storm water pollution prevention plan (SWPPP) for CITY approval and implementing best management practices as require per the construction general permit, street sweeping daily, temporary inlet protection, furnishing and installing straw wattles, implementing rain event action plans prior to each rain events, and all other work complete in place as shown on the plans, as specified in the Standard Specifications, the Special Provisions, these Technical Specifications, and as directed by the Engineer.

The contract lump sum price paid for “**Property Owner Notifications + HOA Coordination**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in notifications to affected property owners and HOA, including preparing schedule notifications, making revisions to schedule per City comments, preparing draft and final flyers to neighbors, notifying owners of impacts, to parking, mail, and deliveries, responding to questions from property owners, day-to-day questions from property owners, holding two evening meetings with property owners, preparing agendas and meeting minutes for HOA meetings, calling by telephone and emailing HOA contact person for HOA meetings in advance, providing correspondences of all communications with property owners and HOA to the City, posting of "No Parking" signs, and all other work, as shown on the plans, as specified in the Standard Specifications, the Special Provisions, these Technical Specifications, and as directed by the Engineer.

The contract lump sum price paid for “**Potholing**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in exploratory excavation (potholing), including obtaining an encroachment permit, contacting USA, walking the site with the City to review and adjust locations based on field conditions, potholing at least 3 weeks prior to trenching, gaining approval for Contractor prepared traffic control plan and implementing traffic control system, exposing utility line, excavation, trenching, backfill, compaction, and resurfacing, providing trench shoring, measuring depth and diameter of utility line, surveying the horizontal location of the utility or measuring its location from nearby readily identifiable surface features, preparing redlined mark-up, submitting potholing report, protecting utility line in-place, providing bedding and backfill for utility line, and repaving over utility line, coordinating with utility companies for inspections during potholing operations, complete in place as shown on the plans, as specified in the Standard Specifications, the Special Conditions and these Technical Specifications, and as directed by the Engineer.

The quantities for Exploratory Excavation (Potholing) will be measured in the field by the actual count of successfully potholed, exposed and measured existing utilities locations. Potholes with no exposed utilities will not be measured or paid for.

The contract lump sum price paid for “**Replace Striping, Pavement Markers and Pavement Markings**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in replacing striping, pavement markers and pavement markings, including referencing and documenting all existing striping with photographs

and plan mark-ups prior to any trenching or excavation and slurry seal surfacing, removing and disposing all existing, conflicting and temporary traffic stripes, pavement markings, crosswalk striping, fire hydrant markers as needed to install new thermoplastic permanent striping, pavement markers and pavement markings, complete in place, including the removal and disposal of the resulting material, and all other work as shown on the plans, as specified in the Standard Specifications, the Special Provisions, these Technical Specifications, and as directed by the Engineer.

Full compensation for additional grinding outside the limits of the existing pavement marking image to obtain a rectangular area, shall be considered as included in the lump sum price paid for "Replace Striping, Pavement Markings and Pavement Markings," and no additional compensation will be allowed therefor.

Full compensation for removal and disposal of yellow thermoplastic striping containing lead concentrations in compliance with an approved lead compliance plans shall be considered as included in the lump sum price paid for "Replace Striping, Pavement Markers and Pavement Markings", and no additional compensation will be allowed therefor.

The contract lump sum price paid for "**Trench Sheetting, Shoring & Bracing per Cal/OSHA**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in providing trench sheetting, shoring and bracing, including furnishing and transporting necessary materials, installing and maintaining sheetting, shoring and bracing as needed to ensure worker safety, moving sheetting, shoring and bracing as needed throughout the project, and removing sheetting, shoring and bracing materials upon completion of the project, as outlined in OSHA standards and the Contract Documents, and as specified in the Contractor's Site-Specific Safety and Health Plan, all of which shall be in accordance with all applicable federal, state and local regulations and requirements, and as directed by the Engineer.

The contract unit price paid for "**New Water Main Tie-in to Existing Water Main**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in contacting USA, coordinating with City Public Works Department for shutdown of any valves, and installation of pipes, couplings to connect to existing water mains, mechanical restraints and fittings shown on the plans at each connection including: providing water temporary (or permanent) tight pressure plugs if necessary on the existing lines to be abandoned (until completely abandoned), installation of temporary water service and surface restoration, sawcut and removal of asphalt concrete and base, curb, gutter and sidewalk to the nearest joint, sawcut and removal of existing water main pipe, dewatering, trenching, sheetting, shoring, excavating and backfilling, notifying property owners of any disruptions to service, furnishing and installation of pipes, couplings, thrust blocks, spools, bolts, nuts, washers, restraint fittings, polyethylene encasement, bedding backfill, pavement section, pipe abandonment, and all other work complete in place, as shown on the plans, as specified in the City Standard Specifications, Caltrans Standard Specifications, the Special Provisions, and these Technical Specifications, and as directed by the Engineer.

Full compensation for doing all the work involved in installing tees, main line valves next to fire hydrant tee at fire hydrant lateral locations shown on plans, shall be considered as included in contract unit price paid for "Install New Fire Hydrant Assembly & Lateral" and no additional compensation will be allowed therefor.

The contract unit price paid for "**8" Gate Valve**" as shown on the bid schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all

the work involved in furnishing and installing 8" gate valves, including saw cutting and removing asphalt concrete and base, saw cutting and removing concrete valley gutter from nearest joint to joint, trenching, excavating, sheeting, shoring, installation of the water valves, including all mechanical joint and flanged joint fittings, thrust blocks shown on the plans, concrete aprons around the valves, trench backfill and surface restoration, replacing full pavement section at trench per City Detail, replacing valley gutter from nearest joint to joint per City Detail, providing temporary AC cutback at the end of each day per City detail, flushing, hydrostatic testing, disinfection, disposal of chlorinated water, bacteriological exam and final flushing, and all other work complete in place, as shown on the plans, as specified in the City Standard Specifications, Caltrans Standard Specifications, the Special Provisions, and these Technical Specifications, and as directed by the Engineer.

The contract price paid per linear foot for "**8" PVC C-900 DR14 (305 psi) + Trench Restoration**" as shown on the bid schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing 8" PVC C-900 DR14 (305 psi) water main, including saw cutting, T-cut trench and removing asphalt concrete and base, saw cutting and removing concrete valley gutter, curb, gutter and sidewalk and driveways from nearest concrete joint to joint, dewatering, trenching, excavating, sheeting, shoring, installation of the 8" PVC C-900 DR14 (305 psi) water main, including all fittings, tees, crosses, bends, mechanical joints and flanged joint fittings, various size of reducers, thrust blocks, warning tape and tracer wire, crossing existing utilities at locations shown on the plans, bedding, trench backfill and surface restoration, replacing curbs and gutters, valley gutter at trench per City Details, replacing sidewalk and driveways from nearest concrete joint to joint per City Details, replacing full pavement section at trench per City Detail, providing temporary AC cutback at the end of each day per City detail, recessed steel trench plates, temporary asphalt concrete cutback at recessed steel trench plates, and all other work complete in place, as shown on the plans, as specified in the City Standard Specifications, Caltrans Standard Specifications, the Special Provisions, and these Technical Specifications, and as directed by the Engineer. The pipe lengths shown on the plans are per Station line and Contractor must account for longer pipe lengths for steep pipe slopes.

Full compensation for installation of asphalt impregnated foam material at utility crossings shown on plans shall be considered as included in the prices paid per linear foot for 8" PVC C-900 DR14 (305 psi).

The contract lump sum price paid for "**Flushing, Hydrostatic Testing, Disinfection & BAC-T Testing**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in providing flushing hydrostatic testing, disinfection, disposal of chlorinated water, bacteriological exam and final flushing, and all other work complete in place, as shown on the plans, as specified in the City Standard Specifications, Caltrans Standard Specifications, the Special Provisions, and these Technical Specifications, and as directed by the Engineer.

3.2 GENERAL PAYMENT NOTES

- A. Soil testing by contractor: Full compensation for retaining the services of an approved, independent materials testing laboratory to perform testing services for compaction of bedding, fill and backfill materials including concrete mix designs slump test, asphalt paving compaction shall be considered as included in the items most closely related, and no separate payment will be allowed therefor.

- B. Adjustment of quantities:** The quantities of this bid item set forth on the bid sheet are nominal only. These quantities may increase or decrease up to 25% depending upon the actual field condition or as directed by the Engineer. The increase or reduction of these quantities as compared with those set forth on the bid sheet shall not constitute a basis for claim by the Contractor for extra payment or damages. Payment for the actual work performed based upon the prices bid for the items of work involved will be considered full compensation to the Contractor for the work.

END SECTION 01 90 00

SECTION 01 74 00 CLEANING

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. This Section covers the work necessary for cleaning during construction and final cleaning on completion of the Work.

1.2 GENERAL

- A. At all times maintain areas covered by the Contract and public properties free from accumulations of waste, debris, and rubbish caused by construction operations.
- B. Pollution Control:
 - 1. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 - 2. Do not burn or bury rubbish and waste materials on project site.
 - 3. Volatile wastes shall be properly stored in covered metal containers and removed daily.
 - 4. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - 5. Do not dispose of wastes into streams or waterways.
- C. Construction materials such as concrete forms shall be neatly stacked by the Contractor when not in use. The Contractor shall promptly remove asphalt, oil, paint, corrosive liquids, and cleaning solutions from surfaces to prevent marring or other damage.
- D. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
- E. Use cleaning materials only on surfaces recommended by cleaning material manufacturers.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CLEANING DURING CONSTRUCTION

- A. During execution of Work, clean site and public properties and dispose of waste materials, debris, and rubbish to assure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish.
- B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- C. Provide approved containers for collection and disposal of waste materials, debris, and rubbish. Empty containers within one day after they are full.

- D. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from exposed and semi-exposed surfaces.
- E. Repair, patch, and touch up marred surfaces to specified finish to match adjacent surfaces.
- F. Vacuum clean all interior spaces, including inside cabinets. Broom clean paved surfaces, rake clean other surfaces of grounds.
- G. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.
- H. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.

3.2 FINAL CLEANING

- A. At the completion of Work on all Contracts and immediately prior to final inspection, cleaning of the entire Project will be accomplished according to the following provisions:
 - 1. The Contractor shall thoroughly clean, sweep, wash, and polish all work and equipment, including finishes. The cleaning shall leave the structures and site in a complete and finished condition to the satisfaction of the Engineer.
 - 2. Should the Contractor not remove rubbish or debris or not clean the building and site as specified above, the Owner reserves the right to have the cleaning done at the expense of the Contractor.
 - 3. Employ professional cleaners for final cleaning.
 - 4. In preparation for substantial completion of occupancy, conduct final inspection of sight- exposed interior and exterior surfaces, and of concealed spaces.
 - 5. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight- exposed interior and exterior finished surfaces; polish surfaces so designated to shine finish.
 - 6. Repair, patch, and touch up marred surfaces to specified finish, to match adjacent surfaces.
 - 7. Broom clean paved surfaces; rake clean other surfaces of grounds.
 - 8. Replace air-handling filters if units were operated during construction.
 - 9. Clean ducts, blowers, and coils, if air-handling units were operated without filters during construction.
 - 10. Clean luminaires in accordance with manufacturer's recommendations. Clean all light fixtures.
 - 11. Remove from the Owner's property all temporary structures and all materials, equipment, and appurtenances not required as a part of, or appurtenant to, the completed work.

END OF SECTION 01 89 13

SECTION 02 11 20 POTHOLING

PART 1 – GENERAL

1.1 SUMMARY

- A.** Perform exploratory excavation by potholing at all utility conflicts to determine the location, depth, width, pipe diameter, culvert or concrete ductbank thickness, type and condition of the existing underground utilities. All existing utilities crossing the new pipelines will be potholed by the contractor prior to starting trenching operations.
- B.** Complete the Exploratory Excavation as the first order of work to determine the locations of all existing water, gas, and telecommunications, and other existing utilities in areas where trenching, excavation or grinding is suspected of potentially damaging existing utilities. Coordinate with the City and utility companies prior to potholing.

1.2 REFERENCES

- A.** Cal/OSHA – California Division of Occupation Safety and Health
- B.** Caltrans Standard Specifications
 - 1. Section 15 – Existing Facilities
 - 2. Section 19 – Earthwork
- C.** City Standard Specifications Section 19 – Earthwork
- D.** Underground Services Alert (USA)

1.3 SUBMITTALS

- A.** Submittal Data:
 - 1. Contact USA to verify the actual location of the pothole prior to beginning pothole. Submit to the City letters or correspondences of advance notifications to the utility companies.
 - 2. Submit photographs, in jpeg or PDF format, of the pothole locations with the pothole number identified on the photograph as designated below.
 - 3. Provide dimensions from the potholes to adjacent existing features (i.e. measurements to existing streetlights, power poles, fire hydrants or other nearby facility). Reference measurements must include a minimum of two fixed objects required for each pothole.
 - 4. Pothole data shall also include the thickness of asphalt concrete/Portland cement concrete pavement and aggregate base.
 - 5. At a minimum, pothole data shall be submitted in a tabular format. See sample

potholing submittal format below:

| # | Utility | Pipe Diameter (inch) | Concrete Ductbank Width x Depth | Depth to Top of Pipe or Concrete Ductbank | Material | AC/AB Depth (inch) | Northing or Distance from fixed Object A | Easting or Distance from fixed Object B |
|-------|--------------|----------------------|---------------------------------|---|-------------------|--------------------|--|---|
| PH# 1 | Water | 12 | - | 3'-6" | PVC | 4/8 | 15.1 ft from FH | 12.2 ft from SSMH |
| PH# 2 | Telecom Duct | - | 2 ft x 3 ft | 4'-2" | Concrete Ductbank | 6/10 | 22.1 ft from SDMH | 40.1 ft from WV |

1.4 POTHOLING

- A. Potholing shall conform to Section 5-1.36, "Property and Facility Preservation" and Section 15, "Existing Facilities" of the current Caltrans Standard Specifications.
- B. Locate utilities and provide utility markings of the underground utilities prior to potholing.
- C. Do not proceed with underground construction or commence trenching when USA Markings indicate a conflict.
- D. Do not proceed with underground construction or commence trenching when USA Markings when the potholing report is under review and yet not approved.
- E. Where gas distribution or gas transmission lines and high voltage lines are present, Contractor shall have a PG&E representative present on site during potholing.
- F. Contractor shall be responsible for contacting and notifying the utility companies 3 working days prior to beginning any potholing. Contractor shall be responsible for coordinating any inspections with the respective utility company.
- G. 2 weeks prior to any construction, potholing shall be performed at all utility conflicts in order to determine the location, depth, width, pipe diameter, thickness type, and condition of existing underground utilities and shall conform to the Special Provisions.
- H. Potholing will be shown as a separate line item in the project construction schedule, with a separate move-in from the underground utility trenching and separate from the trenching operations. Potholing shall be performed with non-destructive potholing equipment, such as vacuum method, and shall be approved by the Engineer in advance of commencing any work, along with the required traffic controls.
- I. Contractor for potholing shall be approved by the Engineer in advance of commencing any work, along with the required traffic controls.

- J. After the completion of the USA markings but before the actual potholing, host a field meeting with the City to review the locations of the potholes which will be painted in the field. During the meeting, the Engineer may relocate the potholes based on the field conditions. The Contractor's bid price shall include allowance for moving the locations of the potholes during the pre-pothole site meeting. No guarantee is made as to the exact locations of the existing utilities.
- K. Provide the Engineer in a tabular format the location, type, depth, diameter and condition of each utility found prior to commencing construction. The potholing table shall include a neatly red-lined plan. No trenching work shall be performed until the Engineer reviews the potholing information submitted by the Contractor.
- L. Provide the potholing information to the Engineer and allow 1 week for any necessary revisions to the design plan and profiles prior to sawcutting and trenching of the proposed pipe alignment or as shown on the Drawings.
- M. Take care not to damage any existing facilities during potholing. Existing facilities damaged by the Contractor's operations shall be repaired or replaced to the satisfaction of the City Engineer and Utility companies, at the Contractor's expense.
- N. Backfill with Controlled Low Strength Materials (CLSM) and complete surface restoration to match existing conditions in kind.
- O. Notify the utility companies and the City of all impacted utilities and allow in the schedule 45 calendar days for the utility companies to relocate any impacted utility lines which are not the responsibility of the contractor.

1.5 ADDED POTHoles AND INCIDENTAL WORK

- B. All Potholing work is incidental to the trenching work, and no separate payment will be made for potholing.
- C. Added Potholes Allowance: Added potholes are locations of existing utility crossings which are not indicated on the plans. A pipe that is less than 12" deep or smaller than 4" diameter will not qualify as an added pothole.
 - 1. In addition to the potholing at all existing utility crossings, the Contractor will include an additional 4 potholes in the trenching work.
 - 2. The cost for the added potholes is also incidental to the trenching work.
 - 3. Contractor will provide an accounting of the added potholes in writing as they occur.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 02 11 20

SECTION 31 11 00 CLEARING, GRUBBING, AND DEMOLITION

PART 1 - GENERAL

1.1 WORK INCLUDED

- A.** Clearing and disposal of all rubbish, debris, and other objectionable material of the entire area within the limits of work.
- B.** Walk the site and obtain permission from the City prior to removal of concrete conforms at private properties and driveways/doorways.
- C.** Preservation, care, and pruning of trees and shrubs to remain in place.
- D.** Trimming of tree limbs and tree roots as may be required prior to construction of improvements.
- E.** Contract to coordinate with City arborist prior to removal or trimming of trees.
- F.** Dust alleviation and control
- G.** The work shall include the provision of all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified

1.2 JOB CONDITIONS

- A.** The Contractor will be held responsible for any damage to trees injured during construction, i.e., limb breakage, tearing of bark along trunk or excessive root damage
- B.** Provide adequate dust alleviation and control measures at all times during the course of the work.

1.3 REFERENCES

- 1. City Standard Specifications Section 16 – Clearing and Grubbing

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PERFORMANCE

- A.** At sites where the excavation has taken place near trees to remain, and many living roots remain exposed to the air, cover the exposed roots within 2 hours with sand, soil, moist burlap or other means acceptable to the Engineer.
- B.** Spoils from the work site resulting from clearing, grubbing and stripping operations shall be removed from the entire limits of worksite and properly disposed of in accordance with applicable laws and regulations.

3.2 DEMOLITION

A. Demolition work shall conform to the provisions in Section 15, "Existing Facilities", of the Standard Specifications, the Special Conditions and these Technical Specifications. Existing street facilities shown on the plans or marked in the field to be removed shall be removed and salvaged in accordance with the provisions of Section 15, "Existing Facilities", of the Standard Specifications, the contract drawings, the Special Conditions and these Technical Specifications, and as directed by the City.

B. REMOVE ASPHALT CONCRETE PAVING AND BASE

1. Removal of existing asphalt concrete and base shall consist of excavation and removal of asphalt concrete, aggregate base and subsoil to design subgrade as shown on the plans. This work shall include saw-cutting as needed and disposal of asphalt concrete, aggregate base, and subsoil. Resulting holes and depressions shall be backfilled with earthy material selected from excavation, and meeting the requirements for engineered fill. The subgrade will be compacted to the lines and grade established by the Engineer.
2. Before procuring material from or disposing of material on non-public property:
 - a) Submit a written agreement from the property owner:
 1. For the use of the property, and
 2. Absolving the City from responsibility in connection with the property
 - b) Obtain authorization to start

Before Contract acceptance, submit a document signed by the owner of the material source or disposal site stating that the Contractor has complied with the Contractor-owner agreement.

3. Other entities may perform work at or near the job site and material sources at any time. Coordinate activities to avoid delays. Each contractor or other entity performing work at or near the job or material site is responsible to the other for damage to work, persons, or property and for costs due to unnecessary delays.
4. In areas of concrete and asphalt concrete removal, Contractor will also be responsible for removing aggregate base. As part of this work Contractor will be required to remove subsoil as needed to achieve subgrade for the new design section.
5. Subsoil Removal - Removal of base shall conform to the provisions in Section 19, "Earthwork," of the current City Standard Specifications, Section 19 "Earthwork" Caltrans Standard Specifications and the following Special Provisions:
 - a. All material shall be excavated as shown on the plans.
 - b. The accumulation of water in excavated areas shall be prevented by means of pumping or other approved methods. Ground water or storm water must be discharged in accordance with the water pollution prevention plans.
 - c. Excavation shall be carried to the exact depth indicated on the drawing or as specified. Should the Contractor, through his negligence or other fault, excavate below the designated lines, he shall replace such excavations with approved

materials at his own expense.

- d. Excavated material determined unsuitable for use as an embankment or in excess of the amount required for embankment shall be disposed of in accordance with these specifications and applicable regulations.

C. Edge Conforms and Impacts to Property Frontages

1. Additional asphalt concrete surfacing material shall be placed along the edge of the surfacing at road connections and private drives, hand raked, if necessary, and compacted to form smooth tapered conforms.

3.3 DUST ALLEVIATION AND CONTROL

- A. Contractor shall be responsible for providing pollution, dust abatement and dust control measures continuously during the course of the work.
- B. Where applicable Contractor shall utilize reclaimed water, or dust palliatives, in compliance with the City's Water Conservation Guidelines.

3.4 DEMOLITION SITE REVIEW

Contractor is expected to perform a thorough site investigation to identify all miscellaneous clearing and grubbing items prior to bidding the project. Any required demolition items not included in a specific bid item will be consider included in CLEARING AND GRUBBING.

3.5 CLEAN-UP

- A. Upon completion of clearing and stripping operations, the entire work site shall be cleaned of all construction debris, excess soil and waste of any nature.
- B. Contractor shall repair any damage to the existing irrigation system caused by the work and replace any portion of the existing irrigation system that is removed. Contractor shall incur these costs at own expense.
- C. Except where shown or specified otherwise, any existing groundcover area disturbed by the work shall be restored to existing grade and replanted with sod or plants as those removed with Engineers approval.
- D. Construction debris, waste and excess soil remaining on-site upon completion of clearing and stripping operations shall become the property of the Contractor, and shall be removed from the work site and disposed of in a lawful manner.

END OF SECTION 31 05 13

SECTION 31 22 00 GRADING AND EARTHWORK

PART 1 - GENERAL

1.1 WORK INCLUDED

- A.** Grading, earthwork and roadway excavation and/or fill.
- B.** Subgrade preparation.
- C.** Dust alleviation and control.
- D.** Cleanup and disposal of excess material
- E.** Supplying all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified

1.2 APPLICABLE PUBLICATIONS

- A.** The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the general designation only.
- B.** American Society for Testing and Materials (ASTM) Publications:
 - D4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils
 - D1556 Density and Unit Weight of Soil in place by Sand Cone Method
 - D558 Moisture-Density (Unit Weight) Relations of Soil-Cement Mixtures
 - D2419 Sand Equivalent Value of Soils and Fine Aggregate
 - D6938 In-Place Density and Water Content of Soil and Soil Aggregate by Nuclear Methods (Shallow Depth)

1.3 REFERENCES

- A.** Caltrans Standards:
 - 1. Section 19 Earthwork
 - 2. Section 26 Aggregate Base
- B.** City Standard Specifications:
 - 1. Section 19 Earthwork
 - 2. Section 26 Aggregate Base

1.4 QUALITY ASSURANCE

- A.** Finish surface of the graded and prepared subgrade must not vary more than

0.02 feet from the design grades on the plans or detail drawings when completed, and immediately prior to placement of the roadway structural section.

- B. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM Designation D558.
- C. Submit test results on imported material to indicate conformance with these requirements.

1.5 JOB CONDITIONS

- A. Accurately grade and prepare the roadway subgrade section to the lines and grades called for on the plans and detail drawings with due provision for future surface improvements.
- B. Fill required shall consist of suitable excavated material if available, and/or such approved imported borrow material as may be required for the work conforming to these requirements.
- C. Provide dust alleviation and control measures satisfactory to the Engineer continuously during the course of the work.
- D. Surplus excavation material remaining upon completion of the grading and roadway subgrade preparation shall be segregated as to type and must be transported and disposed off-site in a lawful manner.
- E. The soil on this project is to be treated as contaminated, but non-hazardous. All soil to be exported to a pre-approved Landfill, and shall not be transported offsite as “clean” export.

PART 2 - PRODUCTS

2.1 SOIL AND AGGREGATE MATERIALS

- A. Site Fill and Backfill Materials - General:
 - 1. Provide various types of materials as specified herein and indicated on the Plans.
 - 2. All fill and backfill materials must be free of deleterious substances, large rocks, garbage, rubbish, wood or organic debris.
 - 3. All materials, regardless of source, will require approval of the Submittal by the Engineer prior to procurement or placement.
- B. Unclassified Locally Obtained or Imported Fill Beneath or Adjacent to Roadways and for Structural Backfill:
 - 1. Unless otherwise shown on the Plans, use suitable materials obtained from Contract excavation. Supplement with import materials, if required and authorized. Suitable materials must be non-organic, native soil or soil-rock. Expansive silt and clay with liquid limit greater than 50 are unsuitable fill material and must not be used.
 - 2. No import materials for structural fill or embankment fill will be authorized until suitable materials from Contract excavation have been exhausted.

C. Class 2 Aggregate Base:

1. Aggregate base must comply with the 3/4-inch maximum, aggregate grading under Section 26 of the City Standard Specifications and Section 26-1.02B, "Class 2 Aggregate Base," of the Standard Specifications.

2.2 IMPORTED MATERIAL FOR ENGINEERED FILL

A. Material for fill shall be supplied from previously tested and approved sources, and must conform to the following specifications and requirements:

1. All material must be free of organic materials, trash and debris, expansive clays or any other deleterious materials, and shall be subject to the approval and acceptance of the Engineer.
2. The contractor shall designate his proposed import sources in advance and shall provide the source samples of material proposed to be furnished for evaluation.
3. Minimum "R" value of import soils shall be 25. "R" values for acceptable import material shall be determined by the procedure set forth in Test Method No. 301 of the State of California, Department of Transportation, and the material shall conform to the following gradation requirements:
 - e. Maximum particle size 1.5 inches
 - f. Percent passing 1-1/2" screen 50-100
 - g. Percent passing No. 4 screen 20-100
 - h. Percent passing No. 200 screen 10-30
4. Plasticity Index for acceptable import material must be less than 20 when determined by the procedure set forth in ASTM Designation D4318.
5. Sand Equivalent for acceptable import material must be not less than 25 when determined by the procedure set forth in ASTM Designation D2419.
6. Loamy material is required, unless prior written approval from the City: Fertile, friable local natural sandy loam or loam, free from weeds, seed, stones, subsoil or other debris.

PART 3 - EXECUTION

3.1 PREPARATION

- A.** Prior to placing fill, all areas must be stripped of all vegetation, topsoil, and other objectionable materials, scarifying the ground to provide a bond with the fill material, and compacting the fill at optimum moisture content.
- B.** Do not proceed with filling until the grade has been satisfactorily inspected.

- C. Protect utilities indicated to remain from damage.
- D. Notify utility company to remove or relocate utilities.
- E. Protect plant life, lawns, rock outcropping and other features remaining as portion of final landscaping.
- F. Protect bench marks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.2 PLACING AND COMPACTING FILL MATERIAL

- A. Spread fill material in uniform lifts not exceeding 8" in uncompacted thickness. Each lift shall be thoroughly mixed to ensure a uniform distribution of water content. If suitable compaction can be demonstrated, thickness of fill placement may be increased, subject to written approval of the Engineer.
- B. Before compaction begins, maintain optimum moisture content of fill materials to attain required compaction density by either: (1) aerating the material if it is too wet, or (2) spraying the material with water if it is too dry. Material that has been removed because it is too wet to permit compacting may be temporarily stockpiled or spread and allowed to dry.
- C. Control soil compaction during construction to provide the minimum percentage of density specified for each area as determined according to ASTM D1556 or ASTM D6938. All operations will be subject to the approval of the Engineer.
- D. For a minimum depth of 8" below existing subgrade or fill placed under asphalt roadways must be compacted to 95 percent compaction.
- E. In landscaped areas, place and compact fill to 1" below the surface of adjacent curbs, walks and drives. Fill in landscape areas shall be compacted to 85 percent. Unless otherwise specified or indicated.
- F. Any fill that does not meet the specification requirements shall be removed and/or recompacted until the requirements are satisfied.

3.3 GENERAL GRADING & EARTHWORK

- A. Earthwork shall consist of excavating to the lines and grades called for on the plans and detail drawings.
- B. Materials must be removed or placed to the lines and grades indicated for subgrade for roadway and any other improvements called for on the plans and detail drawings. Materials must be placed and compacted as specified above for fill material.
- C. Construct slopes to the lines and grades shown on the Drawings.
- D. Make grade changes gradual. Blend slopes into level areas.
- E. Round the tops of excavation slopes and ends of excavation.

- F. Identify any site low points which need positive drainage and make adjustments with approval from Engineer prior to pouring concrete.

3.4 SUBGRADE PREPARATION UNDER PAVED AREAS

- A. The Contractor must at all times maintain the subgrade surface in such condition as to readily drain effectively.
- B. Vehicular and equipment traffic shall be distributed across the prepared surface in such a manner as to prevent continual operation in one path. The Contractor must repair any damage to the prepared subgrade.
- C. Storage or stockpiling of heavy loads on the roadway subgrade will not be permitted. Use only approved storage areas.
- D. The Contractor shall be responsible for any failure of the underlying native soils during the course of the work and must repair any damage.
- E. Finished subgrade shall be subject to the approval of the Engineer and no select material or improvement shall be placed thereon until approval for same has been obtained.

3.5 FIELD QUALITY CONTROL

- A. Coordinate with the City inspector for each phase of work. The Contractor may not proceed with the next phase until the previous phase has been approved by the inspector.
- B. The Engineer will inspect, test and approve subgrades and fill layers before further construction is permitted thereon; and will conduct a sufficient number of tests chosen at Engineer's discretion to enable said Engineer to approve fill as it is placed. Areas to receive structural fills and all structural excavations must be approved before covering or filling.
- C. If in the Engineer's opinion, based on the results of testing for subgrade or fills which have been placed and compacted below the specified density, the Contractor shall provide additional compaction, with subsequent retesting by the owner until the affected subgrade or fill is approved.

3.6 DUST ALLEVIATION AND CONTROL

The provisions of this section will apply to all work performed by the contractor and the subcontractors.

- A. Provide pollution and dust abatement and control measures continuously during the course of the work.
- B. Utilize reclaimed water, or dust palliatives, in compliance with the City's Water Conservation Guidelines.
- C. Dust control shall conform to the provisions in Section 10-4, "Water Usage", Section 10-5 "Dust Control", Section 10-6, "Watering", Section 13-4.03C(3), "Stockpile Management", Section 13-5, "Temporary Soil Stabilization", Section 14, "Environmental Stewardship", and Section 18, "Dust Palliatives", of the most current edition of the State Standard Specifications."

- D. Provide suitable means for dust control by applying either reclaimed water, not potable water, or dust palliative for operations within the limits of the Work. Comply with the City Water Conservation Guidelines. Dust control work shall be performed in such manner to prevent dust at all times, including during non-working hours. Thoroughly moisten surfaces as required to prevent dust being a nuisance to the public, neighbors, and personnel performing other work on the site.
- E. Promptly comply with all directives from the City relating to dust control. If dust control is not performed in a manner satisfactory to the City, then either work shall be suspended until the dust control measures are sufficient, or dust control may be performed by the City, or its designee, and the City will deduct all costs it incurs performing dust control plus 25% from amounts due or that become due to the Contractor.
- F. At the end of each working day, or as directed by the City, the roadways and on-site paved areas must be cleaned and swept of all materials attributed to or involved in the Work. Streets must not be washed down into a storm drain or creek in lieu of street sweeping. Water wash may be picked up by a vacuum unit in lieu of sweeping.
- G. Full compensation for providing dust control shall be deemed included in the prices paid for the various contract items of work, and no separate payment will be made therefor.

3.7 STOCKPILING

- A. Separate differing materials with dividers or stockpile apart to prevent mixing.
- B. Prevent intermixing of soil types or contamination.
- C. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.
- D. Stockpile unsuitable or hazardous materials on impervious material and cover to prevent erosion and leaching, until disposed of. Dispose unsuitable or hazardous material within 48 hours of removal.

3.8 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.
- B. Leave unused materials in a neat, compact stockpile.
- C. When borrow area is indicated, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

3.9 DISPOSAL OF EXCESS MATERIAL

- A. Surplus materials and construction debris remaining upon completion of the work shall become the property of the Contractor unless otherwise specified herein or noted on the plans and must be removed from the work site by the Contractor and disposed of off-site in a lawful manner.

END OF SECTION 31 22 00

| | |
|-------------|---|
| ASTM C136 | Standard Method for Sieve Analysis of Fine and Coarse Aggregate |
| ASTM D 422 | Test Method for Particle-Size Analysis of Soils. |
| ASTM D 1556 | Test Method for Density of Soil in Place by the Sand-Cone Method. |
| ASTM D 1557 | Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54-kg) Rammer and 18-in. (457-mm) Drop. |
| ASTM D 1633 | Test Method for Compressive Strength of Molded Soil-Cement Cylinders. |
| ASTM D 2419 | Method for Sand Equivalent Value of Soils and Fine Aggregate. |
| ASTM D 2487 | Test Method for Classification of Soils for Engineering Purposes. |
| ASTM D 3017 | Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth). |
| ASTM D 4253 | Test Methods for Maximum Index Density of Soils Using a Vibratory Table. |
| ASTM D 4254 | Test Methods for Minimum Index Density of Soils and Calculation of Relative Density. |
| ASTM D 4318 | Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils. |
| ASTM D6938 | Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth). |
| OSHA | Occupational Safety and Health Administration |

1.4 CONTRACTOR SUBMITTALS

- A. The Contractor shall comply with all pertinent regulations of Cal/OSHA, local codes and practices.
- B. The CONTRACTOR'S attention is directed to the provisions for "Shoring and Bracing Drawings" in Section 6705 of the California Labor Code. The CONTRACTOR, prior to beginning any trench and in locations where there is a potential for cave-ins, shall submit to the ENGINEER for review for compliance with Section 6705 the CONTRACTOR'S detailed plan showing design of all shoring, bracing, sloping of the sides of excavation, or other provisions for worker protection against the hazard of caving ground during the excavation of such trenches or structure excavation. If such plan varies from the shoring system standards established in the Construction Safety Orders of the State of California or if the trench excavations exceed 4.9 feet deep, such

alternative system plans shall be prepared, stamped and signed by a civil or structural engineer licensed in the State of California at the CONTRACTOR'S expense.

- C. **Certificates of Compliance:** Certificates of Compliance shall be provided for all products and materials proposed to be used under this Section.
- D. For all materials the CONTRACTOR shall designate the source and/or submit samples of all materials in advance of their use for required testing and ENGINEER'S approval. All testing costs shall be at the CONTRACTOR'S expense.
- E. Submit copies of a report from a testing laboratory verifying that backfill material conforms to the specified gradations of characteristics for granular material, imported sand, rock refill for foundation stabilization, and water.
- F. Submit method of compaction in pipe zone including removal sequence of shoring where used.
- G. Obtain all required permits and licenses before installing utilities under existing roads, and follow the rules and requirements of the City of Brentwood.
- H. Arrange construction sequences to provide the shortest practical time that the trenches will be open to avoid hazard to construction personnel and public, and to minimize the possibility of trench collapse.

1.5 QUALITY ASSURANCE

- A. **General:** The Contractor, at his own expense, shall retain the services of an approved, independent materials testing laboratory to perform testing services. Compaction testing of bedding, fill and backfill materials will be performed by the Contractor to ensure compliance with the plans and specifications. The Contractor shall provide all material analyses (gradations, Proctor curves, etc.) necessary to evaluate the materials and perform field tests on all materials used. The Owner may obtain independent material analyses. If independent analyses are obtained by the Owner, the Owner will have the final authority as to which analyses are used for quality assurance testing. Areas where test results indicate noncompliance shall be corrected before placing additional materials.
- B. Independent material testing laboratory shall be certified and all reports prepared under the supervision of a California Registered Geotechnical or Civil Engineer. Reports shall be signed by Geotechnical or Civil Engineer.
- C. Where soil material is required to be compacted to a percentage of maximum density the maximum density at optimum moisture content will be determined in accordance with ASTM D 1557. Where cohesionless, free draining soil material is required to be densified to a percentage of relative density the calculation of relative density will be determined in accordance with ASTM D 4253 and D 4254. Field density in-place tests will be performed in accordance with ASTM D 6938, or by such other means acceptable to the ENGINEER.
- D. If a test fails, the area shall be reworked to the satisfaction of the OWNER and retested. All subsequent re-testing shall also be at the CONTRACTOR'S expense.
- E. The CONTRACTOR shall notify the ENGINEER at least 48 hours prior to performing any utility excavation.

1.6 FREQUENCY OF TESTING

- A. Dry Density and Optimum Moisture Content Testing, ASTM D1557, to be performed on each different class or type of material, and additional tests as necessary when a previous test is suspect, due to changes in the material, as determined by the Owner. Additional test locations will be randomly selected by the Owner.
- B. Density of Soil In-Place by Sand Cone or by Nuclear Methods Testing shall be performed at the locations, intervals, and frequency as determined by the Owner. The following minimum frequencies apply:
 - a. Trench Zone - A minimum of one test per lift per 250 lineal feet of trench.
 - b. Street Zone (Aggregate Base Section) – a minimum of one test per lift per 250 lineal feet of trench.
 - c. Pipe Zone – a minimum of one test per lift per 250 lineal feet of trench.
- C. Density of Soil In-Place by Sand Cone or by Nuclear Methods Testing shall be performed at the locations.
- D. Density Copies of the reports shall be provided to the Owner.

1.7 TESTING TOLERANCES

- A. Percent Compaction. Not less than as specified on Plans, in these specifications, *or 95% minimum.*
- B. In-Place Moisture Content. As required to achieve minimum relative compaction.
- C. Soft or Yielding Surfaces. Regardless of percent relative compaction obtained by test, areas which are soft and yield under the load of construction equipment are to be removed and replaced at no additional cost.

PART 2 -- PRODUCTS

2.1 SUITABLE BACKFILL MATERIALS

- A. Suitable Backfill shall be a selected or processed clean, fine earth, rock, or sand, free from objectionable material, vegetation, or other deleterious substances.
- B. The following TYPES of backfill materials are designated and defined as follows:

Sand: Sand shall be imported sand and shall have the following gradation:

| <u>Sieve Size</u> | <u>Percent Passing</u> |
|-------------------|------------------------|
| No. 4 | 100 |
| No. 8 | 75 – 100 |
| No. 16 | 55 – 100 |

| | |
|---------|---------|
| No. 30 | 30 – 95 |
| No. 50 | 10 – 75 |
| No. 100 | 2 – 15 |
| No. 200 | 0 – 5 |

Imported sand shall have a minimum sand equivalent of 70 per ASTM-D2419.

Class 2 Aggregate Base: Class 2 Aggregate Base shall be crushed rock aggregate base material meeting the requirements of Section 26 of the City Standard Specifications and Section 26, "Aggregate Bases," for 3/4" maximum grading, of the Caltrans Standard Specifications and 1-1/2" maximum grading for over excavated areas. Aggregate shall contain no detectable asbestos.

CLSM: Controlled Low Strength Materials (CLSM) shall conform to the requirements of Section 312323 "Controlled Low Strength Materials (CLSM)."

Native: Native material shall be material obtained from on-site excavations, provided the materials are not classified as unsuitable. Native material shall be free of stones, lumps, broken concrete or bituminous surfacing over 4 inches in diameter, objectionable material, vegetation, and deleterious substances.

Engineered Fill: Material for fill shall be supplied from previously tested and approved sources, and must conform to the following specifications and requirements: All material must be free of organic materials, trash and debris, expansive clays or any other deleterious materials, and shall be subject to the approval and acceptance of the Engineer. The contractor shall designate his proposed import sources in advance and shall provide the source samples of material proposed to be furnished for evaluation. Minimum "R" value of import soils shall be 25. "R" values for acceptable import material shall be determined by the procedure set forth in Test Method No. 301 of the State of California, Department of Transportation, and the material shall conform to the following gradation requirements:

| | |
|--------------------------------|------------|
| Maximum particle size | 1.5 inches |
| Percent passing 1-1/2" screen | 50-100 |
| Percent passing No. 4 screen | 20-100 |
| Percent passing No. 200 screen | 10-30 |

Plasticity Index for acceptable import material must be less than 20 when determined by the procedure set forth in ASTM Designation D4318. Sand Equivalent for acceptable import material must be not less than 25 when determined by the procedure set forth in ASTM Designation D2419. Loamy material is required, unless prior written approval from the University: Fertile, friable local natural sandy loam or loam, free from weeds, seed, stones, subsoil or other debris.

2.2 UNSUITABLE BACKFILL MATERIALS

- A. Unsuitable soils for backfill material shall include soils which, when classified under ASTM D 2487, fall in the classifications of Pt, OH, or OL. Types CH and MH soils will be permitted in unimproved areas only where required compaction and stability can be demonstrated. In addition, any soil which cannot be compacted sufficiently to achieve the percentage of maximum density specified for the intended use, shall be classified as unsuitable material.

- B. Any material determined to be hazardous is defined as unsuitable material.
- C. Washed, smooth rock (pea gravel) is classified as unsuitable material.
- D. Contractor shall remove and replace any trenching and backfilling material which does not meet the specifications, at the Contractor's expense.

2.3 USE OF SUITABLE BACKFILL MATERIALS TYPES

- A. The CONTRACTOR shall use the types of materials as designated herein for all required backfill construction.
- B. Backfill material types shall be used in conformance with the following provisions:
 - 1. **Pipe Zone** backfill, as defined under PART 3 - EXECUTION of this Section herein, shall be Class 2 AB meeting the requirements of Product Type 1.
 - 2. **Trench Zone** backfill as defined under PART 3 - EXECUTION of this Section herein, shall be Class 2 Aggregate Base meeting the requirements of Product Type 2. Upon approval of the Engineer, Controlled Density Fill (CDF) may be used in lieu of Class 2 AB.
 - 3. **Street Zone** backfill as defined under PART 3 - EXECUTION of this Section herein, shall consist of the following materials for each condition listed below.
 - a. Street Zone shall be 6" minimum thickness of asphalt paving or existing pavement thickness (T) + 1"; whichever is greater. The top 2" of asphalt paving shall be Type A, 1/2" maximum, medium and the lower lifts of asphalt paving shall be Type A, 3/4" maximum, course. All trenches shall be "T" cut per City Standard Details.
 - b. Street Zone Backfill in unimproved areas shall be Native meeting the requirements of Product Type 4.
 - c. Street Zone backfill in landscape areas shall be Native meeting the requirements of Product Type 4.
 - 4. **Minor structures (Valve boxes and Meter Boxes)** Backfill materials around minor structures shall be Class 2 Aggregate Base meeting the requirements of Product Type 2.
 - 5. **Over-excavation** backfill shall be 3/4" Crushed rock and where pipelines extend into loose medium dense sands below the water table. For wet trench conditions place a filter fabric on top and below of the material to prevent migration of fines.

2.4 SKID RESISTANT STEEL PLATES

- A. When steel plate bridging is provided in-lieu of backfill and temporary asphalt, it shall conform to Section 602.1 of the Caltrans Encroachment Permit Manual, with the following minimum thicknesses:

| Trench Width | Minimum Plate Thickness |
|-------------------|-------------------------|
| (10") 0.25 m | (1/2") 13 mm |
| (1' - 11") 0.58 m | (3/4") 19 mm |
| (2' - 7") 0.80 m | (7/8") 22 mm |
| (3' - 5") 1.04 m | (1") 25 mm |
| (5' - 3") 1.60 m | (1 1/4") 32 mm |

For spans greater than 5 feet-3 inches, a structural design shall be prepared by a California registered civil engineer.

PART 3 -- EXECUTION

3.1 GENERAL

- A. Where abandoned underground structures are encountered in the street areas, remove to sufficient depth to allow underground lines to cross, backfill and compact during rough grading. The ENGINEER may require further work to be done if visual inspection indicates during construction.

3.2 MINOR STRUCTURE EXCAVATION

- A. **General:** Except when specifically provided to the contrary, excavation shall include the removal of all materials of whatever nature encountered, including all obstructions of any nature that would interfere with the proper execution and completion of the work. The removal of said materials shall conform to the lines and grades shown on the Drawings or ordered by the ENGINEER. Unless otherwise provided, the entire construction site shall be stripped of all vegetation and debris, and such material shall be removed from the site prior to performing any excavation or placing any fill. The CONTRACTOR shall furnish, place, and maintain all supports and shoring that may be required for the sides of the excavations, and all pumping, ditching, or other measures required for the removal or exclusion of water, including storm water, groundwater, and wastewater reaching the site of the work from any source so as to prevent damage to the work or adjoining property. Excavations shall be sloped or otherwise supported in a safe manner in accordance with applicable State safety requirements and the requirements of OSHA Safety and Health Standards for Construction (29CFR1926). The limits of structure excavation shall be a minimum of 12 inches beyond the outside edge of the structure, and at a minimum no larger than necessary to facilitate backfill, compaction and testing operations. For structures poured against undisturbed soil the width of the structure wall shall be no more than 2 inches greater than specified or shown on the Drawings.
- B. **Excavation Beneath Minor Structures:** Except where otherwise specified for a particular structure or as directed by the ENGINEER, excavation shall be carried to the grade of the bottom of the structure. When directed by the ENGINEER, areas beneath minor structures shall be over-excavated. When such over-excavation is directed, both over-excavation and subsequent backfill to the required grade shall be performed. After over-excavation is performed and before backfill is placed, the exposed surface shall be scarified to a depth of 6 inches, brought to optimum moisture content, and rolled with heavy compaction equipment to obtain 90 percent of maximum density.

3.3 PIPELINE AND UTILITY TRENCH EXCAVATION

- A. **Trench Width:** Unless otherwise shown or directed, excavation for pipelines and utilities shall be open-cut trenches. Trench widths shall be kept as narrow as is practical for the method of densification selected by the CONTRACTOR, but shall have a minimum width at the bottom of the trench equal to the outside diameter of the pipe plus a minimum of 6 inches on either side of the pipe. For deep trenches, the maximum width requirement may be waived for constructability reasons with the written approval of the ENGINEER. Comply with 29CFR Part 1926 Subpart P - Excavations.
- B. **Subgrade:** The surface of the subgrade after compaction shall be hard, uniform, smooth, self draining, and true to grade and cross section.
- C. **Trench Bottom:** The pipe bedding shall be given a final trim establishing grade such that each pipe section when first laid will be continually in contact with the bedding along the extreme bottom of the pipe. Rounding out the trench bottom or bedding to form a cradle for the pipe will not be allowed. The CONTRACTOR shall excavate for bell holes and fittings.
- D. **Open Trench:** The maximum amount of open trench permitted in any one location shall be the length necessary to accommodate the amount of pipe installed and backfilled in a single day. All trenches shall be fully backfilled at the end of each day to the greatest depth possible by leaving access holes at tie-ins and at corporation stops filling between holes or, in lieu thereof, shall be covered by heavy steel plates adequately braced and capable of supporting vehicular traffic in those locations where it is impractical to backfill at the end of each day. The above requirements for backfilling or use of steel plate may be waived in cases where the trench is located further than 100 feet from any travelled roadway or occupied structure. In such cases, however, barricades, reflective cones and warning lights meeting safety requirements shall be provided and maintained.
- E. **Trench Over-Excavation:** Where indicated trenches shall be excavated to the depth shown, and then backfilled to the grade of the bottom of the Pipe Zone.
- F. **Over-Excavation:** When ordered by the ENGINEER, whether or not indicated on the Drawings, trenches shall be over-excavated beyond the depth shown. Such over-excavation shall be to the depth ordered. The trench shall then be backfilled to the grade of the bottom of the Pipe Zone.

3.4 LOCATION OF EXCAVATED MATERIAL

- A. During trench excavation, place the excavated material only within the working area. Do not obstruct any roadways or streets. Conform the federal, state, and local codes governing the safe loading of trenches with excavated material. All trenches shall be backfilled at the end of each day's operation.
- B. Until permanent AC paving and base can be replaced, the Contractor shall backfill the trench to grade and maintain the subgrade and surface in a condition that is suitable to support and safely carry traffic. New AC paving shall be placed within one (1) week after backfilling and trench, unless otherwise approved by the Owner.

3.5 OVER-EXCAVATION NOT ORDERED, SPECIFIED, OR SHOWN

- A. Any over-excavation carried below the grade ordered, specified, or shown, shall be backfilled to the required grade and densified with the specified material and compaction. Such work shall be

performed by the CONTRACTOR at its own expense.

3.6 EXCAVATION IN VICINITY OF TREES

- A. All trees shall be protected from injury during construction operations. No tree roots over 2 inches in diameter shall be cut without express permission of the ENGINEER. Trees shall be supported during excavation by any means previously reviewed by the ENGINEER.
- B. If existing roots over one inch in diameter are cut during the course of the work, the cut faces shall be thoroughly coated with emulsified asphalt made especially for use on cut or damaged plant tissues. Exposed roots shall be covered with wet burlap to prevent them from drying out.

3.7 DEWATERING

- A. Provide and maintain means and devices to remove and dispose of all water entering the trench excavation during the time the trench is being prepared for the pipe laying, during the laying of the pipe, and until the backfill at the pipe zone has been completed. These provisions shall apply at all times. Dispose of the water in a manner to prevent damage to adjacent property and in accordance with regulatory agency requirements. Do not drain trench water through the pipeline under construction. Do not allow groundwater to rise around the pipe until jointing compound has set hard.

3.8 ROCK EXCAVATION

- A. No rock excavation is anticipated on this project.

3.9 DISPOSAL OF EXCESS EXCAVATED MATERIAL

- A. The CONTRACTOR shall remove and dispose of all excess excavated material to a suitable site. The proper and legal disposal shall be the responsibility of the CONTRACTOR.

3.10 BACKFILL - GENERAL

- A. Backfill shall not be dropped directly upon any structure or pipe. Backfill shall not be placed around or upon any structure for a minimum of 72 hours or until the concrete has attained sufficient design strength to withstand the loads imposed, whichever is greater.

3.11 BEDDING, PIPE ZONE, UTILITY TRENCH ZONE, STREET ZONE AND BACKFILL

A. Pipe Zone and Backfill:

1. The Pipe Zone is defined as that portion of the full width of vertical trench cross-section lying between a plane 4" from the bottom surface of the pipe, and a plane at a point 12" above the top surface of the pipe. Where multiple pipes or conduits are placed in the same trench, the pipe zone shall extend from the bottom of the lowest pipes to a horizontal level above the top of the highest or topmost pipe.
2. The Pipe Zone shall be backfilled with the specified backfill material. The CONTRACTOR shall exercise care to prevent damage to the pipeline coating, cathodic bonds, or the pipe itself during the installation and backfill operations.

- B. **Trench Zone and Backfill:** The Trench Zone is defined as that portion of the full width of vertical trench cross-section lying between a plane 12" above the top surface of the pipe and a plane below the roadway asphalt paving in paved areas.

After the Pipe Zone backfill has been placed as specified above, and after all excess water has completely drained from the trench, backfilling of the Trench Zone may proceed.

- C. **Street Zone and Backfill:** The Street Zone is defined as the paving zone, which is the top 6 inches or existing pavement thickness + 1" below the finished surface whichever is greater; of the vertical trench cross-section lying between the top of the Trench Zone and the finish final grade in paved or landscaped or unimproved areas.

The street zone includes the asphalt concrete and aggregate base pavement section placed over the trench backfill and/or above street subgrade.

Utility Crossing: For any new pipeline installation that crosses under an existing electric, gas, telephone, or cable TV utility pipe(s) or conduit(s) the CONTRACTOR shall replace the existing backfill material around the existing utility pipe(s) or conduit(s) with PG&E Sand. Sand shall be placed from a plane 6 inches below the bottom of the lowest utility pipe or conduit to a plane 12 inches above the top of the highest utility pipe or conduit, and for the full width of the new trench. PG&E Sand backfill shall be compacted to 95 percent maximum density in conformance with COMPACTION AND BACKFILL MATERIALS as specified below. PG&E Sand shall comply with the gradation requirements as specified in the PG&E Green book latest edition.

3.12 PLACING AND SPREADING OF BACKFILL MATERIALS

- A. Backfill materials shall be placed and spread evenly in horizontal layers. The backfill layers shall be evenly spread so that when compacted each layer shall not exceed 6 inches in thickness.
- B. During spreading each layer shall be thoroughly mixed as necessary to promote uniformity of material in each layer and uniformity of moisture throughout backfill materials. Pipe Zone backfill materials shall be manually spread around the pipe so that when compacted the Pipe Zone backfill will provide uniform bearing and side support.
- C. Where the backfill material moisture content is below the optimum moisture content water shall be added before or during spreading until the proper moisture content is achieved.
- D. Where the backfill material moisture content is too high to permit the specified degree of compaction, the material shall be dried or replaced until the moisture content is satisfactory.
- E. Backfill shall be mechanically compacted by means of tamping rollers, sheepsfoot rollers, pneumatic tire roller, vibrating rollers, or other mechanical tampers. All such equipment shall be of a size and type subject to review by the ENGINEER. Impact-type pavement breakers (stompers) will not be permitted. Permission to use specific compaction equipment shall not be construed as guaranteeing or implying that the use of such equipment will not result in damage to adjacent ground, existing improvements, or new improvements. The CONTRACTOR shall make its own determination in this regard.
- F. Material for mechanically compacted backfill may be placed in loose lifts which, prior to compaction, shall not exceed the thickness specified below for various types of equipment:

1. Vibratory equipment, including vibratory plates, vibratory smooth-wheel rollers, and vibratory pneumatic-tired rollers - maximum lift thickness of 2 feet.
 2. Rolling equipment, including sheepsfoot (both vibratory and non-vibratory), grid, smooth-wheel (non-vibratory), pneumatic-tired (non-vibratory), and segmented wheels - maximum lift thickness of 1 foot.
 3. Hand-directed mechanical tampers-maximum lift thickness of 4 inches.
- G. Mechanically compacted landfill shall be placed in horizontal layers of thickness not exceeding those specified above, compatible to the material being placed and the type of equipment being used. Each layer shall be evenly spread, moistened or dried, if necessary, and then tamped or rolled until the specified relative compaction has been attained.

3.13 COMPACTION OF BACKFILL MATERIALS

- A. Each layer of backfill material as defined herein, shall be mechanically compacted to the specified percentage of maximum density. Equipment that is consistently capable of achieving the required degree of compaction shall be used and each layer shall be compacted over its entire area while the material is at the required moisture content range.
- B. Flooding, ponding, or jetting shall not be used.
- C. Equipment weighing more than 10,000 pounds shall not be used closer to structure walls than a horizontal distance equal to the depth of the fill against the structure wall at that time. Hand operated power compaction equipment shall be used where use of heavier equipment is impractical or restricted due to weight limitations.
- D. **Compaction Requirements:** The following compaction test requirements shall be in accordance with ASTM D 1557 for cohesive type materials and in accordance with ASTM D 4253 and D 4254 for “non-plastic” cohesionless free draining granular type materials. Where other agency or utility company requirements govern, the highest compaction standards shall apply.

| <u>Location or Use of Fill</u> | <u>Percentage of Maximum Density</u> | <u>Percentage of Relative Density</u> |
|--|--------------------------------------|---------------------------------------|
| Pipe Zone backfill including bedding and overexcavated zone. | 90 | 65 |
| Trench Zone backfill. | 95 | 65 |
| Backfill beneath minor structures. | 95 | 70 |
| Backfill around minor structures. | 95 | 65 |

Maximum Density refers to maximum dry density according to ASTM D 1557 laboratory test procedures. Percentage of Relative Density refers to ASTM D 4253 and ASTM D 4254 laboratory test procedures. Relative density should only be used for "non-plastic" cohesionless free draining, granular-type materials.

- E. **Trench Backfill Requirements:** The pipe class has been structurally designed based upon the trench configuration previously specified herein.
1. The CONTRACTOR shall maintain the previously specified trench width up to a horizontal plane lying 12 inches above the top of the pipe.
 2. If, at any location under said horizontal plane, the CONTRACTOR slopes the trench walls or exceeds the trench widths indicated the Pipe Zone backfill shall be "improved" at no additional cost to the CITY. "Improved" backfill shall mean Control Low Strength Materials or other equivalent materials acceptable to the ENGINEER.
 3. If the allowable deflection specified for the pipe is exceeded, the CONTRACTOR shall expose and reround or replace the pipe, repair all damaged lining and coating, and reinstall the Pipe Zone material and Trench Zone backfill as specified.
 4. All trenches shall have a minimum of 2 inches of temporary asphalt placed daily and maintained unless final paving can be completed in the same day. Temporary asphalt shall be placed flush with adjacent pavement grade.

Steel plates may be used to cover open trenches in-lieu of backfill and temporary asphalt pavement.

3.14 STEEL PLATES

- A. **General:** When backfilling operations of an excavation in the traveled way, whether transverse or longitudinal, cannot be properly completed within a work day, steel plate bridging with a non-skid surface and shoring may be required to preserve unobstructed traffic flow.
- B. When steel plate bridging is required, the following conditions shall apply:
1. Steel plates used for bridging must extend a minimum of 12 inches beyond the edges of the trench.
 2. Steel plate bridging shall be installed to operate with minimum noise.
 3. The trench shall be adequately shored to support the bridging and traffic loads.
 4. Temporary paving with cold asphalt concrete shall be used to feather the edges of the plates, if plate installation by Method (2) is used.
 5. Bridging shall be secured against displacement by using adjustable cleats, shims or other devices.
- C. Steel plate bridging and shoring shall be installed using either Method (1) or (2):
1. Method 1 For Posted speeds more than 30 mph or for Trench plates installed for more than 2 days: The pavement shall be cold planed to a depth equal of the thickness of the plate and to a width and length equal to the dimensions of the plate.
 2. Method 2 For Posted speeds less than or equal to 30 mph or for Trench plates installed for less than 2 days: Approaching plate(s) and ending plate (if longitudinal placement) shall be attached to the roadway by a minimum of 2 dowels pre-drilled into the corners of the plate and drilled 2 inches into the pavement. Subsequent plates are butted to each other. Fine graded asphalt concrete shall be compacted to form ramps, maximum slope 8.0 percent with a minimum 12 inch taper to cover all edges of the steel plates. When steel plates are removed,

the dowel holes in the pavement shall be backfilled with either graded fines of asphalt concrete mix, concrete slurry or an equivalent slurry.

- D. Steel plate bridging should not exceed 4 consecutive working days in any given week.

3.15 WATER POLLUTION CONTROL

- A. Water Pollution Control work will include street sweeping, installing, maintaining, removal and cleanup of all erosion and sediment control measures such as straw wattles, drainage inlet protection, in conformance with Caltrans Standard plans within the project site, providing measures to prevent silt or contamination of the City stormwater collection system, including preparing and submitting a water pollution control plan (WPCP) for City approval and implementing best management practices as require per the construction general permit, daily street sweeping, furnishing and installing straw wattles, implementing rain event action plans prior to each rain events as specified in the Standard Specifications, the Special Provisions, these Technical Specifications, and as directed by the Engineer.

END OF SECTION 31 23 16

SECTION 31 23 23 CONTROLLED LOW STRENGTH MATERIALS

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. Controlled Low Strength Materials (CLSM) or Controlled Density Fill (CDF) will be allowed only on a case-by-case basis with the written approval of the ENGINEER.
- B. The CONTRACTOR shall provide all materials, equipment, and labor necessary to furnish and place CLSM, complete in place, and shall mix, place, finish, and do all other work to produce a cementitious hand excavatable mixture of aggregate, cement, pozzolan, water, and admixtures to be used as backfill as specified herein.
- C. The CONTRACTOR is hereby advised that flotation or displacement of the pipe may occur during installation of the CLSM. The CONTRACTOR shall make necessary provisions to ensure that the pipe is installed according to the alignment and grade specified on the Drawings. Any pipe that is floated shall be removed and replaced at the CONTRACTOR'S expense.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. City Standard Specifications Section 19 – Earthwork
- B. Caltrans Standard Specifications Section 312316 - Utility Earthwork
- C. Division 1 - General Requirements.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Commercial Standards:

| | |
|------------|--|
| ACI 229 | Controlled Low Strength Materials. |
| ACI 232 | Fly Ash/Other Pozzolans in Concrete. |
| ASTM C 31 | Practice for Making and Curing Concrete Test Specimens in the Field. |
| ASTM C 39 | Test Method for Compressive Strength of Cylindrical Concrete Specimens. |
| ASTM C 42 | Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete. |
| ASTM C 94 | Specification for Ready-mixed Concrete. |
| ASTM C 150 | Specification for Portland Cement. |
| ASTM C 260 | Specification for Air-Entraining Admixtures for Concrete. |

| | |
|-------------|---|
| ASTM C 494 | Specification for Chemical Admixtures for Concrete. |
| ASTM C 618 | Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Additive in Portland Cement Concrete. |
| ASTM D 1586 | Method for Penetration Test and Split Barrel Sampling of Soils. |
| ASTM D 1633 | Test Method for Compressive Strength of Molded Soil-Cement Cylinders. |
| ASTM D 3017 | Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow-Depth). |
| ASTM D 6938 | Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow-Depth). |

1.4 CONTRACTOR SUBMITTALS

- A. **Mix Design:** Prior to beginning any work the CONTRACTOR shall submit to the ENGINEER for review, the pre-approved CLSM mix designs which shall show the proportions and gradations of all materials proposed for each class and type of CLSM to be used.
- B. **Certificate of Compliance:** Certificates of Compliance shall be provided for all products and materials proposed to be used under this Section.

PART 2 -- PRODUCTS

2.1 CONTROLLED LOW STRENGTH MATERIALS (CLSM)

A. General:

- a. CLSM shall be a flowable, hand-excavatable mixture of cement, pozzolan, coarse and fine aggregate and water which has been mixed in accordance with ASTM C 94.
- b. **Composition:** The following parameters shall be within the indicated limits and as necessary to produce the indicated compressive strengths.
 - i. Mix proportions shall be as approved.
 - ii. Entrained air content shall be between 8 percent minimum and 20 percent maximum.
 - iii. Water reducing agent content shall be as approved.
 - iv. **Cement shall be 50-100 lbs/cubic yard.**
- c. **Properties:**
 - i. Density shall be between 120 PCF minimum and 135 PCF maximum.

- ii. Slump shall be as approved.
 - iii. Compressive strength at 28 days for flowable CLSM shall be between 50 psi minimum and 100 psi maximum.
- B. **Cement:** Cement shall be Type II in accordance with the requirements of ASTM C 150.
- C. **Pozzolan:** Pozzolan shall be added to improve the flowability and shall be Type F in accordance with the requirements of ASTM C 618. Fly ash shall be 10-2000 lbs/cubic yard.
- D. **Aggregate:** Coarse aggregate shall consist of a well graded mixture of crushed rock, soil, or sand with a maximum size aggregate of ½ inch. 100 percent shall pass the 3/4-inch sieve. Not more than 30 percent shall be retained by the 3/8-inch sieve and not more than 12 percent shall pass the No. 200 sieve. All material shall be free from organic matter and not contain more alkali, sulfates, or salts than the native materials at the site of the WORK. Fine aggregate shall be 2600-3100 lbs/cubic yard.
- E. **Admixtures:**
- a. Air entraining shall be added to improve the workability and shall be in accordance with the requirements of ASTM C 260.
- F. **Water:** Water shall be clean and free from objectionable quantities of silty organic matter, alkali, salts, and other impurities.
- G. **Controlled Low Strength Materials (CLSM):**
- a. CLSM shall be a mixture of cement, pozzolan, coarse and fine aggregate, admixtures, and water batched by a ready mix concrete plant and delivered to the WORK by means of standard transit mixing trucks. The mixture shall produce a cementitious, flowable, hand excavatable material.
 - b. The actual mix proportion and slump shall be as determined by the approved mix design.
 - c. The entrained air content shall be a minimum of 8 percent and a maximum of 20 percent as required by the CONTRACTOR to meet the uses specified herein.

PART 3 -- EXECUTION

3.1 TESTING

- A. All testing during the work will be done by a testing laboratory. Contractor is responsible for all the testing by a testing laboratory at the Contractor's expense.
- B. In case the tests of the CLSM show non-compliance with the specifications the CONTRACTOR shall accomplish such remedy as may be required to insure compliance. Subsequent testing to show compliance shall be at the CONTRACTOR'S expense carried out by contractor's testing laboratory.

- C. **Density:** The installed density of the material will be determined in accordance with ASTM D 6938.
- D. **Compressive Strength:** The compressive strength will be determined in accordance with ASTM C 39.

3.2 PREPARING PLACEMENT FOR CLSM

- A. The trench subgrade or compacted fill to receive CLSM shall be complete and acceptable in accordance with Section 31 23 16, "Utility Earthwork."

3.3 DELIVERING CLSM

- A. CLSM shall be delivered to the WORK in standard transit mix trucks.

3.4 PLACING CLSM

- A. CLSM shall be delivered in place by means of tailgate discharge, conveyor belts, pumped in place, or other means acceptable to the ENGINEER.
- B. CLSM shall be directed in place by means of a vibrator, shovel or rod to ensure that all voids, crevices, and pockets are filled with CLSM. Care shall be taken to avoid over-consolidation of the material separating the large and fine aggregate.
- C. CLSM shall be continuously placed against undisturbed in-situ earth material unless otherwise approved by the ENGINEER. Where new CLSM must be placed against existing CLSM, the placement shall be clean of all loose and foreign material. The surface of existing CLSM shall be soaked a minimum of one hour before placement of fresh CLSM. No standing water will be allowed before starting placement of fresh CLSM.

3.5 PROTECTING CLSM

- A. CLSM shall be protected from running water, rain, freezing or other conditions that could damage the material until the material has been accepted and final fill complete.
- B. No equipment, traffic, or backfill shall be allowed on the CLSM until the surface of the CLSM is able to withstand a 20 psi load without displacement or damage. If necessary, the CONTRACTOR shall provide steel trench plates that span the trench, as specified in Section 31 23 16, "Utility Earthwork," until the CLSM has reached the required strength.

3.6 CURING

- A. CLSM shall be kept damp for a minimum of 7 days or until final fill is completed.

END OF SECTION 31 23 23

SECTION 31 23 33 TRENCHING AND BACKFILL

PART 1 - GENERAL

1.1 WORK INCLUDED

- A.** The work of this Section includes all saw cutting, utility trenching, bedding and backfill, earthwork and removal and replacement of surface material as required for construction of the utility trenches. Such earthwork shall include, but limited to; the loosening, removing, loading, transporting, depositing, and compacting in its final location of all materials wet and dry, as required for the purposes of completing the work, which shall include the furnishing, placing, and removing of sheeting, shoring and bracing necessary to safely support the sides of all excavations; all pumping, draining and other required measures for the removal of water from the excavation; the supporting of structures above and below the ground; all backfilling around structures and all backfilling of trenches and pits; restoration of surface, pavement markings, the disposal of excess excavated materials; borrow of materials to make up deficiencies for fills; and all other incidental earthwork.
- B.** All utility lines not owned by the City shall be designed and constructed in accordance with the rules and regulations of serving utilities. All utilities shall be installed prior to placement of the wearing surface of the street.
- C.** All broken concrete, pavement, base, unsuitable material and surplus excavated material shall be removed, hauled off the site and disposed of by the Contractor at a location obtained by the Contractor and approved by the City all at no additional cost to the City. The costs and fees for disposal shall be considered as included in the prices bid.
- D.** All materials regardless of character and subsurface conditions shall be excavated to the depths indicated or specified. During excavation, suitable trench material that will be used as backfill shall be piled in an orderly manner a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins, or shall be separately stockpiled. All excavated materials not required or unsuitable for backfill shall be disposed of outside the Right-of-Way as specified in Section 5-1.20B(4) "Contractor–Property Owner Agreement" of the State Standard Specifications
- E.** All hazardous materials shall be handled in accordance with all regulatory agency requirements and as specified in Section 14-11.03, "Hazardous Waste Management", of the State Standard Specifications. Contractor-generated hazardous waste shall be disposed of outside the Right-of-Way as specified in Section 14-11.06B of the State Standard Specifications. Within 5 business days of transporting hazardous waste, submit documentation of proper disposal from the receiving landfill.
- F.** Where there is not a specific bid item for Hazardous Waste Management, full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in handling of the contaminated/non-hazardous soil shall be considered included in the price paid for various items of work and no separate compensation will be allowed therefor.
- G.** All surface openings shall be saw cut using a power-driven saw with a diamond blade to provide a smooth joint for both concrete and bituminous street and sidewalk surfaces. All the trenches shall be "T" cut trenches as shown in the plan set and details.

- H. The requirements of Section 7-1.02K(6) of State Standard Specifications concerning Trench Safety shall be complied with in addition to the requirements of Article 6 of the State of California Construction Safety Orders.
- I. Grading shall be done as may be necessary to prevent surface water from flowing into trenches or other excavations. Unless otherwise indicated, excavation shall be by open cut except that short sections of a trench may be tunneled if the pipe, cable, or duct can be safely and properly installed, backfilled with Controlled Low Strength Materials not tamped in such tunnel sections.
- J. Provide dust alleviation and control measures continuously during the course of the work.
- K. Cleanup and restore surface in improved areas, including pavement markings and signage.
- L. Supply all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the general designation only.

- B. American Society for Testing and Materials (ASTM) Publications:

| | |
|-------|--|
| C94 | Specification for Ready-Mixed Concrete. |
| C136 | Sieve Analysis of Fine and Coarse Aggregates |
| C150 | Portland Cement |
| C260 | Air-Entraining Mixtures for Concrete |
| C618 | Coal Fly Ash and Raw or Calcined Natural Pozzolan for use as in Concrete |
| D558 | Moisture-Density (Unit Weight) Relations of Soil-Cement Mixtures |
| D2419 | Sand Equivalent Value of Soils and Fine Aggregate |
| D2487 | Classification of soils for Engineering Purposes |
| D4318 | Liquid Limit, Plastic Limit and Plasticity Index of Soils |
| D6938 | In-Place Density and Water Content of Soil and Soil Aggregate by Nuclear Methods (Shallow Depth) |

1.3 SUBMITTALS

- A. Certified test reports for the permeable material backfill tested in accordance with ASTM C136.
- B. Samples: Submit 1-gallon size sample of permeable material, in air-tight containers for each type of fill, for approval.

- C. Shoring and Sheet piling Plan: Before starting work submit the shoring and sheet piling plan for a CAL-OSHA permit when trench excavation is five feet deep or more.
- D. Dewatering Plan: Before starting work, submit a dewatering plan describing the basic components of the dewatering including silt control.

1.4 QUALITY ASSURANCE

- A. Performance of all work under this contract shall be subject to the quality control/quality assurance provisions outlined in Section 5, "Control of Work" and Section 6-2, "Quality Assurance" of the State Standard Specifications.
- B. Furnish submittal for backfill material from each single source throughout the Work.
- C. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted backfill material to the maximum dry density of the material as determined by the procedure set forth in ASTM D558. For field density tests, ASTM D6938 may be used.
- D. D-load or class of pipe requirements shown or called for on the plans shall be the minimum acceptable.

1.5 JOB CONDITIONS, PROTECTION, AND SHORING

A. EXISTING UTILITIES:

1. Unless shown to be removed, protect active utility lines shown on the Plans. Contractor to actively research and thoroughly review in the field the locations of the existing utilities prior to excavating. If damaged, the utilities will be repaired or replaced at the Contractor's expense.
2. Contractor is required to request a PDF copy of the record utility drawings from the City.
3. Arrange and host a minimum of 2 utility meetings. Provide written meeting agenda prior to the meeting and following the meeting prepare action minutes with date and time of the meeting, list of attendees, and action items. Contact utility companies in advance of meeting to assure their attendance. Provide a record of outreach to utility companies to the City. Invite City to every utility meeting and provide a copy to the City of the Agenda and the Minutes.
4. Pothe all utilities as required to verify utility location.
5. Contractor shall be responsible for contacting all utility companies and coordinating any work which requires relocation or abandonment of existing utilities.
6. If active utility lines are encountered and are not shown on the Plans, promptly take necessary steps to assure that service is not interrupted.
7. If a known service is interrupted as a result of work under this section, immediately restore service by repairing the damaged utility at Contractor's expense.

8. If foreseen or unforeseen existing utilities are newly found to interfere with the permanent facilities being constructed under this Contract, immediately notify the Engineer for directions.
9. Do not proceed with permanent repair or relocation of utilities until written instructions are received from the Engineer.
10. No construction water shall be disposed of into the existing site storm drain system.
11. Comply with all conditions and requirements indicated and specified under the specific utility section of these specifications.

B. PROTECTION OF PERSONS & PROPERTY:

1. Install all necessary underpinning, shoring, lagging, cribbing, and bracing of ample strength to support adjoining soils, paving and structures.
2. Maintain access to adjacent areas, walkways and driveways at all times.
3. Barricade open depressions and holes occurring as part of this work, and post warning lights on property adjacent to or with public access.
4. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
5. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by operations of Contractor.
6. No trenches shall be left open during non-working hours.
7. Install fences and barricades to secure the area from the public.

C. SHORING

1. The Contractor is solely responsible for all bracing and shoring. The Contractor shall forward their application for shoring to the California Division of Industrial Relations, Division of Occupational Safety and Health (CAL-OSHA) for their review. Contractor's application must include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and must be prepared by a Civil Engineer registered in California.
2. If an application for a shoring permit is required, no excavation in trench section or around structures shall proceed until the approved shoring plan has been received by the Engineer.
3. Repair or restore damage to any portion of the work resulting from movement of the sides or bottom of trenches or other excavation which is attributable to the Contractor's acts or omissions, whether sides are braced or not.

D. DEWATERING

1. Remove all water, including rain water, encountered during trench and substructure work to an approved location by pumps, drains, and other approved methods.

2. Keep excavations and site construction area free from water.

PART 2 - PRODUCTS

2.1 GENERAL SOIL MATERIALS

- A. In general, soils used for backfill shall be select material free of debris, roots, wood, scrap material, vegetation, refuse, soft unsound particles, frozen, deleterious, or objectionable materials, satisfactory to the Engineer, free of stones or lumps exceeding 2.5 inches in greatest dimension.

2.2 TEMPORARY STEEL PLATES

- A. When approved by the Engineer, the Contractor may use steel plate bridging in-lieu of backfill and shall be recessed within the existing pavement where the roadway surface is to be opened to traffic. All steel plates shall be without deformation. Inspectors shall determine the trueness of steel plates by using a straight edge and shall reject any plate that is permanently deformed.
- B. Trench plates shall be coated with Antiskid type surface meeting State Standard Specifications of a nominal Coefficient of friction of 0.35 in accordance with California Test Method 342.
- C. Design of Trench Plates:
 - 1) Bridging for vehicular traffic shall be of sufficient width to accommodate the required number of travel lanes.
 - 2) Trench plates shall be designed to support H-20 vehicular traffic.
 - 3) All bridging or trench plates shall be set flush with travel surface.
 - 4) Embed trench plates flush with the adjacent asphalt.
 - 5) No trench or holes shall be left open overnight. Use steel plates to protect open trenches overnight.
- D. The following table shows the advisory minimal thickness of steel plate bridging required for a given trench width (A-36 grade steel, designed for HS20-44 truck loading per Caltrans Bridge Design Specifications Manual).

| <u>Max Trench Width</u> | <u>Minimum Steel Plate Thickness (inches)</u> |
|-------------------------|---|
| 10 inches | 1/2 |
| 1 feet 10 inches | 3/4 |
| 2 feet 6 inches | 7/8 |
| 3 feet 4 inches | 1 |
| 4 feet 1 inches | 1-3/4 |

NOTE: For trench width spans greater than 4 feet 1 inches, a structural design shall be prepared, signed, and stamped by a California Registered Civil Engineer.

2.3 PIPE BEDDING AND INITIAL BACKFILL MATERIAL

- A. Material must contain at least 75% of the particles having one or more fractured faces.
- B. Backfill material must be subject to the approval of the Engineer.

PART 3 – EXECUTION

3.1 PREPARATION

- A. Call Local Utility Line Information service at USA North 811 not less than three working days before performing Work.
 - Request underground utilities to be located and marked within and surrounding construction areas.
- B. Potholing must be a separate operation from the trenching. Refer to potholing of these specifications.

3.2 GENERAL TRENCHING AND EXCAVATING

- A. Trenches may be excavated either by hand, or mechanically. Trenches must be cut with vertical sides and must be of sufficient width to provide adequate space for working therein; such space must be a minimum clear distance of 6 inches of shoring and a maximum of 9 inches clear of shoring on each side of the pipe barrel when the pipe is properly placed and aligned in conformity with the plans. Glory hole excavation or vee trenches will not be allowed. Trench sides must be parallel to and at equal distance from the center-line of the pipe, when aligned in conformity with the plans.
- B. Excavated material shall be loaded into trucks immediately upon removal from the trench to prevent stockpiling on roadways or walkways.
- C. Where the excavated trench exceeds the widths specified above, furnish higher strength pipe, or other methods of construction as approved by the Engineer, to adequately provide for the increased loading, which the trench widening will cause. Stepped trenches shall meet the approval of the Engineer.
- D. Pipe trenches must be excavated to a depth below the bottom of the pipe sufficient to provide for pipe bedding materials as required in section titled General Bedding of this specification.
- E. Where a trench has been excavated below the designed grade, the bottom of the trench must be refilled to proper subgrade with approved material well compacted in place, in an approved manner.
- F. Excavation shall include the removal of all water and materials of any nature which interfere with the construction work. Removal of ground water to a level below the structure sub-grade will be necessary unless specified otherwise.
- G. When subsurface materials at bottom of trench are loose or soft, excavate to greater depth as directed by Engineer until suitable material is encountered.

- H. The Engineer shall have the right to limit the amount of trench which is opened or partially opened at any one time; and also to limit the amount of trench left without backfill, at any one time. Do not advance open trench more than 130 feet ahead of installed pipe.
- I. When Trench plates are used, trench plates will be embedded flush with the adjacent asphalt.
- J. General: Install Trench Plates across all trenches and excavations in existing streets and at driveways when work is not in progress. Trench plates shall be in accordance with the Standard Plans and Specifications and the CAMUTCD and approved by the City.
- K. Excavation for thrust blocks shall be neat to the line and dimensions shown or called for on the plans.

3.3 GENERAL BEDDING

- A. Utilities must be laid on a firm layer of firm bedding material not less than 4 inches in depth as shown or as noted on the plans and detail drawings, except that bedding shall not be required for utilities two inches or less in nominal diameter. Compact as specified herein.
- B. Upon completion of bedding operations and, prior to the installation of pipe or appurtenances, notify the Engineer who will then inspect the bedding layer. Pipe laying shall not commence until the bedding has been approved.

3.4 SANITARY SEWER LATERAL LOCATING

- A. Contractor shall be responsible for locating all the sanitary sewer lateral prior to trenching.
- B. Contractor shall walk the site to locate any sewer cleanouts behind the curb up along the property, and mark all the sanitary sewer laterals from the sewer cleanout to the sewer main in the street.
- C. When sewer cleanouts are not located or not visible at the ground surface, Contractor shall positively locate all the sanitary sewer laterals by means and methods available to the Contractor, including investigating the adjacent house/building configuration, vent, and bathroom location.

3.5 GENERAL BACKFILLING

- A. Place in 6-inch maximum loose lifts to one foot above pipe unless otherwise specified. Bring up evenly on each side, and for the full length of the structure. Ensure that no damage is done to structures or protective coatings thereon. Place the remainder of the backfill in 8-inch maximum loose lifts unless otherwise specified. Compact each loose lift, as specified in section titled "General Compaction" of these Technical Specifications, before placing the next lift. Where unacceptable settlements occur in trenches and pits due to improper compaction, excavate to the depth necessary to rectify the problem, then backfill and compact the excavation as specified herein and restore the surface to the required elevation.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

- C. Maintain optimum moisture content of fill materials to attain required compaction density.
- D. No backfill shall be placed until the line has been inspected and approved for backfilling.

3.6 GENERAL COMPACTION

- A. Use hand-operated plate type vibratory or other suitable hand tampers in areas not accessible to larger rollers or compactors. Be careful to avoid damaging pipes and protective pipe coatings. Compaction must be in accordance with the following unless otherwise specified. If necessary, the Contractor's selected equipment and construction procedure shall be altered, changed or modified in order to meet the specified compaction requirements.
- B. Initial backfill and bedding must be carefully packed under the haunches of the pipe and brought up simultaneously on both sides so as to obviate any displacement of the pipe from its true alignment. Bedding must be compacted in layers described in section "General Backfilling" and compacted by the use of pneumatic tampers or other approved mechanical means, in a manner that will preclude moving the pipe, to the following densities:

| <u>Location of backfill</u> | <u>Relative Compaction</u> |
|--|----------------------------|
| Pipe Zone (including Bedding) | 90 |
| Trench Zone | 90 |
| Final Zone (paved areas, excluding the Pavement Section) | 95 |
| Final Zone (unpaved or landscape areas) | 90 |
| Over-excavated areas | 90 |
| Around minor structures | 90 |
| Beneath minor structures | 95 |

Jetting of backfill material will not be permitted.

- C. Water or dry the soils as close as practicable to the optimum moisture content as required for proper compaction. Compaction equipment or methods that produce horizontal or vertical earth pressures which may cause excessive displacement or may damage the pipeline will not be permitted.
- D. For flowable CDF, compaction is not necessary for placement. Trench sections may be filled in one lift above the initial backfill material in a manner which will; not disturb the line, prevent a misalignment, cause movement, cause floatation of or otherwise damage the utility. CDF backfill must be approved in writing prior to use by the Contractor. CDF with compressive strength of 300 psi or less is acceptable for backfill.
- E. Backfill will be inspected and tested by the Engineer during placement. Contractor must cooperate with the Engineer and must provide working space for such tests during operations.

Backfill not compacted in accordance with these specifications shall be recompact or removed as necessary and replaced to meet specified requirements prior to proceeding with the work.

3.7 GENERAL BRACING, SHEETING, AND SHORING

- A.** The Contractor must furnish, place, and maintain such sheeting, bracing, and shoring, conforming to Cal/OSHA for trenches 5 feet deep or more, to support the sides of the excavations for the proper protection of workers; to facilitate the work, to prevent caving, erosion, loss of surrounding subsoil; and to prevent damage to adjacent structures or facilities.
- B.** Upon completion of the work, all bracing and shoring shall be removed, unless otherwise directed by the Engineer. Current requirements are for a maximum depth of 5 feet without CAL-OSHA approved shoring.
- C.** Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.
- D.** Application for CAL-OSHA approved shoring shall include, assumed soils conditions, and the estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used. The application shall be prepared by a Civil Engineer registered in California. No excavation around cast-in-place concrete structures shall proceed until the Contractor has received the return of an approved application, if required.

3.8 FIELD QUALITY CONTROL

- A.** Schedule and arrange with Engineer to inspect, test and approve trench backfill layers before further construction is permitted thereon. Number of tests required will be determined by the Engineer.
- B.** If backfill has been placed that is below the specified density, provide additional compaction with subsequent retesting until successful compaction is achieved.

3.9 TEMPORARY STEEL PLATE BRIDGING

- A.** When backfilling operations of a transverse or longitudinal excavation in the roadway cannot be properly completed within a work day, steel plate bridging with a non-skid surface and shoring shall be required to preserve unobstructed traffic and pedestrian flow. In such cases, the following conditions shall apply:
 - 1. Steel plates used for bridging must extend a minimum of 12-inches beyond the edges of the trench.
 - 2. Steel plate bridging shall be flush with the roadway, and installed to operate with minimum noise or movement.
 - 3. The trench shall be adequately shored to support the bridging and traffic loads.
 - 4. Temporary paving with cold asphalt concrete shall be used to feather the edges of the plates, if plate installation by Method 2 described below, is used.

5. Bridging shall be secured against displacement by using adjustable cleats, shims, or other devices.
- B. The Contractor is responsible for maintenance of the steel plates, shoring, asphalt concrete ramps, and ensuring that they meet minimum specifications.
- C. Approach plate(s) and ending plate (if longitudinal placement) shall be attached to the roadway by a minimum of 2 dowels pre-drilled into the corners of the plate and drilled 2-in into the pavement. Subsequent plates are to be butted and tack welded to each other. Fine graded asphalt concrete shall be compacted to form ramps, maximum slope 5 percent with a minimum 12-inch taper to cover all edges of the steel plates. When steel plates are removed, the dowel holes in the pavement shall be backfilled with either graded fines of asphalt concrete mix, concrete slurry, epoxy or an equivalent that is satisfactory to the Engineer.

3.10 FINISH OPERATIONS

- A. Dispose of all surplus material or material unsuitable for filling or grading off the site in a legal manner.
- B. Satisfactorily restore any existing improvements, paving, landscaping, and other utilities disturbed during the course of constructing the improvements.
- C. Photograph, measure and record the locations of existing striping prior to excavation, as described in Section 32 17 00 "Signing and Pavement Delineation" of these technical specifications. Existing control devices damaged or disturbed during construction must be replaced or repaired to the satisfaction of the Engineer.

END OF SECTION 31 23 33

SECTION 31 25 00 WATER POLLUTION CONTROL

PART 1 - GENERAL

1.1 WORK INCLUDED

- A.** Prohibit illicit discharge (non-rainwater) into the storm drain system.
- B.** Construct any and all necessary systems to eliminate contaminants from entering the storm water system.
- C.** Clean up and control of work site materials, spoils and debris.
- D.** Removal of contaminants produced by the project.
- E.** Projects that are less than one acre are required to have a Water Pollution Control Plan (WPCP) prepared and submitted to the City for approval prior to grading.

1.2 APPLICABLE PUBLICATIONS

- A.** California's General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (General Permit) Order No. 2009-0009-DWQ as amended by Order No. 2010-0014-DWQ (NPDES No. CAS000002) and 2012-0006-DWQ, Waste Discharge Requirements (WDRs) for Discharges of Storm Water Runoff Associated with Construction Activity (herein after referred to as General Permit) issued by the State Water Resources Control Board (State Water Board).
- B.** Municipal Regional Stormwater Permit, Order No. R2-2022-0018 NPDES Permit No. CAS612008 dated May 11, 2022, issued by the California Regional Water Quality Control Board San Francisco Bay Region.
- C.** California Storm Water Best Management Practice Handbooks, issued by California Stormwater Quality Association:
 - 1. Municipal
 - 2. Industrial/Commercial
 - 3. Construction Activity
- D.** Contra Costa Clean Water Program Stormwater C.3 Guidebook – current edition.

1.3 QUALITY ASSURANCE

- A.** All work performed under this contract and all contractors and their associates and/or employees are required to comply with all applicable storm water regulations and to implement Best Management Practices (BMP's) at all times.
- B.** The Contractor shall prepare and submit a Water Pollution Control Plan (WPCP), which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from

contacting storm water and with the intent of keeping all products of erosion from moving off site into receiving waters.

- C. A Contractor prepared Water Pollution Control Plan (WPCP) must be submitted for the proposed control of contaminants entering the storm water system. City will provide a PDF base plan which may be used by Contractor. The WPCP plan must be approved by the Engineer prior to the commencement of work.
- D. The Water Pollution Control Plan provided in the plan set is the minimum requirement for the project and is to be used as an example. Because the actual storm water pollution prevention and erosion control measures are specific to the means and methods, and phasing of construction, the Contractor will prepare his/her own project specific WPC Plan.
- E. The erosion and sediment control plan may be a neat red-line mark-up submitted on a color PDF. The erosion control measures shown on the project plans are minimum required, the contractor plan to also show temporary concrete washout facility, portable toilets with secondary containment and area for construction staging, inlet protection, materials storage, vehicle/ equipment storage, cleaning, maintenance and fueling area.
- F. All employees and subcontractors must be trained on the storm water pollution prevention requirements contained in these specifications.
- G. A supply of spill clean-up materials such as Spill Containment Kits must be kept readily accessible on-site.
- H. Groundwater from dewatering and foundation drains will need additional certification that the groundwater has been tested or evaluated for the presence of pollutants subject to non-stormwater discharge regulations. In such a case, a Special Sewer Discharge Permit shall be required for the water to be discharged to the Sanitary Sewer System, as directed.
- I. The contractor shall be responsible throughout the duration of the project for installing, constructing, inspecting and maintaining the control measures and for removing and disposing of temporary control measures. Prior to each rain event the temporary erosion control features as are necessary to prevent damage during the forthcoming rain event shall be constructed and functioning.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECYCLING

- A. At the end of each working day, all scrap, debris and waste material must be collected and materials disposed of properly.
- B. Dry, empty paint cans/buckets, old brushes, rollers, rags and drop cloths must be disposed of in approved waste collection.
- C. Dumpsters must be inspected for leaks. As leaks are detected, the trash hauling contractor shall be contacted to replace or repair dumpsters that leak.

- D. Water from cleaning dumpsters must not be discharged on-site.
- E. Regular waste collection must be arranged for before dumpsters overflow.

3.2 HAZARDOUS MATERIAL/WASTE MANAGEMENT/MATERIALS MANAGEMENT

- A. Designated areas of the project site shall be proposed by the contractor for approval by the Engineer suitable for material delivery, storage and waste collection as far from catch basins, gutters, drainage courses and creeks as possible.
- B. All hazardous materials such as pesticides, paints, thinners, solvents and fuels; and all hazardous wastes such as waste oil and antifreeze must be labeled and stored in accordance with State and Federal regulations.
- C. All hazardous materials and all hazardous wastes must be stored in accordance with secondary containment regulations, and it is recommended that these materials and wastes be covered as needed, to avoid potential management of collected rain water as a hazardous waste.
- D. The contractor must dispose of all excess thinners, solvents, chemicals, oil-based and water-based paint as hazardous waste.
- E. Regular hazardous waste collection shall be arranged for to comply with time limits on the storage of hazardous wastes.
- F. Granular materials must be stored a minimum of ten feet from the closest catch basin and curb return. The contractor must not allow these granular materials to enter the storm drain or creek.
- G. Warning signs must be posted in areas containing or treated with chemicals.
- H. An accurate up-to-date inventory, including Material Safety Data Sheets (MSDS) of hazardous wastes stored on site must be kept and available to assist emergency response personnel in the event of a hazardous materials incident.
- I. Maintenance and fueling of vehicles and equipment must be performed in a designated, bermed area, or over a drip pan that will not allow run-off of spills. Vehicles and equipment shall be regularly checked and have leaks repaired promptly. Secondary containment, must be used to catch leaks or spills any time that vehicle or equipment fluids are dispensed, changed or poured.
- J. Construction operations shall be carried out in such a manner that erosion and water pollution will be minimized. Contractor shall comply with state and local laws concerning pollution abatement.
- K. Sanitary facilities shall be maintained on the site in a manner to prevent inadvertent discharge or leakage of sanitary wastes into the storm drain system either by placing sanitary facilities in locations that do not drain to the storm drain system or by providing secondary containment systems to capture leaked wastes.

- L. Extreme care shall be taken when hauling any earth, sand, gravel, stone, debris, paper, or any other substance over any public street, alley or other public place. Occurrences of material blown, spilled, or tracked over and upon said public or adjacent private property are prohibited and shall be immediately remedied. Discharge of debris is prohibited. Non-stormwater discharge is prohibited, except as specified in State Water Resources Control Board (SWRCB) Order 2009-009-DWQ. Discharge of hazardous substances is prohibited.

3.3 CHEMICAL USAGE

- A. When rain is forecast within 24 hours, or during wet weather, the Engineer may prevent the contractor from applying chemicals in outside areas.
- B. Pesticides or fertilizers shall not be over-applied and material manufacturer's instructions must be followed regarding uses, protective equipment, ventilation, flammability and mixing of chemicals. Over-application of a pesticide constitutes a violation subject to an enforcement action by the local authority.

3.4 DUST CONTROL

- A. Contractor shall provide dust control as required by the appropriate federal, state and City requirements.
- B. Reclaimed water must be used to control dust on a daily basis or as directed by the City
- C. At the end of each working day, or as directed by the City, the roadways and on-site paved areas must be cleaned and swept of all materials attributed to or involved in the work. Streets must not be washed down into a storm drain or creek in lieu of street sweeping. Water wash may be picked up by a vacuum unit in lieu of sweeping.
- D. Dust Control shall conform to the provisions in Section 1, "Dust Palliative," of the Caltrans Standard Specifications and these special provisions.
- E. The Contractor shall take the prevailing wind direction into consideration during grinding operations and shall perform grinding operations in such a way so as to minimize dust.

3.5 SAWCUTTING

- A. The contractor must cover or barricade catch basins using control measures such as filter fabric, straw bales, and sand bags to keep slurry out of the storm drain system. The contractor shall ensure that the entire opening is sealed.
- B. Sawcutting debris and spoils be removed by shovel, absorption, vacuum or pick up of waste prior to moving to the next location or at the end of each working day, whichever is sooner.
- C. If slurry enters a catch basin, the slurry must be removed from the storm drain immediately, and the Engineer will be notified immediately.

3.6 DEWATERING OPERATIONS

- A. Water shall be routed through a control measure as determined and approved by the Engineer such as a sediment trap, sediment basin or Baker tank to remove settleable solids prior to

discharge to the storm drain system. Filtration of the water following the control measure may be required on a case-by-case basis.

- B. The filtered water shall be reused for other purposes such as dust control or irrigation to the extent possible.
- C. If the project is within an area of known groundwater contamination, the water from dewatering operations must be tested prior to discharge. If the water meets the Regional Water Quality Control Board standards, it may be discharged into the storm drain. With a City of Brentwood permit, water may be discharged into the sanitary sewer. Otherwise, the water shall be treated and hauled off-site for proper disposal.

3.7 PAVING OPERATIONS

- A. Catch basins and manholes must be covered when paving or applying seal coat, tack coat, slurry seal or fog seal.
- B. Inlet protection shall be installed at open inlets to prevent sediment from entering the storm drain system. Contractor to protect drainage courses by using control measures such as straw bale and sand bag to divert run-off or trap filter sediment, per the approved WPCP.
- C. Excess sand (placed as part of a sand seal or to absorb excess oil) must not be swept or washed down into gutters, storm drains or creeks. The sand shall be collected and returned to the stockpile or disposed of in a trash container or hauled to an approved dump site. Water must not be used to wash down fresh asphalt concrete.
- D. All paved areas shall be kept clear of earth material and debris. The site shall be maintained so as to prevent sediment-laden runoff to any storm drainage system, including existing drainage swales and watercourse, to the extent necessary for compliance with applicable numeric action or effluent levels specified in the WPCP. Stockpiling of materials on the street will not be allowed unless otherwise approved by the engineer. The Contractor shall cover with plastic any construction or excavated materials which may possibly erode and enter the storm drain system of paved streets or other paved areas both public and private. Stockpiling of dirt on paved areas will not be allowed.

3.8 PAINTING

- A. The cleaning of painting equipment and tools must be performed in a designated area that will not enter the gutters, storm drains or creeks.
- B. Excess paint must be removed from brushes, rollers and equipment prior to cleanup.
- C. Wash water, from aqueous cleaning of water-based paint tools and equipment, must be disposed of in a sanitary sewer or onto a designated dirt area.
- D. Paint thinners and solvents from oil-based paints shall be filtered and re-used when possible. Waste sludge, thinner and solvent from cleaning tools and equipment must be disposed of as a hazardous waste.

3.9 SITE CLEANUP

- A.** The cleaning of equipment of materials shall not be performed on-site or in the street using soaps, solvents, degreasers, steam cleaning or equivalent methods.
- B.** All cleanup must be performed in a designated area that will not allow the cleaning rinse to flow off-site or into streets, gutters, storm drains, or creeks.
- C.** Clean-up shall be performed as each portion of the work progresses. All refuse, excess material, and possible pollutants shall be disposed of in a legal manner off-site and all temporary and permanent BMP devices shall be in place and maintained in good condition.
- D.** Contractor must remove all construction materials, temporary facilities, temporary BMPs, equipment and construction related materials from the site.
- E.** The contractor shall sweep the work area and clean up the work site daily before leaving the site.

END OF SECTION 31 25 00

SECTION 32 12 16 ASPHALT CONCRETE

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Traffic control as required to divert vehicular and pedestrian traffic around construction.
- B. Spreading and compacting aggregate base material.
- C. Spreading and compacting asphalt concrete pavement and surfacing.
- D. Applying tack coat.
- E. Dust alleviation and control.
- F. Cleanup and disposal of debris.
- G. Supplying all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 APPLICABLE PUBLICATION

- A. The publications listed below form a part of this specification to the extent referenced. The publication is referred to in the text by the general designation only.
- B. American Society for Testing and Materials (ASTM) Publication:
 - D1557 Laboratory Compaction Characteristics of Soil
- C. California Department of Transportation Testing Manual:
 - Test 304 Method of Preparation of Bituminous Mixtures for Testing
 - Test 375 Determining the In-Place Density and Relative Compaction of AC Pavement

1.3 QUALITY ASSURANCE

- A. Codes and Standards
 - 1. Asphalt concrete / Hot Mix Asphalt shall conform to the applicable provisions of Section 39 of the City Standard Specifications and Section 39 "Asphalt Concrete" of the Standard Specifications.
 - 2. Spreading and compacting of aggregate base material shall conform to the applicable provisions of Section 26 of the City Standard Specifications and Section 26 "Aggregate Bases" of the Standard Specifications.
 - 3. At the discretion of the City the contractor shall flood test all asphalt pavement for proper drainage by flooding with water in ample quantity to demonstrate the correct shaping of

the pavement.

4. The finished asphalt should be of uniform smoothness and texture, without segregation, thoroughly compacted, free of humps, depressions, and irregularities as determined by the Inspector of Record.
5. Traffic control and pedestrian and bicycle access control shall conform to these Specifications.

B. Allowable Tolerances

1. Finish surface of the aggregate base or aggregate subbase courses shall not vary more than 0.04 feet from the grade established by the Engineer.
2. Finish surface of asphalt concrete when measured with a twelve-foot straight edge shall not vary more than 0.01 feet in the longitudinal direction and 0.02 feet transversely below the lower edge of the straight-edge.

C. Aggregates Testing:

1. Test the quality of aggregates in accordance with the test methods and frequencies shown in Section 39 of the City Standard Specifications and Section 39-2.02A(4)(b)(ii), "Aggregates" of the most current edition of the State Standard Specifications.

D. Submittals

1. For aggregate bases, the contractor shall arrange and provide for the following acceptance tests to be performed on samples taken at the job site, based on a frequency of one series of tests per 1000 tons of material placed:
 - a. Sieve analysis, per California Test Method 202;
 - b. Sand equivalency, per California Test Method 217;
 - c. For aggregate bases, the durability index, per California Test Method 229.
2. Provide the Engineer daily with 1 hard copy and 1 PDF copy of a material certificate signed by material producer certifying that each material item complies with or exceeds the specified requirements for each type of material delivered.
3. Provide the Engineer with 1 hard copy and 1 PDF copy of certified plant load out slips for each load of material delivered showing net weight of aggregate base, subbase or asphalt concrete delivered to the job site, to be attached to the appropriate material certificate.
4. Submit a TC&PAC Plans: Refer to Traffic Control of these specifications for TC&PAC requirements.

1.4 JOB CONDITIONS & MINIMUM TEMPERATURES

- A.** Aggregate base or subbase material shall not be placed until the subgrade has been approved.
- B.** Provide satisfactory dust alleviation and control measures continuously during the course of the work.

- C. Tack coat materials shall not be applied unless the ambient temperature is above 50 F and has not been below 35 F during the 12 hours immediately prior to application. Tack coats shall not be applied when the surface to be coated is wet or contains an excess of moisture.
- D. Asphalt concrete shall not be applied unless the ambient temperature is above 50 F and rising, the surface is dry, and upon specific approval by the Engineer.
- E. Temperature of asphalt concrete shall not be less than 250 F during initial spreading.
- F. Maximum lift thickness for asphalt paving shall be 2 inches, unless Contractor has written approval from the Engineer.

PART 2 - PRODUCTS

2.1 AGGREGATE BASE

- A. Materials for aggregate base shall conform to the requirements for Class 2 aggregate base contained in Section 26 of the City Standard Specifications and Section 26-1.02B of the Standard Specifications.

2.2 ASPHALT CONCRETE

- A. Asphalt to be mixed with aggregate to form asphalt concrete shall be steam-refined paving asphalt, grade PG-64-10, conforming to the requirements of Section 92-1.02B "Performance Grade Asphalt Binders" of the Standard Specifications.
- B. Aggregate for asphalt concrete shall be Type A conforming to the requirements of Section 39 of the City Standard Specifications and Section 39-2.02 "Type A Hot Mix Asphalt" of the Standard Specifications with the following Special Conditions:
 - 1. Grading of combined aggregates for new asphalt concrete pavement in roadways with overlays 2 inches or more in thickness shall be 3/4 inch maximum size, medium grading.
- C. Asphaltic emulsion for tack coat (paint binder) shall be emulsified asphalt, Type SS-1h conforming to the requirements of Section 94-1.01 through 1.04 of the Standard Specifications.
- D. Suppliers certification showing conformance to these specifications shall be delivered with each shipment of materials to the job site.

PART 3 - EXECUTION

3.1 AGGREGATE BASE

- A. Base material shall be placed, spread and compacted in conformance with the applicable requirements of Section 26 of the City Standard Specifications and Section 26-1.03 of the Standard Specifications.

- B. Base material shall be compacted to a relative density of not less than 95% when tested in accordance with the requirements of ASTM D1557.

3.2 TACK COATS, AND SURFACE PREPARATION

- A. Tack coat shall be applied to all vertical surfaces of existing pavement, curbs, and gutters in the surfacing to the horizontal surface of all existing pavements to be resurfaced and other surfaces designated in accordance with Section 39-2.01C(3)(f), "Tack Coat," of the State Standard Specifications. Asphaltic paint binder shall be provided in sufficient quantity to produce a thin, uniform black, glossy coat of asphalt. Pools in unevenly distributed material shall be spread out by squeegee, broom or other means so an even coverage is attained. Immediately in advance of placing HMA, apply additional tack coat to damaged areas or where loose or extraneous material is removed. Do not track tack coat onto pavement surfaces beyond the job site. Discontinue application of emulsion early enough to comply with lane closure specifications and daily work advancement. (For bonding between HMA and base)
- B. Distributed areas shall be redistributed by means of hand brooms. Tack coat shall be applied in conformance with the applicable requirements of Section 39-2.01C(3)(f), "Tack Coat," of the Standard Specifications.
- C. Prior to placing asphalt over existing pavement, sweep the pavement clean of loose dirt to the satisfaction of the Engineer.

3.3 ASPHALT CONCRETE

- A. Asphalt concrete shall be proportioned, mixed, placed, spread, and compacted in conformance with the applicable requirements of Section 29 of the City Standard Specifications and Section 39-2.02, "Type A Hot Mix Asphalt," and 39-2.05, "Bonded Wearing Courses," of the Standard Specifications and the following requirements:
 1. Asphalt concrete shall be placed only upon specific approval of the Engineer. When, in the opinion of the Engineer, the surface is too wet, no asphalt concrete shall be placed.
 2. No asphalt concrete surface course shall be placed when the ambient temperature is less than 50°F. All compaction shall be completed before the temperature of the mixture drops below 200° F.
 3. All longitudinal joints shall be "hot" joints; cold joints are only allowed transversely at discontinuance of the day's run.
 4. Asphalt concrete for roadways shall be placed in layers when the total depth exceeds 2 inches. The final layer shall not be less than 1-1/2 inches in compacted thickness no more than 2 inches.
 5. Where more than 4-1/2 inches in total compacted thickness are specified, 3 or more layers shall be required. The first lower layer shall not exceed 2-1/2 inches in compacted thickness.
 6. All asphalt courses shall be placed by means of an approved self-propelled asphalt paving machine. Contractor may place lower courses and compact all courses with equipment conforming to the requirements of Section 29 of the City Standard

Specifications and Section 39-2.01C(2) of the State Standard Specification.

7. The window/pick-up machine method for spreading asphalt may be used with the following restrictions:
 - a. The machine is self-supporting and may not transmit loads to the paving machine. The use of a track type machine is recommended.
 - b. The maximum window length in front of the paving machine shall be 200-feet, and shall not block intersections.
 - c. The Contractor shall furnish a “Dump Man” for the control of window distribution.
 - d. At the sole discretion of the Engineer, depending on ambient temperature and the length of haul, the loaded trucks must be covered with a tarp.
 - e. Any damages to the reinforcing fabric caused by the pick-up machine shall be repaired before the work is allowed to continue.
 - f. At the sole discretion of the Engineer, depending on traffic control operations, the use of double-bottom dump trucks may be prohibited.
 8. Where asphalt paving is to be laid against concrete gutter, the first pass shall start at the gutter and successive passes work towards the center of the street, and the finish surface of the asphalt concrete wearing course shall be constructed to a height 1/4 inch above the abutting edge of the gutter.
 9. Trucks, loaded or empty, shall not be allowed on the new surface until the asphalt concrete reaches ambient temperature.
- B.** The final lift of asphalt paving shall not be placed until all other construction activity, including building construction and landscaping is completed.
 - C.** Asphalt concrete shall be rolled such that compaction after rolling shall be 95% of the density obtained with the California Test 304. Field density tests may be conducted by the Engineer to confirm density using the California Test 375.
 - D.** Failure to meet the specified density may require credits back to the City for non-conformance.
 - E.** In the event rock packets or rough pavement is observed by the Engineer after installing the final lift of Asphalt Concrete it is the Contractors sole responsibility to slurry seal the entire pavement project to the city’s satisfaction, prior to Cat tracking and stripping at his own cost and the city shall not reimburse the Contractor for the additional labor and material.

3.4 ADJUST MANHOLES, VALVES, AND MONUMENT COVERS

- A.** Existing manholes, valve and monument covers, inlets, or other such structures in the line of the work shall be adjusted to conform with the new grade after completion of paving operations.
- B.** The box will be adjusted by removing the existing concrete pad and pouring a new pad of concrete.

- C. Manholes, frames and covers shall be adjusted to grade in accordance with the provisions in Section 75 of the City Standard Specifications and Section 71-5.03B "Frames, Covers, Grates, and Manholes" of the State Standard Specifications, these Technical Provisions and as directed by the Engineer.
- D. Adjusting existing manhole frame and cover to grade shall include adjusting cone sections as necessary. Adjusting existing valve boxes to grade shall include extension of valve stems as necessary.
- E. Prior to any work on the sewer manholes, the Contractor shall install false bottoms in the manholes impacted by the work. Upon completion of the work the false bottoms shall be removed.
- F. Some of the existing utility facilities may belong to different utility companies. The Contractor shall coordinate with respective utility companies for the adjustment of their facilities.
- G. Contractor shall lower the valves and manhole frames & covers, to below the grading activity of the proposed work. Within 2 working days of the final lift of asphalt concrete the valves and manhole frames & covers, shall be raised to the final grade of the asphalt concrete.
- H. The concrete collar shall be circular and shall be covered with a minimum of 2 inches of asphalt concrete to blend in with the adjacent surfacing.
- I. Extension rings will not be acceptable. Contractor shall be responsible for preserving the survey point in its original position.

3.5 ASPHALT CONCRETE SPOT RECONSTRUCTION

- A. This work, otherwise known as "digouts," shall consist of removing existing asphalt concrete surfacing and underlying base material and replacing the removed surfacing and base material with new asphalt concrete as shown on the plans and specified in these technical specifications.
- B. The exact limits of asphalt concrete surfacing to be removed and replaced will be determined by the Engineer. The contractor will first paint the areas to be repaired at the locations shown on the plans. Paint marks will be performed by the Contractor's licensed land surveyor. After the paint marks the Engineer and City will walk the site to confirm the paint mark locations and quantities prior to performing the removal. Contractor to adjust paint marks, as directed by the Engineer, and provide traffic control during the site walk and the adjustment of paint marks.
- C. Existing surfacing and underlying base material removed during a work period shall be replaced before the lane is to be opened.
- D. Surfacing and base material shall be removed without damage to surfacing that is to remain in place. Damage to pavement which is to remain in place shall be repaired to a condition satisfactory to the Engineer.
- E. The material remaining in place, after removing surfacing and base material to the required depth, shall be graded to a plane, watered, and compacted.

1. The finished surface of the remaining material shall not extend above the grade established by the Engineer
2. Areas of the base material which are below the required depth, as a result of over excavation, shall be filled, at the Contractor's expense, with asphalt concrete.

3.6 TRAFFIC CONTROL AND STRIPING

- A. Temporary delineation is required and shall conform to Section 32 17 00 titled, "Pavement Delineation," of these Specifications.
- B. Conform to all Traffic Control and Pedestrian/Bicycle Access Control Plan requirements included in these Specifications.

3.7 CLEANUP

- A. Upon completion of asphalt paving and surfacing operations, the entire work site shall be cleaned of all waste, rubbish, and construction debris of any nature.

END OF SECTION 32 12 16

SECTION 32 17 00 SIGNING AND PAVEMENT DELINEATION

PART 1 - GENERAL

1.1 WORK INCLUDED

- A.** Cleaning and sweeping of streets before application of markings.
- B.** Application of temporary and permanent stripes and pavement markings.
- C.** Application of raised pavement markers.
- D.** Application of roadway markers, striping and delineators.
- E.** Restoration of existing improvements.
- F.** Cleanup and removal of debris.
- G.** Supplying all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

1.2 SUBMITTALS

- A.** For each lot or batch of traffic stripe material, primer, and glass beads, submit:
 - 1. Certificate of compliance, including the material name, lot or batch number, and manufacture date
 - 2. METS notification letter stating that the material is authorized for use, except for thermoplastic and primer
 - 3. SDS
 - 4. Manufacturer's Instructions
- B.** For each lot or batch of thermoplastic, submit a manufacturer's certificate of compliance and the following test results from the California Test 423:
 - 1. Brookfield Thermosel viscosity
 - 2. Hardness
 - 3. Yellowness index, white only
 - 4. Daytime luminance factor
 - 5. Glass bead content
 - 6. Binder content
- C.** The date of the test must be within 1 year of use.
- D.** Submit test results for each lot of beads specifying the EPA test methods used and tracing the lot to the specific test sample. The testing for lead and arsenic content must be performed by an independent testing laboratory.
- E.** Submit the thermoplastic test stripe to the Engineer.

- F. Submit a retroreflectivity test within 5 days of testing the traffic stripes and pavement markings. The data must include the retroreflectivity, time, date, and GPS coordinates for each measurement.

1.3 QUALITY ASSURANCE

- A. Manufacturer's certificates showing conformance with this specification shall be delivered with each shipment of materials and equipment delivered to the job site.
- B. Only City inspected and approved material may be used for roadway delineation.
- C. Codes and Standards
 - 1. The standards, recommended methods and tests contained in the publications cited below shall determine the standards for the work to be done hereunder unless otherwise specifically designated on the plans:
 - a. The *California Manual on Uniform Traffic Control Devices (California MUTCD)*, latest edition.
 - b. The regulations, standards, and tests of the State of California Department of Transportation Materials and Research Division.
 - c. The State of California Standard Plans and Standard Specifications, and applicable related Standard Special Conditions.
 - 2. Pavement markings shall be placed in the locations shown on the plans and shall conform to the applicable sections of the California MUTCD and the State of California Highway Design Manual.
 - 3. Reference by manufacturers, brands or models is to establish type and quality of materials desired. Substitutions of materials of equal quality will be permitted upon the prior written approval.

1.4 JOB CONDITIONS

- A. No striping, markings, or markers shall be applied until pavement surfaces have been approved.
- B. Document and measure existing striping to be replaced per these specifications.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
- B. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.
- C. Do not deliver items to project before time of installation. Limit shipment of bulk and multiple-use materials to quantities needed for immediate installation.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Install pavement markers only when ambient temperature and humidity conditions acceptable per manufacturer's specifications.

PART 2 - PRODUCTS

2.1 TEMPORARY PAVEMENT DELINEATION

- A. Temporary Pavement Delineation shall conform to Section 12-6, "Temporary Pavement Delineation," and Section 84-2, "Traffic Stripes and Pavement Markings", of the Caltrans Standard Specifications.
- B. Short term, temporary pavement markers shall be day/night retroreflective raised pavement markers conforming to the requirements of Section 12-6 of the Standard Specifications and Part 6 of the California MUTCD.

2.2 THERMOPLASTIC STRIPES AND MARKINGS

- A. Crosswalk striping shall be thermoplastic material, unless otherwise noted on plans. Thermoplastic stripes and markings shall be extruded thermoplastic conforming to 84-2, "Traffic Stripes and Pavement Markings," of the Standard Specifications.
- B. The thermoplastic material shall be free of lead and chromium and conform to State Specification PTH-02ALKYD, or PTH-02HYDRO, (for markings) and PTH-02SPRAY (for stripes).
- C. Concrete surfaces shall be treated before thermoplastic stripes and markings are installed, per Section 84-2, "Traffic Stripes and Pavement Markings", of the Caltrans Standard Specification.
- D. Submit certificates of compliance showing conformance with this specification for each load of material delivered to the job site.
- E. Each lot or batch of thermoplastic must be tested under California Test 423.
- F. All new striping shall be thermoplastic.

2.3 PAINT

- A. Paint for traffic stripes and pavements markings shall conform to Section 84-2, "Traffic Stripes and Pavement Markings", of the Caltrans Standard Specifications and the following:
 - 1. Waterborne Traffic Line (White): Caltrans Standard Specification PTWB-01R2

2.4 GLASS BEADS

- A. Glass beads applied to molten thermoplastic material must comply with Caltrans Standard Specification 84-2.02D, "Glass Beads."
- B. Glass beads must be surface treated, according to the bead and the material manufacturer's

instructions, to promote adhesion with the specified material.

- C. High-performance glass beads must be on the Authorized Material List for high-performance beads.
- D. Large-gradation glass beads must be on the Authorized Material List for two component traffic paint.
- E. Glass beads for methyl methacrylate must be on the Authorized Material List for methyl methacrylate traffic striping and pavement marking.

2.5 PROTECTION

- A. The Contractor shall protect the newly installed pavement markers and stripes from damage until the material has cured. Any damage by the elements to the newly stripe or marking due to the failure of any Contractor to protect his work shall be repaired by him at no additional cost. Any over-spray or tracking of fresh thermoplastic material onto unpainted surfacing shall be removed by any methods to the satisfaction of the Engineer.
- B. Replace any markers broken, misaligned or otherwise disturbed prior to opening roadway to traffic.

PART 3 – EXECUTION

3.1 LAYOUT, ALIGNMENT, AND SPOTTINGS

- A. All layout, spotting and tracking required shall be performed by and at the expense of the Contractor and approved by the City, prior to placement of pavement striping or markings.
- B. The Contractor shall mark or otherwise delineate the traffic lanes in the new roadway or portion of roadway, or detour before opening it to traffic.
- C. The Contractor shall provide an experienced technician to supervise the location, alignment, layout, dimensions, and application of the delineation or marking.
- D. The Contractor shall furnish all equipment, materials, labor, and supervision necessary for installing pavement striping and markings in accordance with the contract plans for temporary detours required for the safe control of traffic through and/or around the project.

3.2 REMOVAL OF EXISTING MARKINGS

- A. Existing striping and pavement markings that will be in conflict with the pipe trenching and installation shall be removed as directed by the City in accordance with Section 84-9 of the Caltrans Standard Specifications.
- B. The Contractor shall conduct his work so as not to damage existing pavement and public improvements to remain. Any resultant damage determined to be excessive by the City shall be repaired in kind by the Contractor at its sole expense.
- C. Damage to the pavement resulting from removal of pavement markers shall be considered as any depression more than 1/4-inch deep and shall be repaired by the Contractor by filling the

depression with hot melt bituminous adhesive to the satisfaction of the City.

- D. Where blast cleaning is used for the removal of traffic stripes and pavement markings or objectionable material, the residue including dust shall be removed immediately after contact between the sand and the surface being treated. Such removal shall be by a vacuum attachment operating concurrently with the blast cleaning operation.
- E. Where removal of traffic stripes and pavement markings is done by grinding or sandblasting methods, the effected pavement surface shall be completely covered by applying asphaltic emulsion conforming to Section 94 of Caltrans Standard Specifications.
- F. All reference markings made by the Contractor shall be done with spray chalk.
- G. All temporary traffic stripes and pavement markings shall be removed by the Contractor on the same day as placement of the permanent striping and marking

3.3 DOCUMENTING AND MEASURING OF EXISTING STRIPING

- A. Contractor will be required to restore the existing roadway/parking lot striping to the original layout, after the completion of the pavement rehabilitation.
- B. Prior to demolition, grinding, or impact to the existing striping, Contractor to collect photographs, measure striping in the field, and prepare existing striping sketches. The photographs, measurement of striping, and existing striping sketches will be submitted to the engineer prior to any demolition of striping.
- C. Adequate number of photographs and measurements will be collected to document the existing striping conditions. Engineer may require the Contractor to collect more measurements and photos prior to construction.

3.4 THERMOPLASTIC STRIPES AND MARKINGS

- A. Configuration of crosswalks shall conform to the detail and methods set forth in the latest issue of the State of California MUTCD and Caltrans Specifications, unless specifically modified on the plans.
- B. The Contractor shall make all necessary striping as required. The completed stripes and markings shall be sharp and clear with clean, well-defined edges.
- C. Thermoplastic stripes and markings shall be applied in conformance with the manufacturer's recommended instructions and the applicable requirements of Section 84-2.03 of the Standard Specifications.
- D. Use mechanical wire brushing to remove dirt, contaminants, and loose material from the pavement surface that is to receive the traffic stripe or pavement marking.
- E. All existing traffic stripes and pavement markings shall be removed where shown on the plans, where the existing striping conflicts with proposed striping, and as designated by the Engineer. If pavement markings are applied to existing surface over existing painted legends (arrows and crosswalks), existing pavement legends shall be removed before thermoplastic material is applied.

- F. Apply traffic stripes and pavement markings before the end of the same work shift

3.5 PAVEMENT MARKINGS INSTALLATION

- A. Placement of all traffic stripes and pavement markings shall be in conformance with Section 84, "Markings" of the Caltrans Standard Specifications, referenced Plans of the Caltrans Standard Plans, with color required as shown on the Drawings and as specified herein.
- B. Any overlap, dripping, or tracking of fresh thermoplastic or paint onto unmarked surfacing shall be removed to the satisfaction of the City.
- C. The Contractor shall protect all fresh thermoplastic and paint and shall repair or replace all damage to traffic stripes and pavement markings caused by their failure to do so at its own expense.
- D. All traffic stripes and pavement markings, new or existing, within or adjacent to the work limits which become defaced or damaged during the Contractor's operations shall be replaced by the Contractor at its expense concurrently with other traffic marking operations in the immediate area. The City shall be the sole judge as to which stripes or legends are defaced or damaged.
- E. All traffic stripes and pavement markings shall be placed at application rates in conformance with Section 84-2, "Traffic Stripes and Pavement Markings", of the Caltrans Standard Specifications.

3.6 TRAFFIC CONTROL SIGNS

- A. Traffic control signs shall be installed in conformance with the requirements of the *California MUTCD*, and Section 56 of the Standard Specifications.
- B. After erection, damage to traffic sign faces shall be repaired as required.

3.7 RESTORATION OF EXISTING IMPROVEMENTS

- A. Existing signs or other markings removed or damaged due to the installation of roadway markers or traffic control signs shall be replaced in kind.
- B. Existing landscaping or planting removed, damaged or disturbed due to the installation of roadway markers or traffic control signs shall be replaced in kind.

3.8 CLEANUP

- A. Upon completion of the installation of Roadway Markings and Accessories, Contractor shall thoroughly clean the work site of all waste, rubbish and construction debris of any nature.
- B. Upon removal of temporary signs, patch holes in walkway or roadway with Portland Cement concrete conforming to these Technical Specifications.

END OF SECTION 32 17 00

SECTION 33 05 26 PIPING IDENTIFICATION SYSTEMS

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall provide all materials, equipment, and labor necessary to furnish, mark, and install identification devices for piping, valves, and appurtenances using detectable warning tape, buried wire, color codes, lettering, and related permanent identification devices as required and as specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 1 – General Requirements.
- B. City Standard Specifications Section 130 – Potable Water Facilities

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. **Commercial Standards:**
 - a. ANSI A13.1 Scheme for the Identification of Piping Systems.

1.4 CONTRACTOR SUBMITTALS

- A. **Certificates of Compliance:** Certificates of Compliance shall be provided for all products and materials proposed to be used under this Section.

PART 2 -- PRODUCTS

2.1 DETECTABLE WARNING TAPE - IDENTIFICATION OF BURIED PIPING

- A. Identification of all buried pressure pipe shall be accomplished by color-coded warning tape consisting of a minimum 2-inch-wide plastic tape with lettering giving a warning and a description of the pipe function (for example: "CAUTION, WATER LINE BELOW").
- B. Warning Tape shall be installed on all pipes greater than 2 inches and the warning tape shall be placed above the centerline of the pipe, spanning the full length of the pipe, and be placed at a depth of 1-foot above top of pipe.
- C. Furnish materials according to National Transportation Safety Board NTSB-PSS-73-1, GSA Public Buildings Service Guide, American Gas Association 72-D-56, API RP 1109, OSHA 1926.956 (c)(1), APWA Uniform Color Code, DOT Office of Pipeline Safety USAS B31.8, and Federal Gas Safety Regulations S 192-321 (e).
- D. Description:
 - 1. Material: Polyethylene
 - 2. Brightly colored, continuously printed.
 - 3. Minimum Size: 6 inches wide by 5 mils thick. Taper coverage shall equal the full width of the pipe and span the full length of the pipe.
 - 4. Manufactured for direct burial service.

5. Lettering Size: 1 inch
6. Color: All tape is APWA color coded and permanently printed
 - Blue – Water, Potable Water
7. Standard Imprints: “CAUTION WATER LINE BURIED BELOW”,

E. Technical Data:

| Properties | Test Method | Value |
|------------------|---------------|--------------------------|
| Thickness | ASTM D2103 | 0.005” (5 mil) |
| Elongation | ASTM D882-75B | 80% |
| Colors | APWA Coded | See above |
| Tensile Strength | ASTM D882 | 35 lbs/inch (15,000 psi) |
| Bond Strength | Boiling Water | 5 Hours w/o Peel |
| Adhesives | Mfg. Specs | Morton 548 or Equivalent |
| Bottom Later | Mfg. Specs | Virgin PE |
| Top Later | Mfg. Specs | Virgin PET |
| Foil | Mfg. Specs | 0.00035 (0.35 Mil) |
| Flexibility | ASTM 671-76 | Pliable Hand |
| Message Repeat | Mfg. Specs | AXL II |
| Inks | Mfg. Specs | Varies per Legend |
| Printability | ASTM D2578 | 45 Dynes |

- F. Warning Tape manufacturer shall be **Northtown Company, Christy's, Bernsten, or approved equal.**

2.2 TRACER WIRE

- A. Tracer wire shall be used on all pressure piping. Tracer wire shall be blue and suitable for direct burial and wet conditions.
- B. Tracer wire shall be continuous and splices shall be made with two copper or brass split bolt fasteners without encapsulation in epoxy.
- C. Contractor shall submit proof of continuity testing to the City in a written format.
- D. Tracing wire through valve boxes shall be placed outside of riser but inside the valve box.
- E. Tracer wire shall be UL listed, Standard 83, conforming to Federal Specification JC-30-B, ANSI-C 33.80 and the requirements of National Electric Code.
- F. For all pressure piping systems, a No. 12 A.W.G. UF Insulated solid core wire, coated, soft-drawn copper wire shall be attached to the pipeline secured with tape to facilitate locating the pipe after embedment
- G. The wire shall be taped to hold in place and the tape shall be 2 inches wide, 10 mil. thick. On mains the wire shall be held in place with tape spaced not more than 10 feet apart. On service laterals the wires shall be wrapped around the pipe.

- H. Wire: Unshielded 10-gauge, blue insulated tracing copper wire.
- I. Furnish materials according to City standards.
 - a) Northtown Company
 - b) Priority Wire and Cable, Inc.
 - c) or approved equal

PART 3 -- EXECUTION

3.1 DETECTABLE WARNING TAPE

- A. Warning tape shall be installed with all buried pressure piping. Warning tape shall be continuous over top of pipe buried 12 inches above the piping.
- B. All water distribution pipes shall be identified with marking tape meeting the following specifications:
 - 1. Buried utility line tape to be identified with 1-inch or larger bold, black letters identifying the utility with the words "CAUTION; WATER LINE BELOW", or as approved by the Owner, at 24-inch intervals.
 - 2. Tape to be installed in backfill 12" over each buried utility line, directly above the pipe zone, unless otherwise noted on the drawings or instructed by the Owner.
 - 3. Where utilities are buried in a common trench, identify each line by a separate warning tape. Bury tapes side by side directly over the applicable line.

3.2 COPPER WIRE

- A. Tracer wire shall be used on all non-metallic water piping.
- B. Buried non-metallic pressure pipelines for potable water systems, irrigation systems shall be provided with an USE-2 Insulated copper wire laid along the top of the pipe.
- C. On main line installations the wire shall be held in place with ties or tape spaced not more than 10 feet apart. On service laterals the wire shall be wrapped around the pipe.
- D. At all buried valves install copper tracer wire on the outside of the polyvinyl chloride valve sleeve to a notch cut out at the top of the valve sleeve. The wire shall be stubbed up inside each valve box, and be placed as shown on the Project Drawings. Wire extending into the valve boxes shall have polyvinyl chloride insulation with a minimum thickness of 4/64-inch.

END OF SECTION 33 05 26

SECTION 33 11 13 WATER UTILITY DISTRIBUTION PIPING

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall provide all materials, equipment, and labor necessary to furnish and install 8-inch polyvinyl chloride (PVC) with restraint joints, and all appurtenant work, complete and operable, including all connections as shown on the Drawings and as specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- | | |
|-------------------|---|
| A. Section 312316 | Utility Earthwork |
| B. Section 330526 | Piping Identification Systems. |
| C. Section 331200 | Water Utility Distribution Equipment |
| D. Section 331300 | Pressure Pipeline Testing and Disinfection. |

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. California Codes:

1. Titles 17 and 22 California Code of Regulations - Chapter 16 – California Waterworks Standards
2. Water Main Separation Criteria: Chapter 16 - California Waterworks Standards: Article 6 - §64572

C. City Standard Specifications

1. Section 130 – Potable Water Facilities

C. Commercial Standards:

| | |
|----------------|--|
| AASHTO | Standard for Highway Bridges. |
| ANSI/AWWA C104 | Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water. |
| ANSI/AWWA C110 | Standard for Ductile-Iron and Gray-Iron Fittings, 3-In. through 48-In., for Water and Other Liquids. |
| ANSI/AWWA C111 | Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings. |
| ANSI/AWWA C153 | Standard for Ductile-Iron Compact Fittings, 3-In. through 6-In., for Water and other Liquids. |
| ASME B16.1 | Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250. |

| | |
|-----------------|---|
| AWWA C115 | Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges |
| AWWA C151 | Ductile-Iron Pipe, Centrifugally Cast. |
| AWWA C153 | Ductile-Iron Compact Fittings. |
| AWWA C105 | Polyethylene Encasement for Ductile-Iron Pipe Systems. |
| AWWA C223 | Fabricated Steel and Stainless Steel Tapping Sleeves. |
| AWWA C515 | Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service. |
| AWWA C600 | Installation of Ductile-Iron Water Mains and their Appurtenances. |
| AWWA C605 | Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water |
| AWWA C900 | Polyvinyl Chloride (PVC) Pressure Pipe, 4-In. through 12-In., for Water Distribution. |
| AWWA Manual M23 | PVC Pipe - Design and Installation. |

D. National Fire Protection Association:

1. NFPA 24 - Standard for the Installation of Private Fire Service Mains and Their Appurtenances.

1.4 CONTRACTOR SUBMITTALS

- A. **Certificates of Compliance:** Certificates of Compliance shall be provided for all products and materials proposed to be used under this Section, as specified in the referenced standards, and the following supplemental requirements:
1. Hydrostatic proof test reports.
 2. Sustained pressure test reports.
 3. Burst strength test reports.
- B. All expenses incurred in making samples for certification of tests shall be borne by the CONTRACTOR.
- C. Contractor shall submit 50-year warranty for all pipe materials.
- D. Contractor shall furnish operating and maintenance instructions and parts list in four (4) complete sets to the Engineer. These instructions shall fully describe the equipment being furnished, including all valves. Each set shall be bound in standard size, three-ring, loose-leaf, vinyl plastic hard cover binders suitable for bookshelf storage.

1.5 QUALITY ASSURANCE

- A. **Tests:** Except as modified herein, all materials used in the manufacture of the pipe shall be tested in accordance with the requirements of this Section, and as specified in the referenced standards, as applicable.
- B. The Contractor shall have said material tests performed at no additional costs to the City. The Engineer shall have the right to witness all testing provided, that the Contractor's schedule is not delayed for the convenience of the Engineer.
- C. In addition to those tests specifically required, the Engineer may request additional samples of any material for testing by the City. The additional samples shall be furnished at no additional cost to the City.

PART 2 -- PRODUCTS

2.1 WATER PIPING

- a. PVC Pipe:
 - 1) Comply with AWWA C900 and AWWA C905 – Pressure Class 305 (DR14) or as specified on the project plans.
 - 2) Fittings: Comply with AWWA C900, AWWA C905, AWWA C111, cast iron.
 - 3) Joints:
 - a) Comply with ASTM D3139, ASTM F477.
 - b) Seals: PVC flexible elastomeric.
 - c) Solvent-cement couplings are not permitted.
 - 4) Manufacturers:
 - a) PW pipe
 - b) J-M Manufacturing
 - c) Vinyltech
 - d) Diamond Plastics Corporation
 - e) North American Pipe
 - f) Or approved equal
 - 5) PVC pressure pipe shall conform to the applicable requirements of AWWA C900 and shall be subject to additional requirements specified herein.
 - 6) Contractor shall furnish Certification that all PVC pipe supplied for this project has been manufactured in compliance with all requirements of AWWA C900.
 - 7) Potable water pipe shall either be colored blue or shall be white with blue stenciling on both sides of the pipe reading "POTABLE WATER" in 5/8-inch-high letters repeated at 1-foot intervals.
 - 8) PVC materials for pipe and fittings shall conform to ASTM D1784, Cell Classification 12454-B with an established hydrostatic design basis rating of 4,000psi for water at

73.4-degree F. Pipe and fitting materials shall be specially formulated with sufficient UV screeners to provide for long term outdoor exposure with no deleterious effects.

- 9) All PVC pipe shall be continuously marked in conformance with ASTM D1785. Each pipe length shall be marked showing the date of manufacture, nominal pipe size and O.D. base, the AWWA pressure class and the AWWA specification designation (AWWA C900).
- 10) PVC pressure pipe shall be designed in accordance with the requirements of AWWA C900, except that safety factors and surge pressure requirements of C900 shall be applied to all pipe, 4 inch through 12 inch. Pressure class shall be as shown on the Drawings, but in no case shall the dimension ratio be greater than 14 for C900.
- 11) The pipe shall be of the diameter and pressure class as specified or shown, furnished complete with rubber gaskets, and all specials and fittings shall be provided as required. The dimensions and pressure classes for Dimension Ratios for PVC pressure pipe with Cast-Iron Pipe Equivalent O.D.'s shall conform to the requirements of AWWA C 900.
- 12) **Joints:** All joints for the buried PVC pipe shall be an integral bell manufactured on the pipe employing a rubber ring joint. The bell shall be the same or greater thickness as of the pipe barrel.
- 13) **Joint Deflection:** Deflection at the joint shall not exceed 50% of the maximum deflection recommended by the manufacturer. No deflection of the joint shall be allowed for joints which are over-belled or not belled to the stop mark.
- 14) Bending of pipe shall not exceed recommendations of AWWA or manufacturers printed recommendations.

PART 3 -- EXECUTION

3.1 GENERAL

- A. All laying, jointing, testing for defects and for leakage shall be performed in the presence of the ENGINEER, and shall be subject to its approval before acceptance. All material found during the progress to have defects will be rejected and the CONTRACTOR shall promptly remove such defective materials from the site of the work.
- B. Installation shall conform to the requirements of AWWA Manual M23, instructions furnished by the pipe manufacturer, and to the supplementary requirements or modifications specified herein. Wherever the provisions of this Section and the aforementioned requirements are in conflict, the more stringent provision shall apply.
- C. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, and remove burrs. Use only equipment specifically designed for pipe cutting and recommended by the pipe manufacturer; use of chisels, hammer or hand saws is not permitted. Grind edges smooth with beveled end for push-on connections. Remove scale and dirt on inside and outside before assembly. Prepare pipe connections to equipment with flanges or unions.
- D. Inspect pipe and fittings before installation, clean ends thoroughly, and remove foreign matter and dirt from inside.

- E. Repair any coatings or linings which were damaged during shipping and handling using manufacturer-approved coating and lining repair materials in accordance with manufacturer's instructions.

3.2 PIPE HANDLING

- A. **Handling:** Pipe, fittings and accessories shall be carefully inspected before and after installation and those found defective shall be rejected. Pipe and fittings shall be free from fins and burrs. Before being placed in position, pipe, fittings, and accessories shall be cleaned, and shall be maintained in a clean and sanitary condition. Proper facilities shall be provided for lowering sections of pipe into trenches. Under no circumstances shall pipe, fittings or any other material be dropped or dumped into trenches. Fittings shall be carried and placed into trench using fabric straps. Chains and cables shall not be used.

3.3 STORAGE

- A. Pipe shall be stored, if possible, at the job site in unit packages provided by the manufacturer. Caution is to be exercised to avoid compression damage or deformation to bell ends of the pipe. Pipe shall be stored in such a way as to prevent sagging or bending and protected from exposure to direct sunlight by covering with an opaque material while permitting adequate air circulation above and around the pipe. Gaskets shall be stored in a cool, dark place out of the direct rays of the sun, preferably in original cartons. Pipe, fittings, or accessories improperly stored are subject to rejection by the ENGINEER.

3.4 TRENCHING AND BACKFILL

- A. Trench excavation, backfill, sheeting and shoring shall conform to the requirements of Section 31 23 16, "Utility Earthwork," and as specified herein.
- B. Dewater excavations to maintain dry conditions and to preserve final grades at bottom of excavation

3.5 WATER MAIN SEPARATION

- A. Water Main Separation Criteria: Chapter 16 - California Waterworks Standards: Article 6 - §64572
 - 1) New water mains and new supply lines shall not be installed in the same trench as, and shall be at least 10 feet horizontally from and one foot vertically above, any parallel pipeline conveying sanitary sewer, recycled water or fuel lines.
 - 2) New water mains and new supply lines shall be installed at least 4 feet horizontally from, and one foot vertically above, any parallel pipeline conveying storm drainage and disinfected tertiary recycled water.
 - 3) If crossing a pipeline conveying a fluid listed in subsections a and b above, a new water main shall be constructed no less than 45-degrees to and at least one foot above that pipeline. No connection joints shall be made in the water main within eight horizontal feet of the fluid pipeline.
 - 4) The vertical separation specified in subsections above is required only when the horizontal distance between a water main and pipeline is less than ten feet.

3.6 INSTALLATION

- A. Install pipe according to AWWA C600 and AWWAC605.
- B. Cover: Establish elevations of buried piping with not less than thirty-six (36) inches of cover for main sizes less than 12" in pipe diameter unless otherwise shown on the plans. Measure depth of cover from final surface grade to top of pipe barrel.
- C. Handle and assemble pipe according to manufacturer instructions and as indicated on Drawings.
- D. Route pipe in straight line; re-lay pipe that is out of alignment or grade.
- E. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- F. Excavate bell holes to permit proper joint installation. Bell and spigot pipe shall be laid with the bell end pointing in the direction of laying. Pipe shall be set to grade in straight lines, taking care to avoid the formation of any dips or low points. Pipe shall not be laid when the conditions of trench or weather are unsuitable as determined by Engineer. Do not lay pipe in wet or frozen trench. At the end of each day's work, open ends of pipe shall be closed temporarily with water-tight, expandable type plugs.
- G. Pressurized lines laid on a downhill grade shall be blocked and held in place until sufficient support is furnished by the following pipe to prevent movement.
- H. Pipe shall be supported at its proper elevation and grade, care being taken to secure firm and uniform support. Wood support blocking will not be permitted. The full length of each section of pipe and fittings shall rest solidly on the pipe bed, with recessed excavation to accommodate bells and joints. Anchors and supports shall be provided where necessary and where indicated on the Drawings for fastening work into place. Fittings shall be independently supported.
- I. Joints shall be installed according to manufacturer's recommendations. Trenches shall be kept free of water until joints have been properly made. The maximum combined deflection at any coupling shall be 50 percent of the manufacturer's printed recommendations.
- J. Pipe and fittings shall be of the sizes indicated. Clean pipe interior of all foreign matter before installing. Pipe shall be cut by means of saws, power driven abrasive wheels or pipe cutters, which will produce a square cut. No wedge-type roller cutters will be permitted. After cutting, the end of the pipe shall be beveled using a beveling tool, portable type sander or abrasive disc. Remove burrs by smoothing edges with a knife, file, or sandpaper. Handle pipe carefully to prevent gouging or scratching. Any length of pipe having a gouge, scratch, or other permanent indentation more than 10 percent of the wall thickness in depth shall be rejected.
- K. All necessary precautions shall be taken to prevent uplift or floating of the pipe prior to the completion of the backfilling operation. The Contractor shall assume full responsibility for any damage due to this cause and shall, at its own expense, restore and replace the pipe to its specified condition and grade if it is displaced due to floating.
- L. Each pipe elastomeric gasket joint shall be installed in conformance with the manufacturer's printed recommendations.

- M. Encase piping in polyethylene for all ductile iron pipe and fittings to prevent contact with surrounding backfill material and Comply with AWWA C105. Terminate encasement 3 to 6 inches above ground where pipe is exposed. Care shall be exercised to prevent entrapment of soil materials between the polyethylene wrap and metal surfaces.
- N. Backfill per the specification Section 312316, "Utility Earthwork", and per the following.
1. Handle pipe in such a manner as to avoid damage to the pipe. Do not drop or dump pipe into trenches under any circumstances.
 2. Inspect each pipe or fitting prior to placing into the trench. Clean ends of pipe thoroughly. Remove foreign matter and dirt from inside of pipe and keep clean during and after installation.
 3. Pipelines shall be identified with warning tape. Tape shall be placed continuously in the trench at the top of the Pipe Zone.
 4. Grade the bottom of the trench to the line and grade to which the pipe is to be laid, with allowance for pipe thickness and bedding depth. Remove hard spots that would prevent a uniform thickness of bedding. Place the specified thickness pipe base material over the full width of trench. Grade the top of the pipe base ahead of the pipe laying to provide firm, continuous, uniform support along the full length of pie, and compact to the relative compaction specified herein. After laying each section of the pipe, check the grade and alignment and correct any irregularities prior to laying next joint.
 5. Excavate bell holes at each joint to permit proper assembly and inspection of entire joint. Fill the area excavated for the joints with the bedding material specified or detailed in the drawings.
 6. When installing pipe, do not deviate more than 1-inch from line or 1/4 –inch from grade. Measure elevation at the pipe invert. The Contractor shall verify pipe grade at not more than 50 feet intervals.
 7. After pipe has been bedded, place pipe zone material simultaneously on both sides of the pipe, in maximum 6-inch lifts, keeping the level of backfill the same on each side. Carefully place the material around the pipe so that the pipe barrel is completely supported and that no voids or compacted areas are left beneath the pipe. Use particular care in placing material on the underside of pipe to prevent lateral movement during subsequent backfilling.
 8. No more backfill material than 6-inches shall be placed prior to shovel slicing. Sufficient care shall be taken to prevent movement of the pipe during shovel slicing. Shovel slicing shall be witnessed by the Owner.
 9. Compact each lift to the relative compaction specified.
 10. Push the backfill material carefully onto the backfill previously placed in the pipe zone. Do not permit free fall of the material until at least 2 feet of cover is provided over the top of the pipe. Do not drop sharp, heavy pieces of material directly onto the pipe or the tamped material around the pipeline. Do not operate heavy equipment over the pipe until at least 3 feet of backfill has been placed and compacted over the pipe.

11. When pipe laying is not in progress, including the noon hours, close the open ends of pipe. Do not allow trench water, animals, or foreign material to enter the pipe.
12. Remove and dispose of all water entering the trench during the process of pipe laying. Keep the trench dry until the pipe laying and jointing are completed.

3.7 COPPER WIRE AND WARNING TAPE

- A. Installation of copper wire, warning tape, and pipe identification shall conform to Section 33 05 26, "Piping Identification Systems."

3.8 TESTING AND DISINFECTION

- A. Field testing and disinfection of all pressure pipe shall conform to the requirements of Section 331300, "Pressure Pipeline Testing and Disinfection."

END OF SECTION 33 11 13

SECTION 33 12 00 WATER UTILITY DISTRIBUTION EQUIPMENT

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The Contractor shall provide all materials, equipment, and labor necessary for construction of replacement water main including any fittings, bends, thrust blocks, sleeves, couplings etc.
- B. Unless otherwise provided, all waterworks materials specified herein shall be new, of first class quality and shall be made by reputable manufacturers. All material of like kind shall be provided from a single manufacturer unless otherwise approved by Owner. All materials shall be carefully handled and installed and in good working order free from defect in manufacture, storage and handling.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 330526 – Piping Identification Systems.
- B. Division 1 – General Requirements.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- D. California Codes:
 - 1. Titles 17 and 22 California Code of Regulations - Chapter 16 – California Waterworks Standards
 - 2. Water Main Separation Criteria: Chapter 16 - California Waterworks Standards: Article 6 - §64572
- E. City Standard Specifications
 - 1. Section 130 – Potable Water Facilities
- F. Commercial Standards:

| | |
|----------------|--|
| ANSI/AWWA C110 | Standard for Ductile-Iron and Gray-Iron Fittings, 3-In. through 48-In., for Water and Other Liquids. |
| ANSI/AWWA C111 | Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings |
| ANSI/AWWA C153 | Standard for Ductile-Iron Compact Fittings, 3-In. through 6-In., for Water and other Liquids. |
| AWWA C223 | Fabricated Steel and Stainless Steel Tapping Sleeves. |
| AWWA C600 | Installation of Ductile-Iron Water Mains and their Appurtenances. |

1.4 CONTRACTOR SUBMITTALS

- A. **Certificates of Compliance:** Certificates of Compliance shall be provided for all products and materials proposed to be used under this Section.
- B. Manufacturer's product specifications and performance details shall be provided for all products and materials proposed to be used under this Section.
- C. Contractor shall submit materials list and catalog data sheets naming each product to be used identified by manufacturer and type number.

PART 2 -- PRODUCTS

2.1 FITTINGS

- A. Fittings shall be ductile iron, flanged or mechanical joint, Class 125, conforming to AWWA C110, "Ductile-Iron and Gray-Iron 3-inch through 48-inch for Water and Other Liquids", or AWWA C153 "Ductile-Iron Compact Fittings, 3-inch through 24-inch for water and other liquids", and AWWA C104, "Cement-Mortar Lining and Ductile-Iron Pipe and Fittings for Water". All fittings shall be marked in accordance with Section 10-11 of AWWA C110. All fittings shall be provided with restraining ears.
- B. Buried fittings shall have flanged outlets adjacent to the valves and mechanical joint or flange by mechanical joint adapters on pipe runs where no valves are required.
- C. Above ground fittings shall have flanged joints.
- D. Fittings: Fittings shall have the same pressure rating, as a minimum of the connecting pipe unless specified otherwise.
 - 1) Fittings:
 - a) Material: Ductile iron, AWWA C110 or C153.
 - b) Fittings: Comply with AWWA C110 or C153.
 - c) Fittings shall conform to a minimum pressure rating of 250 psi.
 - d) Coating and Lining:
 - Bituminous Coating: Comply with AWWA C115.
 - Cement Mortar Lining: Comply with AWWA C104.
 - 2) Joints:
 - a) Mechanical Joints: Comply with AWWA C111.
 - b) Flanged Joints: Comply with AWWA C115.
 - c) Tighten bolts alternately (across from one another) to the recommended manufacturer rating or if not provided, to the following normal torques and as stated in ANSI/AWWA C600 are:

| <u>Joint Size</u> | <u>Bolt Size</u> | <u>Range of Torque (ft.-lb.)</u> |
|-------------------|------------------|----------------------------------|
| 3" | 5/8" | 45 - 60 |
| 4"-24" | 3/4" | 75 - 90 |
| 30"-36" | 1" | 100-120 |
| 42"-48" | 1-1/4" | 120 -150 |

- d) Flange gasket: Full face type per AWWA C111 to provide positive sealing for the flange ductile iron joints.

- e) Flange Bolts: Bolts and Nuts for flanges and couplings are Heavy Hex Head ASTM A193 (Grade B7) for bolts and Heavy Hex Head ASTM A194 (Grade 2H) for nuts, they shall be coated as described below. Threads shall conform to ANSI B1.1. Bolt lengths shall be such that after joints are assembled, the bolts shall protrude through the nuts, but not more than ½ inch.
 - f) Restrained Joints: Boltless, push-on type, joint restraint independent of joint seal.
 - g) Jointing of pipe dissimilar in size or material shall be accomplished either by use of special adapters or couplings as specified on the plans or approved by the Engineer for such use.
 - h) Rods, Bolts, Lugs and Nuts (including threads) shall be coated using a three-layer system as specified below.
- 3) Jackets: Comply with AWWA C105, polyethylene jacket, single layer, half lapped, 10-mil polyethylene tape.
- 4) Manufacturers for ductile iron pipe fittings:
- a) U.S. Pipe
 - b) Pacific States
 - c) Union Foundry
 - d) Tyler
 - e) Sigma
 - f) Star
 - g) Or approved equal.
- 5) Manufacturers for pipe restraints:
- a) EBAA Iron Sales, Inc. (1100 Megalug for DIP and 2000PV for PVC pipes)
 - b) Star Pipe Products (Stargrip Series 3000 for DIP pipes and Stargrip Series 4000 for PVC pipes)
 - c) Or approved equal.
- E. Restrained joints shall be as approved in writing by the ENGINEER.
- F. All fittings shall be lined and coated.
- G. Each fitting shall be clearly labeled to identify its size and pressure class.
- H. DI pipe, fittings, and valve encasements shall be polyethylene wrapped and taped conforming to AWWA C105 "Polyethylene Encasement for Ductile Iron Piping for Water and Other Liquids".
- I. Maximum joint deflection in constructed pipelines shall not exceed 50 percent of the manufacturer's recommended maximum deflections.
- J. Unless otherwise noted, flanges on all Ductile iron pipe shall conform to AWWA C115. Flange adapters for PVC pipe 4-inch through 12-inch in diameter shall be constructed from fusion epoxy coated ductile iron, and designed specifically for the O.D. controlled PVC pipe being attached.
- K. Pipe restraints shall be coated and protected as follows:
- 1. Wedge and Wedge Assemblies, T-bolts, Bolts and Nuts:
 - a. Process through an iron-phosphate spray, rinse and drying in preparation for coating application.

- b. The coating itself shall consist of two coats of liquid Xylan, with heat cure to follow each coat.
2. Casting (rings) shall be surface pre-treated with an iron-phosphate spray, rinse, sealer before drying. The coating shall be electrostatically applied and heat cured. Coating shall be a polyester based powder to provide corrosion, impact and UV resistance.
3. The coating system shall be EBAA Iron, Inc. Mega-Bond or approved equal.
4. In addition to the restraint manufactures coating systems of this section all fitting and associated components shall be coated. Any fitting over 12" shall be plastic film wrapped.

2.2 THRUST BLOCKS

- A. Thrust blocks, where designated on the plans, shall be cast-in-place Class "B" concrete. The thrust block shall extend from the fitting to undisturbed soil, shall be kept clear of the joints, and shall be of such bearing area as to assure adequate resistance to the force to be encountered. Size of blocking shall be as defined in the Project Drawings and per City Standard Drawings and Specifications. Thrust block shall be used in addition to restrained pipe joints unless otherwise directed by the Owner.

2.3 GASKETS

- A. Gaskets for flanged joints shall be 1/8-inch thick, cloth-inserted rubber. Gaskets shall be suitable for a water pressure of 350 psi at a temperature of 108° F.
- B. Full face type gaskets with pre-punched holes shall be used where both flanges are flat faced. Ring gaskets extending to inner edge of bolts may be used where raised flat flange is present.
- C. Gaskets for push-on, mechanical, and restraints joints shall be synthetic rubber or natural rubber in accordance with AWWA C111.

2.4 COUPLINGS AND SLEEVES

- A. Couplings and sleeves for 4-inch through 12-inch PVC pipe shall be fusion epoxy coated ductile iron, or Type 316 stainless steel, with a minimum working pressure equal to the connecting pipe. Couplings, sleeves, and accessories shall be of domestic manufacture.
- B. Where flexible connections in piping are specified or indicated on the plans, they shall be obtained by the use of sleeve-type coupling. All sleeve-type couplings and accessories shall be of a pressure rating at least equal to that of the pipeline in which they are to be installed. Sleeve-type couplings shall be made by Rockwell International, Pittsburgh, PA; Dresser Mfg Div., Bradford, PA; or be approved equal products.
- C. Coupling for buried PVC pipe shall be Rockwell 411, Dresser Style 38, or approved equal products.

2.5 BOLTS AND NUTS

- A. Bolts and nuts for flanges and couplings shall be Heavy Hex Head ASTM A 193 (Grade B7) for bolts, and Heavy Hex Head ASTM A 194 (Grade 2H) for nuts. Nuts and bolts (including threads) shall be coated using a three-layer system consisting of a metallic base coat, an adhesion coat, and a heat cured fluoropolymer compound containing PTFE or TEFLON® as topcoat. Coating shall be FluoroKote#1 by Metal Coatings Corp., Tripac 2000 Blue Coating System by Tripac

Fasteners, or approved equal.

- B. Washers shall be provided for each nut, and shall be the same material and coating as the nut.
- C. Apply a liberal coat of white food grade anti-seizing compound containing PTFE or TEFLON® to the threads of all nuts and bolts, and to the face of all washers. The compound shall have operating range covering -20°F to 440° F, be NSF approved (or meet USDA-H1 and FDA requirements for incidental food contact), suitable for use on stainless steel, with a coefficient of friction no greater than $K=0.13$. Compound shall be White-Knight as manufactured by Jet_lube, or approved equal.

PART 3 -- EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's recommendations.

END OF SECTION 33 12 00

SECTION 33 12 15 WATER VALVES

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall provide all materials, equipment, and labor necessary to furnish, install, and test all valves and all appurtenant work, complete and operable as shown on the Drawings and as specified herein. Where buried valves are shown, the CONTRACTOR shall furnish and install valve boxes to grade, with covers, sleeves, and valve extensions.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 331113 – Water Utility Distribution Piping
- B. Division 1 – General Requirements.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. **Commercial Standards:**

| | |
|------------|---|
| ANSI B16.1 | Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800. |
| ANSI B16.5 | Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and Other Special Alloys. |
| ASTM B 62 | Specification for Composition Bronze or Ounce Metal Castings. |

B. **City Standard Specifications**

- 1. Section 130 – Potable Water Facilities

1.4 CONTRACTOR SUBMITTALS

- A. **Certificates of Compliance:** Certificates of Compliance shall be provided for all products and materials proposed to be used under this Section.
- B. Materials list and catalog data sheets naming each product to be used identified by manufacturer and type number.
- C. Submit Operations and Maintenance Manuals for approval for all valves.

1.5 QUALITY ASSURANCE

- A. **Valve Testing:** Unless otherwise specified, each valve body shall be tested in conformance with the appropriate AWWA Standard for the specific type of valve being used.
- B. **Bronze Parts:** Unless otherwise specified, all interior bronze parts of valves shall conform to the requirements of ASTM B 62.

- C. American Society for Testing and Materials (ASTM)

PART 2 -- PRODUCTS

2.1 GENERAL

- A. All valves shall be in accordance with the City of Brentwood standards and details unless otherwise specified on the plans.
- B. All valves shall be the same size as the pipe in which they are installed, unless specifically noted otherwise on the Drawings.
- C. All valves shall include all appurtenant parts (operators, chainwheels, handwheels, valve stems, floor stands, gear boxes, operating nut, etc.) for a complete operating valve.
- D. Valve shall be, as much as practical, fully factory assembled.
- E. All valves shall open by turning counter-clockwise. Maximum force required for operation shall be 40 lbs.

2.2 VALVES

- A. **General:** The CONTRACTOR shall furnish all valves, valve-operating units, stem extensions and other accessories as shown or specified. All valves shall be new and of current manufacture. Where buried, all valves shall be provided with valve boxes and covers and valve extensions as required.
- B. **Gate Valves:** Gate valves shall conform to the requirements listed below:
 - i. **GAV-10:** Resilient-Seated Gate Valve, 3 Inches to 12 Inches:
 - 1. Service: Water.
 - 2. Features:
 - a. Conforms to AWWA C509 (<12")
 - b. Iron body
 - c. Resilient seat, bronze mounted
 - d. Full port
 - e. Valve Ends:
 - i. Mechanical joint ends for buried service, unless shown otherwise on drawings
 - ii. Flanged ends for exposed service
 - f. Non-rising stem
 - g. Actuator for Buried Service:
 - i. Stem extension, as required, to bring operating nut to within 12" of ground surface.
 - ii. 2-inch operating nut
 - h. Actuator for Exposed Service:
 - i. Handwheel
 - i. Design working water pressure: 250 psig
 - j. Coatings and Linings:
 - i. Liquid epoxy, 12 mil minimum, for valve interior and exterior.
 - ii. For potable water applications, epoxy lining shall be NSF 61 approved.
 - 3. Manufacturers and Products:

- a. Mueller 2360 (2" to 12")
 - b. M&H Valve; AWWA C509 (2" to 12").
 - c. Or Equal.
- C. **Valve Flanges:** The flanges of valves shall be in accordance with ANSI B16.1, Class 125.
- D. **Elastomers:** All elastomers used in valves shall be made of EPDM synthetic polymers that are specifically developed for their chemical resistance. EPDM elastomers are to be used in gate valves.
- E. **Protective Coating:** All Valve bodies shall be fusion epoxy lined and coated in accordance with AWWA C550. The exterior surface of buried valves shall be coated with Petroleum wax tape.
- F. All unburied manual operators shall have handwheels or a 2-inch square operating nut.
- G. All buried valves shall have operating nuts, valve boxes and other features as shown on the Drawings. Where operating nut would otherwise be more than 30-inches below grade, stem extensions shall be provided to bring operating nut 6 to 12 inches below grade.
- H. **Bolts and Nuts:** All buried nuts, bolts, and washers shall be Type 304 Stainless Steel in conformance with the standards listed below. All buried nuts and bolts shall be Teflon coated. Except where otherwise shown or specified, all bolts, anchor bolts, nuts and washers, and cap screws shall be steel, galvanized after fabrication as specified herein. Threads on galvanized bolts and nuts shall be formed with suitable taps and dies such that they retain their normal clearance after hot-dip galvanizing.
- a. Hex Bolts: ASTM A320/A320M, Type 304 stainless steel, Grade B8, Class 2
 - b. Nuts: ASTM F594, Type 304 stainless steel, Grade B8, Class 2
 - c. Washers: Type 304 stainless steel
- I. **Buried Tie Rods:** Buried tie rods and anchor bolts, and bolts for valve anchor blocks and pipeline thrust restraints shall be of Type 304 stainless steel.
- J. **Bolt Requirements:**
- a. The bolt and nut material shall be free-cutting steel.
 - b. The nuts shall be capable of developing the full strength of the bolts. Threads shall be Coarse Thread Series conforming to the requirements of the American Standard for Screw Threads. All bolts and cap screws shall have hexagon heads and nuts shall be Heavy Hexagon Series.
 - c. The length of all bolts shall be such that after joints are made up, each bolt shall extend through the entire nut, but in no case more than 1/2 inch beyond the nut.
- K. **Valve Traffic Boxes and Covers:** A valve box shall be installed for each buried valve. Water Valve boxes shall be cast iron box with minimum 9 inches depth, with cast iron traffic cover with minimum 3 inches depth marked "WATER". All valve boxes shall be traffic rated.

PART 3 -- EXECUTION

3.1 GENERAL

- A. **General:** All valves, operating units, stem extensions, valve boxes and accessories shall be installed in accordance with the manufacturer's printed instructions and as shown and specified. Valves shall be firmly supported to avoid undue stresses on the pipe.
- B. **Access:** All exposed valves shall be installed to provide easy access for operation, removal and maintenance and to avoid conflicts between valve operators, structural members, or piping.
- C. All valves shall be handled in a manner to prevent any injury or damage to any part of the valve. All joints shall be thoroughly cleaned and prepared prior to installation. All valves shall be installed so that the valve stem is plumb and valve is in the location shown on the Drawings.
- D. Prior to installation of any valve the Contractor shall operate each valve and, as necessary, adjust stem packing to ensure proper operation.

3.2 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 following as noted on the Drawings.

3.3 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).

3.4 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. Test that two-way valves open and close smoothly under operating pressure conditions from both

directions.

- C. Inspect air release and vacuum valves as pipe is being filled to verify venting and seating is fully functional.
- D. Count and record number of turns to open and close valve; account for any discrepancies with manufacturer's data.
- E. Set, verify, and record set pressures for all relief and regulating valves.
- F. Automatic valves to be tested in conjunction with control system testing. Set all opening and closing speeds, limit switches, as required or recommended by the Engineer.

END OF SECTION 33 12 15

SECTION 33 12 16 GATE VALVES

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall provide all materials, equipment, and labor necessary to furnish and install gate valves, 4 inch to 12 inch, complete and operable, including but not necessarily limited to operators, epoxy lining and coating, and appurtenant work, as shown on the Drawings and as specified herein. Unless otherwise shown or specified, all shut-off valves 12 inches and smaller shall be Gate Valves.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 331215 – Water Valves.
- B. Division 1 – General Requirements.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Commercial Standards:

| | |
|--------------|--|
| AWWA C515-09 | Standard for Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service |
| AWWA C550 | Standard for Protective Epoxy Interior Coating for Valves and Hydrants. |

B. City Standard Specifications

- 1. Section 130 – Potable Water Facilities

1.4 CONTRACTOR SUBMITTALS

- A. **Certificates of Compliance:** Certificates of Compliance shall be provided for all products and materials proposed to be used under this Section.
- B. Submit a 10-year warranty for all gate valves.

PART 2 -- PRODUCTS

2.1 GATE VALVES

- A. **General:** All gate valves shall be non-rising stem, resilient-seated wedge flanged valves, of the inside screw type. Valves shall be capable of being repacked under line pressure. All ferrous surfaces of the valves shall be factory fusion bonded epoxy lined and coated, as specified, in conformance with AWWA C550 for exterior coating.
- B. All valve construction, materials, and pressure ratings shall be selected to suit the system in which installed. Pressure rating and manufacturer's name shall be cast on each valve body.

Where specified, valves shall be supplied fully packed with Teflon impregnated packing. Where possible, valves shall be of one manufacturer.

- C. Buried gate valves shall have flanged, flanged by mechanical joint or mechanical joint by mechanical joint ends as required by the nature of the installation and shall conform to the requirements of AWWA C515.
- D. Stems of all bronze valves shall be silicon bronze or similar alloy to prevent de-zincification. Alloy shall have minimum tensile strength of 60,000 psi, minimum yield point of 24,000 psi per ASTM B584.
- E. Valves shall be furnished full line size unless specifically called out to be of reduced size. Flanges for valves shall be compatible with adjacent piping.
- F. Valves installed immediately adjacent to flanged equipment and flanged specialties shall be flanged, regardless of size.
- G. **Elastomers:** All elastomers used in valves shall be made of EPDM synthetic polymers that are specifically developed for their chemical resistance.
- H. Resilient-seated gate valves conforming to AWWA C515 shall be provided. Resilient-seated gate valves shall have cast iron bodies with flanged or mechanical joint ends, elastomer-coated cast iron wedge/disc, flanged bonnet, bronze stem, O-ring seals, and operators with handwheel or 2-inch square nut, unless otherwise shown.
- I. All valves shall have a minimum working pressure of 200psi.

PART 3 -- EXECUTION

3.1 INSTALLATION

- A. All gate valves shall be installed in accordance with AWWA Standards and the manufacturer's printed recommendations, and in accordance with the applicable provisions of Section 33 12 15, "Water Valves."

END OF SECTION 33 12 16

SECTION 33 12 20 POLYWRAP

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall furnish and install 2 layers of protective wrapping for coated ductile iron pipe, valves and fittings.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Commercial Standards:

AWWA C105 Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids.

NFPA 24 (Latest Edition) National Fire Protection Association 24 – Standard for the installation of Private Fire Service Mains and Their Appurtenances

2022 California Building Code

2022 California Fire Code

1.3 CONTRACTOR SUBMITTALS

- A. Certificates of Compliance: Certificates of Compliance shall be provided for all products and materials proposed to be used under this Section.

PART 2 -- PRODUCTS

2.1 MATERIALS

- A. General Purpose Adhesive Tape:

1. Two inches wide by 10 mils thick minimum, to 20mils thick maximum.
2. Scotch wrap No. 50, Polyken No. 900, Tapecoat CT, Plymouth Slipnot 100, Manville No. V-10 Trantex, Renfru 300-10, Wrap-tite WT 46-12, or approved.

- B. Polywrap:

1. AWWA C105, Type I, Class C(black), Grade E-1, 8 mil minimum thickness.
2. Minimum polywrap tube size shall be

Nominal Mortar Coated Steel
Pipe Diameter (inches)

Polywrap Flat
Tube Width (inches)

4
6
8

16
20
24

| | |
|----|-----------|
| 10 | <u>27</u> |
| 12 | <u>30</u> |
| 14 | <u>34</u> |

PART 3 -- EXECUTION

3.1 INSTALLATION

- A. Install two layers of polyethylene encasement for all cast-iron fittings.
- B. Openings for Appurtenances:
 - 1. Openings for branches, service taps, blow offs, air valves, and similar appurtenances shall be made by making an x-shaped cut in the polywrap and temporarily folding the film back.
 - 2. After installation of the appurtenances, replace film and repair cur as well as other damaged areas in the polywrap with tape.
 - 3. Branches, service taps, blow offs, air valves, and similar appurtenances shall not be wrapped with polywrap unless otherwise specified or shown on the drawings.
- C. Cast Iron Fittings:
 - 1. Polywrap shall extend beyond fittings by 8" on each side and shall be secured by tape.
 - 2. Polywrap shall be overlapped 6" when split is required. The split shall be sealed with tape.
- D. Backfill:
 - 1. Material and compaction shall be the same as specified for pipe without polywrap.
 - 2. Exercise care to prevent damage to the polywrap.

END OF SECTION 33 12 20

SECTION 33 13 00 PRESSURE PIPELINE TESTING AND DISINFECTION

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall furnish all materials, equipment, and labor to perform and complete flushing and testing of all pipelines and appurtenant piping, and disinfection of all pipelines and appurtenant piping for potable water, complete, including conveyance of test water and all disposal thereof, and as specified herein.
- B. The work of this section consists of the disinfection of all portions of the new potable water pipeline, appurtenances, and any portion of the existing connecting system that might become contaminated during construction activities by the Contractor, in accordance with California Code of Regulations Title 22, Article 5. Section §64580. Disinfection of New or Repaired Mains and AWWA C651 Disinfecting Water Mains.
- C. Water for filling, flushing and testing may be obtained from the existing distribution system at the Contractor's expense. The Contractor will be required to furnish and install any material and equipment required to provide temporary connections to the water system including a back-flow prevention valve to protect the existing water distribution system from contamination. The Contractor will be required to obtain an approved City hydrant meter and backflow prevention device. The Contractor will not be allowed to operate any valves or any part of the existing distribution system unless approved and directed by the City Water Department.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Commercial Standards:

- 1. AWWA B300 Standard for Hypochlorites.
- 2. AWWA C651 Standard for Disinfecting Water Mains.
- 3. California Code of Regulations Title 22, Article 5. Section §64580. Disinfection of New or Repaired Mains and AWWA C651 Disinfecting Water Mains.

B. City Standard Specifications

- 1. Section 130 – Potable Water Facilities

1.3 CONTRACTOR SUBMITTALS

- A. **Certificates of Compliance:** Certificates of Compliance shall be provided for all products and materials proposed to be used under this Section.
- B. A testing schedule, including proposed plans for water conveyance, control, disposal, and disinfection shall be submitted in writing to the Engineer for review a minimum of five (5) working days before testing is to start. The plan must include testing dates, piping systems and sections to be tested, test type, method of isolation, and calculations of maximum allowable leakage for piping.

- C. Submit plan for conveying water and protecting the existing potable water system used to supply disinfection water, including backflow prevention in accordance with City, State and Federal regulations.
- D. Submit plan for disinfection of pipelines, appurtenances, and any portion of the existing connecting system that might become contaminated during construction activities. The plan must outline how disinfection will be applied and implemented, the method used shall be the continuous feed method using sodium hypochlorite of no less than 12.0% strength, preventative and corrective measures to prevent contamination during construction, method of capping pipes, flushing plan, and bacteriological sampling plan. The plan must be in strict accordance with AWWA Standard C651-05. The plan must describe the procedure and plan for cleaning disinfecting and testing the system, and must show the proposed location where samples will be taken along with certifications that employees working with concentrated solutions have received appropriate safety training. Other disinfection methods may be approved at the City's discretion.
- E. Submit Certifications of Calibrations for testing equipment to be used.
- F. Submit plan for disposal of chlorinated water in accordance with the State Discharge Permit requirements for Best Management Practices.
- G. Submit certification that independent testing agency is qualified to perform bacteriological testing in accordance with AWWA standards, agency requirements, and these technical specifications.
- H. Submit Certified Bacteriological Test Results, including confirmation that facility tested is free from coliform bacteria contamination. Forward results directly to Engineer.

1.4 TESTING AND DISINFECTION

- A. The contractor will test the pipe for pressure and disinfection. All testing will be conducted in the presence of the engineer.

1.5 QUALIFICATIONS

- A. Independent testing agency must be certified in the state of California with 10 years' experience in field of water sampling and testing. Agency shall use calibrated testing instruments and equipment, and documented standard procedures for performing specified testing.

1.6 CONNECTION TO EXISTING MAINS

- A. The test shall be made before connection of the new line to the existing City pipes and mains (excepting hot taps).
- B. Where connections are to be made to an existing potable water system, the interior surfaces of all pipe and fittings used in making the connections shall be swabbed or sprayed with a sodium hypochlorite solution in conformance with the requirement of AWWA C651, except that the solution shall be 5 percent, before they are installed.

1.7 TESTER

- A. Contractor's Tester will have a gauge and meter that is calibrated annually.

1.8 REQUIREMENTS PRIOR TO TESTING

- A. Before testing, the pipe trench shall be backfilled to Subgrade, or a minimum of 36" below finished grade.
- B. All concrete anchor blocks shall be allowed to cure a sufficient time to develop a minimum strength of 2,000 psi before testing unless otherwise approved by the City Representative.

PART 2 -- PRODUCTS

2.1 MATERIAL REQUIREMENTS

- A. All test equipment, chemicals for chlorination, temporary valves or assemblies, test outlets, test bulkheads, or other water control equipment and materials shall be determined and furnished by the Contractor subject to the Engineer's review. No materials shall be used which would be injurious to the piping system or its proposed function.
- B. Chlorine for disinfection shall be in the form of sodium hypochlorite solution, or calcium hypochlorite granules or tablets. Sodium hypochlorite and calcium hypochlorite shall be in accordance with the requirements of AWWA B300. The Contractor shall only use NSF approved chemicals in accordance with California Code of Regulations Title 22, Article 7. Section §64590.
- C. The concentration dosage of chlorine for disinfecting water mains shall be as defined in AWWA Standard C651-05.

2.2 WATER

- A. Use only potable water for the hydrostatic pressure test. Make up water for testing shall be potable water.
- B. Water used for chlorination must also be clean, uncontaminated, and potable. Contractor shall make arrangements for water supply and convey water in disinfected pipelines or containers.
- C. The same water used for chlorination of other sections of the pipeline may not be used to fill the line for hydrostatic pressure or leakage testing.
- D. Water used to fill pipeline may be supplied using a temporary connection to existing distribution system. Provide protection against cross-connections as required by AWWA C651.

2.3 TEST BULKHEADS

- A. Design and fabricate test bulkheads per Section VIII of the ASME Boiler and Pressure Vessel Code. Materials shall comply with Part UCS of said code.
 - 1. The bulkhead design pressure shall be at least 2.0 times the specified test pressure for the section of pipe containing the bulkhead.

2. Limit the stresses in the bulkhead at the design pressure to 70 percent of yield strength of the bulkhead material.
3. Include air-release and water drainage connections.

2.4 TEST OUTLETS AND TEMPORARY VALVES AND PIPING

- A. Provide additional outlets and temporary valves for releasing air or apply the test where automatic air valves or other outlets are available in the pipeline. Construct the outlets in the same manner as for a permanent outlet and seal with a blind flange, pipe cap, or plug and apply coating equal to that of the adjacent pipe after use.
- B. Provide a reduced pressure backflow prevention assembly if the source of potable water is from a public waterline.
- C. Provide temporary piping to convey and dispose of the test fluid used in the pipeline. Disconnect and remove temporary piping after successful completion of testing.
- D. Locate and install test bulkheads, temporary valves and connections to existing pipelines and other appurtenances in a manner to provide air gap separation between existing potable water pipelines and the pipeline being tested.

2.5 TEST EQUIPMENT

- A. Provide pressure gages, pipes, pumps, meters, chemicals, and other equipment necessary to perform the hydrostatic pressure test.

2.6 CHLORINATION USED FOR DISINFECTION

- A. The Contractor shall use an acceptable form and concentration of chlorine for disinfecting water mains as defined in AWWA Standard C651-05 and as specified in these Specifications and Special Provisions.

PART 3 -- EXECUTION

3.1 GENERAL

- A. The Contractor will furnish the water for the hydrostatic tests, and for the disinfection tests up through the flushing sequence. All water for any re-testing shall also be paid for by the Contractor. The Contractor shall make all necessary provisions for conveying the water from the source to the points of use.
- B. All pressure pipelines shall be tested after backfilling has been completed. Disinfection shall be accomplished by chlorination. All chlorinating and testing operations shall be performed in the presence of the Engineer.
- C. The Contractor shall notify the Owner a minimum of 7 days prior to commencing the disinfection of a pipe segment to arrange for the bacteriological examination to be performed.
- D. Complete installation of piping system, including all thrust restraint, prior to pressure testing.
 - a. If thrust blocking is specified, wait 7 days minimum after concrete thrust blocking is

- installed to perform pressure tests. If high-early strength cement is used for thrust blocking, wait may be reduced to 2 days.
- E. Prior to test, remove and replace with pipe spools or suitably isolate appurtenant instruments or devices that could be damaged by pressure testing.
 - F. New Piping Connected to Existing Piping: Isolate new piping with grooved-end pipe caps, spectacle blinds, blind flanges, or as acceptable to Engineer.
 - G. Conform to AWWA C651 for pipes and pipelines.
 - H. Disinfect the following items installed or modified under this Project, intended to hold, transport, or otherwise contact potable water:
 - a. Pipelines: Disinfect new pipelines that connect to existing pipelines up to point of connection.
 - I. Disinfect surfaces of materials that will contact finished water, both during and following construction, using one of the methods described in AWWA C652 and C653. Disinfect prior to contact with finished water. Take care to avoid recontamination following disinfection.
 - J. Prior to application of disinfectants, clean pump, tank, filters, and pipelines of loose and suspended material.
 - K. Allow freshwater and disinfectant solution to flow into pipe or vessel at a measured rate so chlorine-water solution is at specified strength. Do not place concentrated liquid commercial disinfectant in pipeline or other facilities to be disinfected before it is filled with water.

3.2 HYDROSTATIC TESTING OF PIPELINES

- A. Existing facilities will be operated by or under the direction of the Owner's Representative only.
- B. Disinfect the pipeline to be pressure tested before pressure testing when it is connected to a potable water pipeline. Otherwise, perform the required disinfection after pressure testing.
- C. All labor, materials, tools, and equipment for testing shall be furnished by the contractor.
- D. The pipeline shall be subjected to a field hydrostatic test pressure of 50 psi in excess of the class rating of the pipe or at a minimum of 150 psi, whichever is smaller, for a period of four hours. The test pressure for piping shall be as shown or specified, measured at the lowest point of the pipeline unit or section being tested. Apply and maintain specified test pressure with hydraulic force pump; valve off pipe system when test pressure is reached. Expel air from piping system during filling. All visible leaks shall be repaired in a manner acceptable to the Engineer.
- E. The test pressure shall not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed, resilient-seat gate valves. Testing against closed valves will only be allowed if permitted by the City. Valves should not be operated in either direction at differential pressure exceeding the rated valve working pressure.
- F. The water necessary to maintain test pressure shall be measured through a meter. The leakage shall be considered as the amount of water entering the pipe during the test, less the measured

leakage through valves and fittings. Leakage shall not exceed the rate specified. Any noticeable leaks shall be stopped, and any defective pipe or joints shall be replaced with new sections or materials.

- G. Noticeable leaks shall cause the test to be terminated until the leak is repaired and the test is rescheduled.
- H. The test shall further be conducted with valves open, and the open ends of pipes, valves, and fittings suitably closed. Valves shall be operated during the test period.
- I. Backflow assemblies used to comply shall be tested and approved by a certified backflow assembly tester. A passing test report on the backflow assembly shall be provided by the Contractor to the City before the assembly is used.
- J. The Contractor shall test all pipelines as a single unit, or in sections if approved by the Engineer. The length of the test section in any one test shall not exceed 2,500 feet, the distance between closed valves, or as directed by the Owner's Representative. The test may be made by closing new valves when available, or by placing temporary bulkheads in the pipe and filling the line slowly with water. Unless approved by the Engineer testing shall not be performed against existing system closed valves. The Contractor shall be responsible for ascertaining that all test bulkheads are suitably restrained to resist the thrust of the test pressure without damage to, or movement of, the adjacent pipe. Any unharnessed sleeve-type couplings, expansion joints, or other sliding joints shall be restrained or suitably anchored prior to the test, to avoid movement and damage to piping and equipment. The Contractor shall provide sufficient temporary air release assemblies to allow for evacuation of all entrapped air in each pipe unit or section to be tested. After completion of the tests, such taps shall be permanently plugged. Care shall be taken to see that all air release assemblies are open during filling.

3.3 FIELD TEST PROCEDURE

- A. The pipeline shall be filled at a rate which will not cause any surges or exceed the rate at which the air can be released through the air release assemblies at a reasonable velocity (less than 1 feet per second) and all the air within the pipeline shall be properly purged. At no time shall the maximum velocity of flow exceed 2 feet per second during filling.
- B. The following table relates the filling velocity to an equivalent volume flow rate.

| <u>Nominal Size (inches)</u> | <u>Flow Rate*(gpm)</u> |
|------------------------------|------------------------|
| 6 | 85 |
| 8 | 150 |
| 10 | 240 |
| 12 | 340 |
| 16 | 600 |
| 18 | 750 |
| 24 | 1,300 |

* Filling rate equivalent to pipeline filling velocity of 1 fps for pipe flowing full.

- C. All air shall be purged from the pipeline at each service lateral, air valve, blowoff, and hydrant before checking for leaks or performing pressure or acceptance tests on the system. To

accomplish this, if air valves or hydrants or other outlets are not available, taps shall be made at the high points to expel the air, and these taps shall be tightly plugged afterwards.

- D. After the pipeline has been filled and allowed to sit a minimum of 24 hours (48 hours for mortar-lined pipelines), the pressure in the pipeline shall then be pumped up to the specified test pressure. If a large quantity of water is required to increase the pressure during testing, entrapped air, leakage at joints, or a broken pipe can be suspected. Tests should be discontinued until the source or trouble is identified and corrected.
- E. When the test pressure has been reached, the pumping shall be discontinued until pressure in the line has dropped 30 psi, at which time the pressure shall again be pumped up to the specified test pressure. This procedure shall be repeated until four hours have elapsed from the time the specified test pressure was first applied. At the end of the four-hour period, the pressure shall be pumped up to the test pressure for the leakage test.
- F. **Maximum Leakage:** Leakage shall be considered as the total amount of water pumped into the pipeline during the leakage test period. Maintain the pressure within 5 psi for four hours. Leakage shall not exceed the rate calculated using the following equations:

PVC Pipe maximum allowable leakage for pressure pipelines shall be in accordance with the following formula:

Design Basis: $L = \frac{ND\sqrt{P}}{7,400}$

- Where:
- L = allowable leakage (gallons/hour)
 - N = number of joints in the pipeline test section
 - D = nominal diameter of pipe (inches)
 - P = average test pressure (psi)

Pipe with welded, soldered, threaded and flanged joints and service lateral pipe shall have no leakage.

- K. In the case pipelines fail to pass the prescribed leakage test, the Contractor shall determine the cause of the leakage, shall take corrective measures necessary to repair the leaks, and shall again test the pipelines.
- L. Any noticeable leak shall be stopped and all defective pipe, fittings, valves, and other accessories discovered in consequence of the test shall be removed and replaced by the Contractor. The defective material shall be replaced with sound material, and the test shall be repeated until the total leakage during the leakage test duration does not exceed the rate specified above.

3.4 PIPE PRESSURE TESTING LOG

- A. All pressure tests shall be witnessed by Engineer. Contractor shall keep a pipe pressure testing log to document the pressure testing and Engineer's approval of such.
 - 1. Specific details of the contents and format pipe pressure testing log shall be determined by the Contractor and approved by the Engineer.
 - 2. At a minimum, pipe pressure testing log shall record, on a daily basis for any day when pipe pressure testing is performed:

- a. Test Report Documentation:
 - 1) Test date.
 - 2) Description and identification of piping tested.
 - 3) Test fluid.
 - 4) Test pressure.
 - 5) Remarks, including:
 - a) Leaks (type, location).
 - b) Repair/replacement performed to remedy excessive leakage.
3. Pipe pressure testing log shall be kept on-site. Pipe pressure testing log shall be signed on a daily basis, for any day when pipe pressure testing work is performed, by the supervisor of the Contractor's field crew and by the Engineer.
4. Any piping system which was pressure testing, but which was not recorded in the pipe pressure testing log shall be re-tested at the Engineer's discretion.

3.5 BULKHEAD AND TEST FACILITY REMOVAL

- A. After a satisfactory test, drain the water; remove test bulkheads, temporary valves and piping, and other test facilities; connect to existing facilities; and restore the pipe coatings

3.6 DISINFECTION OF WATERLINES

- A. NOTIFICATIONS: The Contractor shall notify the Owner a minimum of 7 days prior to commencing the disinfection of a pipe segment to arrange for the bacteriological examination to be performed.
- B. Before disinfecting, clean all foreign matter from pipe in accordance with AWWA C651.
- C. CHLORINATION: Hypochlorite shall be used to chlorinate the piping system in accordance with the requirements of AWWA C651. Care shall be taken to prevent chlorine solution in the pipeline being disinfected from flowing back into the pipeline supplying the water. Flush pipelines with potable water until clear of suspended solids and color. Provide hoses, temporary pipes, ditches, and other conduits as needed to dispose of flushing water without damage to adjacent properties. Any one of the following 2 methods as listed in the AWWA standard (brief summary of two methods as modified below) can be used for the initial disinfection; however, if the pipeline fails a bacteriological test, it must be disinfected again by the slug method:
 1. The continuous feed method consists of placing calcium hypochlorite granules in the main during construction, completely filling the main to remove all air pockets, flushing the completed main to remove particulates, and filling the main with potable water. The potable water shall be chlorinated so that after a minimum 24 hour holding period in the main there will be a free chlorine residual of not less than 10 mg/l.
 2. The slug method consists of placing calcium hypochlorite granules in the main during construction, completely filling the main to eliminate all air pockets, flushing the main to remove particulates and slowly flowing through the main a slug of water dosed with chlorine to a concentration of 100 mg/l.
- D. FILLING SYSTEM: Fill entire system with the chlorine solution at a rate not to exceed 1 foot per second. Open all taps and valves and leave open until a strong odor of chlorine is noticeable in the water coming from the outlets, after which close the taps and valves. The chlorine residual

must be verified by field sampling and be above 100 PPM at all points of the disinfected pipeline and at designated services.

- E. VALVE DISINFECTION: During the process of chlorinating the pipelines, all valves and other appurtenances shall be operated while the pipeline is filled with the heavily-chlorinated water
- F. TEST PERIOD: Allow Chlorinated water to remain in the system a minimum of 24 hours, and then thoroughly flush the system. During retention period, operate all valves, stops, and other appurtenances to assist the disinfection. After 24 hours, the minimum chlorine residual shall be verified by field sampling and not be less than 10 PPM at all points of the disinfected pipeline and at designated services.
- G. PRELIMINARY FLUSHING: Flush the new water pipeline and services to remove all dirt and debris. Continue flushing until the receiving water is free of visible dirt and impurities.
- H. POST DISINFECTION FLUSHING: Flush the potable water system to remove all super chlorinated water. Continue flushing until the receiving water is field verified and the chlorine residual is no higher than 3 PPM and is consistent with the City source water.
- I. BACTERIOLOGICAL EXAMINATION: After the system has been thoroughly flushed, the City requires that the new main and services test negative for total coliform and **Escherichia coli**. Two consecutive sets of samples taken at least 24-hours apart shall be collected by the Contractor at locations approved by the City. At any time that a sample test positive, the disinfection process will restart from the beginning.

The Contractor shall sample and perform bacteriological testing for the first two consecutive rounds of sampling, if the samples are all negative for total coliform and Escherichia coli. Contractor shall in writing notify the City 24-hours in advance of any sampling plan changes or results. If the report is unsatisfactory, the Contractor shall repeat the disinfection procedure until satisfactory results are obtained at the contractor's cost. Re-testing shall be performed by the Contractor. Re-testing, laboratory fees, sample collection, water used for flushing, re-filling after failure of a bacteriological test and applicable inspections fees shall be borne by the Contractor.

The Contractor shall notify the City in writing a minimum of 7-days prior to commencing the disinfection of any pipe segment.

- J. TESTING DOCUMENTATION: In order to pass the disinfection process, the Contractor shall submit a written report verifying the initial chlorine dose of above 100 PPM, the chlorine residual after the 24-hour test period of above 10 PPM, and the chlorine residual for post disinfection flushing. The Contractor will be responsible for the bacteriological results for the two sets of consecutive samples. The Contractor shall be responsible for providing all required reports conducted in order to pass the disinfection process.

Failure in following any portion of this section and American Water Works Standards C651-05, is in direct violation of the State of California Code of Regulations Article 5. Disinfection Requirements §64580. Disinfection of New or Repaired Mains.

- K. DISPOSAL OF CHLORINATED WATER: Dispose of chlorinated water in accordance with local, state and federal regulations so that no water having chlorine residual reaches a surface stream. Contractor shall submit a detail water handing plan for owner review prior to any flushing operation. There shall be no planned or unplanned discharges to City Storm Drainage Systems or

Creeks. See the appendix of AWWA C651, C652, C653, and C654 for acceptable neutralization methods.

- L. FINAL FLUSHING: After completion of successful disinfection process and connection to existing system, flush entire system to achieve velocities on the order of 3 feet per second. Continue flushing until water is free of dirt and impurities. The Contractor shall apply a reducing agent to the water to thoroughly neutralize the chlorine residual remaining in the water prior to disposal of the water. The Contractor will be solely responsible for the proper disposal of all water used for the disinfection process in accordance with City of Brentwood requirements.

3.7 FIRE SERVICES AND FIRE HYDRANT TESTING

- A. Fire flow testing of fire service lines and fire hydrant laterals will be tested by the Contractor and approved by the Engineer prior to acceptance of the pressure pipeline installation.

END OF SECTION 33 13 00