



CITY COUNCIL AGENDA REPORT

Meeting Date: June 6, 2019

From: Jerry Flanagan, Senior Civil Engineer (Utilities)

Via: Randy Breault, Director of Public Works/City Engineer

Subject: Fire Main Replacement Project - Phase 2 (Project No. 9F08)

Community Goal/Result

Safe Community

Purpose

To provide fire flow capacity per the 2016 California Fire Code (CFC) criteria within the benefitting neighborhoods; this action is consistent with the community's value of public safety.

Recommendation

Approve the plans and specifications and authorize publication of the Notice Inviting Bids for the Fire Main Replacement Project - Phase 2 (Project No. 9F08).

Background

The July 2003 Water Master Plan recommended a prioritized capital improvement program to improve the potable water system's capacity to supply fire flows to specific residential areas of the City. The project identified to resolve these issues was subsequently confirmed in the 2017 Water Master Plan update.

Phase 1 of the "Project" was awarded by Council on June 21, 2018 and is substantially complete. Phase 1 included the replacement of approximately 1,550 linear feet of 6-inch water main with 8 and 10-inch pipe along portions of Thomas Avenue, San Bruno Avenue, Annis Road, Humboldt Road and Sierra Point Road; and the installation of a new pressure reducing valve (PRV) at the intersection of Annis Road and San Bruno Avenue.

Phase 2 of the "Project" includes the replacement of approximately 5,120 linear feet of 6-inch water main with 8 and 10-inch pipe along portions of Kings Road, Margaret Avenue and Paul Avenue.

City Council authorized engineering design services by EKI Environment & Water, Inc. (EKI) for this project on July 14, 2016. EKI has developed the project plans and specifications for Phase 2 and those documents are attached to this staff report.

For California Environmental Quality Act (CEQA) compliance, the project was determined to be Categorical Exempt, and a Notice of Exemption was submitted on

May 12, 2017. No further action on this environmental determination is required by Council.

Discussion

A significant construction footprint on the narrow streets within the project limits will necessitate the full-width roadway shutdown within sectioned project limits at least three times; for installation of the temporary bypass water line, for installation of the new waterline, and for removal of the temporary line and final street repairs. The contractor will be required to follow specific construction sequencing including: (1) the contractor is required to complete either the Western Section or Eastern Section of the project first before work on the other section will be allowed to commence; (2) the contractor is required to construct each section per the phasing shown on plan sheets TP-1 through TP-4, including installing the complete temporary water service bypass system prior to starting work to replace the main in each phase; (3) the maximum contiguous length of full-width road closure shall not exceed 500 feet on any given day and full access must be restored at the end of each work day; (4) the contractor is required to provide 72-hour advance written notice to affected residents prior to restricting access to driveways and parking; (5) the contractor is required to provide 72-hour advance written notice prior to disconnecting water service.

Fiscal Impact

On April 16, 2015, the City Council adopted Resolution No. 2015-11 authorizing the issuance and sale of \$5M of revenue bonds to finance improvements to the city's public utilities, including the Annis Road PRV Station and Fire Main Replacement Project

The current engineer's estimate for the Fire Main Replacement Project - Phase 2 is \$3,855,000.

Measure of Success

Opening of the project to competitive bids that will enable the City to select a qualified contractor for the construction work.

Attachments

1. Plans and Specifications for Construction of the Fire Main Replacement Project Phase 2



Jerry Flanagan, Senior Civil Engineer (Utilities)

Randy Breault

Randy Breault, Director of Public Works/City Engineer

Clay L. Holstine

Clay Holstine, City Manager

A copy of supporting materials provided to the City Manager and Council Persons in connection with this agenda item is available for public inspection and copying at 50 Park Place, City of Brisbane Department of Public Works, Brisbane, CA, 94005, Telephone: (415) 508-2130.

CITY OF BRISBANE, CALIFORNIA



SPECIFICATIONS

For Construction Of:

Fire Main Replacement Project – Phase 2

JOB NO. 9F08

Mayor: Madison Davis
Mayor Pro Tempore: Terry O' Connell
Council Member: W. Clarke Conway
Council Member: Clifford R. Lentz
Council Member: Karen Cunningham

City Manager: Clayton L. Holstine
Director of Public Works/City Engineer: Randy L. Breault

DATE: 05/21/2019

Prepared by:

Jonathan P. N. Sutter

Date signed: 5/21/19

Nelson J. Schlater

Date signed: 5/21/19

EKI Environment & Water, Inc.
577 Airport Drive, Suite 500
Burlingame, CA 94010

CITY OF BRISBANE
 FIRE MAIN REPLACEMENT PROJECT – PHASE 2

TABLE OF CONTENTS

NOTICE INVITING BIDS 1

INSTRUCTIONS TO BIDDERS 4

PROPOSAL 9

BIDDER’S BOND 11

BID SCHEDULE 12

INFORMATION REQUIRED OF THE BIDDER 26

NONCOLLUSION AFFIDAVIT 30

AGREEMENT 32

BOND FOR FAITHFUL PERFORMANCE 34

PAYMENT BOND 36

GENERAL CONDITIONS 38

 GC-01. Definitions. 38

 GC-02. Contract Documents Complementary. 39

 GC-03. Time and Order of Work. 39

 GC-04. Assignment Forbidden. 39

 GC-05. Subcontracts. 40

 GC-06. Notice to Discontinue Work Under Contract. 40

 GC-07. Termination of Contract. 41

 GC-08. Legal Address of Contractor. 42

 GC-09. Additional Surety. 42

 GC-10. Authority of the Engineer. 42

 GC-11. Changes. 43

 GC-12. Extra Work. 43

 GC-13. Suspension of Work - Extension of Time. 44

 GC-14. Delays - No Extra Compensation. 45

 GC-15. Right-of-Way. 45

 GC-16. Obligations of Contractor. 45

 GC-17. Personal Attention. 46

 GC-18. Protests. 46

 GC-19. Claims. 46

 GC-20. Contractor's Responsibilities. 47

 GC-21. Contractor to Furnish Information. 48

 GC-22. Specifications. 48

 GC-23. Materials, Workmanship and Tests. 48

 GC-24. Inspection. 48

 GC-25. Examination of Work. 49

GC-26.	Defective Work or Materials.....	49
GC-27.	Right of Property in Materials.....	50
GC-28.	Title to Materials Found on the Work.....	50
GC-29.	Access to Work.....	50
GC-30.	Damages - Failure to Complete on Time.....	50
GC-31.	Patents and Copyrights.	51
GC-32.	No Payment for Temporary Work.....	51
GC-33.	Partial Estimates.....	51
GC-34.	Partial Estimates May be Withheld.....	52
GC-35.	Partial Payments.	52
GC-36.	Final Estimate and Payment.....	53
GC-37.	False or Erroneous Certificates.	54
GC-38.	Acceptance of Work not a Waiver.	54
GC-39.	Final Payment Terminates Liability.	54
GC-40.	Payment Only in Accordance with Contract.	54
GC-41.	Moneys May be Retained.	55
GC-42.	Unpaid Claims.	55
GC-43.	Cost Statement.....	55
GC-44.	Laws and Regulations.....	55
GC-45.	Payment of Wages.	56
GC-46.	Eight-Hour Law.....	56
GC-47.	Overtime.	56
GC-48.	Prevailing Rates of Wages and Department of Industrial Relations Requirements.	57
GC-49.	Interference with Fire Hydrants, Highways and Fences.	57
GC-50.	Other Rights-of-Way and Structures.....	57
GC-51.	Public Safety.....	58
GC-52.	Trespass.....	58
GC-53.	Character of Workmen.....	58
GC-54.	Employment of Labor.....	58
GC-57.	Antitrust Claims.....	58
GC-58.	Employment Eligibility.	59
SPECIAL CONDITIONS.....		60
SC-01.	Definitions.....	60
SC-02.	Contract Documents.	60
SC-03.	Contract Plans and Specifications.	62
SC-04.	Preconstruction Meeting.	62
SC-05.	Construction Schedule.	63
SC-06.	Emergency Calls.	63
SC-07.	Services During An Emergency.....	64
SC-08.	Claims.	64
SC-09.	Bidder’s Breakdown Of Lump Sum Bid.	65
SC-10.	Working Hours.	65
SC-11.	Shop Drawings And Samples.....	65
SC-12.	Maintenance And Guaranty.....	68
SC-13.	Permits And Licenses To Be Obtained By The Contractor.	69
SC-14.	Work Area Limits, Site Access, And Material Storage.....	69
SC-15.	Temporary Power.....	69

SC-16.	Construction Lighting.....	69
SC-17.	Dust And Smoke Control.....	69
SC-18.	Noise Criteria.....	70
SC-19.	Sanitation.....	70
SC-20.	Accumulation of Costs for Extra Work.....	70
SC-21.	Overtime Inspection.....	70
SC-22.	Lines, Grades, And Measurements.....	71
SC-23.	Hazardous Materials.....	71
SC-24.	Coordination And Cooperation With Others.....	72
SC-25.	Protection And Restoration Of Existing Improvements.....	73
SC-26.	Isolation Of Dissimilar Metals.....	73
SC-27.	Construction Water.....	73
DIVISION 1 - GENERAL REQUIREMENTS.....		74
SECTION 01100 - CONSTRUCTION CONSTRAINTS.....		74
SECTION 01270 - MEASUREMENT FOR PAYMENT.....		76
SECTION 01312 - PROJECT MEETINGS.....		83
SECTION 01329 - SAFETY AND TRAFFIC CONTROL.....		84
SECTION 01355 - STORM WATER POLLUTION PREVENTION.....		87
SECTION 01600 - PRODUCT REQUIREMENTS.....		91
SECTION 01770 - PROJECT CLOSEOUT.....		94
DIVISION 2 - SITE CONSTRUCTION.....		95
SECTION 02318 - TRENCHING.....		95
SECTION 02722 - ASPHALT PAVING CONSTRUCTION.....		102
SECTION 02762 - PAVEMENT MARKINGS.....		108
DIVISION 31 – EARTHWORK		
SECTION 31 2319 – DEWATERING		
DIVISION 32 – EXTERIOR IMPROVEMENTS		
SECTION 32 1612 – CURBS, GUTTERS, AND SIDEWALKS		
DIVISION 33 – UTILITIES		
SECTION 33 1100 – PUBLIC WATER UTILITIES DISTRIBUTION PIPING		
SECTION 33 1150 – TEMPORARY BYPASS WATER DISTRIBUTION PIPING		
SECTION 33 1213 – WATER SERVICE CONNECTIONS		
SECTION 33 1216 – WATER UTILITY DISTRUBUTION VALVES		
SECTION 33 1219 – WATER UTILITY DISTRIBUTION FIRE HYDRANTS		
SECTION 33 1300 – DISINFECTION OF WATER UTILITIES		

ATTACHMENTS

- A. KEYS TO SOIL CLASSIFICATION, ROCK QUALITY DESCRIPTIONS, AND LOGS OF DRILL HOLES DH-4 THROUGH DH-6 AND DH-8 THROUGH DH-12, AND SITE PLAN (APPENDIX A AND FIGURE 1 FROM THE *GEOTECHNICAL INVESTIGATION* PREPARED BY GEO-LOGIC ASSOCIATES, 17 FEBRUARY 2017).

**CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS
BRISBANE, CALIFORNIA**

NOTICE INVITING BIDS

For the construction of **Fire Main Replacement Project – Phase 2 (“Project”)**, located in the City of Brisbane, San Mateo County, California.

N-1. Sealed proposals for constructing said portions of the Project, in accordance with the Owner's project specifications therefore numbered 9F08 will be received by the City of Brisbane Department of Public Works at its office, 50 Park Place, Brisbane, California 94005-1310, until **2:00 p.m., July 8, 2019** at which time they will be publicly opened and read.

N-2. The work to be performed under this contract shall consist of, in general, mobilization; providing traffic control; providing construction area signs; daily cleanup; testing; safety; water main replacement using open trench construction methods; installation of a temporary bypass water system and temporary service connections, water service piping replacement; service connections to the onsite water meters; fire hydrant assemblies installation or replacement; asphalt paving restoration; striping and marking restoration; utility adjustments; cleaning the site at the end of the job; furnishing of all labor, materials, tools, equipment, mechanical workmanship, transportation and services necessary in order to perform a complete job in all aspects as indicated on the plans, and by reference made a part hereof, as specified herein, and as directed by the Engineer at locations shown on the Drawings within the City of Brisbane. Work shall be completed for the Base Bid within 240 calendar days from the effective date of the Notice to Proceed. If the City elects to award either Additives, an additional 30 calendar days will be added for Additive 1 and an additional 180 calendar days will be added for Additive 2.

N-3. Each proposal must be accompanied by a certified or cashier's check or by a corporate surety bond on form furnished by the Owner, as a guaranty that the bidder will, if an award is made to him or her in accordance with the terms of his or her proposal, promptly secure workers' compensation insurance, execute a contract in the required form and furnish satisfactory bonds for the faithful performance of the contract and for the payment of claims of material, men and laborers thereunder and insurance as required. Said check or bidder's bond shall be in an amount not less than ten percent (10%) of the estimated total contract payments for the maximum amount of work which may be awarded the bidder in accordance with the terms of his or her proposal, computed based on the sum of the “Total Amount of Base Bid Items”, “Total Amount of the Additive 1 Bid Items”, and “Total Amount of the Additive 2 Bid Items”, as stated in the Bid Schedule. The faithful performance bond and payment bond shall be not less than one-hundred percent (100%) of the estimated total amount of the payments to be made to the Contractor under the contract. The work shall be guaranteed for a period of two years after completion, secured with a warranty bond in the amount of one hundred percent (100%) of the amount to be paid under the contract.

N-4. Pursuant to applicable provisions of the Labor Code of the State of California, all work performed is subject to compliance monitoring and enforcement by the Department of Industrial Relations. The City Council of the Owner has ascertained the general prevailing rates of per diem wages and the general prevailing rates for legal holiday and overtime work applicable to the work contemplated under the contract. A schedule of said rates is on file at City Hall. Said schedule of rates is incorporated herein by reference and made a part hereof

as if it were fully set forth herein. The successful bidder, and his or her subcontractors, will be required to pay not less than the wage rates set forth in said schedule. The successful bidder will be required to post prevailing wage job site notices, as prescribed by state law. Except as specifically set forth in Labor Code section 1771.1(a), no bidder or subcontractor may be listed on a bid proposal or awarded a contract or subcontract for public work on a public works project unless currently registered and qualified to perform public work as required by section 1725.5 of the Labor Code. No proposal shall be accepted without proof of the bidder's and all subcontractors' current registration to perform public work under section 1725.5. The bidder shall furnish in his or her proposal, the Department of Industrial Relations registration number and registration expiration date for the bidder and each subcontractor included in the proposal.

N-5. The Contract Documents shall consist of this Notice Inviting Bids, together with the Instructions to Bidders, the Proposal with the Bid Schedule, the Agreement, the Bonds, the General Conditions, the Special Conditions, the Detail Specifications, and the Project Drawings, all which documents are on file in the office of the Owner and are hereby referred to and made a part of this notice. The contract documents may be inspected in the office of the Owner at 50 Park Place, Brisbane, California 94005-1310, (415) 508-2130. Complete sets of said contract documents may be purchased through the City's website at www.brisbaneca.org/bids-and-solicitations ; click on "List of Construction Projects Out to Bid", under the Public Works heading, center of the page.

N-6. For a proposal to qualify for consideration in making an award, the bidder shall have had not less than three (3) years' experience in the successful completion of work comparable to or greater in magnitude and complexity to the work herein contemplated. An Engineering Contractor's Class A license shall be held by the bidder at the time of bidding as a prerequisite for consideration in making an award. The bidder is required to be skilled and regularly engaged in the work required in the Specifications.

N-7. Fabricators and manufacturers of materials and equipment to be supplied are required to have successfully and regularly provided similar products of comparable magnitude, which have been in satisfactory service for five (5) years or more. Manufacturers of equipment to be supplied shall have a local service representative and local stocks of spare parts.

N-8. The Owner reserves the right to reject any and all bids, waive minor informalities not affecting substantial rights and delay award of contract for a period of up to sixty (60) calendar days after the bid opening date.

N-9. A mandatory prebid meeting will be held at 10:00 a.m. on June 19, 2019. Bids for this project will only be accepted from qualified contractors who have a representative in attendance at the prebid meeting. This meeting will convene at the City of Brisbane office located at 50 Park Place, Brisbane, California 94005-1310.

CITY OF BRISBANE

By /S/ Randy Breault, P.E.

Director of Public Works/City Engineer

Dated: May 21, 2019

For information regarding this project, contact:

Jerry Flanagan, City of Brisbane Project Manager, (415) 508-2137
Jonathan Sutter, Engineer's Project Manager, (650) 292-9099

CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS

INSTRUCTIONS TO BIDDERS

I-1. Form of Proposal and Signature.

a. The proposal shall be submitted on the form provided by the Owner and shall be enclosed in a sealed envelope marked and addressed as hereinafter directed.

b. The bidder shall state the unit or lump sum prices for which the bidder proposes to supply the labor, materials, supplies, or machinery, and perform the work required by the specifications. If a unit price and the total amount named by a bidder for any items are not in agreement, the unit price times the estimated quantity will be considered as representing the bidder's intention and the totals will be corrected to conform thereto. Similarly, if a discrepancy exists between item totals and schedule totals, the item totals will be considered as representing the bidder's intention and the totals will be corrected to conform thereto. The Proposal Forms provided shall not be separated from the balance of the Proposal nor the bound contract documents.

c. If the proposal is made by an individual it shall be signed by the individual and the individual's full name and address shall be given; if it is made by a partnership firm, it shall be signed by a partner of the firm and the partnership name and the name and address of each partner shall be given; and if it is made by a corporation, the name of the corporation and its address shall be given and the proposal shall be signed by a duly authorized officer or officers of the corporation and attested by the corporate seal. No oral, telegraphic, or telephonic proposals or modifications will be considered.

I-2. Preparation of the Proposal.

a. Blank spaces in the proposal shall be properly filled. The phraseology of the proposal must not be changed and no additions shall be made to the items mentioned therein. Unauthorized conditions, limitations, or provisos attached to a proposal will render it informal and may cause its rejection. Alterations by erasure or interlineation must be explained or noted to the proposal over the signature of the bidder. Alternative proposals will not be considered, unless specifically requested.

b. A bidder may withdraw his or her proposal before the hour fixed for opening bids, without prejudice to himself or herself by submitting a written request to the Owner for its withdrawal, and his or her proposal will be returned to him or her unopened when reached in the procedure of opening bids.

c. No proposal may be withdrawn after the hour fixed for opening bids without rendering the accompanying certified or cashier's check or bidder's bond subject to forfeiture as liquidated damages in like manner as in the case of failure to execute contract after award, as hereinafter provided.

d. No proposal received after the time named or at any place other than the place stated in the Notice Inviting Bids will be considered. All bids will be opened and declared publicly. Bidders, their representatives and other interested parties are invited to be

present at the opening. The Owner reserves the right to waive any informality in any bid, to reject any or all proposals, to reject one part of a proposal and accept the other, except to the extent that bids are qualified by specific limitations and to make award to the lowest responsible bidder as the interest of the Owner may require. Where bonds are required, the bidder shall name in his or her proposal the surety or sureties which have agreed to furnish said bonds.

e. Bidders are required to execute the Noncollusion Affidavit in the form attached as part of their bids.

I-3. Lowest Responsible Bidder.

a. Bidders shall submit a bid based on the sum of the “Total Amount of Base Bid Items”, “Total Amount of the Additive 1 Bid Items”, and “Total Amount of the Additive 2 Bid Items” as described in the Contract Documents and as provided for in the Bid Schedule. In comparison of the bids, the determination of the lowest bidder will be based on the sum of the “Total Amount of Base Bid Items”, “Total Amount of the Additive 1 Bid Items”, and “Total Amount of the Additive 2 Bid Items”. After notice of award, the owner will award the Base Bid Items and may elect to award either additive at the unit costs proposed by the lowest responsible bidder.

b. In selecting the lowest responsible bidder, consideration will be given not only to the bid price, but also to the general competency of the bidder for the performance of the work covered by the proposal. To receive favorable consideration, a bidder will be required to present evidence that they have successfully performed similar work of comparable magnitude as requested in the Information Required of Bidder section and may be required to submit other evidence satisfactory to the City that he or she, or his or her associates, are personally competent to manage the proposed undertaking and to carry it forward to a successful conclusion. Professional integrity and honesty of purpose shall be essential requirements. A showing of adequate financial resources may be required, but will not alone determine whether a bidder is competent to undertake the proposed work. The Owner shall have absolute discretion as to the evaluation of past work performance of any bidder, and the Owner's decision in regards thereto shall be deemed correct and shall be conclusive and binding.

I-4. Equalizing Factors. Wherever applicable, equalizing elements or factors not specifically mentioned or provided for herein, such as interest during construction, costs of transportation, inspection (including salaries and travel and subsistence expenses), installation, and operation, or any other factor or element in addition to the Owner will be taken into consideration in comparing bids for award of contract.

I-5. Local Conditions.

a. Bidders shall read the specifications and make their own estimates of the existing facilities and the difficulties which will attend the execution of the work called for by the proposed contract, including local conditions, uncertainty of weather, and all other contingencies. Bidders shall satisfy themselves by personal examination of the location of the proposed work, and by such other means as they may choose as to actual conditions and requirements. Information derived from the specifications, details, exhibits, or from the Engineer shall not relieve the Bidder of this responsibility, and the interpretation of and data disclosed by preliminary investigations is not guaranteed by the Owner.

b. The quantities of work or material stated in the unit-price items of the Bid Schedule are supplied only to give an indication of the general scope of the work; the Owner does not expressly or by implication agree that the actual amount of work or material will correspond therewith, but reserves the right to increase the amount of any unit-price item of the work by an amount up to and including twenty-five percent (25%) of any bid item(s), or to omit portions, or all of such work as may be deemed necessary or expedient by the Engineer without a change in the unit price.

I-6. Execution of Contract.

a. A bidder to whom award is made shall execute a written contract with the Owner on the form of agreement attached hereto, secure the payment of workers' compensation, and furnish good and approved bonds and insurance as required in the following paragraphs, all within fifteen (15) calendar days from the date of mailing of a notice from the Owner to the bidder, according to the address given by him or her, of the acceptance of his or her proposal, or such additional time as may be allowed by the Owner.

b. At the option of the Owner, additional time to furnish said documents may be allowed with the provision that such additional time will be counted toward the time stipulated to perform the work under subsection III entitled "Time of Completion", in Section 01100 "Construction Constraints" of the Detail Specifications.

c. If a bidder to whom award is made fails or refuses to enter into contract as herein provided, or to conform to any of the stipulated requirements in connection therewith, the money represented by his or her check or bidder's bond shall become the property of the Owner as provided in the section hereof entitled "Bonds," the award will be annulled, and an award may be made to the bidder whose proposal is next most acceptable to the Owner and such bidder shall fulfill every stipulation embraced herein as if he or she were the party to whom the first award was made.

d. A corporation to which an award is made may be required before the contract is finally executed, to furnish evidence of its corporate existence, of its right to do business in California, and of the authority of the officer signing the contract and bonds for the corporation to so sign.

I-7. Bonds. Each bidder shall furnish an approved check or bidder's bond and the bidder to whom the contract is awarded shall furnish certain other bonds all as stipulated herein. Contract bonds shall be secured at no cost to the Owner, from a surety company authorized to write such bonds in the State of California and shall be subject to the approval and acceptance of the Owner. Failure to submit contract bonds from a surety company which meets these requirements shall be due cause to reject the bidder's proposal.

a. Bid Bond or Check.

(1) Each bidder shall submit with his or her proposal an unconditional certified or cashier's check drawn on a solvent state or national bank, or a bidder's bond with a responsible corporate surety, on the form furnished by, or approved by, the Owner, in the sum stated in the Notice Inviting Bids, payable to the City of Brisbane, as guaranty that the bidder will, if an award is made to him or her in accordance with the terms of proposal, promptly execute a contract in the required form and furnish satisfactory bonds and insurance.

(2) If a bidder to whom an award is made fails or refuses to execute the contract, secure the payment of workers' compensation, if required, and furnish the required bonds and insurance all within the time stated in the section hereof entitled "Execution of Contract," the moneys represented by said check or bidder's bond shall become and remain the property of the Owner and shall be subject to deposit with other moneys belonging to the Owner, the amount thereof being agreed to by the bidder as liquidated damages due to the Owner on account of the delay in the execution of the contract, bonds and insurance and in the performance of work thereunder, resulting from such failure or refusal. The check of a bidder to whom contract has been awarded will be returned to him or her after all the acts, for the performance of which said check is required, have been fully performed. Checks of other bidders will be returned as soon as their proposals are rejected or in any event at the expiration of sixty (60) calendar days from the date of opening bids. The liability of the Owner in connection with the said checks shall be limited to the return of the checks as herein provided.

b. Faithful Performance Bond. A bidder to whom contract is awarded shall, within the time mentioned in the section hereof entitled "Execution of Contract," furnish a bond conditioned upon the faithful performance of the said bidder of all covenants and stipulations in the contract. Said bond shall be on the form provided by the Owner and in an amount, not less than one hundred percent (100%) of the estimated aggregate payments to be made under the contract.

c. Payment Bond. Within the time mentioned in the section hereof entitled "Execution of Contract," a bidder to whom contract is awarded for the improvement, erection, or construction of any building, road, bridge or other structure, excavation, or other mechanical work shall also furnish a payment bond on the form provided by the Owner and shall be in a sum not less than one hundred percent (100%) of the total amount payable by the terms of the Contract. Said bond shall also be in accordance with provisions of Section 3248 of the California Civil Code.

d. Warranty Bond. After completion and acceptance of the work and prior to the filing of the notice of completion as mentioned in Section GC-36, the bidder to whom the contract is awarded shall deliver to the Owner a surety bond to guaranty the work for the period specified in the Special Conditions of these specifications. Said bond shall be in the amount of at least one hundred percent of the amount to be paid under the contract. Instead of providing such bond, the bidder to whom the contract is awarded may, at his or her option, provide that the faithful performance bond furnished under the contract shall remain in full force and effect for said purposes in the amount of not less than 100 percent of the amount to be paid under the contract.

I-8. Workers' Compensation Insurance. Before the contract is executed on behalf of the Owner, a bidder to whom contract has been awarded shall furnish satisfactory evidence that he or she has secured in the manner required by law the payment of worker's compensation provided for in the California Labor Code and all amendments thereto. The successful bidder shall execute a certificate regarding workers' compensation on a form approved by the Owner. This requirement does not apply to contracts for furnishing materials and equipment only.

I-9. Liability Insurance.

a. Prior to execution of the contract by the Owner, the Contractor shall furnish an insurance policy or a signed and acknowledged certificate thereof filed with and subject to the approval of the Owner, naming the Contractor, the Owner, the Engineer and respective representatives as being insured and protected by public liability and property damage insurance with insurance carriers satisfactory to the Owner against loss from liability imposed by law from damage on account of bodily injury, including death resulting therefrom, suffered or alleged to have been suffered by any person or persons, resulting directly or indirectly from the performance or execution of this contract or any subcontract thereunder, and also to protect said Contractor, the Owner and Engineer against loss from liability imposed by law for damage to any property, caused directly or indirectly by the performance or execution of this contract or any subcontract thereunder, which insurance shall cover accidents arising out of the use and operation of automobiles, trucks and all other equipment used in the execution of the contract. Insurance coverage shall include Owner furnished equipment that has been temporarily placed in the custody of the Contractor.

b. All liability insurance shall be maintained by the Contractor in full force and effect during the entire period of performance under the contract and the amount of coverage of said insurance shall be not less than the following:

Combined Single Limit: \$ 1,000,000

Said certificate shall also provide that said policy or policies shall not be amended or canceled without giving of at least 30 days prior written notice to Owner. Evidence of renewals of liability insurance shall be furnished to the Owner prior to expiration of current policies.

I-10. Address and Marking of Proposal. The envelope enclosing the proposal shall be sealed and addressed to the Public Works Director/City Engineer, City of Brisbane, 50 Park Place, Brisbane, California 94005-1310. The envelope shall be plainly marked in the upper left-hand corner with the name and address of the bidder and bear the words "Proposal for," followed by the name of the work and the date and hour of opening bids. The certified or cashier's check or bidder's bond shall be enclosed in the same envelope with the proposal.

A bid will not be accepted after the date and time designated in the Notice Inviting Bids. The "official" time will be kept and determined by the City. It is the sole responsibility of the bidder to see that his or her bid is delivered and received in proper time. Any bid received after said designated date and time shall be returned to the bidder unopened.

CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS

PROPOSAL

FOR THE CONSTRUCTION OF

FIRE MAIN REPLACEMENT PROJECT – PHASE 2

Proposals received until 2:00 p.m., **July 8, 2019.**

To the City Council of the City of Brisbane:

The undersigned hereby declares, as bidder, that the only persons or parties interested in this proposal as principals are those named herein, that no Council Member or any other officer or employee of the City in any manner interested directly or indirectly in this proposal or in the profits to be derived from the contract proposed to be taken; that this bid is made without any connection with any other person or persons making a bid for the same purpose; that the bid in all respect is fair and without collusion or fraud; that he or she has read the Notice Inviting Bids and the Instructions to Bidders herein attached and agrees to all the stipulations contained therein; that he or she has examined the site of the work, the form of Agreement approved by the City, and the specifications, details and exhibits therein referred to, and he or she proposes and agrees that if his or her bid as submitted in the attached Bid Schedule be accepted, he or she will contract in the form so approved to perform all the work mentioned in said approved form of Agreement and the specifications and to complete the same within the time stipulated therein; and that he or she will accept in full payment therefore the prices named in said Bid Schedule. Said prices are to include and cover the furnishing of all materials, the performing of all the labor requisite or proper, and the providing of all necessary machinery, tools, apparatus, and other means of construction; and the performance and completion of all the work in the manner set forth, described and shown in the specifications or on the details and exhibits for the work in the form of Agreement.

The bidder further agrees that, upon receipt of written notice of the acceptance of this proposal within sixty (60) calendar days after the date of opening of the bids, bidder will execute the contract in accordance with the proposal as accepted, secure the payment of workers' compensation, furnish the required bonds and insurance, all within fifteen (15) calendar days from date of mailing of said notice of acceptance to him or her at his or her address as given below, or within such additional time as may be allowed by the Owner and that upon his or her failure or refusal to do so within said time, then the certified or cashier's check or bidder's bond, accompanying this bid, and the money payable thereon, shall be forfeited to and become the property of the City of Brisbane as liquidated damages for such failure or refusal; provided that if said bidder shall execute the contract, secure the payment of workers' compensation, and furnish the required bonds and insurance within the aforesaid time his or her certified or cashier's check, if furnished, shall be returned to him or her within three (3) working days thereafter, or the bid bond, if furnished, shall become void.

The undersigned bidder acknowledges receipt of the following addenda:

Addendum No.	Description	Date Received

The bidder declares that the surety or sureties named in the space provided below have agreed to furnish bonds in the form and aggregate amounts set forth in the accompanying Notice Inviting Bids and the Instructions to Bidders, in the event contract is awarded on the basis of this proposal.

The bidder declares that the license listed below is his or hers, is current and valid, and is in a classification appropriate to the work to be undertaken.

Contractor's License No. _____
 License Expiration Date _____

The bidder declares that he or she is registered with the Department of Industrial Relations to perform public work, and that the registration list below is his or hers, and is current and valid.

DIR Registration No. _____

Registration Expiration Date _____

The bidder declares under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Dated: _____

By (Bidder): _____

Title: _____

Attest By: _____

(CORPORATE SEAL)

Title: _____

Surety or Sureties: _____

BIDDER'S BOND

(Not necessary when certified or cashier's check accompanies bid)

We, the undersigned principal and surety, acknowledge ourselves jointly and severally bound to the City of Brisbane in the sum of:

_____ Dollars
Words

(\$ _____) to be paid to said City if the bid of the undersigned principal for construction of the Fire Main Replacement Project – Phase 2, shall be accepted and the proposed contract awarded to said principal, and the said principal shall fail to execute the contract and furnish the bonds required in connection therewith; otherwise, this obligation to be void.

WITNESS our hands this _____ day of _____, 20____

(SEAL) By (Principal)_____

Title _____

Surety _____

(SEAL) Attest By_____

Title _____

Address_____

Telephone No. _____

Fire Main Replacement Project – Phase 2

BID SCHEDULE

ITEM NO.	ITEM DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL COST
BASE BID ITEMS					
1	Mobilization , in accordance with the contract documents @ _____ _____ Dollars	1	LS	\$ _____	\$ _____
2	Traffic Control , in accordance with the contract documents @ _____ _____ Dollars	1	LS	\$ _____	\$ _____
3	Storm Water Pollution Prevention , in accordance with the contract documents @ _____ _____ Dollars	1	LS	\$ _____	\$ _____
4	Sheeting, Shoring, and Bracing , in accordance with the contract documents @ _____ _____ Dollars	1	LS	\$ _____	\$ _____
5	Site Investigation and Potholing , in accordance with the contract documents @ _____ _____ Dollars	1	LS	\$ _____	\$ _____
6	Water Main 10-inch DIP (Replace in Existing Trench) , in accordance with the contract documents @ _____ _____ Dollars	1,690	LF	\$ _____	\$ _____
7	Water Main 8-inch DIP (Install in New Trench) , in accordance with the contract documents @ _____ _____ Dollars	705	LF	\$ _____	\$ _____

ITEM NO.	ITEM DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL COST
8	Water Main 10-inch DIP (Install in New Trench), in accordance with the contract documents @ _____ _____ Dollars	75	LF	\$ _____	\$ _____
9	6" Plug or Cap, in accordance with the contract documents @ _____ _____ Dollars	1	EA	\$ _____	\$ _____
10	8" Plug or Cap, in accordance with the contract documents @ _____ _____ Dollars	1	EA	\$ _____	\$ _____
11	Fitting 10" x 10" x 6" Tee & Thrust Block, in accordance with the contract documents @ _____ _____ Dollars	1	EA	\$ _____	\$ _____
12	Fitting 10" x 10" x 8" Tee & Thrust Block, in accordance with the contract documents @ _____ _____ Dollars	1	EA	\$ _____	\$ _____
13	Fitting 10" x 10" x 10" Tee & Thrust Block, in accordance with the contract documents @ _____ _____ Dollars	1	EA	\$ _____	\$ _____
14	Fitting 8" 11.25 Degree Bend & Thrust Block, in accordance with the contract documents @ _____ _____ Dollars	3	EA	\$ _____	\$ _____
15	Fitting 8" 22.5 Degree Bend & Thrust Block, in accordance with the contract documents @ _____ _____ Dollars	6	EA	\$ _____	\$ _____

ITEM NO.	ITEM DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL COST
16	Fitting 8" 45 Degree Bend & Thrust Block , in accordance with the contract documents @ <hr/> <hr/> Dollars	2	EA	\$ _____	\$ _____
17	Fitting 10" 11.25 Degree Bend & Thrust Block , in accordance with the contract documents @ <hr/> <hr/> Dollars	5	EA	\$ _____	\$ _____
18	Fitting 10" 22.5 Degree Bend & Thrust Block , in accordance with the contract documents @ <hr/> <hr/> Dollars	17	EA	\$ _____	\$ _____
19	Fitting 10" 45 Degree Bend & Thrust Block , in accordance with the contract documents @ <hr/> <hr/> Dollars	8	EA	\$ _____	\$ _____
20	Fitting 10" x 6" Reducer & Thrust Block , in accordance with the contract documents @ <hr/> <hr/> Dollars	3	EA	\$ _____	\$ _____
21	6" Gate Valve , in accordance with the contract documents @ <hr/> <hr/> Dollars	1	EA	\$ _____	\$ _____
22	8" Gate Valve , in accordance with the contract documents @ <hr/> <hr/> Dollars	3	EA	\$ _____	\$ _____
23	10" Gate Valve , in accordance with the contract documents @ <hr/> <hr/> Dollars	5	EA	\$ _____	\$ _____

ITEM NO.	ITEM DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL COST
24	Fire Hydrant Assembly - Hot Connection (incl. Tapping Sleeve, Tapping Valve, & Thrust Blocks) , in accordance with the contract documents @ _____ _____ Dollars	1	EA	\$ _____	\$ _____
25	Fire Hydrant Assembly - Inactive Line (incl. Tee/Bend, Valve, & Thrust Blocks) , in accordance with the contract documents @ _____ _____ Dollars	6	EA	\$ _____	\$ _____
26	Water Service Type K Copper Tubing (All Sizes), in accordance with the contract documents @ _____ _____ Dollars	14	EA	\$ _____	\$ _____
27	Reconnect Existing Water Service (All Sizes) , in accordance with the contract documents @ _____ _____ Dollars	39	EA	\$ _____	\$ _____
28	Traffic-Rated Meter Box (All Sizes), in accordance with the contract documents @ _____ _____ Dollars	10	EA	\$ _____	\$ _____
29	Non-Traffic-Rated Meter Box (All Sizes, in accordance with the contract documents @ _____ _____ Dollars	43	EA	\$ _____	\$ _____
30	Abandon Existing Fire Hydrant Assembly, in accordance with the contract documents @ _____ _____ Dollars	4	EA	\$ _____	\$ _____

ITEM NO.	ITEM DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL COST
31	Abandon Existing Water Valve , in accordance with the contract documents @ <hr/> <hr/> Dollars	7	EA	\$ _____	\$ _____
32	Abandon and Cap Existing Water Main , in accordance with the contract documents @ <hr/> <hr/> Dollars	3	EA	\$ _____	\$ _____
33	Connection to Existing 12" Water Main on Humboldt at Kings , in accordance with the contract documents @ <hr/> <hr/> Dollars	1	LS	\$ _____	\$ _____
34	Connection to Existing 6" Water Main on Humboldt at Kings , in accordance with the contract documents @ <hr/> <hr/> Dollars	1	LS	\$ _____	\$ _____
35	Connection to Existing 12" Water Main on Beatrice at Kings , in accordance with the contract documents @ <hr/> <hr/> Dollars	1	LS	\$ _____	\$ _____
36	Connection to Existing 6" Water Main on Kings at Beatrice , in accordance with the contract documents @ <hr/> <hr/> Dollars	1	LS	\$ _____	\$ _____
37	Connection to Existing 6" Water Main on Kings at Margaret , in accordance with the contract documents @ <hr/> <hr/> Dollars	1	LS	\$ _____	\$ _____

ITEM NO.	ITEM DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL COST
38	Connection to New 8" Water Main on Kings at Margaret, in accordance with the contract documents @ <hr/> <hr/> Dollars	1	LS	\$ _____	\$ _____
39	Connection to Existing 6" Water Main on Paul, in accordance with the contract documents @ <hr/> <hr/> Dollars	1	LS	\$ _____	\$ _____
40	Above Ground Piping Installation of Temporary Bypass System, in accordance with the contract documents @ <hr/> <hr/> Dollars	1,010	LF	\$ _____	\$ _____
41	Shallow Buried Piping Installation of Temporary Bypass System, in accordance with the contract documents @ <hr/> <hr/> Dollars	710	LF	\$ _____	\$ _____
TOTAL AMOUNT OF BASE BID ITEMS				\$ _____	

ITEM NO.	ITEM DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL COST
ADDITIVE 1 BID ITEMS - PAUL AVE					
A.1.1	Mobilization , in accordance with the contract documents @ _____ _____ Dollars	1	LS	\$ _____	\$ _____
A.1.2	Traffic Control , in accordance with the contract documents @ _____ _____ Dollars	1	LS	\$ _____	\$ _____
A.1.3	Storm Water Pollution Prevention , in accordance with the contract documents @ _____ _____ Dollars	1	LS	\$ _____	\$ _____
A.1.4	Sheeting, Shoring, and Bracing , in accordance with the contract documents @ _____ _____ Dollars	1	LS	\$ _____	\$ _____
A.1.5	Site Investigation and Potholing , in accordance with the contract documents @ _____ _____ Dollars	1	LS	\$ _____	\$ _____
A.1.6	Water Main 8-inch DIP (Install in New Trench) , in accordance with the contract documents @ _____ _____ Dollars	510	LF	\$ _____	\$ _____
A.1.7	Fitting 8" 11.25 Degree Bend & Thrust Block , in accordance with the contract documents @ _____ _____ Dollars	4	EA	\$ _____	\$ _____

ITEM NO.	ITEM DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL COST
A.1.8	Fitting 8" 22.5 Degree Bend & Thrust Block , in accordance with the contract documents @ <hr/> <hr/> Dollars	1	EA	\$ _____	\$ _____
A.1.9	Fitting 8" 45 Degree Bend & Thrust Block , in accordance with the contract documents @ <hr/> <hr/> Dollars	2	EA	\$ _____	\$ _____
A.1.10	Fitting 8" 90 Degree Bend & Thrust Block , in accordance with the contract documents @ <hr/> <hr/> Dollars	1	EA	\$ _____	\$ _____
A.1.11	Air Release Valve Assembly , in accordance with the contract documents @ <hr/> <hr/> Dollars	1	EA	\$ _____	\$ _____
A.1.12	Blowoff Valve Assembly , in accordance with the contract documents @ <hr/> <hr/> Dollars	1	EA	\$ _____	\$ _____
A.1.13	Fire Hydrant Assembly - Inactive Line (incl. Tee/Bend, Valve, & Thrust Blocks) , in accordance with the contract documents @ <hr/> <hr/> Dollars	2	EA	\$ _____	\$ _____
A.1.14	Water Service Type K Copper Tubing (All Sizes) , in accordance with the contract documents @ <hr/> <hr/> Dollars	4	EA	\$ _____	\$ _____

ITEM NO.	ITEM DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL COST
A.1.15	Non-Traffic-Rated Meter Box (All Sizes), in accordance with the contract documents @ <hr/> <hr/> Dollars	5	EA	\$ _____	\$ _____
A.1.16	Abandon Existing Fire Hydrant Assembly, in accordance with the contract documents @ <hr/> <hr/> Dollars	3	EA	\$ _____	\$ _____
A.1.17	Abandon Existing Water Valve, in accordance with the contract documents @ <hr/> <hr/> Dollars	5	EA	\$ _____	\$ _____
A.1.18	Abandon Existing Water Vault, in accordance with the contract documents @ <hr/> <hr/> Dollars	1	EA	\$ _____	\$ _____
D.1.1	Deduct Base Bid Item 10 8" Plug or Cap, @ negative <hr/> <hr/> Dollars	1	EA	-\$ _____	-\$ _____
D.1.2	Deduct Base Bid Item 11 Fitting 10" x 10" x 6" Tee & Thrust Block, @ negative <hr/> <hr/> Dollars	1	EA	-\$ _____	-\$ _____
D.1.3	Deduct Base Bid Item 21 6" Gate Valve, @ negative <hr/> <hr/> Dollars	1	EA	-\$ _____	-\$ _____
D.1.4	Deduct Base Bid Item 22 8" Gate Valve, @ negative <hr/> <hr/> Dollars	1	EA	-\$ _____	-\$ _____

ITEM NO.	ITEM DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL COST
D.1.5	Deduct Base Bid Item 32 Abandon and Cap Existing Water Main, @ negative _____ _____ Dollars	1	EA	- \$ _____	- \$ _____
D.1.6	Deduct Base Bid Item 39 Connection to Existing 6" Water Main on Paul @ negative _____ _____ Dollars	1	LS	- \$ _____	- \$ _____
TOTAL AMOUNT OF ADDITIVE 1 BID ITEMS					\$ _____

ITEM NO.	ITEM DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL COST
ADDITIVE 2 BID ITEMS - ANNIS RD AND HAROLD RD					
A.2.1	Mobilization , in accordance with the contract documents @ _____ _____ Dollars	1	LS	\$ _____	\$ _____
A.2.2	Traffic Control , in accordance with the contract documents @ _____ _____ Dollars	1	LS	\$ _____	\$ _____
A.2.3	Storm Water Pollution Prevention , in accordance with the contract documents @ _____ _____ Dollars	1	LS	\$ _____	\$ _____
A.2.4	Sheeting, Shoring, and Bracing , in accordance with the contract documents @ _____ _____ Dollars	1	LS	\$ _____	\$ _____
A.2.5	Site Investigation and Potholing , in accordance with the contract documents @ _____ _____ Dollars	1	LS	\$ _____	\$ _____
A.2.6	Water Main 8-inch DIP (Replace in Existing Trench) , in accordance with the contract documents @ _____ _____ Dollars	2,140	LF	\$ _____	\$ _____
A.2.7	Fitting 8" 11.25 Degree Bend & Thrust Block , in accordance with the contract documents @ _____ _____ Dollars	20	EA	\$ _____	\$ _____

ITEM NO.	ITEM DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL COST
A.2.8	Fitting 8" 22.5 Degree Bend & Thrust Block , in accordance with the contract documents @ <hr/> <hr/> Dollars	10	EA	\$ _____	\$ _____
A.2.9	Fitting 8" 45 Degree Bend & Thrust Block , in accordance with the contract documents @ <hr/> <hr/> Dollars	1	EA	\$ _____	\$ _____
A.2.10	Fitting 10" x 8" Reducer & Thrust Block , in accordance with the contract documents @ <hr/> <hr/> Dollars	1	EA	\$ _____	\$ _____
A.2.11	8" Gate Valve , in accordance with the contract documents @ <hr/> <hr/> Dollars	2	EA	\$ _____	\$ _____
A.2.12	Air Release Valve Assembly , in accordance with the contract documents @ <hr/> <hr/> Dollars	1	EA	\$ _____	\$ _____
A.2.13	Fire Hydrant Assembly - Inactive Line (incl. Tee/Bend, Valve, & Thrust Blocks) , in accordance with the contract documents @ <hr/> <hr/> Dollars	7	EA	\$ _____	\$ _____
A.2.14	Water Service Type K Copper Tubing (All Sizes) , in accordance with the contract documents @ <hr/> <hr/> Dollars	2	EA	\$ _____	\$ _____

ITEM NO.	ITEM DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL COST
A.2.15	Reconnect Existing Water Service (All Sizes) , in accordance with the contract documents @ <hr/> <hr/> Dollars	8	EA	\$ _____	\$ _____
A.2.16	Traffic-Rated Meter Box (All Sizes) , in accordance with the contract documents @ <hr/> <hr/> Dollars	2	EA	\$ _____	\$ _____
A.2.17	Non-Traffic-Rated Meter Box (All Sizes) , in accordance with the contract documents @ <hr/> <hr/> Dollars	8	EA	\$ _____	\$ _____
A.2.18	Abandon Existing Fire Hydrant Assembly , in accordance with the contract documents @ <hr/> <hr/> Dollars	4	EA	\$ _____	\$ _____
A.2.19	Abandon Existing Water Valve , in accordance with the contract documents @ <hr/> <hr/> Dollars	5	EA	\$ _____	\$ _____
A.2.20	Connection to Existing 8" Water Main on Annis at Humboldt , in accordance with the contract documents @ <hr/> <hr/> Dollars	1	LS	\$ _____	\$ _____
A.2.21	Removal and Disposal of AC Pipe , in accordance with the contract documents @ <hr/> <hr/> Dollars	500	LF	\$ _____	\$ _____

ITEM NO.	ITEM DESCRIPTION	EST. QTY	UNIT	UNIT PRICE	TOTAL COST
A.2.22	Slurry Seal , in accordance with the contract documents @ _____ _____ Dollars	830	SY	\$ _____	\$ _____
A.2.23	Above Ground Piping Installation of Temporary Bypass System , in accordance with the contract documents @ _____ _____ Dollars	1,960	LF	\$ _____	\$ _____
A.2.24	Shallow Buried Piping Installation of Temporary Bypass System , in accordance with the contract documents @ _____ _____ Dollars	220	LS	\$ _____	\$ _____
TOTAL AMOUNT OF ADDITIVE 2 BID ITEMS				\$ _____	

TOTAL AMOUNT OF BASE BID ITEMS + ADDITIVE 1 BID ITEMS + ADDITIVE 2 BID ITEMS (BASIS OF AWARD)	\$ _____
--	----------

Notes:

1. A summary of the work to be included in each bid item is described in Section 01270 of these specifications.
2. The determination of the lowest bidder will be based on the sum of the Base Bid, Additive 1, and Additive 2 totals.
3. The unit costs for deductions D.1.1 through D.1.6 shall be equal to the unit costs for Base Bid Items 10, 11, 21, 22, 32, and 39, respectively.
4. After determination of the lowest responsible bidder, the owner will award the base bid and may elect to award either additive at the unit costs proposed by the lowest responsible bidder. The awarded additives will be identified in the Owner-Contractor Agreement.
5. The Owner reserves the right to reject any or all proposals.
6. If any discrepancy between Unit Cost and Total Cost is found, the product of "Est. Qty." and "Unit Cost" will prevail.
7. All prices shall include all taxes, licenses, insurance, transportation, charges and duties, etc., for the Work, complete in place.

INFORMATION REQUIRED OF THE BIDDER

1. Name _____
2. Address _____
3. Telephone _____
4. Fax _____ Email _____
5. Type of firm - Corporation, Partnership or Individual _____
6. Corporation organized under laws of the State of _____
7. Names and addresses of all partners or names and titles of all officers of the corporation:

Officer's Name and Address	Title

8. List projects completed by bidder within the past five years which are comparable in scope and size to the project specified herein. Include reference information for these projects and contact persons in tabular form as shown in (or similar to) the table below. Attach additional sheets if necessary.

Project	Year	Location	Contact	Phone

INFORMATION REQUIRED OF THE BIDDER

Replies to these inquiries must be full and explicit where applicable.

9. When, by whom, and in what manner was the site of this proposed work inspected on behalf of the bidder.

10. The bidder shall herein set forth the name and the location of the place of business of each subcontractor who will perform work or labor or render service to the General Contractor in or about the construction of the work or improvement in an amount in excess of one-half (½) of one percent (1%) of the General Contractor's total bid, and the portion of the work which will be done by each such subcontractor. (See GC-05,b., of the General Conditions herein) Attach additional sheets if necessary.

Name of Subcontractor	Location of Main Office	Subcontractor's DIR registration number and expiration date	Portion of work to be Done

INFORMATION REQUIRED OF THE BIDDER

11. Give the name and address of the manufacturer and/or fabricator, as applicable, from whom the following items will be purchased:

Item Description	Supplier or Manufacturer	Supplier or Manufacturer Telephone

12. Name, Address, Telephone Number and Contact Person of Surety or Sureties which have agreed to furnish Faithful Performance, Payment and Guaranty Bonds.

13. The Bidder anticipates that the following construction trades (carpenter, plumber, etc.) will be employed on this project:

- | | | |
|--|--|--|
| <input type="checkbox"/> ASBESTOS | <input type="checkbox"/> BOILERMAKER | <input type="checkbox"/> BRICKLAYERS |
| <input type="checkbox"/> CARPENTERS | <input type="checkbox"/> CARPET/LINOLEUM | <input type="checkbox"/> CEMENT MASONS |
| <input type="checkbox"/> DRYWALL FINISHER | <input type="checkbox"/> DRYWALL/LATHERS | <input type="checkbox"/> ELECTRICIANS |
| <input type="checkbox"/> ELEVATOR MECHANIC | <input type="checkbox"/> GLAZIERS | <input type="checkbox"/> IRON WORKERS |
| <input type="checkbox"/> LABORERS | <input type="checkbox"/> MILLWRIGHTS | <input type="checkbox"/> OPERATING ENG |
| <input type="checkbox"/> PAINTERS | <input type="checkbox"/> PILE DRIVERS | <input type="checkbox"/> PIPE TRADES |
| <input type="checkbox"/> PLASTERERS | <input type="checkbox"/> ROOFERS | <input type="checkbox"/> SHEET METAL |
| <input type="checkbox"/> SOUND/COMM | <input type="checkbox"/> SURVEYORS | <input type="checkbox"/> TEAMSTER |
| <input type="checkbox"/> TILE WORKERS | <input type="checkbox"/> | <input type="checkbox"/> |

NONCOLLUSION AFFIDAVIT

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

STATE OF CALIFORNIA)
) ss
COUNTY OF)

_____,being first duly sworn, deposes
(Name)

and says that he or she is the _____
(Title)
(Title)

of _____, the party making
(Name of Bidding Entity)

the foregoing bid, that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, reorganization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Executed at _____, California, on the
_____ day of _____, 20_____.

(Name and Title) for

(Entity)

(Signature)

SUBSCRIBED and sworn to before me this _____ day of
_____, 20_____

Notary Public

AGREEMENT

THIS AGREEMENT, made and entered into this ____ day of _____ in the year two thousand _____, by and between the City of Brisbane, hereinafter designated as the City, party of the first part, and

hereinafter designated as the Contractor, party of the second part.

WITNESSETH: That the parties hereto do mutually agree as follows:

ARTICLE I. For and in consideration of the payments and agreements hereinafter mentioned to be made and performed by the City, the Contractor agrees with the City to construct **Fire Main Replacement Project – Phase 2**, and to perform and complete in good and workmanlike manner all the work pertaining thereto shown on the details and exhibits and described in the specifications hereto attached, to furnish at his or her own proper cost and expense all tools, equipment, labor and materials necessary therefore, except such materials as in the said specifications are stipulated to be furnished by the City, and to do everything required by this Agreement and the said specifications, details and exhibits.

ARTICLE II. For furnishing all said materials and labor, furnishing and removing all plant, temporary works or structures, tools and equipment, and doing all the work contemplated and embraced in this Agreement; also for all loss and damage arising out of the nature of the work aforesaid, or from the action of the elements, or from any unforeseen difficulties which may arise or be encountered in the prosecution of the work until its acceptance by the City, and for all risks of every description connected with the work; also for all expense such as in the said specifications are expressly stipulated to be borne by the City; and for well and faithfully completing the work and the whole thereof, in the manner shown and described in the said specifications, details, exhibits, and in accordance with the requirements of the Engineer under them, the City will pay and the Contractor shall receive in full compensation therefore the prices named in the Bid Schedule of the Proposal hereto attached, that is \$_____ Dollars.

ARTICLE III. The City hereby promises and agrees with the said Contractor to employ, and does hereby employ the said Contractor to provide the materials and to do the work according to the terms and conditions herein contained and referred to, for the prices aforesaid, and hereby contracts to pay the same at the time, in the manner and upon the conditions set forth in the specifications; and the said parties for themselves, their heirs, executors, administrators, successors, and assigns, do hereby agree to the full performance of the covenants herein contained.

ARTICLE IV. The Notice Inviting Bids, the Instructions to Bidders, the Proposal, the General Conditions, the Detail Specifications, and the Bonds, all of which are hereto attached, are hereby incorporated and made a part of this Agreement.

IN WITNESS WHEREOF: The parties hereto have caused the contract to be executed the day and year first above written.

CITY OF BRISBANE

(City Seal)

By: _____

Madison Davis, Mayor

Attest:

Ingrid Padilla City Clerk

Contractor _____

By: _____

Title _____

Attest By: _____

Title _____

Approved as to Form and Execution:

(Corporate Seal)

Michael Roush, Attorney for the City

BOND FOR FAITHFUL PERFORMANCE

LET THE FOLLOWING BE KNOWN:

That we, _____
hereinafter referred to as "Contractor," as principal, and _____

_____ as surety, are held firmly bound unto the City of Brisbane, in the sum of

_____ dollars,

(\$_____), lawful money of the United States of America, for the payment of which sum, well and truly to be made, we bind ourselves, jointly and severally, firmly by these presents.

The condition of the foregoing obligation is such that,

WHEREAS, said Contractor has been awarded and is about to enter into the annexed contract with the City of Brisbane for the **Fire Main Replacement Project – Phase 2**, and is required by said City to give this bond in connection with the execution of said contract;

NOW, THEREFORE, if the said Contractor shall well and truly do and perform all of the covenants and obligations of said contract on his or her part to be done and performed at the times and in the manner specified therein, then this obligation shall be null and void, otherwise it shall be and remain in full force and effect;

PROVIDED, that any alterations in the work to be done, or the material to be furnished, which may be made pursuant to the terms of said contract, shall not in any way release either the Contractor or the surety thereunder, nor shall any extensions of time granted under the provisions of said contract release either the Contractor or the surety, and notice of such alterations or extensions of the contract is hereby waived by the surety.

BOND FOR FAITHFUL PERFORMANCE (Cont'd.)

WITNESS our hands this _____ day of _____, 20____.

(Seal)

Contractor _____

By _____

Title _____

Attest By _____

Title _____

(Seal)

Surety _____

By _____

Attorney-in-Fact
Mailing Address and Telephone:
(Attach Notarization)

Approved as to Form and Execution

Michael Roush, City Attorney

(Attach Power of Attorney)

PAYMENT BOND

LET THE FOLLOWING BE KNOWN:

That we, _____

as principal, and _____

as surety, are held and firmly bound unto the City of Brisbane, in the sum of

_____ Dollars

(\$ _____), lawful money of the United States of America, for the payment of which sum, well and truly to be made, we bind ourselves, jointly and severally, firmly by these presents.

The conditions of the above obligation is such that:

WHEREAS, said principal has been awarded and is about to enter into the annexed contract with the City of Brisbane to construct the **Fire Main Replacement Project – Phase 2**, and is required by said City to give this bond in connection with the execution of said contract;

NOW, THEREFORE, if said principal as Contractor in said contract, or said principal's subcontractors, fails to pay for any materials, provisions, or other supplies, or equipment, used in, upon, for or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Act with respect to such work or labor, said surety will pay for the same, in an amount not exceeding the sum specified above, and also, in case suit is brought upon this bond, a reasonable attorney's fee, to be fixed by the court. This bond shall insure to the benefit of any and all persons entitled to file claims under Section 1192.1 of the Code of Civil Procedure of the State of California.

PROVIDED, that any alterations in the work to be done, or the material to be furnished, which may be made pursuant to the terms of said contract, shall not in any way release either the Contractor or the surety thereunder, nor shall any extensions of time granted under the provisions of said contract release either the Contractor or the surety, and notice of such alterations or extensions of the contract is hereby waived by the surety.

PAYMENT BOND (Cont'd.)

WITNESS our hands this _____ day of _____, 20____.

(Seal)

Principal _____

By _____

Title _____

Attest: By _____

Title _____

Surety _____

By _____

(Seal)

Attorney-in-Fact
Mailing Address and Telephone

Approved as to Form and Execution:

Michael Roush, City Attorney

(Attach Attorney-in-Fact Affidavit)

GENERAL CONDITIONS

GC-01. Definitions.

a. Whenever the words defined in this article, or pronouns used in their stead, occur in these specifications or in any of the other contract documents, they shall have the meanings here given.

b. The word OWNER or CITY shall mean the City of Brisbane acting through its City Council and/or City Manager, as appropriate, each operating directly or through the duly authorized Engineer or other agents or employees.

d. The word ENGINEER shall mean the City's Director of Public Works/City Engineer, EKI Environment & Water, Inc. (EKI), or the City's duly authorized representative, acting either directly or through properly authorized agents, such agents acting severally within the scope of the particular duties entrusted to them.

e. The word CONTRACTOR shall mean the party of the second part entering into contract with the Owner for the performance of work required by these specifications and the legal representative of said party, or the agent appointed to act for said party in the performance of the work. Said party is referred to throughout the contract documents as if of the singular number.

f. The word SUBCONTRACTOR shall mean any person, firm or corporation performing work or labor or rendering service to the general contractor in or about the construction of the work or improvement in an amount in excess of one-half (½) of one percent (1%) of the general contractors total bid.

g. The word Claim shall mean a separate demand by the Contractor for (1) a time extension, (2) payment of money or damages arising from work done by or on behalf of the Contractor pursuant to the contract for a public work and payment of which is not otherwise expressly provided for or the Contractor is not otherwise entitled to, or (3) an amount the payment of which is disputed by the Owner.

h. The words STANDARD SPECIFICATIONS shall mean the latest edition of the publication entitled "Standard Specifications for Public Works Construction," applicable amendments thereto, as written and promulgated by the Joint Cooperative Committee of the Southern California Chapter, American Public Works Association and Southern California District, Associated General Contractors of California. Reference may also be made to the Standard Specifications of the State of California Department of Transportation.

i. Whenever in these specifications reference is made to a Federal, State or local specification, standard or regulation, or to a specification or standard issued by the American National Standards Institute (ANSI), the American Society for Testing and Materials (ASTM), the American Waterworks Association (AWWA) or other recognized body it shall be understood to mean the latest edition or amendment whether definitive or tentative together with any appendices.

j. The figure given in the specifications or upon the details and exhibits after the word Elevation, or an abbreviation of it, shall mean distances in feet above the datum, as established by the Owner. This datum is mean sea level according to the best information available.

GC-02. Contract Documents Complementary.

The Notice Inviting Bids, the Instructions to Bidders, the Proposal and Bid Schedule, the General and Special Conditions, the Project Drawings and Detail Specifications, together with the Bonds and Agreement, constitute the Contract. These contract documents are complementary, and what is called for in any one shall be as binding as if called for in all. The intention of the documents is to require a complete and finished piece of work including all labor, materials, equipment and transportation necessary for the proper execution of the work, with the exception of such items as are definitely stipulated in the specifications, details and exhibits to be furnished by the Owner. Anything shown in the details and exhibits, and not in the specifications, or in the specifications and not in the details and exhibits, or neither in the specifications nor in the details and exhibits, but necessary to properly complete the structure in accordance with the law and governmental rules and regulations, shall be performed by the Contractor as though shown in both the details and exhibits and the specifications. Material or work described in words which so applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.

GC-03. Time and Order of Work.

a. The Contractor shall at all times employ such force, plant, materials, and tools as will be sufficient, in the opinion of the Owner to prosecute the work at not less than the rates fixed under the terms of the contract and to complete the work or any separable portions thereof within the time limits therein fixed. If the Contractor shall fail to employ sufficient force, plant, materials and tools or to maintain adequate progress he or she may, after such failure, be required to increase his or her progress at any point or points or to modify his or her plans and procedure in such manner and to such extent as the Owner may direct. No extension of time shall be made for ordinary delays and accidents and the occurrence of such shall not relieve the Contractor from the necessity of maintaining the required progress. In case of extension by the Owner of the time for the completion of the contract, as hereinafter provided, a revised schedule of progress may be prescribed in accordance with such extension of time.

b. The time in which the various portions and the whole of the contract are to be performed, and the work is to be completed, is of the essence of the contract.

GC-04. Assignment Forbidden.

a. The Contractor shall not assign, transfer, convey, sublet, or otherwise dispose of this contract, or of his or her right, title or interest in or to the same or any part thereof, without the previous consent in writing of the Owner and he or she shall not assign, by power of attorney or otherwise, any of the moneys to become due and payable under the contract unless by and with the like consent signified in like manner. If the Contractor should without such previous written consent, assign, transfer, convey, sublet, or otherwise dispose of the contract, or of his or her right, title or interest therein, or of any of the moneys to become due under the contract, to any other person, company, or other corporation, the contract may at the option of the Owner be terminated, revoked, and annulled, and the Owner shall thereupon be relieved and discharged from any and all liability and obligations growing out of the same to the Contractor, and to his or her assignee or transferee.

b. No right under the contract, nor any right to any money to become due hereunder, shall be asserted against the Owner in law or equity by reason of any so-called

assignment of the contract, or any part thereof, or by reason of the assignment of any moneys to become due hereunder, unless authorized as aforesaid by the written consent of the Owner.

GC-05. Subcontracts.

a. In the discretion of the Owner and subject to the provisions of subsection b., hereof, subcontracts may be permitted to such extent, and only to such extent, as shall be shown to be necessary or definitely advantageous to the principal contractor in the prosecution of the work, and without injury to the interests of the Owner. The resubletting of work by a subcontractor shall be subject to the same limitations as an original subletting. In general, the broking of work will not be favored, and the subletting of the entire contract, or of substantial complete units of it, will be permitted only upon an adequate showing of necessity, involving some new condition not reasonably foreseeable at the time of proposal. No subcontract will be permitted which has the effect of avoiding the residence or wage requirements or any other provisions of the main contract. Individual subcontracts, or members of contracting or subcontracting organizations, personally engaged upon the work, shall be subject to all the requirements of GC-44 to GC-47, inclusive, GC-53 and GC-54 hereof, and to all other conditions of these specifications applicable to employees working for wages.

b. Reference is hereby made to the provisions of Chapter 2 of Division 5, Title I of the Government Code of the State of California. As required by the provisions of said Chapter 2, each bidder shall set forth in his or her proposal the name and location of the place of business of each subcontractor who will perform work or labor or render service to the general contractor in or about the construction of the work or improvement in an amount in excess of one-half ($\frac{1}{2}$) of one percent (1%) of the general contractor's total bid, and the provisions of said Chapter 2. Notwithstanding the provisions of said Chapter 2 and the Contractor's compliance therewith, the Owner's acceptance of his or her bid shall not constitute authority to the Contractor to sublet or subcontract any of the work to any subcontractor so named in the proposal, but permission to subcontract any portion of the work to any subcontractor so named in the proposal shall be within the discretion of the Owner, as provided in subdivision a., of this section.

c. A copy of each subcontract, if in writing, or if not in writing then a written statement signed by the Contractor giving the name of the subcontractor and the terms and conditions of such subcontract, shall be filed with the Owner before the subcontractor begins work. Each subcontract shall contain a reference to the agreement between the Owner and the Contractor, and the terms of that agreement and all parts thereof shall be made a part of such subcontract insofar as applicable to the work covered thereby. Such subcontract shall provide for its annulment by the Contractor at the order of the Owner if in the Owner's opinion the subcontractor fails to comply with the requirements of the principal contract insofar as the same may be applicable to his or her work. Nothing herein contained shall create any contractual relation between any subcontractor and the Owner or to relieve the Contractor of any liability or obligation hereunder.

GC-06. Notice to Discontinue Work Under Contract.

a. If the work to be done under the contract shall be abandoned by the Contractor, or if the Contractor shall make a general assignment for the benefit of his or her creditors or be adjudicated a bankrupt, or if a receiver of his or her property or business be appointed by a court of competent jurisdiction, or if this contract shall be assigned by him or her otherwise as hereinbefore specified, or if at any time the Owner shall be of the opinion that the performance of the contract is unnecessarily or unreasonably delayed, or that the Contractor is

willfully violating any of the conditions or covenants of the contract, or of the specifications, or is executing the same in bad faith or not in accordance with the terms thereof, or if the work be not fully completed within the time named in the contract for its completion, or within the time to which the completion of the contract may have been extended, as hereinbefore provided, the Owner may by written notice instruct the Contractor to discontinue all work, or any part thereof, under this contract.

b. When such written notice is served upon the Contractor as hereinafter provided in Sec. GC-07, he or she shall immediately discontinue the work or such part thereof as is covered by the Notice, and shall not resume the same except by written instructions from the Owner. In any such case the Owner may take charge of the work and complete it by a new contract or by force account. The Owner may procure other materials and provide labor for the completion of the same, or contract therefore, and charge the expenses of completion by either method to the Contractor. These charges shall be deducted from such moneys as may be due or may at any time hereinafter become due the Contractor under and by virtue of this contract, or any part hereof. In case such expense shall exceed the amount which would have been due the Contractor under the contract if the same had been completed by him or her, he or she shall pay the amount of such excess to the Owner; and in case such expenses shall be less than the amount which would have been payable under this contract if the same had been completed by the Contractor, he or she shall have no claim to the difference except to such extent as may be necessary, in the opinion of the Owner, to reimburse the Contractor or the Contractor's sureties for any expenses, properly incurred for plant, camp, equipment, materials, supplies, and labor devoted to the prosecution of the work, of which the Owner shall have received the benefit and which shall not have been otherwise paid for by the Owner. When any particular part of the work is being carried on by the Owner, by contract or otherwise, under the provisions of this section, the Contractor shall continue the remainder of the work in conformity with the terms of his or her contract, and in such manner as in no wise to hinder or interfere with the persons or workmen employed as above provided, by the Owner, by contract or otherwise, to do any part of the work, or to complete the same under the provisions of this section.

GC-07. Termination of Contract.

a. If at any time before completion of work under the contract, it shall be found by the Owner that reasons beyond the control of the parties thereto render it impossible or against the interest of the Owner to complete the work contracted to be done; or if the work shall have been prevented or suspended by injunction issued by a court of competent jurisdiction or by any other order of constituted authority for a period in excess of 30 consecutive days; the Owner may at any time, by written notice to the Contractor, discontinue the work and terminate the contract; or if the entire work shall have been suspended for a period in excess of 60 consecutive days and termination is demanded in writing by the Contractor, the contract shall be discontinued. Upon the service of such notice of termination, the Contractor shall discontinue the work in such manner, sequence and at such times as the Owner may direct, continuing and doing after said notice only such work and only until such time or times as the Owner may direct; and the Contractor shall have no claim for damages for such discontinuance or termination of the contract; nor shall the Contractor have any claim for anticipated profits on the work thus dispensed with, nor any other claim except for the work actually performed up to the time of complete discontinuance including any extra work ordered by the Owner to be done under Section GC-12 after the date of said order.

b. Completion of Contract. In the event that the work shall be so discontinued and the contract terminated, the satisfactory completion of such work as the Owner may thereafter

direct and satisfactory compliance with the terms of said order shall be deemed the completion of the work specified in this contract; and the final estimate shall be of the amount of the work completed to the time of such discontinuance and termination, together with such other sum or sums as may be due the Contractor in accordance with the provisions of this section.

c. Termination by the Owner for Convenience. The Owner reserves the right to terminate the Work for its Convenience, without any cause, upon ten (10) days notice in writing to the Contractor. Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

- (1) Cease operations as directed by the Owner in the notice;
- (2) Take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- (3) Except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing Subcontractors and purchase orders and enter into no further Subcontracts and purchase orders.

In the event the Owner terminates for Convenience, the Contractor shall be paid for at its actual costs for the portion of the Work performed to the date of termination and for all costs of termination, including demobilization and any termination charges by vendors and subcontractors, plus ten (10) percent of the Contractor's actual termination costs for overhead and profit.

GC-08. Legal Address of Contractor.

a. The address given in the Contractor's proposal on which the contract is founded is hereby designated as the place to which all notices, letters and other communications to the Contractor shall be mailed or delivered. The delivering at the above named place or the depositing in a pre-paid wrapper directed to the above place, in any post office mail box regularly maintained by the post office, of any notice, letter or other communication to the Contractor, shall be deemed sufficient service thereof upon the Contractor and the date of said service shall be the date of such delivery or mailing. Such address may be changed at any time by a written notice signed by the Contractor and delivered to the Owner.

b. Nothing therein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon the Contractor personally.

GC-09. Additional Surety.

If during the continuance of the contract any of the sureties upon the faithful performance bond in the opinion of the Owner are or become insufficient, he or she may require additional sufficient sureties which the Contractor shall furnish to the satisfaction of the Owner within 15 days after notice, and in default thereof the contract may be suspended and the work completed as provided in Section GC-06 hereof.

GC-10. Authority of the Engineer.

The Engineer shall interpret all orders and directions contemplated under the contract; shall determine all questions in relation to said work and the construction thereof; and shall decide in

all cases every question which may arise relative to the fulfillment of this contract on the part of the Contractor. Should any discrepancy appear or any misunderstanding arise as to the import of anything contained in the specifications, details, or exhibits, the matter shall be referred to the Engineer, who shall decide the same in accordance with the true intent and meaning as construed by him, and his or her decision shall be binding on the Contractor. Any differences or conflicts which may arise between the Contractor and other contractors of the Owner in regard to their work shall be adjusted and determined by the Engineer.

GC-11. Changes.

a. If the Owner finds it impracticable to comply strictly with these specifications, the Owner may prescribe a modification of requirements or of methods of work; and for such purposes the Owner may, at any time during the life of the contract, by written order make such changes as he or she shall find necessary in the design, line, grade, form, location, dimensions, plan or material of any part of the work or equipment hereinafter specified, or in the quantity or character of the work or equipment to be furnished. If such changes increase or diminish the quantity or amount of work to be done, they shall not constitute the basis for a claim for damages or anticipated profits on the work that may be dispensed with; provided, that if such changes or alterations render useless any work already done or materials already furnished or used in the work, the Owner shall make reasonable allowance therefore, which action shall be binding upon both parties.

b. In the event of increasing or decreasing work, the total amount of work actually done or materials or equipment furnished shall be paid for according to the unit price established for such work under the contract, wherever such unit price has been established. In the event no prices are named in the contract to cover such changes or alterations, the cost of such changes shall be covered as hereinafter provided for extra work.

c. Any disputes regarding payment for changes in the work or for extra work, or regarding extensions of time, shall proceed in accordance with the procedures set forth in the General Conditions section entitled "Claims".

GC-12. Extra Work.

a. If during the performance of the contract it shall in the opinion of the Owner become necessary or desirable for the proper completion of the contract to order work done or materials or equipment furnished which in the opinion of the Owner are not susceptible of classification under the unit-price items named in the Bid Schedule, and are not included in any item for which a lump sum is bid, the Contractor shall do and perform such work and furnish such materials and equipment. Such labor, materials, and/or equipment will be classed as extra work and shall be ordered in writing before such work is started. No extra work shall be paid for unless ordered in writing.

b. Extra work and material will ordinarily be paid for at a lump sum or unit price agreed on in writing by the Owner and the Contractor before the extra work shall be ordered.

c. Performance of any extra work or the furnishing of any extra material which, in the judgment of the Owner is of like character to and susceptible of classification under the unit-price items of the contract as specified shall, if the order of the Owner shall be provided, be paid for at the unit price named for such work in the Bid Schedule.

d. Whenever, in the judgment of the Owner, such extra work or such extra material, as the case may be, is not of like character to and susceptible of classification under the

unit-price items of the contract as specified, and it is impracticable because of the nature of the work or for any other reason to fix the price before the extra work order shall be issued, extra work and material, when furnished by the Contractor, shall be paid for at actual necessary costs of materials, supplies, labor (including foreman's wages) at the job site, workers' compensation insurance contributions made to the State as required by the provisions of the Unemployment Insurance Act, Chapter 352, Statutes of 1935, as amended, taxes paid to the Federal Government as required by the Social Security Act, approved August 14, 1935, as amended, and the reasonable value of the use of equipment for the actual time it is used, all as determined by the Owner, and in accordance with Section 9-1.03 of the Standard Specifications, which shall include: general expenses, excise taxes, property taxes, bond premiums, license and inspection fees imposed by any governmental authority and all other items of expense, whether of the kind enumerated herein or otherwise.

e. If any work or materials ordered under this section on a cost-plus basis, the Contractor shall, at the times directed during the performing of the work or the furnishing of the materials, render to the Owner written reports in prescribed form, showing the name and number of each workman employed thereon, the number of hours employed thereon at the job site, the character of work he or she is doing, and the wages paid or to be paid to him, also showing the materials delivered and any other items that may enter into the cost, the quantity and character of each such material, from whom purchased and the net amount paid or to be paid therefore, and such other information as directed. If required, the Contractor shall produce any books, vouchers, other records, or memorandum which will assist the Owner in determining the true, necessary cost of work and materials to be paid for.

f. Any extra work performed hereunder shall be subject to all of the provisions of the contract and the Contractor's sureties shall be bound with reference thereto as under the original contract.

GC-13. Suspension of Work - Extension of Time.

a. The Owner reserves the right of suspending the whole or any part of the work herein contracted to be done, if it shall deem it for the interest of the Owner to do so. If the said work shall be delayed in consequence of such suspension or of any act or omission of the Owner, or by strikes, acts of God, or other unforeseeable causes beyond the control and without the fault or negligence of the Contractor, or his or her subcontractors, the Contractor shall be entitled to so much additional time where to perform and complete the contract on his or her part as the Owner shall certify in writing to be just. When delay is caused by an order to suspend work given on account of climatic condition that could have been reasonably foreseen, the Contractor shall not be entitled to any extension of time on account of such order.

b. Applications for extension of time must be made promptly in writing, stating cause. No delay shall be made on the basis in any application for extension of time, unless such delay and the causes thereof shall have been called to the attention of the Owner in writing within the 30 days immediately following the end of such delay. Applications for extension of time shall be addressed to the Owner.

c. Any dispute regarding an extension of time shall proceed in accordance with the procedures set forth in the General Conditions section entitled "Claims".

GC-14. Delays - No Extra Compensation.

Except when in the judgment of the Owner direct and unavoidable extra cost to the Contractor is caused by the failure of the Owner to provide necessary right-of-way, or site for installation, unless otherwise specifically provided in the detail specifications, the Contractor shall receive no compensation on account of any suspension of work either in whole or in part or for any other delay or hindrance herein mentioned. Where such extra compensation is claimed a written itemized statement setting forth in detail the amount thereof shall be presented promptly by the Contractor, and in no case later than 30 days after the close of the month during which extra cost is claimed to have been incurred. Unless so presented, the claim shall be deemed to have been waived. Any such claim if found correct will be approved and the amount found due as actual extra cost shall be included in the next partial estimate made as provided in Sec. GC-33.

GC-15. Right-of-Way.

a. The right-of-way for the works to be constructed under these specifications will be provided by the Owner. Nothing herein contained, however, and nothing marked on the details and exhibits, shall be interpreted as giving the Contractor exclusive occupancy of the territory provided. When two or more contracts are being executed at one time on the same or adjacent land in such manner that work on one contract may interfere with that on another, the Owner shall decide which contractor shall cease work, and which shall continue, or whether the work on both contracts shall progress at the same time, and in means of access for the execution of another contract, such privilege of access or any other reasonable privilege may be granted by the Owner to the Contractor so desiring, to the extent, amount, in the manner, and at the times permitted. No such decision as to the method or time of conducting the work or the use of territory shall be made the basis of any claim for delay or damage, except as provided in Section GC-13 hereof.

b. Lands to be furnished by the Owner for construction operations, roads, and other purposes will be specifically shown on the details and exhibits or provided for in the Detail Specifications. Should the Contractor find it necessary to use any additional land for his or her purpose during the construction of the work, he or she shall provide for the use of such lands at his or her own expense.

GC-16. Obligations of Contractor.

a. The Contractor at his or her own sole cost and expense shall perform all labor and services and furnish all the materials, tools and appliances, except as hereinafter otherwise definitely provided, necessary or proper for performing and completing the work required by these specifications, in the manner and within the time stipulated in the Detail Specifications. He or she shall furnish, erect, maintain, and remove the construction plant and such temporary works as may be required.

b. If at any time before the commencement or during the progress of the work or any part of it, the Contractor's methods or appliances appear to the Owner to be unsafe, inefficient, or inadequate for securing the safety of the workmen, the quality of work required, or the rate of progress stipulated, he or she may order the Contractor to increase their safety and efficiency or to improve their character and the Contractor shall comply with such orders at his or her own expense; but neither the making of such demands nor the failure of the Owner to make such demands shall relieve the Contractor of his or her obligation to secure the safe conduct of the work, the quality of work required and the rate of progress stipulated in the contract.

c. The Contractor alone shall be responsible for the safety, efficiency, and adequacy of his or her plant, appliances, and methods and for any damage which may result from their failure or their improper construction, maintenance, or operation. All the labor, services, and materials, shall be performed and furnished strictly pursuant to, and in conformity with the General Conditions of the Specifications, the Detail Specifications, and the lines and grades and other directions of the Owner as given from time to time during the progress of the work under the terms of the contract, and also in accordance with the details and exhibits and with working drawings to be furnished from time to time as provided herein.

d. The Contractor shall complete the entire work to the satisfaction of the Owner, and in accordance with the specifications, details and exhibits herein attached, at the prices fixed in the contract.

GC-17. Personal Attention.

The Contractor shall give his or her personal attention constantly to the faithful prosecution of the work, and shall be present, either in person or by a duly authorized and competent representative, on the site of the work, continually during its progress, to receive directions or instructions from the Owner. Whenever the Contractor is not present on any part of the work where it may be desired to give directions, orders may be given by the Owner, and shall be received and obeyed by the superintendent or foreman who may be in charge of the particular part of the work in reference to which orders are given.

GC-18. Protests.

If the Contractor considers any work demanded of him or her to be outside the requirements of the contract, or if he or she considers any record or ruling of the Owner or of any inspector to be unfair, he or she shall immediately upon such work being demanded or such record or ruling being made, ask for written instructions or decision, whereupon he or she shall proceed without delay to perform the work or conform to the record or ruling; but unless the Contractor finds such instruments or decisions satisfactory, he or she shall, within 10 days after receipt of same, file a written protest with the Owner, stating clearly and in detail his or her objections and the reason therefore. Except for such grounds of protest or objections as are made of record in the manner specified and within the time stated herein, the Contractor hereby waives all grounds for protests or objections to the records, rulings, instructions, or decisions of the Owner, and hereby agrees that as to all matters not included in such protests the records, instructions, and decisions of the Owner shall be final and conclusive. Such protests shall proceed in accordance with the procedures set forth in the General Conditions section entitled "Claims".

GC-19. Claims.

a. As provided in Article 1.5 of Chapter 1 of Part 3 of Division 2 of the Public Contract Code, claims by the Contractor shall be in writing and include the documents necessary to substantiate the claim. Claims must be filed with the Owner on or before the date of final payment.

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

thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the Owner and the Contractor. The Owner's written response to the claim, as further documented, shall be submitted to the Contractor within 15 days after receipt of the further documentation or within a period of time no greater than that taken by the Contractor in producing the additional information, whichever is greater.

c. For Claims of over fifty thousand dollars (\$50,000) and less than or equal to three hundred seventy-five thousand dollars (\$375,000), the Owner shall respond in writing to all written claims within 60 days of receipt of the claim, or may request in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses or claims the Owner may have against the Contractor. If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the Owner and Contractor. The Owner's written response to the claim, as further documented, shall be submitted to the Contractor within 30 days after receipt of the further documentation, or within a period of time no greater than that taken by the claimant in producing the additional information or request documentation, whichever is greater.

d. If the Contractor disputes the Owner's written response, or the Owner fails to respond within the time prescribed, the Contractor may so notify the Owner, in writing, either within 15 days of receipt of the Owner's response or within 15 days of the Owner's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a demand, the Owner shall schedule a meet and confer conference within 30 days for settlement of the dispute.

e. If following the meet and confer conference the claim or any portion remains in dispute, the Contractor may file a claim pursuant to Government Code Section 900 et seq. and a lawsuit on the claim may be filed in the appropriate state court. The court is to order non-binding mediation, (unless waived by both parties) under strict time constraints (within 60 days following the filing of responsive pleadings). The parties are to select a mediator within 15 days and the mediation must be commenced within 30 days of the submittal to mediation.

f. If the matter remains in dispute, the case shall be submitted to judicial (non-binding) arbitration pursuant to Code of Civil Procedure Section 1141.10 et seq. If either party objects to the arbitrator's award, the matter can then go to trial De Novo in the trial court, subject to the usual rules of litigation.

GC-20. Contractor's Responsibilities.

a. The Contractor shall bear all losses resulting to him or her on account of the amount or character of the work, or from any unforeseen obstructions or difficulties which may be encountered, or from any encumbrances on the line of the work, or because the nature of the ground in or on which the work is done is different from what is assumed or was expected or on account of the weather, floods or other causes and he or she shall assume the defense of, and indemnify and save harmless the Owner and their Engineer, officers and agents from all liability and claims of any kind arising from the negligence or willful misconduct of the Contractor or his or her agents.

b. The Contractor shall be responsible for the care of any material furnished by the Owner and for the care of all work until its completion and final acceptance, and he or she shall, at his or her own expense, replace damaged or lost material and repair damaged parts of the work, or the same may be done at his or her expense by the Owner. He or she shall remove from the vicinity of the completed work, all plant, buildings, rubbish, unused material, concrete forms, etc., belonging to him or her or used under his or her direction during construction, and in

the event of his or her failure to do so, the same may be removed by the Owner at the expense of the Contractor.

c. The Contractor shall assume all risk and shall save harmless the Owner and their Engineer, officers and agents from any action caused by failure to provide an adequate environmental impact report where the inadequacy of such environmental impact report results in delaying the performance of said Contractor or any of his or her subcontractors.

GC-21. Contractor to Furnish Information.

Before proceeding with the erection of construction plant, including sheeting, bracing, and other temporary structures, the Contractor shall furnish the Owner with information and drawings of all such structures as may be required. Drawings and prints in such detail as may be required, of articles, machinery, or fabricated materials entering into permanent construction which are by these specifications required to be furnished by the Contractor and of which detailed drawings are not furnished by the Owner shall be submitted by the Contractor for approval and shall become the property of the Owner. Such approval shall not, however, operate to waive or modify any provision or requirement contained in these specifications.

GC-22. Specifications.

The Contractor shall keep on the work site a copy of the specifications and shall at all times give the Owner access thereto. The Contractor shall check all dimensions and quantities on the details, exhibits or schedules herein contained or given to him or her by the Owner, and shall notify the Owner of all errors therein which may be discovered by examining and checking the details and exhibits. He or she shall not take advantage of any error or omission in these specifications, or on the details, exhibits, or in schedules, as full instructions will be furnished by the Owner should such error or omission be discovered, and the Contractor shall carry out such instructions as if originally specified.

GC-23. Materials, Workmanship and Tests.

The Contractor shall submit samples, specimens, or test pieces of such materials to be furnished or used in the work as the Owner may require. All materials must be of the specified quality and equal to approved sample, if samples have been submitted. All work shall be done and completed in a thorough, workmanlike manner, notwithstanding any omission from these specifications or the details or exhibits. The Contractor shall furnish without cost to the Owner such quantities of concrete, concrete aggregates, and other construction material as may be required for test purposes, and shall place at the Owner's disposal all available facilities for and cooperate with him or her in the sampling and testing of all materials and workmanship.

GC-24. Inspection.

All materials furnished and all work done under these specifications shall be subject to rigid inspection. Work done in the absence of prescribed inspection may be required to be removed and replaced under the proper inspection, and the entire cost of removal and replacement, including the cost of all materials furnished by the Owner and used in the work removed, shall be borne by the Contractor, irrespective of whether the removed work is found to be defective or not. Work covered up without the authority of the Owner shall, upon order of the Owner, be uncovered

to the extent required, and the Contractor shall similarly bear the entire cost of performing all the work and furnishing all the materials necessary for the removal of the covering and its subsequent replacement, as directed and approved by the Owner. Whenever the Contractor arranges to work at night or at any time when work is not usually in progress, or to vary the period during which work is carried on each day, he or she shall give the Owner due notice so that inspection may be provided.

GC-25. Examination of Work.

The Contractor shall furnish the Owner every reasonable facility for ascertaining whether the work is in accordance with the requirements and intention of these specifications even to the extent of uncovering or taking down portions of finished work which have been previously approved or authorized to be covered. Should such previously approved work thus exposed or examined prove satisfactory, the uncovering or taking down and replacing of the covering or the making good of the parts removed, shall be included in the contract estimates and will be paid for at the contract prices for the kind of work done, or as extra work, as determined by the Owner; but should the work exposed or examined prove unsatisfactory, the uncovering, taking down, replacing and making good shall be at the expense of the Contractor, and he or she shall be charged with the cost to the Owner of any materials furnished by the Owner for the unsatisfactory work and its replacement in excess of the requirements for satisfactory original construction.

GC-26. Defective Work or Materials.

a. The inspection of the work shall not relieve the Contractor of any of his or her obligations to fulfill his or her contract as herein prescribed, and defective work shall be made good, and unsuitable materials may be rejected, notwithstanding that such work and materials have been previously overlooked by the Owner and accepted or estimated for payment.

b. If the work, or any part thereof, shall be found defective at any time before the final acceptance of the whole work, the Contractor shall forthwith make good such defect without compensation in a manner satisfactory to the Owner, and shall be charged as provided in the preceding section for any excess material furnished by the Owner; provided that in the event the Owner finds that the said defect necessitating the repair or removal of completed work is due to the use of materials furnished by the Owner which were, when incorporated in the work, or have since become, unsatisfactory or unsuitable from causes for which the Contractor is not responsible, then the Owner shall pay under applicable contract items or as extra work for the placing, tearing out, removal from the vicinity, and replacing of such defective work or for its repair as ordered, and shall furnish without charge satisfactory materials to replace that previously furnished by the Owner.

c. If any materials furnished and brought upon the ground by the Contractor for use in the work, or selected for the same by him or her, shall be condemned by the Owner as unsuitable or not in conformity with the specifications, the Contractor shall forthwith discard such materials and remove them to a satisfactory distance from the vicinity of the work.

d. If the Contractor shall fail or neglect to make ordered repair of defective work or to remove condemned materials from the work within 10 days after the service by the Owner of an order to do such repair work or remove such materials, the Owner may make the ordered repairs or remove the condemned materials and deduct the cost thereof from any moneys due the Contractor.

GC-27. Right of Property in Materials.

Nothing in this contract shall be considered as vesting in the Contractor any right of property in materials used, after they have been attached or affixed to the work of the soil, but all such materials shall, upon being so attached or affixed, become the property of the Owner.

GC-28. Title to Materials Found on the Work.

The title to all water and to the right to use of all water, to all soil, stone, gravel, sand, minerals, and all other materials developed or obtained in the excavation or other operations by the Contractor or any subcontractor or any of their employees, and the right to use or dispose of the same, are hereby expressly reserved in the Owner and neither the Contractor, nor any subcontractor, nor any of their employees shall have any right, title, or interest in or to any part thereof, neither shall they, nor any of them, assert or make any claim thereto. The Contractor may be permitted to use in the work without charge any such materials which meet the requirements of these specifications.

GC-29. Access to Work.

The Owner, and the Engineer, their assistants, inspectors, agents, and other employees, shall at all times and for any purpose have access to the work and the premises used by the Contractor, and the Contractor shall provide safe and proper facilities therefore. Furthermore the Owner and the Engineer, their assistants, inspectors, and agents shall, at all times, have immediate access to all places of manufacture where machinery or materials are being manufactured, produced or fabricated for use under these specifications, and shall have full facilities for determining that all such machinery or materials are being made strictly in accordance with the specifications, details and exhibits. The Contractor shall, whenever so requested, give the Owner and the Engineer access to the proper invoices, bills of lading, etc., and shall provide scales and assistance for weighing, or assistance for measuring of the materials.

GC-30. Damages - Failure to Complete on Time.

The Contractor shall pay to the Owner all expenses, losses, and damages, as determined by the Owner, incurred in consequence of any defect, omissions, or mistake of the Contractor or his or her employees, or the making good thereof, and shall also pay for each and every day, including Sundays and legal holidays; that he or she shall be in default in completing the whole work to be done under this contract, or any separable part thereof, the sum or sums named in the Detail Specifications, which sum or sums are by the execution of the Agreement mutually agreed upon, not as a penalty, but as liquidated damages which the Owner will suffer by reason of default. The Owner shall have the right to deduct the amount of such damages from any moneys due or to become due the Contractor under this contract; provided, however, that the Owner shall have the right as provided in Section GC-13 hereof to extend the time for the completion of the work beyond the time stated in this contract. If the time for the completion of the work as aforesaid shall be extended by the Owner, then and in such case the Owner shall be fully authorized and empowered to deduct from the final estimate of the amount due the Contractor under the provisions of this contract the amount of any damages determined as heretofore stipulated for each day that the Contractor shall be in default, for the completion of the work or separable part thereof, beyond the date to which the time for said completion shall have been extended by the Owner. (See also Section GC-33). Permitting the Contractor to continue the work and finish the work, or any part of it, after the date to which the time fixed for the completion may have been

extended, shall in no way operate as a waiver on the part of the Owner of any of its rights under this contract.

GC-31. Patents and Copyrights.

The Contractor shall hold and save the Owner, its Engineer, officers, agents, and employees, harmless from liability of any nature and kind, including costs and expenses, for or on account of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article, or appliance, manufactured, furnished, or used by him or her in the performance of this contract, including their use by the Owner, unless otherwise specifically stipulated in this contract.

GC-32. No Payment for Temporary Work.

No direct payment will be made to the Contractor for providing transportation, light, power, tools, and equipment or for furnishing, building, and maintaining camps, construction plant, access roads, sanitary conveniences, disposal work, water supply, fire protection, guards, trestles, telephone system, and other temporary works, or for the removal of all temporary structures, plant and materials, or for medical attendance or health protection, or for watchmen, magazine keepers or guards, or for any other service, thing, or material, unless payment therefore has been definitely provided. Compensation for all such services, facilities, thing, or materials necessary or required to execute the work in accordance with the provisions of the contract shall be considered as having been included in the prices stipulated for the appropriate items.

GC-33. Partial Estimates.

a. Unless otherwise specified in the section entitled "Special Conditions," partial estimates and subsequent partial payments shall be made in accordance with the procedures described herein.

b. In order to assist the Contractor to prosecute the work advantageously, the Owner shall, on or about the last day of each calendar month, except as provided in the section entitled "Partial Payments may be Withheld," make in writing, an estimate such as in its opinion shall be just and fair, of the amount and value of the work done by the Contractor up to that time in the performance of the contract.

c. In the case of work for which unit prices are named in the contract the estimate shall be computed on the basis of said unit prices. In the case of work for which a lump sum is named in the contract, the Owner may use the prices submitted by the Contractor in the "Bidder's Breakdown of Lump Sum Bid;" provided, that in case the prices submitted in said breakdown do not in the opinion of the Owner truly represent the actual relative costs of the different parts of the work, the Owner will prepare a schedule of prices which shall be used in estimating the value of the work performed; and provided further, if the Contractor was not required to submit such breakdown with his or her bid, the Owner will prepare a schedule of prices which shall be used in estimating the value of the work performed. To the figure thus arrived at shall be added any amounts due the Contractor for extra work and the amount of any approved claims for extra cost to the date of the progress estimate.

d. From the beginning of work under the contract until 50 percent of it has been completed, a deduction of 10 percent or such larger or smaller percentage as may be hereinafter stipulated in these specifications shall be made from the total thus computed, and from the remainder shall be further deducted any amounts due the Owner from the Contractor for

supplies or materials furnished or services rendered and any other amounts that may be due the Owner under the terms of the contract. From the balance thus determined shall be deducted the amount of all previous payments and the remainder shall constitute the partial estimate for that month.

e. At any time after 50 percent of the work under the contract has been completed and progress satisfactory to the Owner is being made, the Owner, at its discretion, may continue to make such deduction as described in the foregoing paragraph or may make any of the remaining partial payments in full for the estimated value of the work completed during the period covered by each such payment. Further, if the Owner determines that the work is substantially complete and the amount of the retained percentage is in excess of the amount considered by him or her to be adequate for the protection of the Owner, the Owner may, at its discretion, release to the Contractor such excess amount.

f. Unless otherwise specifically provided in the Detail Specifications, no materials not incorporated in the work and none of the Contractor's plant shall be included in the partial estimates. Such partial estimates shall not be required to be made by strict measurement, but they may be made by measurement or by estimation, or partly by one method and partly by the other, and it shall be sufficient if they are approximate only.

GC-34. Partial Estimates May be Withheld.

The partial estimates provided for in the section entitled "Partial Estimates" and/or the payment thereof may, at any time, be withheld or deducted if, in the opinion of the Owner, the Contractor is not diligently and efficiently endeavoring to comply with the intent of the contract, or if the Contractor shall fail to pay his or her labor and material bills or sums due subcontractors as they become due.

GC-35. Partial Payments.

a. Within 21 days after the date each partial estimate is prepared by the Owner, as set forth in Section GC-33 hereof (unless payment be withheld as provided in Section GC-34 hereof), except as stipulated in subsection b., hereof, the Owner shall pay to the Contractor, the amount stated in such estimate to be due the Contractor; provided, however, that the Owner may at all times reserve and retain from such partial payments, or any of them, in addition to the retained percentage and other amounts above mentioned to be deducted in computing the partial estimates, any sum or sums which by the terms hereof, or of any law of the State of California it is or may be authorized or required to reserve or retain; and provided further, that no such partial estimate or payment shall constitute an acceptance of the work or any portion thereof. The percentage deducted as above set forth shall become due and payable with and as a part of the final payment to be made as hereinafter provided.

b. In the event work under the contract or any part thereof shall be discontinued as provided in Section GC-06, the said retained percentage shall become and be the property of the Owner to the extent necessary to repay the Owner any excess in the cost of the work above the contract price; and after issuance of notice to discontinue work, as therein provided, no payment upon partial estimates or otherwise shall thereafter be made the Contractor for the work covered by said notice until completion of the work and final settlement.

c. The Contractor shall have the option to substitute securities for any moneys withheld by the Owner as provided in Section GC-34 hereof. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the Owner, or

with a state or federally chartered bank as the escrow agent, who shall pay such moneys to the Contractor upon satisfactory completion of the contract. Securities eligible for investment under this section shall include those listed in Section 16430 of the Government Code or bank or savings and loan certificates of deposit. The Contractor shall be the beneficial owner of any securities substituted for moneys withheld and shall receive any interest thereon. Any escrow agreement entered into pursuant to this section shall contain as a minimum, the following provisions.

- (1) The amount of securities to be deposited;
- (2) The terms and conditions of conversion to cash in case of the default of the Contractor; and
- (3) The termination of the escrow upon completion of the contract.

d. Pursuant to §20104.50 of the Public Contract Code, should the Owner fail to make a partial payment within thirty days after receipt of the undisputed and properly submitted pay estimate from the Contractor, the Contractor is entitled to interest from the Owner at the then prevailing legal rate.

The payment request shall be reviewed by the Owner as soon as practicable after receipt for the purpose of determining that the payment request is proper. Any payment request determined not to be proper shall be returned to the Contractor not later than seven days after receipt by the Owner's Representative. Such returned requests shall be accompanied by a written explanation of the reasons why the payment request is not proper.

In the event a payment is rejected, all or in part, beyond the seven-day period after receipt, the number of days available to the Owner to make payment without incurring interest shall be reduced by the number of days by which the Owner exceeds the seven day return requirement set forth above.

GC-36. Final Estimate and Payment.

a. Whenever the Contractor shall deem all work under the contract to have been completed in accordance therewith, he or she shall so notify the Owner in writing and the Owner shall promptly ascertain whether such be the fact, and if not, shall advise the Contractor in detail and in writing of any additional work required. When the Contractor has complied with all provisions of the contract to the satisfaction of the Owner, he or she shall proceed with all reasonable diligence to measure all work done and all materials furnished under and in accordance with the contract, and shall make a final and complete estimate of the value of such work done and all materials furnished in conformance with the contract and shall certify to the Owner said estimate and the date of completion of the work. The Owner shall take prompt action thereon and shall furnish the Contractor and his or her surety with a statement of acceptance or of exceptions.

b. Within 10 days after the date of acceptance, the Owner shall cause to be filed, in the office of the county recorder of the county or counties in which the work is located, a notice of the completion of the work herein agreed to be done by the Contractor. Upon the expiration of 35 calendar days from the filing of such notice of completion of the work, the Owner shall pay to the Contractor the amount remaining after deducting from the amount of the Final Estimate, all such sums as shall theretofore have been paid to the Contractor under any of the provisions of the contract, and also any sum or all sums of money which by the terms hereof of the Owner is or may be authorized or required to reserve or retain. All prior certificates upon which partial payments have been made, being merely estimates, shall be subject to correction in the final certificate, which final certificate may be made without notice thereof to the Contractor

or of the measurements upon which it is based. In the event that securities have been deposited with the Owner by the Contractor as provided in Section GC-35c hereof, at the time of the Final Payment as provided for herein, the Owner shall take appropriate action to release control of any such securities being held to insure performance.

GC-37. False or Erroneous Certificates.

Neither the Owner, nor any officer thereof, shall at any time either before or after the final completion and acceptance of the work and payment therefore pursuant to any return or certificate accepted by the Owner, under the provisions of this contract, be precluded or stopped by any return of certificate from showing the true and correct amount and character of the work done and materials furnished by the Contractor or any other person under this agreement, or from showing at any time that any such return or certificate is untrue and incorrect or improperly made in any particular, or that the work and materials, or any part thereof, do not in fact conform to the specifications; and the Owner shall not be precluded or stopped notwithstanding any such return or certificate and payment in accordance therewith, from demanding and recovering from the Contractor such damages as the Owner may sustain by reason of the Contractor's failure to comply with the specifications.

GC-38. Acceptance of Work not a Waiver.

Neither the acceptance by the Owner or by any of its employees, nor any order, measurements, or certificate, nor any payment for, or acceptance of the whole or any part of the work by the Owner or any of its officers, nor any extension of time, nor any possession taken by the Owner or its employees, shall operate as a waiver of any portion of this contract or of any power herein reserved to the Owner, or any right to damage herein provided; nor shall any waiver of any breach of this contract be held to be a waiver of any other or subsequent breach.

GC-39. Final Payment Terminates Liability.

a. No claim shall be made or be filed and neither the Owner, nor its Engineer or any of its agents shall be liable, or held to pay any money except as specifically provided in the contract.

b. The acceptance by the Contractor of the final payment aforesaid shall operate as and shall be a release to the Owner, its Engineer and agents, from all claim and liability to the Contractor for anything done, or furnished for, or relating to, the work or for any act or neglect of the Owner or for any person relating to or affecting the work, except the claim against the Owner for the remainder, if any there be, of the amounts kept or retained as provided in Section GC-41.

GC-40. Payment Only in Accordance with Contract.

The Contractor shall not demand or be entitled to receive payment for the work or materials or any portion thereof, except in the manner set forth in the contract; nor unless each and every one of the promises, agreements, stipulations, terms and conditions herein contained to be performed, kept, observed and fulfilled, and the Owner shall have accepted the work. Said final certificate of completion and acceptance shall be final and conclusive upon the Contractor.

GC-41. Moneys May be Retained.

The Owner may keep any moneys which would otherwise be payable at any time hereunder, and apply the same, or so much as may be necessary therefore, to the payment of any expenses, losses, or damages incurred by the Owner, for which the Contractor is liable under the contract.

GC-42. Unpaid Claims.

If, upon or before the completion of the work herein agreed to be performed or at any time prior to the expiration of the period within which claims or liens may be filed for record as prescribed by Section 1193.1 of the Code of Civil Procedure of the State of California, any person or persons claiming to have performed any labor or furnished any material, supplies, or services toward the performance or completion of this contract, or that they have agreed to do so, shall file with the Owner a verified statement of such claim, stating in general terms the kind of labor and materials and the name of the person to or for whom the same was done or furnished, or both, and the amount in value, as near as may be, of that already done or furnished, or both, and of the whole agreed to be done or furnished, or both, together with a statement that the same has not been paid, or if any person or persons shall bring against the Owner or against any officer or officers thereof any action to enforce such claim. The Owner shall until the discharge thereof withhold from the moneys under its control so much of said moneys due or to become due the Contractor under this contract as shall be sufficient to satisfy and discharge the amount in such notice or under such action claimed to be due, together with the costs thereof; provided, that if the Owner shall in its discretion permit the Contractor to file such additional bond as is authorized by Section 1192.1 of the Code of Civil Procedure, in a penal sum equal to one and one-fourth times the amount of said claim.

GC-43. Cost Statement.

The Contractor shall furnish the Owner promptly, upon completion of all the work, all information necessary to determine the cost of the work, including an itemized statement in a form satisfactory to the Owner of the actual cost of all labor, materials, rentals, repairs, compensation and other insurance, transportation of labor, equipment and materials, engineering or other special services, supervision, overhead, depreciation, and taxes properly chargeable against the work, and any and all cost entering into the work performed. The Contractor shall permit the Owner to have access to original payrolls, vouchers, and other records to the extent required to verify the figures given in said statement, and the Contractor shall not be entitled to receive payment on account of the final estimate hereinbefore provided for unless and until he or she shall furnish the Owner a satisfactory statement of the cost of the entire work.

GC-44. Laws and Regulations.

a. The Contractor shall keep himself fully informed of all laws, ordinances, and regulations in any manner affecting those engaged or employed on the work, or the materials used in the work, or in any way affecting the conduct of the work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over the same. If any discrepancy or inconsistency should be discovered in this contract, or in the details, exhibits or specifications herein referred to, in relation to any such law, ordinance, regulation, order, or decree, he or she shall forthwith report the same in writing to the Owner. He or she shall at all times himself observe and comply with, and shall cause all his or her agents and employees to observe and comply

with all such applicable laws, ordinances, regulations, orders, and decrees in effect or which may become effective before completion of this contract; and shall protect and indemnify the Owner, its officers, Engineer, and agents against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or by his or her employees.

b. Except as otherwise explicitly provided elsewhere in these specifications, all permits and licenses necessary to the prosecution of the work shall be secured by the Contractor at his or her own expense, and he or she shall pay all taxes properly assessed against his or her equipment or property used or required in connection with the work.

GC-45. Payment of Wages.

The issuance as payment for wages of any evidence of indebtedness is prohibited unless the same is negotiable and payable on demand without discount. Wages must be paid at least semi-monthly on regular pay days established in advance, and shall include all amounts for labor or services performed by employees of every description. (See California Labor Code.)

GC-46. Eight-Hour Law.

Pursuant to the provisions of the California Labor Code, eight hours labor shall constitute a legal day's work and the time of service of any workman employed on the work shall be limited and restricted to eight hours during any one-calendar day. Work performed by Contractor's employees in excess of eight hours per day, and 40-hours during any one week will be permitted upon compensation for all hours worked in excess of eight hours per day at not less than one and one-half times the basic rate of pay. The Contractor shall forfeit as a penalty to the Owner \$50.00 for each workman employed in the execution of this contract by him or her or by any subcontractor under him or her, for each calendar day during which such workman is required or permitted to labor more than eight hours in violation of the provisions of said Labor Code.

GC-47. Overtime.

a. Overtime work, i.e. work in excess of eight hours in any one calendar day, or work performed on a Saturday, Sunday or other legal holiday shall not entitle the Contractor to any compensation for any contract item in addition to that stipulated in the contract for the kind of work performed, even though such overtime or legal holiday work may be required under emergency conditions by the Owner under the provisions of Section GC-12 hereof, no additional payment will be made to the Contractor because of the payment by him or her of overtime or legal holiday rates for such work, unless the use of overtime or legal holiday work in connection with such extra work is specifically ordered in writing by the Owner, and then only to such extent extra payment is regularly being made by the contractor to his or her workforce for overtime or legal holiday work of a similar nature in the same locality.

b. Overtime and shift work may be established as a regular procedure by the Contractor only with the written permission of the Owner. Such permission may be revoked at any time.

c. All costs for overtime inspection, except those occurring as a result of overtime and shift work established as a regular procedure, or work specifically ordered by the Owner on an overtime basis, shall be paid by the Contractor. Overtime inspection shall include inspection required during holidays, Saturdays, Sundays and any weekday between the hours of

6:00 p.m. and 7:00 a.m. Such costs will include but will not necessarily be limited to engineering, inspection, general supervision and other overhead expenses which are directly chargeable to the overtime work. All such charges shall be deducted by the Owner from payments due the Contractor.

GC-48. Prevailing Rates of Wages and Department of Industrial Relations Requirements.

a. All work performed under this contract is subject to compliance monitoring and enforcement by the Department of Industrial Relations. To engage in the performance of any work under this contract, the Contractor and his or her subcontractors must be registered and qualified to perform public work pursuant to Section 1725.5 of the Labor Code.

b. As determined by the Director of the Department of Industrial Relations, the Owner has on file at its headquarters office, the prevailing wages for general, holiday and overtime work to be performed by each craftsman or type of worker needed to execute the contract and has specified the same in the Notice Inviting Bids which is attached hereto and made a part of the contract. The Contractor shall forfeit as a penalty to the Owner, Fifty Dollars (\$50.00) for each calendar day or portion thereof for each worker paid less than the prevailing wages for any work done under the contract by him or her or any sub-contractor on the work, in violation of the Labor Code.

c. Contractor shall post job site wage notices as prescribed by state regulations. The Contractor and his or her subcontractors shall also maintain accurate payroll records and provide access to those records, as set forth in Section 1776 of the Labor Code. The Contractor and his or her subcontractors shall furnish payroll records directly to the Labor Commissioner, as set forth in Section 1771.1 of the Labor Code.

GC-49. Interference with Fire Hydrants, Highways and Fences.

The Contractor shall so conduct his or her operations as not to close or obstruct any portion of any highway, road or street or prevent in any manner free access to fire hydrants until he or she has obtained permits therefore from the proper authorities. If any highway required to be kept open shall be rendered unsafe by the Contractor's operations he or she shall make such repairs or provide such temporary guards as shall be acceptable to the authorities having jurisdiction and to the Owner. Any highway or street maintenance or repair work required by local authorities in connection with necessary operations under this contract shall be performed by the Contractor at his or her own expense and cost. Fences subject to interference shall be kept up by the Contractor until the work is finished and then restored to their original condition.

GC-50. Other Rights-of-Way and Structures.

Except as otherwise specifically provided in the Detail Specifications, the Contractor shall not do any work that would affect any railway track, pipe line, telephone, telegraph or electric transmission line, irrigation ditch or other structure nor enter upon the right-of-way or other lands appurtenant thereto, until notified that the Owner has secured authority therefore from the proper companies or parties. Thereafter and before he begins such work, the Contractor shall give said companies or parties due notice of his or her intentions to do so, and he or she shall give said companies or parties convenient access and every facility for removing, shoring, supporting or otherwise protecting such tracks, lines, ditches or structures and for replacing same. The

Contractor shall not be entitled to any extension of time or any extra compensation on account of any postponement, interference or delay caused by any such structures being on the site of the work except as provided in Sections GC-13 and GC-14 hereof.

GC-51. Public Safety.

During performance of the work the Contractor shall erect and maintain temporary fences, bridges, railings and barriers and shall take all other necessary precautions and place proper guards for the prevention of accidents; shall put up and keep suitable and sufficient lights and other signals and shall indemnify and save harmless the Owner, its Engineer, officers and agents and employees from all damage and costs which they may be put to by reason of injury to persons or property resulting from the Contractor's negligence or carelessness in the performance of the work, or in guarding the same, or from any improper materials, implements or appliances used in the construction, or by or on account of any act or omission of the Contractor or his or her agents.

GC-52. Trespass.

The Contractor shall be responsible for all damage or injury which may be caused on any property by trespass by the Contractor or his or her employees in the course of their employment, whether the said trespass was committed with or without the consent or knowledge of the Contractor.

GC-53. Character of Workmen.

None but skilled workmen shall be employed on the work requiring special qualifications. When required in writing by the Owner, the Contractor or any subcontractor shall discharge any person who is, in the opinion of the Owner, incompetent, unfaithful, disorderly or otherwise unsatisfactory, and shall not again employ such discharged person on the work except with the consent of the Owner. Such discharge shall not be the basis of any claim for compensation or damages against the Owner, its Engineer or any of its officers.

GC-54. Employment of Labor.

- a. No convict labor shall be directly employed by the Contractor or any subcontractor in the performance of any work done under this contract.
- b. In the employment of labor in the performance of this contract, the Owner desires that the Contractor and all subcontractors shall, wherever possible, give first consideration to residents of the political subdivision to which the Owner provides service.
- c. The Contractor shall be responsible for compliance with Section 1777.5 of the California Labor Code relating to employment of Apprentices on Public Works.

GC-57. Antitrust Claims.

- a. Upon entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the Contractor or subcontractor offers and agrees to assign to the Owner all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (commencing with Section 16700 of Chapter 2, Part 2 of Division 7 of the Business

and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the Owner tenders final payment to the Contractor, without further acknowledgment by the parties.

b. If the Owner receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under this section, the assignor shall be entitled to receive reimbursement for actual legal costs incurred and may upon demand, recover from the Owner any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but were not paid by the Owner as part of the bid price, less the expenses incurred in obtaining that portion of the recovery.

c. Upon demand in writing by the assignor, the assignee shall, within one year from such demand, reassign the cause of action assigned under this part if the assignor has been or may have been injured by the violation of law for which the cause of action arose and (1) the assignee has not been injured thereby, or (2) the assignee declines to file a court action for the cause of action.

GC-58 Employment Eligibility.

At the request of City, Contractor shall furnish to City copies of Employment Eligibility Verifications (INS Form I-9) or other evidence satisfactory to City showing that any or all persons providing services under this Agreement for on behalf of Contractor are eligible to be employed in the United States. In the event Contractor is unable or unwilling to provide the employment eligibility verification within ten (10) days after City's request, City may require the immediate removal from the project of such workers as specified by City, and upon any failure by Contractor to do so, City shall be entitled to terminate this Agreement.

**** END OF SECTION ****

SPECIAL CONDITIONS

SC-01. Definitions.

Whenever the following terms, or pronouns used in their stead, occur in these Specifications, the intent and meaning shall be interpreted as follows:

- A. AWWA: The American Water Works Association. All references to the specifications of the AWWA are understood to refer to the current specifications as revised or amended at the date of construction.
- B. Construct: To furnish all labor, tools, equipment and incidentals, and to do Work in accordance with the Contract Documents, complete in place for a fully functional and operating system.
- C. Details or Exhibits: That part of the Contract Documents prepared by the Engineer, which schematically shows the scope, extent, and character or the Work to be performed by the Contractor.
- D. Record Documents: The set of Specifications, Details, and Exhibits which shows the facilities including all revisions to the original design.
- E. Specifications: That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards, including appendices containing various Details and Exhibits, and workmanship as applied to the Work and certain administrative details applicable thereto.
- F. State: The State of California.
- G. Work: The entire completed construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
- H. Work Area: The area bounded by the rights-of-way immediately adjacent to the project and other delineations as noted in these Specification for which the Contractor shall maintain all work activities. Storage of materials, staging and other miscellaneous work outside of the Work Area and designated construction staging and material storage areas is prohibited. If the Work Area is not clearly identified in these Specifications, then the Owner will define said boundaries in the field.

SC-02. Contract Documents.

- A. Contract documents consist of the contract (Notice Inviting Bids, Instructions to Bidders, Proposal and Bid Schedule, Project Drawings, Detail Specifications, Bonds and Agreement), together with the Addenda, Change Orders and Notices. The order of precedence of the contract documents shall be:

1. Change Orders, Field Orders, and Work Change Directives
 2. Agreement and Bonds
 3. Proposal and Bid Schedule
 4. Addenda
 5. Notice Inviting Bids
 6. Instructions to Bidders
 7. Notice of Award
 8. Notice to Proceed
 9. Special Conditions
 10. General Conditions
 11. Description of Work
 12. Project Drawings
 13. Standard Plans
 14. Detail Specifications
 15. Standard Specifications
 16. Reference Specifications
 17. Notice of Completion
 18. Exhibits and Details
- B. The Standard Specifications for Public Works Construction (SSPWC), 2000 Edition, shall supplement, to the extent referenced, the requirements specified herein, and are referenced herein as “Standard Specifications.”
- C. The Contract Documents may be supplemented by various forms of construction correspondence issued and occurring during the progress of the work. These supplemental Contract Documents are:
1. Request for Interpretation/Clarification

Requests for Interpretation/Clarification (RFI/RFCs) may be originated by the Owner, the Engineer or the Contractor as necessary during the course of construction. When originated by the Contractor, RFI/RFCs shall be submitted in writing to the Owner’s Project Manager, either directly or through the Owner’s Inspector. RFI/RFC forms will be provided by the Owner to the Contractor. All RFI/RFCs will be responded to in writing with copies to all parties.
 2. Field Orders

Field orders will be written or verbal instructions confirmed in writing provided by the Owner’s Project Manager or Resident Inspector to the Contractor. Field orders will involve minor changes in work, but which do not involve a change in Contract scope, price or time. If the Contractor believes that such an order should require a change in scope, price or time, the Contractor shall file a claim in strict accordance with the Contract Documents.
 3. Work Change Directives

- a. Work Change Directives will be issued by the Owner's Project Manager or Resident Inspector in writing. Work Change Directives will involve an addition, deletion or revision to the Contractor's Scope of Work. The directive itself will not change the Contract price or time, but will serve as evidence to all parties that the addition, deletion or revision will be incorporated into a Change Order following negotiation as to its effect.
- b. Work Change Directives issued by the Owner will be incorporated into a Change Order. The Change Order shall be fully executed by both the Contractor and Owner prior to payment to the Contractor for work performed under the Work Change Directive. All Change Orders to the Contract shall include the following statement:

“The Compensation (time and cost) set forth in the Change Order comprises the total compensation due the contractor, all Subcontractors, and all Suppliers, for the work or change defined in the Change Order, including impact on unchanged work. By signing the Change Order, the Contractor acknowledges and agrees on behalf of himself, all Subcontractors, and all Suppliers, that the stipulated compensation includes payment for all work contained in the Change Order, plus all impact, ripple effect or cumulative impact on all other work under the Contract. The signing of the Change Order indicates that the Change Order constitutes full mutual accord and satisfaction for the change, and that the time and cost under the Change Order constitutes the total equitable adjustment owed the Contractor, all Subcontractors, and all Suppliers as a result of the change. The Contractor on behalf of himself, all Subcontractors, and all Suppliers, agrees to waive all rights, without exception or reservation of any whatsoever, to file any further claim related to the Change Order. No further claim or request for equitable adjustment of any type, for any reasonably foreseeable cause shall rise out of or result of this Change Order or the impact of this Change Order on the remainder of the work under this contract.”

SC-03. Contract Plans and Specifications.

- A. Plans and Specifications supplied to Contractor: After award of contract, the Owner will furnish to the Contractor, upon request, 5 sets of plans and Specifications. Additional quantities of Specifications may be furnished at reproduction cost.

SC-04. Preconstruction Meeting.

- A. Within fifteen (15) calendar days after execution of the contract, the Contractor shall schedule, coordinate and attend a preconstruction meeting with the Owner, Engineer, affected utility companies, and all other interested parties to review the scope of work. The Contractor shall also provide the Owner with at least one local, 24-hour telephone number where the Contractor can be reached day or night, including weekends and holidays.

SC-05. Construction Schedule.

- A. General: Within fifteen (15) calendar days after execution of the contract, the Contractor shall prepare and submit to the Owner for review, a progress schedule showing the order in which the Contractor proposes to carry out the Work, the dates on which critical events will occur (including procurement of materials and equipment), and clearly indicate the estimated start and completion dates for the various tasks. The progress schedule shall show the order in which the Contractor proposes to accomplish the Work activities and shall clearly depict the order, interdependence, duration, and workdays for each activity. The progress schedule shall concur with the interim and final completion requirements of the Contract Documents. The schedule shall show all of the work to be completed for each milestone and interdependence of the various tasks. The schedule breakdown shall be subdivided into areas or facilities in sufficient detail so that the Owner may readily evaluate the Contractor's progress at any given time during the course of the Work and shall be so arranged and itemized as to be of assistance to the Owner in the evaluation of partial estimates and subsequent partial payments.
- B. Schedule Format: The schedule shall be presented as a detailed bar chart and shall be shown in sufficient detail so as to identify the beginning and end of each of the various construction activities as described above.
- C. Schedule Updates: The Contractor shall maintain an updated schedule at all times. When so requested by the Owner, an updated schedule shall be forwarded to the Owner within 5 calendar days. The Owner's receipt and acceptance of the updated schedule shall be a condition precedent to the issuance of any portion of a progress payment for the preceding month.
- D. Schedule Changes Directed by the Owner: In the event that the Owner is of the opinion that any schedule of operation as thus submitted is inadequate to secure the completion of the work in the time agreed upon, or is otherwise not in accordance with the Specifications or if, in the opinion of the Owner, the work is being inadequately or improperly prosecuted in any respect, the Owner may demand that the Contractor submit new schedules and improve or change the prosecution of the work in such manner as to assure proper and timely execution. The Owner's receipt and acceptance of the updated schedule shall be a condition precedent to the issuance of any portion of a progress payment for the preceding month.

SC-06. Emergency Calls.

Contractor shall provide Owner primary and secondary points of emergency contact, available 24 hours a day, seven days a week. Arrangements shall be made by the Contractor to ensure that a response, in person or by telephone, by a duly authorized and competent representative of the Contractor, will be made within 30 minutes of any emergency calls made by the Owner to the telephone number provided by the Contractor during any hour of the day or night. If the Contractor is unable to respond to an emergency call, the Owner may take any necessary actions to remedy the emergency conditions, at the Contractor's expense, in all cases where the Contractor is obligated or responsible under these conditions.

SC-07. Services During An Emergency.

- A. The contractor shall be obligated to assist the Owner in the event of an emergency condition as determined by the Owner in accordance with the requirements of this section.
- B. The contractor shall make available to the Owner all mobilized equipment and personnel active on the project and shall provide supervision of such personnel under the direction of the Owner in order to perform required work to respond to an emergency condition.
- C. The contractor shall be compensated for such assistance in accordance with Section GC-12, cost plus basis of GC-12d and SC-20, "Accumulation of Costs for Extra Work".

SC-08. Claims. Subparagraph a. of GC-19 is specifically revised herein as follows:

- A. The words CHANGE ORDER shall mean a document recommended by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the work, or an adjustment in the contract price or the contract times, issued on or after the effective date of the agreement.
- B. As provided in Article 1.5 of Chapter 1 of Part 3 of Division 2 of the Public Contract Code, claims by the CONTRACTOR shall be in writing and include the documents necessary to substantiate the claim. Claims must be filed with the OWNER promptly, and in no case later than 30 days after the close of the month during which extra cost is claimed to have been incurred. Any claim forwarded to OWNER shall be accompanied by a cover sheet prepared on Contractor's letterhead which includes the following personal certification of the claim:

I, _____, BEING THE _____ (TITLE) OF (GENERAL CONTRACTOR), DECLARE UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF CALIFORNIA, AND DO PERSONALLY CERTIFY AND ATTEST THAT: I HAVE THOROUGHLY REVIEWED THE ATTACHED CLAIM FOR ADDITIONAL COMPENSATION AND/OR EXTENSION OF TIME, AND KNOW ITS CONTENTS, AND SAID CLAIM IS MADE IN GOOD FAITH; THE SUPPORTING DATA IS TRUTHFUL AND ACCURATE; THAT THE AMOUNT REQUESTED ACCURATELY REFLECTS THE CONTRACT ADJUSTMENT FOR WHICH THE CONTRACTOR BELIEVES THE OWNER IS LIABLE; AND FURTHER, THAT I AM FAMILIAR WITH CALIFORNIA PENAL CODE SECTION 72 AND CALIFORNIA GOVERNMENT CODE SECTION 12650, ET SEQ, PERTAINING TO FALSE CLAIMS, AND FURTHER KNOW AND UNDERSTAND THAT SUBMISSION OR CERTIFICATION OF A FALSE CLAIM MAY LEAD TO FINES, IMPRISONMENT AND OR OTHER SEVERE LEGAL CONSEQUENCES.

This certification must be signed by an officer of the party of the second part of the agreement. Unless so presented, the claim shall be deemed to have been waived.

SC-09. Bidder's Breakdown Of Lump Sum Bid.

- A. In the case of all work for which a lump sum is named in the contract, the Contractor shall submit a detailed schedule of each lump sum item in accordance with Section 9-2 "Lump Sum Work" of the Standard Specifications for Public Works Construction.

SC-10. Working Hours.

- A. PERMITS: All work shall be completed during the days and hours permitted in accordance with the permits.
- B. HOURS: Work is limited to the hours of 8:00 A.M. to 5:00 P.M., Monday through Friday. Work on Saturdays or Sundays is not permitted. No work of any nature shall commence before 8:00 A.M. including but not limited to: loading, unloading, starting and moving of construction equipment.
- C. SATURDAY/SUNDAY WORK: No Saturday or Sunday work will be permitted under this contract except work considered to be an emergency or when the Contractor receives written authorization from the Owner prior to carrying out the subject work.
- E. HOLIDAYS: The Owner legal holidays are: New Years Day (January 1), Martin Luther King Day (third Monday in January), President's Day (third Monday in February), Lincoln's Birthday (February 12th), Memorial Day (last Monday in May), Independence Day (July 4th), Labor Day (first Monday in September), Columbus Day (second Monday in October), Veteran's Day (November 11), Thanksgiving Day (as proclaimed by the State of California) and the day after Thanksgiving Day, Christmas Eve (December 24th), Christmas Day (December 25th) and New Years Eve (December 31st).

SC-11. Shop Drawings And Samples.

A. GENERAL

1. The Contractor is required to prepare and submit Shop Drawing submittals to the Engineer for review and approval. Shop Drawings are required for all materials and equipment proposed to be incorporated into the Work. Shop Drawings shall be submitted by the Contractor in accordance with these specifications. Faxed Shop Drawings are not acceptable.
2. The data shown on the Shop Drawings shall be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show the materials and equipment the Contractor proposes to provide and to enable the Engineer to review the information for the limited purposes described herein.
3. The Contractor shall also submit material samples to the Engineer for review and approval. Each sample shall be identified clearly as to material, supplier, pertinent data such as catalog number and the use for which intended.
4. As part of each Shop Drawing submittal, the Contractor shall give specific

written notice of all deviations that the Shop Drawing or sample submitted may have from the requirements of the Contract Documents. The Contractor shall also provide a notation of each such variation on each Shop Drawing and sample submitted to the Engineer for review and approval.

5. The Engineer will review the Shop Drawings and samples. The Engineer's review and approval or disapproval will be only to determine if the items covered by the submittals generally comply with the intent of the design. The Engineer's review and approval or disapproval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
6. The Engineer's review and approval of Shop Drawings or samples shall not relieve the Contractor from responsibility for any variation from the requirements of the Contract Documents. No portion of the Work requiring a Shop Drawing submittal shall be started until the submittal has been reviewed by and returned to the Contractor with a notation indicating that resubmittal is not required.
7. Revisions indicated on shop drawings shall be considered as changes necessary to meet the requirements of the Specifications and shall not be taken as the basis of claims for extra work. The Contractor shall have no claim for damages or extension of time due to any delay resulting from making changes to Shop Drawings that have been requested by the Engineer.
8. The Engineer's review is limited to checking for general conformance with the design intent and general compliance with the information included in the Contract Documents. Any comments included on Shop Drawings are subject to all requirements of the Contract Documents, applicable codes and permits, and do not relieve the Contractor of any project responsibilities and requirements thereof. Approval/Acceptability of a specific item does not imply approval of an assembly of which the item is a component.
9. The Engineer will review the initial submittal of Shop Drawings and sample submission and one resubmittal without cost to the Contractor. The cost of the Engineer's review of multiple resubmittals will be billed to the Contractor at the hourly rate of \$105 per hour. Multiple resubmittal costs, as provided to the Owner by the Engineer, will be deducted from any monies due or which become due to the Contractor.

B. SHOP DRAWING AND SAMPLE SUBMITTAL PROCEDURES.

1. Before submitting each Shop Drawing or sample, the Contractor shall have done the following:
 - a. Verified and determined all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar information.
 - b. Verified and determined materials with respect to intended use,

- fabrication shipping, handling, storage, assembly and installation pertaining to the performance of the Work.
- c. Verified and determined all information relative to the Contractor's means, methods, techniques, sequences and procedures of construction, and safety precautions and programs.
 - d. Reviewed and coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.
2. Each Shop Drawing and sample submission will bear a stamp or specific written indication that the Contractor has reviewed and approved all information in the submittal. The stamp or written indication shall state the following: ***"By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements."***
 3. The Contractor shall submit electronic copies of each Shop Drawing to the Engineer for review and approval at least thirty (30) calendar days before drawings will be required for ordering materials and commencing the work.
 4. Every submittal shall be accompanied by a letter of transmittal containing the following:
 - a. Contractor's name;
 - b. Project title;
 - c. Description of the submittal;
 - d. Submittals shall be numbered as follows: (spec section no.) – (submittal no. for that spec section) – (letter designation for first or subsequent submittal). Example: 03300-008-B; This example indicates Section 03300 Concrete – eighth submittal for Section 03300 – first resubmittal.
 5. Failure of the Contractor to comply with all of the requirements of this section will result in the shop drawings being returned to the Contractor marked "REJECTED."
 6. Within 14 calendar days of receipt of properly submitted said Shop Drawings, the Engineer will return 2 copies of each drawing to the Contractor with comments noted thereon. Shop Drawings will be returned to the Contractor with one of the following conditions:
 - a. If the drawing is returned to the Contractor marked "**NO EXCEPTIONS TAKEN**" a revision of said drawing will not be required. When the submittal is returned to the Contractor under this condition, the Contractor may release the equipment and/or material for manufacture.
 - b. If the drawing is returned to the Contractor marked "**MAKE CORRECTIONS NOTED**" a resubmittal of said drawing will not be required, but the Contractor shall comply with the comments and notations provided by the Engineer. When the submittal is returned to the Contractor under this condition, the Contractor may release the equipment and/or material for manufacture; however, all comments and

notations must be incorporated into the final product.

- c. If the drawing is returned to the Contractor marked "**REVISE AND RESUBMIT**" then the Shop Drawing may partially meet the intent of the Contract Documents; however significant revision or additional information is required. When the submittal is returned to the Contractor under this condition, the Contractor shall revise said Shop Drawing and resubmit five (5) copies of said revised drawing to the Engineer.
 - d. If the drawing is returned to the Contractor marked "**REJECTED**" then the submittal was not properly submitted or it does not meet the intent of the Contract Documents and the Contractor shall revise said drawing and shall resubmit five (5) copies of said revised drawing to the Engineer, as in the case of an original submittal.
7. If so indicated, the Contractor shall make corrections requested by the Engineer, and shall resubmit the corrected copies of the Shop Drawings and samples for review and approval. In the case of resubmittals, the Contractor shall direct specific written attention to revisions other than the corrections specifically called for by the Engineer.

SC-12. Maintenance And Guaranty.

- A. The Contractor hereby guarantees that the entire work constructed under the Contract shall meet fully all requirements thereof as to quality of workmanship and of materials furnished by the Contractor.
- B. The Contractor hereby agrees to make at the Contractor's own expense any repair or replacement made necessary by defects in materials or workmanship supplied by the Contractor that becomes evident within a two-year period after date of final payment, and to restore to full compliance with the requirements of the Contract Documents, including all test requirements, any part of the plant facilities or appurtenant works which, during said two-year period, is found to be deficient with respect to any provision of the Contract Documents.
- C. Replacement of backfill, where it has settled below the lines established by the Owner, shall be considered part of such repair work, and any repair of resurfacing constructed by the Contractor which becomes necessary by reason of settlement shall likewise be considered part of such repair work.
- D. The Contractor shall make all repairs and replacements promptly upon receipt of written orders for the same from the Owner. If the Contractor fails to make repairs and replacements within 30 calendar days, the Owner may contract with others for performance of the work and the Contractor and the Contractor's surety shall be liable to the Owner for the cost thereof.

SC-13. Permits And Licenses To Be Obtained By The Contractor.

- A. All other permits and licenses for construction of the project shall be met solely and fully by the Contractor. The Contractor is also responsible for ensuring that permits obtained by the Owner fulfill all permitting requirements to perform the Work. All costs incurred due to the permit and license requirements shall be included in the various bid items and no additional compensation will be provided by the Owner.

SC-14. Work Area Limits, Site Access, And Material Storage.

- A. Work shall be limited to the easements, designated work areas, and public right-of-ways as shown in the Specifications.
- B. Construction staging and material storage areas will be available during construction for the Contractor's use at the Firth Park parking lot located at the intersection of Sierra Point Road and Glen Park Way and in the lot south of the Brisbane Fire Station located at the 3445 Bayshore Blvd.

SC-15. Temporary Power.

- A. The Contractor shall provide, at the Contractor's own expense, all necessary power required for operations under the Contract, and shall provide and maintain all temporary power lines required to perform the work in a safe and satisfactory manner.
- B. All temporary connections for electricity shall be subject to the approval of the Owner and the power company representative, and shall be removed in like manner at the Contractor's expense prior to final acceptance of the work.

SC-16. Construction Lighting.

- A. All work conducted under conditions of deficient daylight shall be suitably lighted to insure proper work and to afford adequate facilities for inspection and safe working conditions.

SC-17. Dust And Smoke Control.

- A. No fuel shall be used nor shall any operation be conducted that will emit into the atmosphere any smoke that is equal to Ringelmann No. 2 or darker.
- B. No operation shall be conducted that will emit into the atmosphere any flying dust or dirt that is noticeable or that might constitute a nuisance.
- C. Dust control operations shall be performed to prevent construction operations from producing dust in amounts harmful to, or causing a nuisance to, persons living nearby or occupying buildings in the vicinity of the Work.
- D. Dry materials and rubbish shall be wet down to prevent blowing dust.
- E. Excavated material leaving the site, or material being imported, shall be covered or wet down to prevent excessive dust from being created.

SC-18. Noise Criteria.

- A. The Contractor shall abide by the exterior noise criteria allowed by the City of Brisbane and the County of San Mateo during the applicable hours of construction.

SC-19. Sanitation.

- A. The Contractor shall furnish and install all necessary field toilets, lavatory fixtures, and daily janitorial services for the duration of the Work. These accommodations shall be maintained in a neat and sanitary condition. The Contractor shall remove said facilities within two (2) days after the execution of the Notice of Completion. All facilities hereunder shall conform to or exceed the applicable requirements of Cal-OSHA and the OSHA standards for construction. The Contractor shall furnish all the facilities and means for the proper sanitation of the Work and shall hold harmless the City, its officers and employees, from any liability resulting from improper or insufficient sanitation measures.

SC-20. Accumulation of Costs for Extra Work.

- A. The accumulation of costs for extra work shall be compiled in accordance with Section 9-1.03 of the Standard Specifications for Public Works Construction.

SC-21. Overtime Inspection.

- A. Costs for overtime inspections shall include any inspection required in excess of 8 hours per day.
- B. All costs of inspection and testing performed by the Owner or its authorized representatives before 8:00 A.M. or after 5:00 P.M. on any normal working day, or all Saturdays, Sundays and Holidays, for work by the Contractor which is allowed solely for the convenience of the Contractor shall be borne by the Contractor at the involved agencies standard overtime rates. Current rates may be obtained from the appropriate agency.
- C. See Section SC-10, "Working Hours" for a listing of City legal holidays.
- D. Costs of overtime inspection will be deducted from any monies due or which may become due to the Contractor.

SC-22. Lines, Grades, And Measurements.

- A. Reference lines and grades for the proposed improvements shall be provided by the Contractor. The Contractor shall preserve all benchmarks, monuments, survey marks, and stakes, and, in case of their removal or destruction by the Contractor or the Contractor's employees, the Contractor shall be liable for the cost of their replacement.
- B. The Contractor shall keep the Owner informed, 48 hours in advance, of the times and places at which the Contractor intends to do work, in order that inspection may be made with the minimum of inconvenience to the Owner or delay to the Contractor.
- C. Whenever the Owner finds it necessary to carry on operations outside of regular working hours or at other times when the work of the Contractor is not in progress, the Contractor shall furnish all necessary service and assistance. No direct payment shall be made for the cost to the Contractor of any work or delay occasioned by making necessary measurements, or by inspections.

SC-23. Hazardous Materials.

- A. Contractor shall give a written Notice of Hazardous Materials Condition to Owner promptly, before any of the following conditions are disturbed (except in an emergency as set forth in these Contract Documents), and in no event later than 24 hours after first observance of any:
 - i. Material that Contractor believes may be hazardous waste or hazardous material, as defined in Section 25117 of the Health and Safety Code (including, without limitation, Asbestos, lead, PCBs, petroleum and related hydrocarbons, and radioactive material) that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law ("hazardous material"); or
 - ii. Other material that may present an imminent substantial danger to persons or property exposed thereto in connection with Work at the Site ("other materials").
- B. Except as otherwise provided in the Contract Documents or as provided by applicable law, Contractor shall not be required to give any notice for the disturbance or observation of any such hazardous materials or other materials where such matter is disturbed or observed as part of the scope of Work under the Contract Documents (such as hazardous waste or hazardous material investigation, remediation or disposal activities which are identified as the subject of Work under the Contract Documents), where Contractor complies with all requirements in the Contract Documents and applicable law respecting such materials.
- C. Contractor's Notice of Hazardous Materials Condition shall indicate whether the hazardous materials or other materials were shown or indicated in the Contract Documents to be within the scope of Work, and whether the hazardous materials or other materials were brought to the Site by Contractor, its Subcontractors, suppliers, or anyone else for whom Contractor is responsible.
- D. Contractor shall not be entitled to any adjustment in the Contract Sum or Contract Time regarding claimed hazardous waste or materials if:

- i. Contractor knew of the existence of such hazardous materials or other materials at the time Contractor submitted its Bid; or
 - ii. Contractor should have known of the existence of such hazardous material or other materials as a result of its having the responsibility to obtain additional or supplementary examinations, investigation, explorations, tests, studies, and data concerning the conditions at or contiguous to the Site prior to submitting its Bid; or
 - iii. Contractor failed to give the written notice within the required timeframe set forth below.
- E. If Owner determines that conditions involve hazardous materials or other materials and that a change in Contract Document terms is justified, Owner will issue either a Request for Proposal or Construction Change Directive under the procedures described in the Contract Documents. If Owner determines that conditions do not involve hazardous materials or other materials or that no change in Contract Document terms is justified, Owner will notify Contractor in writing, stating the reasons for its determination.
- F. In addition to the parties' other rights under these Contract Documents, if Contractor does not agree to resume Work based on a reasonable belief that it is unsafe, or does not agree to resume Work under special conditions, Owner may order the disputed portion of Work deleted from the Work, or performed by others, or Owner may invoke its right to terminate Contractor's right to proceed under the Contract Documents in whole or in part, for convenience or for cause as the facts may warrant.
- G. If Contractor does not agree with any Owner determination of any adjustment in the Contract Sum or Contract Time under this Article, Contractor may make a claim as provided in these Contract Documents.

SC-24. Coordination And Cooperation With Others.

- A. During the course of the work to be performed under this Contract, it is possible that other public and private agencies and other contractors will be performing work in the immediate vicinity. The Contractor shall coordinate construction activities with others and notify affected agencies at least five (5) working days prior to beginning work. The Contractor, under this contract shall schedule work and coordinate operations with others so as to minimize conflicts and interference between the Contractor's operations and those of other workers, in strict accordance with Section 7-7 of the Standard Specifications for Public Works Construction. The Contractor shall schedule all work activities to avoid any conflicts with others. No additional compensation will be provided by the Owner for coordination with others.
- B. The Contractor expressly waives any and all rights to make claim or be entitled to receive any compensation or damages for failure of the Owner or of a utility company, public agency, or other contractor to have related portions of the project completed in time, creating delays, standby or waiting time for work included in this contract.

SC-25. Protection And Restoration Of Existing Improvements.

- A. The Contractor shall protect in place or remove and replace existing improvements which may be damaged by the Contractor's operations as specified in Section 7-9 of the Standard Specifications for Public Works Construction. Existing improvements may include, but are not limited to: curbs, gutters, sidewalks, fences, trees, road delineators, road striping, existing utilities, irrigation lines, pavement and drainage devices.
- B. The Contractor shall protect in place all existing trees. No equipment shall be operated or parked within the drip line of the trees nor shall any material including dirt of any kind be stockpiled in this area without the specific approval of the Owner, unless otherwise shown.

SC-26. Isolation Of Dissimilar Metals.

- A. The Contractor shall be responsible for isolating dissimilar metals that have the potential for galvanic corrosion whether or not the isolation system and materials are specifically called out in these specifications.

SC-27. Construction Water.

- A. The Contractor shall furnish at the Contractor's own expense, an adequate supply of water for the purpose of constructing and testing all of the work described in these specifications and shall make arrangements for developing all water sources and shall supply all labor and equipment to collect, load, transport, and apply water as necessary for compaction of materials, concrete construction operations, testing, dust control, disinfection, and other construction use.
- B. All construction water from a City fire hydrant shall be metered. The Contractor may sign up at the City's Public Works Department office for one or more construction meters. After receipt of a deposit of \$750 per meter, the City will install the meter at a fire hydrant near the project site. Charges for the construction water are per Section 13.12.020 of the Brisbane Municipal Code. The Contractor shall supply a double check backflow preventer, certified and inspected within the last year and appropriate support approved by the City before the connection to a fire hydrant is allowed.

**** END OF SECTION ****

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01100 - CONSTRUCTION CONSTRAINTS

I. CONSTRUCTION SEQUENCING

- A. Contractor shall note that there are three distinct project phases, as shown in the Engineering Drawings: (1) Phase West-1 (Kings Road), (2) Phase West-2 (Margaret Avenue and Paul Avenue), and (3) Phase East (Annis Road and Harold Road). The Contractor shall complete the Phase West-1 and Phase West-2 sequentially. The Owner does not have a preference whether Phase East or Phase West-1 is completed first. The Contractor shall not work in multiple phases simultaneously.
- B. The maximum extent of road closure shall not exceed 500 contiguous linear feet on any work day. Full vehicular access must be restored at the end of each work day. The Contractor shall provide 72-hour advanced written notice to residents that will have access to driveways or parking areas restricted by the road closure. Road closures will not be permitted if the Contractor has not provided required advanced notice. The Contractor shall submit to the Owner for review a sample written notice that will be distributed to residents.

II. UTILITY CONSTRAINT AND WORKING TOGETHER WITH CITY MAINTENANCE PERSONNEL

The Contractor shall prosecute the work in such a manner as not to damage any existing utilities. Existing sanitary sewer mains and gas lines are in close proximity to the proposed water main. Contractor shall constantly monitor these pipes for displacement or damage at no cost to the City.

Connections and utilities changes must be scheduled to provide the least possible interruptions of service. Contractor shall cooperate and work closely with City maintenance staff to drain all the water in the existing water mains prior to installation and reattachment of proposed water main. Prior to any shutdown, all materials, fittings, supports, equipment and tools shall be on the site and all necessary labor scheduled prior to starting any connection work. The Contractor shall notify the City in writing at least 7 days in advance of any required shutdowns so that affected customers may be notified.

The Contractor shall provide 72-hour advanced written notice prior to affected residents prior to disconnecting domestic water services. The Contractor shall submit to the Owner for review a sample written notice that will be distributed to residents.

All work shall be conducted in a manner which will minimize shutdowns, open roadways, or traffic obstructions caused by the construction. Shutdowns causing damage to adjacent public and private property shall not be permitted, and any damage resulting shall be the sole responsibility of the Contractor. The Contractor shall restore water service within eight (8) hours or any shutdown or service disconnection.

III. WORKING HOUR

- A. All work shall be completed during the days and hours permitted in accordance with the permits.
- B. The Contractor shall submit a closure schedule for the Engineer's review and approval prior to any lane closure. Lane closures will be allowed between Monday and Friday from 8 am to 5 pm. Traffic will be diverted wherever necessary and will include road closures due to the narrow road conditions and limited staging.

IV. PROJECT COMPLETION

After the effective date of the Notice to Proceed issued by Owner, the Contractor shall diligently prosecute the work to completion within 240 calendar days from the effective date of the Notice to Proceed for the Base Bid plus an additional 30 calendar days for Additive 1 and 180 calendar days for Additive 2, if the City elects to award either Additives. If the Contractor fails to complete the work within the time limits set forth herein, or as it may be modified as provided in the Contract Documents, liquidated damages shall be paid to the Owner at the rate of One Thousand Dollars (\$1,000.00) per calendar day until the work is completed.

V. CONSTRUCTION SCHEDULE AND PROGRESS MEETINGS

The Contractor shall schedule continuous weekly progress meetings at the job sites with the City staff and construction manager throughout the project. The Contractor shall submit to the City a weekly construction schedule. It shall show the following two weeks of construction schedule and project status. If the weekly schedule is revised, the Contractor shall request approval of changes from the Engineer at least 24 hours in advance.

**** END OF SECTION ****

SECTION 01270 - MEASUREMENT FOR PAYMENT

I. GENERAL

It is the intent of the Proposal and this Contract Document that the bid for each lump sum or unit price item, as submitted, shall cover all work shown on the contract drawings and required by the Contract Document, Standard Specification of City of Brisbane, and the Technical Specifications and other contract documents. All costs in connection with the work, including labor, materials and equipment to fully complete the work, shall be included in the lump sum or unit price named in the Proposal. No item of work required by contract documents for proper and successful completion of the contract will be paid for in addition to the prices submitted in the Proposal. All work not specifically set forth in the Proposal as a pay item shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in prices shown in the Proposal.

II. UNITS OF MEASURE

A. **MOBILIZATION AND PREPARATORY WORK (BID ITEMS 1, A.1.1, AND A.2.1)**

A lump sum price will be paid for all costs in connection with mobilization/demobilization, move in and move out including labor, materials, tools, equipment, and incidentals involved in the construction project. Mobilization shall be paid on a lump sum basis. Fifty percent of the Bid Item amount will be paid upon satisfactory completion of mobilization to the worksite, and the remaining 50% distributed evenly throughout construction activity.

Payments for the lump sum item for "Mobilization" shall be determined based on the percentage of the bid item work completed, in accordance with the description above, and as determined by the Engineer at the time the progress payment is prepared. The amount of this Bid Item shall not exceed 10% of the Total Amounts of Base Bid Items, Additive 1 Bid Items, or Additive 2 Bid Items, respectively.

B. **TRAFFIC CONTROL (BID ITEMS 2, A.1.2, AND A.2.2)**

A lump sum price shall be paid for the traffic control or placement of temporary signs, construction area signs, barricades, cones, or other traffic control devices as required for the construction of this project, as described in these specifications. The lump sum price shall include all necessary traffic control submittals, implementation and maintenance of the approved traffic control plans and phases, and placement of temporary markers and striping tape, which shall include full compensation for furnishing all labor, materials, tools, equipment, flagman, and incidentals involved in the safety of the public and workers and according to the State standard requirement. No separate payment shall be made for any single item.

C. **STORM WATER POLLUTION PREVENTION (BID ITEMS 3, A.1.3, AND A.2.3)**

A lump sum price including all necessary submittals, all labor, materials, tools, and equipment shall be paid for all costs in connection with Storm Water Pollution Prevention to eliminate non-rainwater and contaminants from entering the storm drain system. No separate payment shall be made for any single item.

D. **SHEETING, SHORING, AND BRACING (BID ITEMS 4, A.1.4, AND A.2.4)**

A lump sum price shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and all the work involved and necessary to design and prepare shoring plan and furnish, install, and remove sheeting, shoring, bracing and other excavation

supports necessary to complete the Work in conformance with Laws and Regulations and as specified herein. No separate payment shall be made for any single item.

E. SITE INVESTIGATION AND POTHOLING (BID ITEMS 5, A.1.5, AND A.2.5)

Site Investigation and Potholing shall be paid on a lump sum basis. Payment of partial amounts under this Bid Item will be made based on the progress of the Work.

The lump sum price shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals to fully investigate buried and overhead utilities and other facilities and structures.

F. WATER MAIN REPLACED IN EXISTING TRENCH (BID ITEMS 6 AND A.2.6)

The contract price for Ductile Iron Water Main shall be paid on a unit price basis per linear foot of pipe provided complete in place and satisfactorily tested, using open trenching methods. Payment shall be deemed full compensation for all labor, materials, equipment and incidentals necessary to provide water main complete, in place, as shown on the typical sections; including confirming the actual alignment of the existing piping to locate existing trench for removal of existing piping, removal and disposal of existing pipeline, profile adjustments necessary to avoid known utility conflicts, irrespective of required waterline depth of pipe; and including required fittings, couplings and thrust blocks for profile adjustments, permits as required, excavation, hand digging as required, dewatering and water management as necessary, pipe alignment staking, buried pipe installation, backfilling, trench topping, disposal of surplus excavation material, construction of required thrust blocks and restrained joints, testing, disinfection, temporary surface restorations including pavement removal and temporary replacement in waterline trench, asphalt concrete, traffic stripe restoration, and miscellaneous concrete work including sidewalk curb and gutter, replacement in kind of existing driveways and stone-lined gutters damaged during construction, replacement of existing sanitary sewer pipe and laterals and other utility services damaged during construction, and all appurtenances and work not otherwise itemized but necessary for a complete and fully-functioning installation.

Measurement for pipe shall be made along the centerline of the pipe trench at the finished surface elevation, in place.

G. WATER MAIN INSTALLED IN NEW TRENCH (BID ITEMS 7, 8, AND A.1.6)

The contract price for Ductile Iron Water Main shall be paid on a unit price basis per linear foot of pipe provided complete in place and satisfactorily tested, using open trenching methods. Payment shall be deemed full compensation for all labor, materials, equipment and incidentals necessary to provide water main complete, in place, as shown on the typical sections; including profile adjustments necessary to avoid known utility conflicts, irrespective of required waterline depth of pipe; and including required fittings, couplings and thrust blocks for profile adjustments, permits as required, excavation which may include excavation in rock, hand digging as required, dewatering and water management as necessary, pipe alignment staking, buried pipe installation, backfilling, controlled density fill as shown on the Plans, trench topping, disposal of surplus excavation material, construction of required thrust blocks and restrained joints, testing, disinfection, temporary surface restorations including pavement removal and temporary replacement in waterline trench, asphalt concrete, traffic stripe restoration, and miscellaneous concrete work including sidewalk curb and gutter, replacement in kind of existing driveways and stone-lined gutters damaged during construction, replacement of existing sanitary sewer pipe and laterals and other utility services damaged during construction, and all appurtenances and work not otherwise itemized but necessary for a complete and fully-functioning installation.

Measurement for pipe shall be made along the centerline of the pipe trench at the finished surface elevation, in place.

H. PLUG OR CAP ACTIVE LINE (BID ITEMS 9 AND 10)

The contract price for Plug or Cap for active water mains shall be paid on a unit price basis per each plug or cap per respective size, provided complete in place. Payment for plugs or caps shall be deemed full compensation for all labor, materials, equipment and incidentals necessary to provide each plug or cap furnished and installed in place as shown on the plans and the technical specifications including installation of required thrust blocks and restrained joints.

Measurement shall be based on a field count by Engineer of each plug or cap provided by the Contractor.

I. FITTINGS (BID ITEMS 11-20, A.1.7-A.1.10, AND A.2.7-A.2.10)

The contract price for Fittings shall be paid on a unit price basis per each fitting per respective size, provided complete in place. Payment for fittings shall be deemed full compensation for all labor, materials, equipment and incidentals necessary to provide per fitting satisfactorily furnished and installed in place as shown by the Contract Documents. including installation of required thrust blocks and restrained joints. Measurement shall be based on a field count by Engineer of each fitting satisfactorily provided by the Contractor. Fittings installed on hydrant runs including the main tee shall be paid as part of the hydrant bid item.

J. GATE VALVES (BID ITEMS 21-23 AND A.2.11)

The contract price for Gate Valves shall be paid on a unit price basis per each gate valve respective size, provided complete in place. Payment for gate valves shall be deemed full compensation for all labor, materials, equipment and incidentals necessary to provide per gate valve furnished and installed in place as shown by the Contract Documents including valve connection, flange by MJ adaptor, valve or meter box and iron cover where required, thrust blocks and/or mechanical restraints recommended or specified by the valve manufacturer, and all work required to install each valve.

Measurement shall be based on a field count by Engineer of each valve provided by the Contractor. Valves installed on hydrant runs shall be paid as part of the hydrant bid item. Insertion valves installed to facilitate connecting to the existing water main shall be paid as part of the connections to existing water main bid items.

K. AIR RELEASE VALVE ASSEMBLY (BID ITEMS A.1.11 AND A.2.12)

The contract price for Air Release Valve Assembly shall be paid on a unit price basis per each air release valve assembly, provided complete in place. Payment shall be deemed full compensation for all labor and material including valve, connections, enclosures, vaults, covers, supports, excavation, backfilling and compaction, surface restorations, testing, and incidentals necessary to provide air relief valves complete and in place as called for in the Contract Documents.

Measurement shall be based on a field count by Engineer of each air release valve assembly provided by the Contractor.

L. BLOWOFF VALVE ASSEMBLY (BID ITEM A.1.12)

The contract price for Blowoff Valve Assembly shall be paid on a unit price basis per each blowoff valve assembly, provided complete in place. Payment shall be deemed full compensation for all labor and material including valve, connections, enclosures, vaults, covers, supports, excavation, backfilling and compaction, surface restorations, testing, and incidentals necessary to provide blowoff valves complete and in place as called for in the Contract Documents.

Measurement shall be based on a field count by Engineer of each new blowoff valve assembly.

M. NEW FIRE HYDRANT ASSEMBLY – HOT CONNECTION (BID ITEM 24)

The contract price for Fire Hydrant Assembly Hot Connection shall be paid on a unit price basis per each new fire hydrant assembly, provided complete in place. Payment shall be deemed full compensation for all labor and material materials including, hot-tap, piping, break-off check valves, fittings, shutoff valve, thrust blocks, and other appurtenances, and all labor, from and including the mainline tapping sleeve to the fire hydrant complete and in place as described in the Contract Documents as needed to provide a complete and fully-functioning hydrant assembly.

Measurement shall be based on a field count by Engineer of each new fire hydrant assembly.

N. NEW FIRE HYDRANT ASSEMBLY – INACTIVE LINE (BID ITEM 25, A.1.13, A.2.13)

The contract price for Fire Hydrant Assembly Connection shall be paid on a unit price basis per each new fire hydrant assembly, provided complete in place. Payment shall be deemed full compensation for all labor and material materials including, piping, tee, break-off check valves, fittings, shutoff valve, thrust blocks, and other appurtenances, and all labor, from and including the mainline tee to the fire hydrant complete and in place as described in the Contract Documents as needed to provide a complete and fully-functioning hydrant assembly.

Measurement shall be based on a field count by Engineer of each new fire hydrant assembly.

O. WATER SERVICE TYPE K COPPER TUBING – ALL SIZES (BID ITEM 26, A.1.14, AND A.2.14)

The contract price for Water Service Connections shall be paid on a unit price basis for each service connection provided complete in place and satisfactorily tested. Payment shall be deemed full compensation for tapping the main, furnishing and installing service tapping saddle, corporation stop, curb stop, appropriate copper tubing for connection to the meter, owner-furnished water meter, check valve on customer side, reconnecting owner-furnished water meter to existing service, excavation and trenchless installation, backfilling, compaction, surface restorations, and restoration of all damaged improvements and plantings complete and in place, including all necessary appurtenances not otherwise itemized. This bid item shall also include installation of up to 25' of customer side water service Type K copper tubing (diameter to match existing) to connect the water meter to the existing customer side water service, where meters are shown to be relocated in the Contract Documents.

Measurement shall be based on a field count by Engineer of each new service connection.

P. RECONNECT EXISTING WATER SERVICE CONNECTIONS – ALL SIZES (BID ITEMS 27 AND A.2.15)

The contract price for Reconnecting Existing Water Service Connections shall be paid on a unit price basis for each service reconnection provided complete in place and satisfactorily tested. Payment shall be deemed full compensation for tapping the main, furnishing and installing service tapping saddle, corporation stop, and copper tubing extensions as needed to accommodate connection to the new main, reconnecting the existing service to the new tapping saddle, excavation, backfilling, compaction, surface restorations, and restoration of all damaged improvements and plantings complete and in place, including all necessary appurtenances not otherwise itemized.

Measurement shall be based on a field count by Engineer of each service reconnection.

Q. METER BOXES (BID ITEMS 28, 29, A.1.15, A.2.16, AND A.2.17)

The contract price for this Bid Item shall be paid on a unit price basis per each water meter box installed as specified in the Contract Documents. Payment shall be deemed full compensation for furnishing all labor and material materials involved in installing water meter boxes, complete in place, including removing the existing water meter boxes, salvaging the existing meters, installing the new meter box and lid, excavation, concrete chipping, backfill, off haul, disposal, saw cutting, cleaning, surface restorations, and restoration of all damaged improvements and plantings complete and in place, and other miscellaneous work and all necessary appurtenances not otherwise itemized.

Measurement shall be based on a field count by Engineer of each water meter box installed, by the Contractor.

R. ABANDON EXISTING FIRE HYDRANT ASSEMBLY (BID ITEMS 30, A.1.16, AND A.2.18)

The contract price for Abandon Existing Fire Hydrant Assembly, paid on a unit price basis per each fire hydrant assembly removed. Payment shall be deemed full compensation for all labor and material materials including excavation, backfill, hand digging, concrete chipping, removal of fire hydrant and bury, proper disposal of all surplus excavated materials and metal, concrete plug, surface restoration, and other miscellaneous work to properly remove and abandon existing fire hydrant assembly.

Measurement shall be based on a field count by Engineer of each fire hydrant assembly removed by the Contractor.

S. ABANDON EXISTING WATER VALVES (BID ITEM 31, A.1.17, AND A.2.19)

The contract price for Abandon Existing Water Valve shall be paid on a unit price basis per each water valve abandoned in place, with certain surface features demolished as specified. Payment shall be deemed full compensation for all labor and material materials including excavation, hand digging, concrete chipping, demolition and removal of designated items, concrete backfill, proper disposal of all surplus excavated materials and metal, surface restoration, and other miscellaneous work to properly abandon in place the existing water valve and demolish and remove designated surface features.

Measurement shall be based on a field count by Engineer of each water valve abandoned in place.

T. ABANDON AND CAP EXISTING WATER MAIN (BID ITEM 32)

The contract price for Abandon and Cap Existing Water Main shall be paid on a unit price basis per each per each end of inactive pipe capped and abandoned. Payment for this item shall be deemed full compensation for furnishing all labor, materials, tools, equipment,

appurtenances, and incidentals, for doing all the work involved, complete in place, including sawcutting, demolition and removing pipe and materials off site, installing the concrete cap, as well as trenching, trench protection, backfill, compaction, removal and restoration of all surfaces (on private or public right of way), disconnecting and protecting existing services, as shown in the plans, as specified in these specifications, and as directed by the Engineer.

Measurement shall be based on a field count by Engineer of each end of pipe capped and abandoned.

U. ABANDON EXISTING WATER VAULT (BID ITEM A.1.18)

The contract price for Abandon Existing Vault shall be paid on a unit price basis per each vault abandonment. Payment for this item shall be deemed full compensation for all labor, materials, equipment and incidentals necessary to perform the abandonment as shown in the Contract Documents.

Measurement shall be based on a field count by Engineer of each vault abandoned.

V. CONNECTIONS TO EXISTING WATER MAIN (BID ITEMS 33-39 AND A.2.20)

The contract price for Connections to Existing Water Main shall be paid on a unit price basis for each connection, provided complete in place as shown by the Contract Drawings. Payment for connection shall be deemed full compensation for all labor, materials, equipment and incidentals necessary to excavate, backfill, piping, couplings, tapping sleeves and tapping valves, insertion valves, restraining devices, thrust blocks, disinfection, and other incidentals necessary to provide a complete and operable connection and tie-in. Also include coordination with Owner, system shutdown (if necessary) by Contractor as satisfactory to Owner, and removal and proper handling of drained pipeline water and excavation dewatering water.

Measurement shall be based on a field count by Engineer of each connection as provided by the Contractor.

W. REMOVAL AND DISPOSAL OF ASBESTOS CEMENT PIPE (BID ITEM A.2.21)

The contract price for Removal and Disposal of Asbestos Cement Pipe shall be paid on a unit price basis per linear foot of asbestos cement pipe removed and disposed of by the Contractor. Payment shall be deemed full compensation for all labor, materials, equipment and incidentals necessary to remove and disposal of asbestos cement pipe according to all applicable rules and regulations.

Measurement shall be based on a field count by Engineer of each linear foot removed and disposed of by the Contractor.

X. SLURRY SEALING (BID ITEM A.2.22)

The contract price paid for Slurry Sealing shall include full compensation for the furnishing all material and labor to place slurry seal and shall include the referencing and removal of all striping pave markings and markers and placement of the striping, pavement markings and markers in kind, referencing and protecting existing utility valve covers, manhole and other improvements, placing crack sealant and all other incidental work. No additional compensations is due.

Slurry sealing shall be measured and paid per square yard of road resurfaced.

Y. ABOVE GROUND PIPING INSTALLATION OF TEMPORARY BYPASS WATER MAIN SYSTEM (BID ITEMS 40 AND A.2.23)

The Temporary Bypass Water Main Piping shall be paid on a unit price basis per linear foot of 4-inch temporary bypass water main piping installed above ground provided complete in

place and satisfactorily tested. Payment of partial amounts under this Bid Item will be made based on the progress of the Work.

The unit price shall include full compensation for furnishing, installing, pressure testing, disinfecting, protecting, operating, maintaining, and removing temporary potable water bypass main and temporary service connection piping, including all valves, fittings, appurtenances; and cutting and repairing road asphalt, curb, and/or sidewalks (referred to herein as temporary bypass system) as shown on the Engineer's Drawings, as described in Specification 33 1150, and as required to completely interconnect all piping for a complete and operable temporary bypass system.

Measurement shall be made along the centerline of the pipe installed above ground, in place.

Z. SHALLOW BURIED PIPING INSTALLATION OF TEMPORARY BYPASS SYSTEM (BID ITEMS 41 AND A.2.24)

The Shallow Buried Piping Installation of the Temporary Bypass System shall be paid on a unit price basis per linear foot of 4-inch temporary bypass water main piping installed below ground provided complete in place and satisfactorily tested. Payment of partial amounts under this Bid Item will be made based on the progress of the Work.

The unit price shall include compensation for furnishing, installing, pressure testing, disinfecting, operating, maintaining, and removing temporary potable water bypass water main and temporary service connections piping, including all valves, fittings, appurtenances; excavation; backfill; and cutting and repairing road asphalt, curb, and/or sidewalks (referred to herein as temporary bypass system) as described in Specification 33 1150 and as required to completely interconnect all piping for a complete and operable temporary bypass system.

Measurement shall be made along the centerline of the pipe trench at the finished surface elevation, in place.

**** END OF SECTION ****

SECTION 01312 - PROJECT MEETINGS

I. PRE-CONSTRUCTION MEETING

- A. Pre-construction conference will be held at the City of Brisbane Department of Public Works at its office, 50 Park Place, Brisbane, California 94005-1310 at the time and date described in the Special Condition SC-04.
- B. Attendance:
 - 1. Owner's representative.
 - 2. Engineer and his or her professional consultants.
 - 3. Contractor's Superintendent.
 - 4. Major Subcontractors.
 - 5. Others as Appropriate.
- C. Submit 3 copies of proposed construction schedule at time of meeting.
- D. Submit copy of proposed notification letter to residents and merchants at time of meeting.
- E. Submit 3 copies of the traffic control & detour plan.
- F. Submit products list.

II. PROGRESS MEETINGS

Engineer will schedule regular periodic meetings as required. Contractor shall attend with appropriate staff, subcontractors, or suppliers.

**** END OF SECTION ****

SECTION 01329 - SAFETY AND TRAFFIC CONTROL**I. SAFETY**

- A. The Contractor's attention is directed to Section 7-1.08 "Public Convenience" and Section 7-1.09 "Public Safety" and Section 12 "Construction Area Traffic Control Devices" of the Standard Specifications.

The provisions in this section will not relieve the Contractor from his or her responsibility to provide such additional devices or take such measures as may be necessary to comply with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications.

- B. Contractor shall at all times during the progress of the work, or temporary suspension of the work, provide, erect and maintain all proper and/or necessary temporary walks, roads, driveways, guards, railings, lights and warning signs; provide a sufficient number of flagmen; and take all necessary precautions at all times for the protection of the work and safety to the public and those engaged in the work. Signs and barricades shall conform to standards approved by the Engineer. All barricades and obstructions shall be illuminated at night with reflector signs and lights, and all lights for this purpose shall be kept burning from sunset to sunrise. If in the opinion of the Engineer, the contractor does not provide sufficient light, barricades, and other safety devices during the course of work, the city may provide them and deduct from the cost due the contractor under this contract. Contractor shall also furnish, install and maintain at his or her own expense such temporary fences, gates and barricades as may be required to protect the work and adequately prevent unauthorized entry into the construction site.
- C. Contractor shall post emergency telephone numbers for police, fire, ambulance, and those agencies responsible for maintenance of utilities at the job site.
- D. Contractor shall comply with all state, county and city laws and shall comply with ordinances and regulations of the department of industrial relations, OSHA and industrial accident commission relating to safety and character of work, equipment and labor personnel.
- E. All trenching operations shall be in accordance with the requirements of title 8 CAL/OSHA.

II. TRAFFIC CONTROL

- A. Traffic Control Plan

The Contractor shall prepare and submit at the pre-construction meeting a Traffic Control Plan for the project for the Engineers review and approval before the commencement of any work, including the location and type of advance warning signs and detour routes, as required. The contractor shall submit multiple plans if needed to address different phases or situations in the project.

During the progress of work, when so directed by the Engineer, the Contractor shall submit supplemental traffic control plans. Said supplemental plans shall be approved by the Engineer before the affected item of work is begun. Traffic control plans shall show the placement of all signs, barricades, delineators and other traffic control devices required by the Contractor's operation.

B. Lane Closure

Except for permitted road closures, Contractor shall maintain one lane of traffic to accommodate residence and emergency vehicle access. Contractor shall provide residence access to driveway within 10 minutes of requested driveway access.

C. Road Closure

Road closure shall not exceed 500 contiguous, linear feet on any work day. Contractor must provide written notice prior to road closures per Section 01100.I.B. Contractor shall provide safe pedestrian access through road closure to residences. If requested, Contractor shall provide access to emergency vehicles and private medical transports for residents in need within 10 minutes of requested access.

D. Barricades

Contractor shall be responsible to provide all barricades, cones and traffic control devices and labor. Adequate barricading and signing shall be provided at all times. Sturdy barricades shall be erected at each end of the closed portion and flashers shall be attached thereto. Barricades shall be constructed so as to prevent them from being moved by the general public.

Contractor's attention is directed to Chapter 5 of State Traffic Manual, "Traffic Controls for Highway Construction and Maintenance Operations", for proper placement and usage of traffic controls. Contractor is forewarned that proper traffic control devices and equipment must be provided and that all flagmen must be trained in proper usage of hand signals and equipment.

City reserves the right to require additional barricades and traffic control any time when, in the opinion of the Engineer, Contractor is not adequately providing these items. If Contractor fails to comply immediately with Engineer's request or direction of additional barricades, signing or traffic control, Engineer shall have authority to direct work be stopped until adequate provisions are made and contractor shall have no claim to City for delays or loss of time or material.

E. Signing

Contractor shall provide signs, directional control by flaggers, barricades, flashers, portable delineators, traffic cones and other items required for the safety and convenience of the public. Signs shall be constructed, erected and maintained during the time of contract by the Contractor. The exact location of descriptive project signs and detour signs shall be approved by the Engineer.

Personal vehicles of the Contractor's employees shall not be parked on the traveled way or shoulders.

Whenever vehicles or equipment are parked on the shoulder within 6 feet of traffic lane, the shoulder area shall be closed with fluorescent traffic cones or portable delineators placed on a taper in advance of the parked vehicles or equipment and along the edge of the pavement at 25-foot intervals to a point not less than 25 feet past the last vehicle or piece of equipment. A minimum of 9 cones or portable delineators shall be used for the taper. A C23 (ROAD WORK AHEAD) or C24 (SHOULDER WORK AHEAD) sign shall be mounted on a telescoping flag tree with flags. The flag tree shall be placed where directed by the Engineer.

When traffic cones or delineators are used to delineate a temporary edge of traffic lane, the line of cones or delineators shall be considered to be the edge of traffic lane, however, the Contractor shall not reduce the width of an existing lane to less than 10 feet without

written approval from the Engineer.

Contractor shall make provisions for emergency vehicle access during closures. Road and lane closures will be allowed between Monday and Friday from 8 am to 5 pm. On residential streets, the Contractor will be required to maintain one ten-foot traffic lane open at any time construction operations are in progress, except for permitted road closures.

The Contractor shall submit a construction area traffic control plan for approval by the Engineer before the commencement of any work, including the location and type of advance warning signs and detour routes, as required.

Construction area traffic control devices shall be in accordance with the current Manual of Traffic Controls (Caltrans) and supplemented by the current Work Area Traffic Control Handbook (Building News).

**** END OF SECTION ****

SECTION 01355 - STORM WATER POLLUTION PREVENTION

BEST MANAGEMENT PRACTICES

I. GENERAL

A. WORK INCLUDED

1. Prohibit illicit discharge (non-rainwater) into the storm drain system.
2. Construct any and all necessary systems to eliminate contaminants from entering the storm water system.
3. Clean up and control of work site materials, spoils and debris.
4. Removal of contaminants produced by the project.
5. 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.

B. QUALITY ASSURANCE

1. 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.
2. A plan shall be submitted for the proposed control of contaminants entering the storm water system. The plan must be approved by the Engineer prior to the commencement of work.
3. All employees and subcontractors shall be trained on the storm water pollution prevention requirements contained in these specifications.
4. A supply of spill clean-up materials such as rags or absorbents shall be kept readily accessible on-site.

II. EXECUTION

A. RECYCLING

1. At the end of each working day, all scrap, debris and waste material shall be collected and materials disposed of properly.
2. Dry, empty paint cans/buckets, old brushes, rollers, rags and drop cloths shall be disposed of in approved waste collection.
3. Dumpsters shall be inspected for leaks. As leaks are detected, the trash hauling contractor shall be contacted to replace or repair dumpsters that leak.
4. Water from cleaning dumpsters shall not be discharged on-site.
5. Regular waste collection shall be arranged for before dumpsters overflow.

B. HAZARDOUS MATERIAL/WASTE MANAGEMENT/MATERIALS MANAGEMENT

1. 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.
2. All hazardous materials such as pesticides, paints, thinners, solvents and fuels; and

all hazardous wastes such as waste oil and antifreeze shall be labeled and stored in accordance with State and Federal regulations.

3. All hazardous materials and all hazardous wastes shall 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.
4. The contractor shall dispose of all excess thinners, solvents, chemicals, oil-based and water-based paint as hazardous waste.

Regular hazardous waste collection shall be arranged for to comply with time limits on the storage of hazardous wastes.

5. Granular materials shall be stored a minimum of ten feet from the closest catch basin and curb return. The contractor shall not allow these granular materials to enter the storm drain or creek.
6. Warning signs shall be posted in areas containing or treated with chemicals.
7. An accurate up-to-date inventory, including Material Safety Data Sheets (MSDS) of hazardous wastes stored on site shall be kept and available to assist emergency response personnel in the event of a hazardous materials incident.
8. Maintenance and fueling of vehicles and equipment shall 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 shall be used to catch leaks or spills any time that vehicle or equipment fluids are dispensed, changed or poured.

C. CHEMICAL USAGE

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

D. DUST CONTROL

1. Reclaimed water shall be used to control dust on a daily basis as directed by the Engineer.
2. At the end of each working day, or as directed by the engineer, the roadways and on-site paved areas shall be cleaned and swept of all materials attributed to or involved in the work. Streets shall 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.

E. SAWCUTTING

1. The contractor shall cover or barricade catch basins using control measures such as filter fabric, straw bales, sand bags and fine earthen dams to keep slurry out of the storm drain system. The contractor shall ensure that the entire opening is sealed.
2. Saw cutting 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.

3. If slurry enters a catch basin, the slurry shall be removed from the storm drain immediately.

F. DEWATERING OPERATIONS

1. 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.
2. The filtered water shall be reused for other purposes such as dust control or irrigation to the extent possible.
3. If the project is within an area of known groundwater contamination, the water from dewatering operations shall be tested prior to discharge. If the water meets the Regional Water Quality Control Board standards, it may be discharged into the storm drain. If the water quality meets City of Brisbane municipal code, water may be discharged into the sanitary sewer. Otherwise, the water shall be treated and hauled off-site for proper disposal.

G. CONCRETE GROUT AND MORTAR WASTE MANAGEMENT

1. Concrete, grout and mortar shall be stored away from the drainage areas and ensure that these materials do not enter the storm drain system.
2. Concrete trucks shall not be washed out into streets, gutters, storm drains, drainage channels or creeks.
3. Concrete trucks and equipment shall be washed out off-site or in a designated area on-site where the water will flow onto dirt or into a temporary pit or bermed area. The water shall percolate into the soil and the hardened concrete placed in a waste container for disposal. If a suitable soil or bermed area is not available on-site, the wash water shall be collected and removed off-site and disposed of properly.
4. Water created by the washing of exposed aggregate concrete finish shall be collected in a suitable dirt area or filtered through straw bales or equivalent material before entering the storm drain system. Sweepings from exposed aggregate finish shall be collected and disposed of in a waste container or removed off-site and disposed of properly.

H. PAVING OPERATIONS

1. Catch basins and manholes shall be covered when paving or applying seal coat, tack coat, slurry seal or fog seal.
2. The Engineer may direct the contractor to protect drainage courses by using control measures such as earth dike, straw bale and sand bag to divert run-off or trap filter sediment.
3. Excess sand (placed as part of a sand seal or to absorb excess oil) shall 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 shall not be used to wash down fresh asphalt concrete.

I. PAINTING

1. The cleaning of painting equipment and tools shall be performed in a designated area that will not enter the gutters, storm drains or creeks.
2. Excess paint shall be removed from brushes, rollers and equipment prior to cleanup.

3. Wash water from aqueous cleaning of water-based paint tools and equipment shall be disposed of in a sanitary sewer or onto a designated dirt area.
4. 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 shall be disposed of as a hazardous waste.

J. SITE CLEANUP

1. 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.
2. All cleanups 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.

**** END OF SECTION ****

SECTION 01600 - PRODUCT REQUIREMENTS

I. REQUIREMENTS INCLUDED

- A. Material and equipment incorporated into the Work:
 - 1. Conform to applicable specifications and standards.
 - 2. Comply with size, make, type and quality specified, or as specifically approved in writing by Engineer.
 - 3. Manufactured and Fabricated Products:
 - a. Design, fabricate and assemble in accordance with the best engineering and shop practices.
 - b. Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.
 - c. Two or more items of the same kind shall be identical, by the same manufacturer.
 - d. Products shall be suitable for service conditions.
 - e. Equipment capacities, sizes and dimensions shown or specified shall be adhered in writing.
 - 4. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

II. MANUFACTURERS INSTRUCTIONS

- A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including two copies to engineer.
Maintain one set of complete instructions and in conformity with installation and until completion.
- B. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.
 - 1. Should job conditions or specified requirements conflict with manufacturer's instruction, consult with Engineer for further instruction.
 - 2. Do not proceed with work without clear instructions.
- C. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step of installation procedure unless specifically modified or exempted by Contract Documents.

III. TRANSPORTATION AND HANDLING

- A. Arrange deliveries of products in accordance with construction schedules, coordinate to avoid conflict with work and conditions at the site.
 - 1. Deliver Products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
 - 2. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittal, and that Products are properly protected and undamaged.

- B. Provide equipment and personnel to handle Products by methods to prevent soiling and damage to Products or packaging.

IV. STORAGE AND PROTECTION

- A. Store Products in accordance with manufacturer’s instruction, with seals and labels intact and legible.
 - 1. Store products subject to damage by the elements in weather-tight enclosures.
 - 2. Store loose granular materials in a well-drained area on soil surfaces to prevent mixing with foreign matter.
- B. Arrange storage in manner to provide easy access for inspection. Make periodic inspections of stored Products to assure that Products are maintained under specified conditions, free from damage or deterioration.
- C. Protection After Installation:
Provide substantial coverings as necessary to protect installed Products from damage from traffic and subsequent construction operations. Remove when no longer needed.

V. SUBSTITUTIONS AND PRODUCT OPTIONS

- A. Products List
Within 15 days after Contract Date, submit to Engineer a complete list of major products proposed to be used, with the name of the manufacturer and the installing subcontractor.
- B. Contractor’s Option
 - 1. For products specified only by reference standard, select any product meeting the standards.
 - 2. For products specified by naming several products or manufacturers named, select any product specified which complies with the specifications.
 - 3. For Products specified by naming one or more Products or manufacturers and “or equal”, contractor must submit a request as for substitutions for any Product or manufacturer not specifically named.
 - 4. For Products specified by naming only for Product and manufacturer, there is no option.
- C. Substitution
 - 1. For a period of 15 days after Contract Date, Engineer will consider written requests from Contractor for substitution of Products.
 - 2. Submit a separate request for each Product, supported with complete data, with drawing and samples as appropriate, including:
 - a. Comparison of the qualities of the proposed substitution with that specified.
 - b. Changes required in other elements of the work because of the substitution.
 - c. Effect on the construction schedule.
 - d. Cost data comparing the proposed substitution with the Product specified.
 - e. Any required license fees or royalties.
 - f. Availability of maintenance service, and source of replacement materials.

- g. Engineer shall be the judge of the acceptability of the proposed substitution.
- D. Contractor's Representation:
- 1. A request for a substitution constitutes a representation that Contractor:
 - a. Has investigated the proposed Product and determined that it is equal to or superior in all respects to that specified.
 - b. Will provide the same warranties or bonds for the substitution as for the substitution as for the Product specified.
 - c. Will coordinate the installation of an accepted substitution into the Work, and make such other changes as may be required to make the Work complete in all respects.
 - d. Waives all claims for additional costs, under his or her responsibility, which may subsequently become apparent.
- E. Engineer will review requests for substitutions with reasonable promptness, and notify Contractor, in writing, of the decision to accept or reject the requested substitution.

**** END OF SECTION ****

SECTION 01770 - PROJECT CLOSEOUT**I. CLEANUP**

Upon completion of the work under this Contract, the Contractor shall remove all surplus construction materials, earth and debris resulting from his or her work so that the entire job site and all areas occupied by him or her are left in a neat and orderly condition, as directed by the Engineer. Clean-up operations must be complete prior to final acceptance of work.

II. GUARANTEE

- A. In addition to any specific guarantee mentioned in these specifications, the Contractor shall guarantee all material, apparatus, equipment and workmanship furnished to be free from all defects, and agrees to replace, at no expense to the Owner, any and all defective parts or labor that may be found at any time within two (2) years from date of acceptance by the Owner. The Contractor also guarantees to repair or replace with like materials, any existing work in or around the job site which may be damaged during the repair of any other defective work.
- B. Signing the Contract for the work covered by these specifications, of which it shall become a part, shall be considered as a written guarantee to carry out the provisions of this section of the specifications.

III. PROJECT RECORD DRAWINGS

- A. Prior to final acceptance of the project, complete "as built" record drawings shall be supplied to the Engineer for incorporation on the original tracings. All reference dimensions, corrections to existing data shown on the plans and revisions to the constructed improvements, shall be shown on one set of record prints.
- B. The Contractor is responsible for maintaining an accurate set of "as built" drawings during the course of construction.

IV. FINAL INSPECTION

Before filing the Notice of Completion, a final inspection will be held with the Contractor, Engineer, and Owner's representatives to review and evaluate compliance with the Contract Documents. If the work is determined to be substantially complete by the Engineer and Owner's representatives, then the Engineer will issue a punch list of items that remain to be accomplished. All "punch list" items must be completed prior to final acceptance.

V. INSPECTION FOR FINAL ACCEPTANCE

An inspection for final acceptance will be scheduled when all "punch list" items have been completed, and all deficiencies have been corrected. The project must be completed and functional before this final acceptance is performed.

**** END OF SECTION ****

DIVISION 2 - SITE CONSTRUCTION

SECTION 02318 - TRENCHING

PART 1 - GENERAL

I. WORK INCLUDED

- A. Trench excavation, pipe bedding, backfilling, compaction, and pavement and surfacing removal for water main replacement.

II. REFERENCES

- A. ANSI/ASTM C131 – Test Method for Resistance to Degradation of Small-Size Course Aggregate by Abrasion and Impact in the Los Angeles Machine.
- B. ANSI/ASTM C136 - Sieve analysis of Fine and Coarse Aggregates.
- C. ANSI/ASTM D1556 – Test Method for Density and Unit Weight of Soil in Place by the Sand Cone Method.
- D. ANSI/ASTM D1557 - Moisture-Density Relations of Soils and Soil-Aggregate Mixture using 10 lb. Rammer and 18-inch Drop.
- E. ANSI/ASTM D2922 – Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- F. ANSI/ASTM D4318 – Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

III. SUBMITTALS

Products Data: For all proposed bedding and backfill materials.

- 1. Material source
- 2. Gradation
- 3. Testing data and testing lab qualifications including lab certification.

IV. GEOTECHNICAL REPORT

- 1. A geotechnical investigation has been developed for the project by Geo-Logic Associates, dated February 17, 2017. A copy of this report is available at the Owner's office for review.

PART 2 - PRODUCTS

I. MATERIALS

- A. Aggregate Base Course: Aggregate base shall be Class 2 aggregate base material conforming to Section 26 of the State Specifications for ¾ inch maximum combine grading.
- B. Sand: Clean, coarse, Class 1 Type A permeable conforming to Section 26 of the State

Specifications

C. Controlled Density Fill (CDF):

1. Controlled Density Fill (CDF) also known as Controlled Low Strength Material (CLSM) shall be used as pipe backfill as specified in the plans and as approved by the City. CDF shall consist of Portland cement, sand, water and flyash. Chemical admixtures and other mineral admixtures may be used when approved by the Engineer.
2. The actual mix proportions and flow characteristics shall be determined by the producer of the CDF to meet jobsite conditions and shall be approved by the Engineer. The mixture shall be workable and non-segregating. When air-entrainment is specified, it shall be evaluated with the actual materials to be used on the project. CDF to be used on the project shall have 2 sack Portland cement and sand aggregates.
 - a. Portland cement shall be Type II low alkali Portland cement conforming to ASTM C150, or Type IP (MS) portland-pozzolan cement conforming to ASTM C595, unless otherwise specified. Either cement shall conform to the low alkali requirements of Table IA of ASTM C150. Type IP (MS) cement shall contain no more than 20 percent pozzolan, which shall be inter-ground with clinker.
 - b. Aggregates shall be sand conforming to Section 200-1.5.3 of the Standard Specifications for Public Works Construction (Latest Edition) and shall meet the sand gradations specified in Section 200-1.5.5.
 - c. Water used for CDF shall not contain deleterious substances. Water shall not contain an amount of impurities that will cause a change in the time of setting of Portland cement of more than 25 percent nor a reduction in relative mortar strength at 7 and 28 days of more than 10 percent compared to results obtained with distilled water.
 - d. Chemical admixtures shall conform to Section 201-1.2.4 of the Standard Specifications for Public Works Construction (Latest Edition) and may consist of air-entraining agents, water-reducing admixtures, and other chemical additives. Chemical admixtures shall be approved by the Engineer.
 - e. Flyash may be used in a CDF mix when approved by the Engineer. It shall conform to the requirements of Section 201-1.2.5 of the Standard Specifications for Public Works Construction (Latest Edition). Class C flyash shall not be used.
3. The Contractor shall submit a Certificate of Compliance from the supplier/manufacturer of CDF to the Engineer. Also, the Contractor shall submit all tags from the supplier to the City inspector to check if the CDF delivered meet the specifications.

II. SCHEDULES

- A. Bedding and backfill materials shall be sand, aggregate base course, or CDF as shown on the Drawings.

PART 3 - EXECUTION

I. PROTECTION

- A. Protect excavations by shoring, bracing, sheet piling, underpinning or other methods required to prevent cave-in or loose soil from falling into excavation.
- B. Underpin adjacent structures including utilities and pipe chases which may be damaged by excavation work.
- C. Notify Engineer of unexpected subsurface conditions and discontinue work in affected area until notified to resume work.
- D. It shall be the Contractor's responsibility to protect the underground improvements or facilities which may be subject to damage by his or her operations. This includes all existing utilities whether shown on the drawings or not. The Contractor shall, at his or her own expense, replace any existing utilities and other facilities damaged during construction to their original condition to the satisfaction of the City.

II. NOTIFICATION

Contact Underground Service Alert (U.S.A.) at 800/642-2444 48 hours prior to excavation.

II. INSTALLATION

A. General Requirements:

- 1. Cut edges of trenches in pavement areas with saw. Excavate material from trench regardless of type, character composition or condition of material excavated including all debris, junk, asphalt concrete, concrete slab, broken concrete, brick, stone, logs, stumps, roots, metal or other material encountered within excavation limits.
- 2. Excavated material shall be placed only within the construction easement, right-of-way, or approved working area. Contractor shall dispose of all excess excavated materials or material not approved for backfill to the contractor's off-site disposal site. The Contractor shall make arrangements for the disposal and bear all costs of such disposal.
- 3. Excavate the trench to the lines and grades of water pipe or as directed by the Engineer, with proper allowance for pipe thickness and pipe base or special bedding material. If the trench is excavated below the required grade, correct any part of the trench excavated below the grade at no additional cost to the City.
- 4. If bottom of excavation is found to consist of rock or any material that by reason of its hardness cannot be excavated to provide uniform bearing surface, remove such rock or other material to a depth of not less than 4 inches below bottom of trench and refill to grade with bedding material placed at uniform density, at no additional cost.
- 5. If bottom of excavation is found to consist of soft or unstable material that is incapable of properly supporting pipe, remove such material to a depth and for the length required, as determined by the Engineer, and then refill trench to grade with bedding material, compacted to 95 percent of maximum density.
- 6. The length of excavation for pipe within the street's right-of-way shall be limited to that which can be laid and backfilled in the same day. Limit width of trench to minimum necessary to provide ample working space for installed pipe and provide adequate backfill compaction. Where adequate bracing will not prevent sliding or caving of excavated soil, slope top walls of trench above the elevations of 6 inches above top of pipe being laid.

7. Trench width shall be a minimum of not less than outside diameter of pipe plus 12 inches and not to exceed outside diameter of pipe plus 16 inches, unless specified differently in the Drawings.
 8. Control water as necessary to keep trench reasonably free from water during construction. Dispose of water without causing nuisance or menace to public or private property. Have on hand sufficient qualified personnel, and pumping equipment and machinery in good working condition for all emergencies. Have competent mechanics for operation of all pumping equipment on hand at all times during trenching operations.
- B. Pipe Bedding and Trench Backfill:
1. Place bedding material under and around pipe in maximum 6 inch lifts to level even with spring line of pipe, and compact to 95 percent of maximum density.
 2. Fill section of trench from spring line to 6 inches above top of pipe in maximum 6 inch lifts with bedding material and compact to 95 percent of maximum density.
 3. Backfill trench up to the underside of asphalt concrete finish Class 2 AB as shown in City Standard Detail.
- C. Unacceptable Material:
1. Any bedding or backfill material not capable of being compacted to density as specified shall be removed and disposed of and new bedding and fill material acceptable to the Engineer shall be used at no additional cost to the Owner.

III. FIELD QUALITY CONTROL

- A. Confirmation Tests:
1. Contractor shall accomplish specified compaction of trench backfill and control operations by confirmation tests to verify and confirm that compaction work complies, and is complying at all times, with requirements specified in this Section concerning compaction, control, and testing.
 2. Cost of confirmation tests to be paid for by the Contractor.
 3. Contractor shall submit copies of confirmation test reports promptly to the Engineer.
 4. Frequency of Confirmation Testing: Every 500 linear feet at each test location include tests for each type or class of backfill from bedding to finish grade.
- B. Compliance Tests:
1. Frequency of Testing: Periodic compliance tests will be made by the Engineer's representative to verify that compaction is meeting requirements previously specified.
 2. If compaction fails to meet specified requirements, Contractor shall perform remedial work either by removing and replacing backfill at proper density or bringing density up to specified level by other means acceptable to the Engineer.
 3. Costs of retesting required to confirm and verify that remedial work has brought compaction within specified requirements shall be borne by the Contractor. Frequency of confirmation tests during performance of remedial work shall be double the amount specified for initial confirmation tests.

IV. SHORING

- A. The Contractor shall furnish, place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the pipes and appurtenances being constructed; and to prevent damage to adjacent structures or facilities. Shoring and sheeting shall be removed, as the backfilling is done, in a manner that will not damage the pipe or permit voids in the backfill. All sheeting, shoring and bracing of trenches shall conform to the safety requirements of the Federal, State, or local public agency having jurisdiction and meet all requirements of State Division of Industrial Safety and OSHA. The most stringent of these requirements shall apply. The Contractor shall be responsible for obtaining OSHA permits.
- B. The Contractor shall be solely responsible for all bracing and shoring and shall, if required, submit an application and supporting data for an effective shoring system to the Engineer. The Engineer may forward the application to the California Division of Industrial Safety for their review. The Contractor's application shall 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 shall be prepared by a Civil Engineer registered in California. No excavations in trench section shall proceed until the return of an approved application, if required.
- C. The Contractor shall submit trenching and shoring plan prepared by a Civil Engineer registered in California to the Engineer for review and approval. The plan shall include trenching and shoring support calculations as well as details of any steel plate bridging proposed for the work.
- D. The Contractor is solely responsible for installing and extracting the sheathing in a manner which will not disturb the line, grade, or backfill compaction or operation of the utility being installed or adjacent utilities and facilities.

V. TEMPORARY STEEL PLATE BRIDGING WITH NON-SKID SURFACE

- A. Trenches protected by K-rail may be left open at night provided that plastic barricade fencing or other barricade acceptable to the City Engineer is used to secure the open trench and prevent access from unauthorized personnel during non-working hours.
- B. When backfilling operations of an excavation in the traveled way, whether transverse or longitudinal, cannot be properly completed within a work day and not protected by K-rail, steel plate bridging with a nonskid surface and shoring is required to preserve unobstructed traffic flow. In such cases, the following conditions shall apply:
 - 1. Steel plates shall be used to cover the trench at the end of every workday.
 - 2. Steel plates used for bridging must extend a minimum of 12" beyond the edges of the trench.
 - 3. Steel plate bridging shall be installed to operate with minimum noise.
 - 4. The trench shall be adequately shored to support the bridging and traffic loads.
 - 5. Temporary paving with cold asphalt concrete shall be used to feather the edges of the plates.
 - 6. Bridging shall be secured against displacement by using adjustable cleats, shims, or other devices.
 - 7. All steel plates within the right-of-way whether used in or out of the traveled way

shall be without deformation. Inspectors can determine the trueness of steel plates by using a straight edge. Any plate that is permanently deformed shall be rejected.

- C. Steel plate bridging and shoring shall be installed as follow:

The edges of traffic plates perpendicular to traffic shall be ramped with cold mix “cut back” asphalt concrete at a ratio of 30:1 for 45 MPH and greater, and 15:1 for less than 45 MPH (measurement for ramp is relative to height of traffic plate above finish grade). The edges of traffic plates parallel to traffic shall be ramped with cold mix “cut back” asphalt concrete at a ratio of 10:1 for 45 MPH and greater, and 5:1 for less than 45 MPH. The contractor shall pin the plates as necessary to prevent shifting, and shall respond to and correct shifting trench plates regardless of the time of day. In all cases, when five or more trench plates are installed contiguously, they shall be tack welded to each other to prevent shifting and rattling. The maximum duration that trench plates may be left in any one location is five (5) working days.

- 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).

Trench Width Minimum	Plate Thickness
10"	1/2"
1'-11"	3/4"
2'-7"	7/8"
3'-5"	1"
5'-3"	1-1/4"

NOTE: For spans greater than 5'-3", a structural design shall be prepared by a California registered civil engineer.

- E. All trenches shall be fully restored within ten (10) days of initial opening. The maximum length of any open or traffic plated trench shall not exceed five hundred (500) feet at any time.
- F. Backfilling of excavations shall be covered with a minimum 2" temporary layer of cold asphalt concrete.
- G. Steel plates used in the traveled portion of the highway shall have a surface that was manufactured with a nominal Coefficient of Friction (COF) of 0.35 as determined by California Test Method 342 (See Appendix H). If a different test method is used, Contractor may utilize standard test plates with known coefficients of friction available from each Caltrans District Materials Engineer to correlate skid resistance results to California Test Method 342. Based on the test data, Contractor shall determine what amount of surface wear is acceptable, and independently ascertain when to remove, test, or resurface an individual plate.
- H. A Rough Road sign (W33) with black lettering on an orange background may be used in advance of steel plate bridging. This sign is used along with any other required

construction signing.

- I. Surfacing requirements are not necessary for steel plates used in parking strips, on shoulders not used for turning movements, or on connecting driveways, etc., not open to the public.
- J. Contractor is responsible for maintenance of the steel plates, shoring, and asphalt concrete ramps. Unless specifically approved by the Engineer, use of steel plate bridging should not exceed four (4) consecutive working days in any given week.

**** END OF SECTION ****

SECTION 02722 - ASPHALT PAVING CONSTRUCTION

PART 1 - GENERAL

I. WORK INCLUDED

- A. Spreading and compacting asphalt concrete pavement and surfacing.
- B. Grinding existing pavement at conforms and for overlaying.
- C. Applying prime coat and tack coat.
- D. Dust alleviation and control.
- E. Cleanup and disposal of debris.
- F. The work shall include the provision of all materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are necessary to complete the work specified.

II. QUALITY ASSURANCE

- A. All work shall be done to the satisfaction of the designated representative of the Engineer and in accordance with Standard Specifications of the State of California Department of Transportation.
- B. Codes and Standards
 - Spreading and compacting of asphalt concrete shall conform to the applicable provisions of Section 39 of the State Standard Specifications.
 - Slurry seal shall conform to provisions in Section 37 of the State Standard Specifications.
- C. Allowable Tolerances
 - 1. Finish surface of asphalt concrete when measured with a twelve-foot straight edge shall not vary more than 0.01 feet in the direction of rolling and 0.02 feet transversely below the lower edge of the straightedge.
 - 2. Thickness of finished pavement section shall not be less than the planned thickness at any point in any layer.
 - 3. 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 D1557.
- D. Certificate of Materials
 - 1. Provide the Engineer with one (1) copy of a material certificate signed by material producer certifying that each material item complies with or exceeds the specified requirements, daily, for each type of material delivered.
 - 2. Provide the Engineer with one (1) copy of certified plant loadout slips for each load of material delivered showing net weight of aggregate base or asphalt concrete delivered to the job site, to be attached to the appropriate material certificate.

III. JOB CONDITIONS

- A. Contractor shall provide dust alleviation and control measures satisfactory to the engineer continuously during the course of work.
- B. Prime or tack coat materials shall not be applied unless the ambient temperature is above 50°F and has not been below 35°F during the twelve (12) hours immediately prior to application. Prime or tack coats shall not be applied when the surface to be coated is wet or contains an excess of moisture.
- C. Asphalt concrete shall not be applied unless the ambient temperature is above 50°F and the base course has been approved by the Engineer.

PART 2 - PRODUCTS

I. ASPHALT CONCRETE

- A. Asphalt concrete shall be Type A and shall conform to the provisions in Section 39, "Asphalt Concrete," of the Standard Specifications and these special provisions, and as directed by the Engineer.

The last sentence of the first paragraph in Section 39-2.01, "Asphalts," of the Standard Specifications and the fifth, sixth, seventh and eighth paragraphs of Section 39-3.03, "Proportioning," of the Standard Specifications shall not apply.

- B. The amount of asphalt binder to be mixed with the aggregate for Type A asphalt concrete will be determined by the Engineer in accordance with California Test 367 using the samples of aggregates furnished by the Contractor in conformance with Section 39-3.03, "Proportioning," of the Standard Specifications.
- C. The aggregate for Type A asphalt concrete shall conform to the 1/2" maximum, medium grading specified in Section 39-2.02, "Aggregate," of the Standard Specifications.
- D. Liquid asphalt for prime coat shall be Grade MC-70 conforming to the requirements of Section 93 of the State Standard Specifications.
- E. Asphaltic emulsion for tack coat (paint binder) shall be emulsified asphalt, Type SSIh, conforming to the requirements of Section 94 of the Standard Specifications of the State of California Department of Transportation.

II. SLURRY SEAL

- A. The aggregate for slurry seal shall be Type II and shall conform with Standard Specifications Section 37-3.
- B. Asphalt emulsion shall be polymer modified asphaltic emulsion Grade PMCQS1h cationic and conform with Standard Specifications Section 37-3 and Section 94.

PART 3 - EXECUTION

I. INSTALLATION

- A. Asphalt Concrete
 - 1. Asphalt concrete shall be proportioned, mixed, placed, spread and compacted in conformance with the applicable requirements of Section 39-3 and 39-6 of the State

Standard Specifications with the following special provisions.

If the Contractor selects the batch mixing method, asphalt concrete shall be produced by the automatic batch mixing method as provided in Section 39-3.03A(2b), "Automatic Proportioning," of the Standard Specifications.

2. In addition to the requirements in Section 39-5.01, "Spreading Equipment," of Standard Specifications, asphalt paving equipment shall be equipped with automatic screed controls and a sensing device or devices.

When placing asphalt concrete to lines and grades established by the Engineer, the automatic controls shall control the longitudinal grade and transverse slope of the screed. Grade and slope references shall be furnished, installed and maintained by the Contractor. Should the Contractor elect to use a ski device, the minimum length of the ski device shall be 30 feet. The ski device shall be a rigid one piece unit and the entire length shall be utilized in activating the sensor.

3. When vibratory rollers are used as finish rollers the vibratory unit shall be turned off. The tenth paragraph of Section 39-6.03, "Compacting," of the Standard Specifications, allowing the use of "alternative compacting equipment" shall be deleted.
4. Asphalt concrete base shall be placed in layers not to exceed 0.25 feet in compacted thickness.
5. Asphalt concrete and asphalt concrete base shall be compacted to a relative compaction of not less than 95 percent and shall be finished to the lines, grades and cross section shown on the plans. In-place density of asphalt concrete and asphalt concrete base will be determined prior to opening the pavement to public traffic.
6. Relative compaction will be determined by California Test 375. Laboratory specimens will be compacted in conformance with California Test 304. Lots will be established for asphalt concrete and asphalt concrete base areas to be tested, as specified in California Test 375.
7. Should the methods and equipment furnished by the Contractor fail to produce a layer of asphalt concrete conforming to the requirements, including straightedge tolerance, of Section 39-6.03, "Compacting," of the Standard Specifications, the paving operations shall be discontinued and the Contractor shall modify his or her equipment or furnish substitute equipment.
8. Should the automatic screed controls fail to operate properly during any day's work, the Contractor may use manual control of the spreading equipment for the remainder of that day, however, the equipment shall be corrected or replaced with alternative automatically controlled equipment conforming to the requirements in this section before starting another day's work.
9. A paint binder (tack coat) shall be applied. The area to which paint binder has been applied shall be closed to public traffic. Care shall be taken to avoid tracking binder material onto existing pavement surfaces beyond the limits of construction.
10. Immediately prior to applying prime coat or tack coat (paint binder), the surface to be paved shall be cleaned of all loose material by means of powered brooms supplemented by hand brooms as required, to the satisfaction of the Engineer. Liquid asphalt prime coat shall then be applied to the aggregate base course in conformance with the requirements of Section 39-4.02 of the State Standard Specifications. Prime coat shall be applied at the rate of 0.25 gallons per square yard unless otherwise directed by the Engineer. After the liquid asphalt has

penetrated the base course, any excess standing on the surface shall be absorbed to the satisfaction of the Engineer with a suitable coating of clean sand.

11. Tack coat (paint binder) shall be applied to all vertical surfaces of existing pavement, curbs, gutters, catch basins, manhole frames, and construction joints in the surfacing; to the surface of all existing pavements to be resurfaced; and other surfaces designated by the Engineer. Asphaltic paint binder shall be provided in sufficient quantity to produce a thin, uniform black, glossy coat of asphalt satisfactory to the Engineer. Pools in unevenly distributed areas shall be redistributed by means of hand brooms. Tack coat shall be applied in conformance with the applicable requirements of Section 39-4.02 of the State Standard Specifications.
12. Additional asphalt concrete surfacing material shall be placed along the edge of the surfacing at road connections, hand raked, if necessary, and compacted to form smooth tapered conforms. Full compensation for furnishing all labor and tools and doing all the work necessary to hand rake said conforms shall be considered as included in the contract prices paid per ton for the various contract items of asphalt concrete surfacing involved and no additional compensation will be allowed therefore.
13. Wearing surface course shall be placed by means of a self-propelled asphalt paving machine satisfactory to the Engineer. Contractor may place lower courses and impact all courses with equipment conforming to the requirements of Section 39-5 of the State Standard Specifications.
14. Where asphalt concrete paving is to be laid against Portland cement concrete gutter, the finish surface of the asphalt concrete wearing course shall be constructed to a height one-quarter (1/4) inch above the abutting edge of the gutter.
15. A drop-off of more than 0.15-foot will not be allowed at any time between adjacent lanes open to public traffic.
16. Where the existing pavement is to be widened by constructing a new structural section adjacent to the existing pavement, the new structural section, on both sides of the existing pavement, shall be completed to match the elevation of the edge of the existing pavement at each location prior to spreading and compacting asphalt concrete over the adjacent existing pavement.

B. Slurry Seal

1. A slurry seal shall be applied to asphalt concrete pavement surfaces shown on the Drawings at the completion of all other work after all heavy construction traffic is finished.
2. The slurry seal shall be applied in accordance with Caltrans Standard Specification 37-3.

II. PAVEMENT GRINDING

- A. At conforms, a minimum of 6 feet wide wedge cut is required and existing pavement shall be grinded down a minimum of two (2) inch. Feathering will not be permitted.
- B. For overlay, grind as necessary to allow a minimum overlay of two (2) inch to new elevations.
- C. The Contractor may use either a mechanical planer or a heater-planer which meets all the

requirements of the Bay Area Air Pollution Control Board and as satisfactory to the Engineer. Planer shall be of a type that will not burn or damage adjacent foliage.

- D. Ground areas shall be overlaid within one week of grinding.

III. 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 including curb, gutter, sidewalks, catch basins and adjacent streets to the satisfaction of the Engineer.
- B. Surplus materials remaining upon completion of the Work shall become the property of the Contractor unless otherwise specified herein or noted on the plans, and shall be removed from the Work site by the Contractor and disposed of off-site in a lawful manner to the satisfaction of the Engineer.

IV. COMPENSATION ADJUSTMENTS FOR PRICE INDEX FLUCTUATIONS OF ASPHALT CONCRETE

- A. The compensation payable for paving asphalt used in asphalt concrete will be increased or decreased in conformance with the provisions of this section for paving asphalt price fluctuations exceeding 10 percent (Iu/Ib is greater than 1.10 or less than 0.90) which occur during performance of the work.
- B. The adjustment in compensation will be determined in conformance with the following formulae when the item of asphalt concrete or asphaltic emulsion (paint binder), or both, are included in a monthly estimate:
 - a. Total monthly adjustment = AQ
 - b. For an increase in paving asphalt price index exceeding 10 percent:

$$A = 0.90 (Iu/Ib - 1.10) Ib$$
 - c. For a decrease in paving asphalt price index exceeding 10 percent:

$$A = 0.90 (Iu/Ib - 0.90) Ib$$
 - d. Where:
 - A = Adjustment in dollars per ton of paving asphalt used to produce asphalt concrete and asphaltic emulsion residue used as paint binder rounded to the nearest \$0.01.
 - Iu = The California Statewide Paving Asphalt Price Index which is in effect on the first business day of the month within the pay period in which the quantity subject to adjustment was included in the estimate.
 - Ib = The California Statewide Paving Asphalt Price Index for the month in which the bid opening for the project occurred.
 - Q = Quantity in tons of paving asphalt that was used in producing the quantity of asphalt concrete shown under "This Estimate" on the monthly estimate using the amount of asphalt determined by the Engineer plus the quantity in tons of paving asphalt that would have been used as residue in the asphaltic emulsion (paint binder) shown under "This Estimate" on the monthly estimate.
- C. The adjustment in compensation will also be subject to the following:
 - a. The compensation adjustments provided herein will be shown separately on

payment estimates. The Contractor shall be liable to the State for decreased compensation adjustments and the Department may deduct the amount thereof from moneys due or that may become due the Contractor.

- b. Compensation adjustments made under this section will be taken into account in making adjustments in conformance with the provisions in Section 4-1.03B, "Increased or Decreased Quantities," of the Standard Specifications.
 - c. In the event of an overrun of contract time, adjustment in compensation for paving asphalt included in estimates during the overrun period will be determined using the California Statewide Paving Asphalt Price Index in effect on the first business day of the month within the pay period in which the overrun began.
- D. The California Statewide Paving Asphalt Price Index is determined each month on the first business day of the month by the Department using the median of posted prices in effect as posted by Chevron, Mobil, and Unocal for the Buena Vista, Huntington Beach, Kern River, Long Beach, Midway Sunset, and Wilmington fields.
- E. In the event that the companies discontinue posting their prices for a field, the Department will determine an index from the remaining posted prices. The Department reserves the right to include in the index determination the posted prices of additional fields.
- F. The California Statewide Paving Asphalt Price Index is available on the Division of Engineering Services website at:

http://www.dot.ca.gov/hq/esc/oe/asphalt_index/astable.html

**** END OF SECTION ****

SECTION 02762 - PAVEMENT MARKINGS

PART I - GENERAL

I. WORK INCLUDED

- A. Removal of traffic stripes and pavement markings as designated by the Engineer.
- B. Removal and disposal of pavement markers as directed by the Engineer.
- C. Installation of temporary traffic striping.
- D. Installation of thermoplastic traffic stripes and pavement markings.

PART 2 - PRODUCTS

I. TEMPORARY LANELINE AND CENTERLINE

Whenever lanelines and centerlines are obliterated the minimum laneline and centerline delineation to be provided shall be temporary reflective raised pavement markers placed at longitudinal intervals of not more than 24 feet. The temporary reflective raised pavement markers shall be the same color as the laneline or centerline the markers replace and shall be approved by the Engineer.

II. TEMPORARY EDGELINE DELINEATION

- A. Whenever edge line are obliterated and temporary pavement delineation is required to replace those edge lines, the edgeline delineation to be provided for that area adjacent to lanes open to public traffic shall, at the option of the Contractor, consist of either solid 4-inch wide traffic stripe of the same color as the stripe the temporary edgeline delineation replaces, or shall consist of traffic cones, portable delineators or channelizers placed at longitudinal intervals not to exceed 100 feet.
- B. Channelizers used for temporary edge line delineation shall be surface mounted type, orange in color and in conformance with Section 12-3.07 "Channelizers" of the Standard Specifications.

III. PERMANENT TRAFFIC STRIPES AND PAVEMENT MARKINGS

All permanent traffic striping and pavement markings shall be thermoplastic material and conform to Sections 84-1 and 84-2 of the Caltrans Standard Specifications.

Pavement markers shall conform to the provisions in Section 85, "Pavement Markers," of the Standard Specifications and these special provisions.

Bike lane rumble strip removed or disturbed during construction shall be replaced in kind to match existing.

PART 3 - EXECUTION

I. REMOVAL OF TRAFFIC STRIPES, PAVEMENT MARKERS AND MARKINGS

- A. Where grinding is used for the removal of painted or thermoplastic traffic stripes and pavement markings, the residue shall be picked up by means of a vacuum attachment to the grinding machine and shall not be allowed to flow across the pavement nor to be left on the surface of the pavement.
- B. Where permanent markings are to be removed, by blast cleaning or by grinding, the area removed shall be approximately rectangular so that no imprint of the removed marking remains on the pavement.
- C. Nothing in these special provisions shall relieve the Contractor from his or her responsibilities as provided in Section 7-1.09, "Public Safety," of the Caltrans Standard Specifications.
- D. Contractor will be responsible for repairing any damage to the pavement during removal of pavement markers. Damage to the pavement resulting from removal of pavement markers shall be considered as any depression more than 1/4 inch deep.

II. TEMPORARY PAVEMENT DELINEATION

- A. Temporary pavement delineation shall be furnished, placed, maintained and removed in accordance with the provisions in Section 12-3.01, "General," of the Standard Specifications and these special provisions. Nothing in these special provisions shall be construed as to reduce the minimum standards specified in the Manual of Traffic Controls published by the Department or as relieving the Contractor from his or her responsibility as provided in Section 7-1.09, "Public Safety," of the Standard Specifications.
- B. Whenever the work causes obliteration of pavement delineation, temporary or permanent pavement delineation shall be in place prior to opening the traveled way to public traffic. Laneline or centerline pavement delineation and edgeline delineation shall be provided at all times for traveled ways open to public traffic.
- C. All work necessary, including any required lines or marks, to establish the alignment of temporary pavement delineation shall be performed by the Contractor. Surfaces to receive temporary pavement delineation shall be dry and free of dirt and loose material. Temporary pavement delineation shall not be applied over existing pavement delineation or other temporary pavement delineation. Temporary pavement delineation shall be maintained until superseded or replaced with a new pattern of temporary pavement delineation or permanent pavement delineation.
- D. Temporary pavement markers and removable traffic type tape which conflicts with a new traffic pattern or which is applied to the final layer of surfacing or existing pavement to remain in place shall be removed when no longer required for the direction of public traffic, as determined by the Engineer.

III. TEMPORARY LANELINE AND CENTERLINE DELINEATION

- A. Temporary reflective raised pavement markers shall be placed in accordance with the manufacturer's instructions and shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used to place pavement markers in areas where removal of the markers will be required.
- B. Temporary lane line or centerline delineation consisting entirely of temporary reflective raised pavement markers placed on longitudinal intervals of not more than 24 feet, shall be used on lanes opened to public traffic for a maximum of 5 days. Prior to the end of the 5 days the permanent pavement delineation shall be placed. If the permanent pavement

delineation is not placed within the 5 days, the Contractor shall provide, at his or her expense, additional temporary pavement delineation. The additional temporary pavement delineation to be provided shall be equivalent to the pattern specified for the permanent pavement delineation for the area, as determined by the Engineer.

IV. TEMPORARY EDGELINE DELINEATION

- A. The lateral offset for traffic cones, portable delineators or channelizers used for temporary edge line delineation shall be as determined by the Engineer. If traffic cones or portable delineators are used as temporary pavement delineation for edge lines, the Contractor shall provide personnel to check the job site to maintain the cones or delineators during all hours that they are in use.
- B. Channelizer bases shall be cemented to the pavement in the same manner provided for cementing pavement markers to pavement in the section of these special provisions entitled "Pavement Markers," except epoxy adhesive shall not be used to place channelizers on the top layer of pavement.

V. PLACEMENT OF THERMOPLASTIC TRAFFIC STRIPES

- A. Contractor is required to submit a template and photos of all existing striping configurations that will be affected by this section, which will be subject to approval by the Engineer. Any work that would obliterate, cover or otherwise remove existing striping shall not be permitted to occur until said submittal is approved by the Engineer.
- B. Thermoplastic striping and pavement markings shall be used to replace existing thermoplastic and painted striping and pavement markings. Where striping and/or markings joins existing, the Contractor shall begin and end the transition from the existing striping and/or marking pattern into the new striping and/or marking pattern a sufficient distance to ensure continuity of the striping pattern.
- C. Thermoplastic material shall be applied in accordance with the Caltrans Standard Specifications, Section 84-2.04, and manufacturer's installation procedures.

VI. PAVEMENT MARKERS

- A. Certificates of compliance shall be furnished for pavement markers.
- B. Pavement markers shall be used to replace existing pavement markers. Where markers join existing, the Contractor shall begin and end the transition from the marker pattern into the new marker pattern a sufficient distance to ensure continuity of the pavement markers.

**** END OF SECTION ****

DIVISION 31 EARTHWORK

SECTION 31 2319

DEWATERING

PART 1 - GENERAL**1.01 - Summary**

- A. Section Includes: Perform all dewatering necessary or required for the construction of the work as covered by these Specifications and indicated on the Engineers' Drawings or Owner's Standard Details. Dewatering shall include the removal and disposal of all water that would interfere with the proper construction and completion of the required work and installation and maintenance of dewatering systems.

1.02 - Submittals

Submit a dewatering plan that includes the following:

1. Anticipated subsurface conditions.
2. Arrangement, location, depths of system components. Plan shall be stamped by a Professional Engineer registered in the State of California
3. Types and sizes of filters.
4. Required permits.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION**3.01 - Control of Water**

- A. All excavations shall be kept free from water and all construction shall be in the dry.
1. It should be presumed that the presence of groundwater will require dewatering operations. Furnish, install, maintain, and operate all necessary pumping and other equipment for dewatering all excavations. At all times have on the project sufficient pumping equipment for immediate use, including standby pumps for use in case other pumps become inoperable.
 2. Provide a sufficient number of pumps so as to hold the groundwater level at an elevation of not less than 3 foot below the bottom of the excavations.
 3. Wet and soft soil, if encountered at the bottom of the excavations shall be over-excavated to a depth of 1 foot and replaced with ¾-inch by No. 4, clean crushed rock.
 4. Dispose of water in such a manner as to cause no injury or nuisance to public or private property, or be a menace to the public health.
 5. The dewatering operation shall be continuous, so that the excavated areas shall be kept free from water during construction, while concrete is setting and achieves full strength, and until backfill has been placed to a sufficient height to anchor the work against possible flotation.
 6. Continue dewatering during backfilling operations such that the groundwater is at least 3 foot below the level of the compaction effort at all times. No compaction of saturated materials will be allowed.
 7. Dewatering devices must be adequately filtered to prevent the removal of fines from the soil.

8. The Contractor shall be responsible for any damage to the foundations or any other parts of existing structures or of the new work caused by failure of any part of the Contractor's protective works. After temporary protective works are no longer needed for dewatering purposes, they shall be removed by the Contractor.
 9. If pumping is required on a 24-hour basis, requiring engine drives, then engines shall be equipped in a manner to keep noise to a minimum consistent with provision SC-18 in the Special Conditions.
 10. Prevent disposal of sediments from the soils to adjacent lands or waterways by employing whatever methods are necessary, including settling basins.
- B. The Contractor shall be responsible for furnishing temporary drainage facilities and control measures to convey and dispose of surface water falling on or passing over the site in accordance with Section 01355 – Storm Water Pollution Prevention.

END OF SECTION

DIVISION 32 EXTERIOR IMPROVEMENTS

SECTION 32 1612

CONCRETE CURBS, GUTTERS, AND SIDEWALKS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Requirements applicable for furnishing all labor, material, equipment, tools and services required for concrete curbs, curbs and gutters, gutters, and sidewalks as required and as specified herein, as indicated on the Owner's Standard Details and Specifications, or as required by the agency having jurisdiction over the right-of-way area. Also included is the repair of existing concrete curbs, gutters, or sidewalks damaged or removed during construction.

1.02 REFERENCES

- A. Whenever the words "Standard Specifications" are referred to, the reference is to the State of California, Department of Transportation, Standard Specifications – 2010 Edition.
- B. In the event of conflict, the requirements of this specification section prevail.

1.03 SUBMITTALS

- A. Submit certificate of compliance indicating that the concrete complies with the specifications.

PART 2 - PRODUCTS

2.01 CONCRETE

- A. Comply with the Standards Specifications, Paragraph 73-1.02A.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Comply with the Standard Specifications, Section 73, Paragraphs 1.01 through 1.03, inclusive.
- B. Replace existing curbs, curbs and gutters, gutters and sidewalks in kind.
- C. Adjust structures such as valve boxes, manhole frames and covers, and electrical vaults to grade after the curb and gutter or sidewalk has been constructed for a reasonable distance on all sides of the structure.
- D. Concrete curbs, gutter, and sidewalks shall be installed in accordance with Engineer's drawings and the City of Brisbane standards.

END OF SECTION

DIVISION 33 UTILITIES

SECTION 33 1100

PUBLIC WATER UTILITIES DISTRIBUTION PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Requirements applicable for furnishing, installing, and testing all piping, including fittings and accessories as shown on the Engineer's Drawings, as shown on Owner's Standard Details, as described in the Specifications, and as required to completely interconnect all piping for a complete and operable systems.

B. Related Sections:

1. The Contractor shall perform excavation and fill in accordance with Section 02318.
2. The Contractor shall furnish and install all temporary bypass water piping in accordance with Section 33 1150.
3. The Contractor shall furnish and install all water service connections in accordance with Section 33 1213.
4. The Contractor shall furnish and install all water valves and accessories in accordance with Section 33 1216.
5. The Contractor shall furnish and install all fire hydrants and accessories in accordance with Section 33 1219.
6. The Contractor shall disinfect all water utilities in accordance with Section 33 1300.

1.02 REFERENCES

- A. American National Standards Institute (ANSI)
- B. American Society of Mechanical Engineers (ASME)
- C. American Society for Testing and Materials (ASTM)
- D. American Water Works Association (AWWA)
- E. Copper Development Association (CDA)
- F. Unified Numbering System (UNS)
- G. National Science Foundation (NSF 61)

1.03 SUBMITTALS

A. Shop Drawings:

1. Submit in accordance with Special Conditions Section 11 (SC-11).
2. Submit manufacturer's literature and certificates of compliance with standards set forth in this specification section for:
 - a. Pipe, fittings, couplings, and accessories.
 - b. Flexible couplings and flanged coupling adapters.
 - c. Restrained joints.
 - d. Corrosion protection joint and fitting bond, test station, and accessories.
2. Manufacturer's installation instructions or guide.
3. Leakage Testing Plan.

B. Potholing Report

1. Submit potholing reports per paragraph 3.02B3.

C. Field Test Reports:

1. Submit field testing reports per paragraph 3.07F.

1.04 QUALITY ASSURANCE

- A. All materials and equipment furnished under this Section shall: (1) be made in America by an American manufacturer who has been regularly engaged in the design and manufacture of the materials and equipment and (2) be demonstrated to the satisfaction of the Owner that the quality is equal to the materials and equipment made by those manufacturers specifically named herein, if an alternate product manufacturer is proposed.
- B. **Compatibility of Equipment and Material:**
 1. Similar items, equipment, devices or products furnished under a single specification section shall all be made by the same maker and have interchangeable parts.
 2. All similar materials or products that are interrelated or used together in an assembly shall be compatible with each other.
- C. **Installation Standards and Manufacturers' Recommendations:**
 1. Install all products and materials in strict compliance with the most restrictive of the following:
 - a. The manufacturer's or provider's written instructions or recommendations. Follow step-by-step installation procedures.
 - b. Recommendation of referenced trade associations or standards.
 - c. These specifications and drawings.
 2. Where conflicts exist present alternatives with advantages and disadvantages to Engineer for decision.
- D. **Delivery, storage and handling:**
 1. Do not use handling methods or equipment that may gouge or damage the pipe or endanger persons or property. Field storage is to be in compliance with AWWA Manuals of Practice M23 for polyvinyl chloride pipes, M41 for ductile iron pipes, and M55 for HDPE pipe. Do not store material directly on the ground. Adequately support piping to prevent warping. Use protective covers where pipe may be damaged by direct sunlight.
 2. If any gouges, scrapes, or other damage to pipe result in loss of 5% of the pipe wall thickness or if damaged pipe rejected by Engineer on site, cut out that section or do not use. Contractor shall replace damaged pipe at no additional expense to the Owner.

1.05 POTHOLING (CHECK ON LOCATIONS)

- A. Do not begin any construction until all utilities in that section of pipeline have been exposed, as specified in paragraph 3.02 and until such time as no interferences are found between said existing utilities and the proposed pipeline alignment. If interferences are found in any particular section of pipeline, do not begin construction for that particular section of pipeline until the pipeline alignment has been modified by the Engineer to eliminate all such interferences.

1.06 CONSTRUCTION SCHEDULING/SEQUENCING

- A. Construction scheduling and sequencing shall be in accordance with Engineering Drawings and Section 01100.
- B. Refer to Temporary Bypass Water Distribution Piping Section 1.06 and Engineering drawings for phasing and sequencing of construction.
- C. Construction may involve expansion and/or modification of the existing water system which must continue to provide service to all customers during construction.
- D. Connections and utilities changes must be programmed to provide the least possible interruptions of service. Prior to any shutdown, all materials, fittings, supports, equipment and tools shall be on the site and all necessary labor scheduled prior to starting any connection work. The Contractor shall notify the Owner and Engineer in writing at least 7 days in advance of any required shutdowns so that affected customers may be notified. In general, shutdowns shall not exceed

four hours in duration unless specifically authorized or indicated in the suggested construction sequence.

- E. All work shall be conducted in a manner which will minimize shutdowns, open roadways, or traffic obstructions caused by the construction. Shutdowns causing damage to adjacent public and private property shall not be permitted, and any damage resulting shall be the sole responsibility of the Contractor.
- F. Planned water service shutdowns shall be accomplished during periods of minimum use. In some cases this will require night or weekend work. The Contractor shall program his work so that service will be restored in the minimum possible time, and shall cooperate with the Owner in reducing shutdowns of the water system to a minimum. No water interruption will be permitted without the prior approval of the Owner.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Pipe and fitting sizes are nominal inner diameter unless otherwise noted.
- B. All materials delivered to the job site shall be new, free from defects, and marked to identify the material, class, and other appropriate data such as thickness for piping.
- C. Acceptance of materials shall be subject to strength and quality testing in addition to inspection of the completed product. Acceptance of installed piping systems shall be based on inspection and leakage and bacteriological tests as specified herein and in Section 33 1300.
- D. All buried nuts and bolts and other hardware for flanges and couplings shall be Type 316 stainless steel unless otherwise specifically specified herein.
- E. Fusion Epoxy Coating: Materials and application shall be in accordance with AWWA C213, except application shall be by the fluid bed method only unless the greatest dimension of the article to be coated exceeds 10 feet, in which case electrostatic spray method may be used.
- F. All brass components in contact with potable water shall be composed of either CDA/UNS Brass Alloys C89520 or C89833 with a maximum lead content of 0.25% by weight in accordance with ANSI/AWWA C-800. Brass alloys not listed in the most current ANSI/AWWA C-800 Paragraph 4.1.2 are not acceptable. Brass saddles shall be composed of CDA/UNS C83600.

2.02 PIPING MATERIALS

A. Pipe Designation:

- 1. New water transmission mains shall be ductile iron (DI) as shown on the Engineer's Drawings.

B. Ductile Iron (DI) Pipe and Fittings:

- 1. Push On Joint Pipe: Ductile Iron Pipe, confirming to AWWA Standard C151, pressure class 350.
- 2. Flanged Join Pipe: Ductile Iron Pipe, confirming to AWWA Standard C151, thickness class 53.
- 3. Pipe Joints
 - a. Push-On Pipe Joints. Joints shall conform to AWWA Standard C111.
 - i. Restrained Joints for Push-on Pipe. Pipe gaskets shall be "Field-Lok" gaskets as manufactured by U.S. Pipe and Foundry Co. or Owner approved equal.
 - b. Flanged Pipe Joints. Where flanged joints are required, flanges shall be in conformance with AWWA C115. Flanges shall normally be Class 125, B16.1, rated for a service pressure of 250 psi. Bolts and nuts for all flanged joints shall be Type 316 stainless steel. Gaskets shall be normally 1/8-inch thick non-asbestos composition type.
- 4. Fittings:
 - a. Fittings for Push-On Joint Pipe. Fittings shall be ductile iron conforming to AWWA Standard C153. Fittings shall be push-on type ("Tyton" style) or mechanical joint type as directed by the Owner.
 - b. Fitting Joint Restraint Devices:

- ii. Restraint Device for Push-On Fittings: "Field-Lok" gaskets as manufactured by U.S. Pipe and Foundry Co. or Owner approved equal.
- iii. Restraint Device for Mechanical Joint Fittings: Series 1100 Megalug Retainer Glands as manufactured by EBBA Iron Sales, Inc.
- c. Fittings for Flanged Pipe. Fittings shall be ductile iron conforming to AWWA C110. Fittings shall be screw- on type, normally Class 125, B16.1 Type, designed for a service pressure of 250 psi. Bolts and nuts for flanged joints shall be Type 304 stainless steel. Gaskets shall normally be 1/8-in thick non-asbestos composition type.
- 5. Exterior Coating. Pipe and fittings shall be furnished with a 1 mil thick asphaltic coating. The finished coating shall be the manufacturer's standard conforming to AWWA C151 requirements.
- 6. Lining: Standard thickness cement mortar lining for pipe and fittings, AWWA C104.
- 7. Protection:
 - a. Polyethylene encasement, AWWA C105, black, 8 millimeter minimum thickness. The encasement material shall be marked at a minimum of every 2 feet along its length in conformance with the AWWA Standard which includes the manufacturer's name, year of manufacturer, "AWWA C105", film thickness, applicable range of nominal pipe diameter sizes, and "Warning---Corrosion Protection---Repair any Damage".
 - b. Single wrap all pipe. Double wrap flanged fittings, mechanical joints, or other appurtenances with significantly different outside diameters from the pipe. Tape to seal seams and overlaps shall be plastic adhesive tape at least 4 mils thick and at least 2 inches wide.
 - c. Provide bonded ductile iron pipe joints and fittings where indicated and as specified in the Contract Drawings.
 - d. Provide a cathodic protection test station where indicated and as specified in the Contract Drawings.

C. Copper Pipe and Fittings:

- 1. Pipe:
 - a. Buried Pipe: Copper (Cu), ASTM B88, Type K.
 - b. Exposed Pipe: Copper (Cu), ASTM B88, Type L.
- 2. Fittings:
 - a. Compression type (not requiring flaring or soldering): ANSI/AWWA C800, Mueller Series 110 as listed below or owner approved equal.

Mueller Copper Fitting Model Numbers

Manufacturer	Description	Model Number
Mueller	Corporation Stop	15008/15013
Mueller	Meter Angle Stop	H-14255/76
Mueller	Compression Union	H-15403

2.03 TAPPING SLEEVES AND TAPPING VALVES

- A. Tapping sleeves shall be Smith Blair 663-316SS or JCM 432-SS316 all stainless steel tapping sleeves with type 316 stainless steel body and bolts. Tapping valves shall be Mueller gate valves

as specified in Section 33 1216.

2.04 PIPE COUPLINGS

A. General:

1. For typical pipe joints refer to pipe material specifications. Other joint devices shall be furnished where called for as specified below.

B. Flexible Couplings:

1. Straight Flexible Couplings. Flexible couplings shall have cast iron bodies and stainless steel bolts and nuts. The Owner-approved coupling is the Smith Blair Type 441.
2. Transition Flexible Couplings. Flexible transition couplings shall have epoxy lined and coated steel bodies and stainless steel bolts and nuts. The Owner-approved coupling is the Smith Blair Type 413.

C. Flange Coupling Adaptors:

1. Flanged coupling adaptors for ductile iron pipe shall be epoxy coated Series 2100 megaflange-flange adaptors as manufactured by EBBA Iron Sales, Inc.

D. Solid Sleeve Couplings

1. Used to connect similar size Ductile Iron or PVC
2. Restraint Device for Mechanical Joint Sleeve for Ductile Iron Pipe: Series 1100 Megalug Retainer Glands as manufactured by EBBA Iron Sales, Inc.
3. Restraint Device for Mechanical Joint Sleeve for PVC Pipe: Series 2000PV Megalug Retainer Glands as manufactured by EBBA Iron Sales, Inc.

2.04 APPURTENANCES

- A. Provide all necessary assembly bolts, washers and nuts, thrust blocks, supports, gaskets, flanges, and all other appurtenant items shown on the project Engineer's or Owner's Standard Details specified or required for the proper installation and operation of the piping, and devices included in or on the piping, equipment, and piping accessories.

PART 3 - EXECUTION

3.01 BURIED PIPE INSTALLATION

A. General Handling and Placing:

1. Exercise great care to prevent injury to or scoring of the pipe lining and coating, as applicable, during handling, transportation or storage. Handle fusion epoxy coated pipe in accordance with AWWA C21. Pipe shall not be stored on rough ground and rolling of the pipe on the coating will not be permitted. Repair any damaged pipe sections, specials, or fittings or replace at the direction of the Owner.
2. Inspect each pipe fitting, valve and accessories carefully before installation. Inspect the interior and exterior protective coatings and patch all damaged areas in the field or replaced at the direction of the Owner.
3. Place or erect all piping to accurate line and grade and backfill, support, hang, or brace against movement as specified or shown on the Engineer's and Owner's Standard Details, or as required for proper installation. Remove all dirt and foreign matter from the pipe interior prior to installation and thoroughly clean all joints before joining.
4. Use reducing fittings where any change in pipe size occurs. Bushings shall not be used. Use eccentric reducing fittings wherever necessary to provide free drainage of lines.
5. Connections between ferrous and non-ferrous piping and accessories shall be made using a dielectric coupling, union, or flange.

B. General Buried Piping Installation:

1. Trenching, bedding, and backfill for buried piping shall be as shown on the Engineer's and Owner's Standard Details and as specified in Section 02318
2. Buried piping shall have a minimum cover of 36 inches unless otherwise permitted by the Owner.
3. Provide each pipe with a firm, uniform bearing for its full length in the trench except at field joints. Do not lay pipe in water or when trench conditions or weather are unsuitable for such work.
4. Protect buried piping against thrust by use of restrained joints, and thrust blocks and all fittings and valves. Securely brace all exposed free pipe ends.
5. Do not pull bell and spigot, gasketed joints more than 75% of the maximum deflection permitted by the pipe manufacturer.
6. Service connections shall be installed by open trench method, or using trenchless technologies as specified in Section 33 1213

C. Water Main Installation:

1. DO NOT MAKE ANY CONNECTIONS BETWEEN THE NEW MAIN AND THE OLD MAIN UNTIL THE NEW MAIN HAS BEEN DISINFECTED AND TESTED AND THE OWNER DIRECTS THAT CONNECTIONS CAN BE MADE. MAXIMUM CONNECTION LENGTH BETWEEN OLD AND NEW MAIN SHALL BE 20 FEET.
2. The Contractor is advised that precautions taken to keep the pipeline clean during construction will facilitate achieving the disinfection requirements of this project with a minimum of effort and expense. Compliance with these suggested minimum procedures will not relieve the Contractor of the disinfection requirements per Section 33 1300.
3. Prior to installation, thoroughly clean the interior of each length of pipe and each fitting or valve and inspect to ensure that no foreign material remains. Cover both ends with plastic and do not uncover them until just prior to completing the joint.
4. Pipe laying shall begin at the low end of the project and proceed uphill, unless authorized by the Owner. Pipe bells shall face uphill.
5. Whenever pipe laying is discontinued for short periods, or whenever work is stopped at the end of the day, close the open ends of the pipe with watertight plugs or bulkheads.
6. Provide adequate trench pumping to ensure against groundwater contacting the inside of the pipeline at any time in accordance with Section 31 2319. Do not lower any pipe or fitting into a trench where groundwater is present and may enter the pipe. When necessary, pump the water from trenches and keep the trench dry until the joints have been completed and the open ends of the pipe have been closed with a watertight plug. Do not remove the plug until the trench has again been pumped dry.
7. Water pipelines and service tubing shall be installed with the following minimum clearances from other underground utilities:
 - a. Electrical Wires or Conduits, Storm Drains, Telephone Conduits, Cable TV Wires or Conduits, and Other Utilities. Where practical, minimum horizontal clearance shall be 4 feet; minimum vertical clearance shall be one foot.
 - b. Sanitary Sewers including House Laterals: minimum horizontal clearance shall be 10 feet, where practical, and at least 2 feet at all locations; minimum vertical clearance shall be one foot; the water pipeline shall be installed above the sanitary sewer, where practical.
8. Keep new pipe sections clean and dry.
9. When making the connection between a new pipeline and an existing pipeline, or when repairing a damaged pipe, take the following extra precautions:
 - a. Clean the exterior of the existing pipeline of all dirt and debris, and spray or swab with a standard 5.25% or stronger chlorine solution (as specified) in the immediate vicinity of the work. Clean equipment and materials, including new pipe and fittings, to be used in making these connections of all dirt and debris and disinfect them. Allow at least 30 minutes contact time for disinfection before the chlorine solution is diluted or rinsed off. Provide sufficient trench pumps to prevent flooding of the trench.
 - b. When an old line is opened, either by accident or by design, the excavation may be

wet or badly contaminated from groundwater. Apply liberal quantities of standard chlorine solution or tablets to the open trench areas to lessen the danger from such pollution. Tablets are recommended because they dissolve slowly and continue to release hypochlorite as water is pumped from the excavation. Scatter liberally around and locate the tablets so that flow entering the work site will contact the disinfecting agent. Trench application should be done very carefully to avoid contact by skin and clothing with chlorine solution.

D. Installation Specifics:

1. General:
 - a. Wherever the pipeline crosses over or under a sewer main or house service lateral, center a standard length pipe, 18-foot minimum, on said sewer main or lateral so as to have the pipeline joints as far as possible away from the sewer. This may require field cutting of some pipe pieces.
 - b. Flanged Joints: Flanged joints shall be made up tight with care being taken to avoid undue strain in the flanges, fittings, and other accessories. Bolt holes shall be aligned for each flanged joint. Bolts shall be full size for bolt holes; use of undersize bolts to make up for misalignment of bolt holes or for any other purpose will not be permitted. Adjoining flange faces shall not be out of parallel to such a degree that the flanged joint cannot be made watertight without over-straining the flange. Replace any flanged pipe or fitting whose dimensions do not allow the making of a proper flanged joint as specified herein by one of proper dimensions. Clean flanges prior to making joints.
 - c. Restrained Joints: Install in accordance with manufacturer’s instructions. Pull slack out of joint after makeup.
 - d. Thrust Blocks: Install at all fittings and valves in accordance with Owner’s Standard Details.
2. Ductile Iron Pipe:
 - a. Buried pipe shall be installed in accordance with AWWA C600.
 - b. Where required by the Owner or by the Contract Documents, wrap buried pipe with polyethylene film in accordance with AWWA C105. Continuously seal seams and overlaps with tape. Seal circumferential overlaps with two turns of tape, half lapped. Gather excess polyethylene on top of pipe so as not to block backfill material from getting under bottom of pipe. Use caution so as not to rip or cut the polyethylene film. Seal any rips or cuts in the film with tape.

3.02 EXISTING UTILITIES

A. General:

1. The known existing utilities and pipelines will be shown on the Engineer’s Drawings prepared by the Engineer, to the extent of Design Engineer’s and Owner’s knowledge based on available information. The Contractor shall exercise care in avoiding damage to all utilities as Contractor will be held responsible for their repair if damaged. Owner, Design Engineer, and Engineer do not represent that all utilities and structures are shown on the Engineer’s Drawings.
2. Contact Underground Services Alert (USA), (800) 642-2444 to mark utilities, at least 48 hours prior to excavating.

B. Check on Locations (Utility Locating and Potholing):

1. Contact all affected utility owners and request them to locate their respective utilities prior to the start of “potholing” procedures. The utility owner shall be given 7 days written notice prior to commencing potholing. If a utility owner is not equipped to locate its utility, the Contractor shall locate it. Contractor shall also arrange and pay for a specialty utility locating subcontractor.
2. Clearly paint the location of all affected utility underground pipes, conduits and other

utilities on the pavement or identify the location with suitable markers if not on pavement. In addition to the location of metallic pipes and conduits, non-metallic pipe, ducts and conduits shall also be similarly located using surface indicators and detection tape, if present and shall then be similarly marked. Contractor shall locate the existing water line to be replaced in the existing trench by running tracer wire or using a similar method after the temporary bypass is in service and the existing water main is shut down.

3. After the utility survey is completed, commence "potholing" to determine the actual location and elevation of all utilities where crossings, interferences, or connections to the new pipelines are as shown on the Engineer's Drawings, marked by the utility companies, located by the Contractor, or indicated by surface signs. Prior to the excavating for any new pipelines or structures, the Contractor shall locate and uncover these existing utilities including services and laterals to a point 1 foot below the utility. Submit a report at least 3 days prior to commencing buried pipe installation identifying each underground utility and its depth and station and locations that will require pipe lowering, raising, or horizontal realignment to correct interferences. The report shall also identify stations where the horizontal clearance between the proposed water main alignment and a sanitary sewer is within two (2) feet. Any variations in the actual and the indicated elevations or horizontal alignments be brought to the Engineer's attention.
4. Excavations around underground electrical ducts and conduits shall be performed using extreme caution to prevent injury to workers or damage to electrical ducts or conduits. Similar precautions shall be exercised around gas lines, telephone and television cables.

C. Interferences:

1. If interferences occur at locations other than shown on the Engineer's Drawings, the Contractor shall notify the Owner, and a method for correcting said interferences, if necessary, will be supplied by the Engineer.
2. Interferences shall include but are not limited to the following:
 - a. All locations where the water main cannot be installed as shown on the Engineer's Drawings with the minimum utility clearances specified in paragraph 3.01.C.7.
 - b. All utility crossings where a full stick of water main pipe cannot be centered on a non-potable water line.
 - c. All non-potable water line crossings occur at angles less than 45 degrees.
3. Any necessary relocations of utilities, whether shown on the Engineer's Drawings or not, shall be coordinated with the affected utility. The Contractor shall perform the relocation only if instructed to do so in writing from the Owner.

3.03 COUPLINGS

A. Flexible and Solid-Sleeve Couplings and Flange Coupling Adaptors:

1. Prior to installation, thoroughly clean oil, scale, rust, and dirt from the pipe to provide a clean seat for the gasket. Care shall be taken that the gaskets are wiped clean before they are installed. If necessary, flexible couplings and flanged coupling adapter gaskets may be lubricated with soapy water or manufacturer's standard lubricant before installation on the pipe ends. Install in accordance with the manufacturer's recommendations.
2. Bolts shall be tightened progressively, drawing up bolt on opposite sides a little at a time until all bolts have a uniform tightness. Workers tightening bolts shall be equipped with torque-limiting wrenches or other favorably reviewed type. Anchor studs on restrained flanged coupling adapters shall be installed so as to lock into holes drilled through pipe wall in accordance with manufacturer's recommendation.

3.04 INSTALLATION OF VALVES AND ACCESSORIES

- A. Valves and valve accessories shall be installed in accordance with Section 33 1216.

3.05 FIELD QUALITY CONTROL

- A. The Contractor shall perform bacteriological analysis for pipelines to be disinfected in accordance

with Section 33 1300 and Owner's Standard Details.

- B. Factory Quality Control: The Contractor shall test all products as required herein and by the reference specifications.
- C. The Contractor shall:
 - 1. Perform leakage tests.
 - 2. Be responsible for the costs of additional inspection and retesting by the Owner resulting from non-compliance.
- D. Water used for the pressure testing, flushing, and disinfection shall be only from an approved potable water source.
- E. Take care to assure that all water released from pipelines after testing, flushing, and disinfection has been captured and no flushing discharge water is be permitted to runoff from roadways.

3.06 CLEANING

- A. Prior to testing, the inside of each completed pipeline shall be thoroughly cleaned of all dirt, loose scale, sand and other foreign material. Cleaning shall be by sweeping, flushing with water, internal cleaning device or "pig" or blowing with compressed air, as appropriate for the size and type of pipe.
- B. Flushing shall achieve a velocity of at least 3 feet per second.
- C. The Contractor shall install temporary strainers, temporarily disconnect equipment or take other appropriate measures to protect equipment while cleaning piping.
- D. Cleaning shall be completed after any repairs.

3.07 FIELD TESTING

- A. **General:**
 - 1. Perform leakage tests on all pipe installed in this project in accordance with AWWA C600 for ductile iron pipe. Furnish all equipment, material, personnel, test media and supplies to perform the tests and make all taps. The test pressure, allowable leakage and test medium shall be as specified below. Perform leakage tests on all piping at a time agreed upon and in the presence of the Owner.
- B. **Buried Piping:**
 - 1. Perform the leakage test for buried piping after all pipe is installed and backfilled. However, preliminary tests may be conducted prior to backfill. If preliminary tests are conducted, provide any necessary temporary thrust restraint.
- C. **Accessories:**
 - 1. It is the responsibility of the Contractor to block off or remove equipment, valves, gauges, etc., which are not designed to withstand the full test pressure.
- D. **Testing Apparatus:**
 - 1. Provide pipe taps, nozzles and connections as necessary in piping to permit testing, addition of test, media, and draining lines and disposal of water, as is necessary. Plug these openings in a manner favorably reviewed by the Engineer after use. Provide all required temporary bulkheads.
- E. **Correction of Defects:**
 - 1. If leakage exceeds the allowable, repair or replace the installation and repeat leakage tests as necessary until conformance to the leakage tests as necessary until conformance to the leakage test requirements specified herein have been fulfilled. All visible leaks shall be repaired even if the pipeline passes the allowable leakage test.
- F. **Reports:**

1. Keep records of each piping test, including:
 - a. Description and identification of piping tested.
 - b. Test pressure.
 - c. Date of test.
 - d. Witnessing by Contractor and Owner.
 - e. Test evaluation.
 - f. Remarks, to include such items as:
 - ii. Leaks (type, location).
 - iii. Repairs made on leaks.
 - iv. Submit test reports to the Owner.

G. Venting:

1. Where not shown on the Engineer’s Drawings, the Contractor may install corporation stops with saddles or “TEES” with shutoff valves at high points on piping to permit venting of air. Valves shall be capped after testing is completed.

H. Testing Specifics:

1. Water Transmission Mains:
 - a. Method: AWWA C600 for ductile iron, as modified herein.
 - b. Duration: Two hours.
 - c. Pressure: Hydrostatic test equal to 200 psi.
 - d. Medium: Potable water.
 - e. Allowable Leakage: Leakage shall be defined as the quantity of test medium that must be added to the section of pipeline being tested to maintain the specified test pressure for the specified test duration. For copper service tubing, no leakage will be permitted. For other pipelines, maximum allowable leakage shall not exceed the following:

Pipe Diameter	Allowable Leakage per 1000 Linear Feet of Pipe during the 2-Hour Test Period
4"	0.76 gallons
6"	1.14 gallons
8"	1.52 gallons
10"	1.92 gallons
12" and larger	2.30 gallons

3.08 DISINFECTION OF POTABLE WATER SYSTEMS

- A. Disinfect all water mains and interconnected piping after testing and before being placed into service to ensure their bacteriological safety in accordance with Section 33 1300.

3.09 EROSION CONTROL

- A. Erosion control measure will be in place to satisfy all parties to ensure prevention of erosion and other harmful effects of large quantities of water.
- B. Take care to assure that all water released from pipelines after testing, flushing, and disinfection has been captured and no water is be permitted to runoff from roadways.

3.010 ABANDON EXISTING WATER UTILITY DISTRIBUTION PIPING

- A. Abandon existing water utility distribution piping as indicated on the Engineer’s Drawings.

END OF SECTION

DIVISION 33 UTILITIES

SECTION 33 1150

TEMPORARY BYPASS WATER DISTRIBUTION PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Requirements applicable for furnishing, installing, pressure testing, disinfecting, operating, maintaining, and removing temporary potable water bypass water main and temporary service connections piping, including all valves, fittings, appurtenances; and cutting and repairing road asphalt, curb, and/or sidewalks (referred to herein as temporary bypass system) as shown on the Engineer's Drawings, as described in the Specifications, and as required to completely interconnect all piping for a complete and operable temporary bypass system.

B. Related Sections:

1. The Contractor shall perform excavation and fill in accordance with Section 02318.
2. The Contractor shall furnish and install all water valves and accessories in accordance with Section 33 1216.
3. The Contractor shall pressure test and disinfect all temporary water utilities in accordance with Section 33 1300.

C. Alternates:

1. The owner may determine to accept alternate bypass piping system installations according to Section 01270.II.

1.02 REFERENCES

- A. American National Standards Institute (ANSI)
- B. American Society of Mechanical Engineers (ASME)
- C. American Society for Testing and Materials (ASTM)
- D. American Water Works Association (AWWA)
- E. Copper Development Association (CDA)
- F. Unified Numbering System (UNS)
- G. National Science Foundation (NSF 61)

1.03 SUBMITTALS

A. Shop Drawings:

1. Submit in accordance with Special Conditions Section 11 (SC-11).
2. Submit manufacturer's literature and certificates of compliance with standards set forth in this specification section for:
 - a. Pipe, fittings, couplings, and accessories.
 - b. Valves and accessories.
 - c. Flexible couplings and flanged coupling adapters.
 - d. Restrained joints.
 - e. Water service connection pipe, fitting, valves and accessories.
2. Manufacturer's installation instructions or guide.
3. Leakage Testing Plan in accordance with Section 33 1300.
4. Disinfection Testing Plan in accordance with Section 33 1300.

5. Temporary Bypass Construction Plan, including a description of any proposed modifications to these specifications or Engineering Drawings. Temporary Bypass Construction Plan shall include the following:
 - a. Description of methods to protect the temporary bypass piping from damage and tampering, including driveway crossings, road crossings, and trench sections for buried installation alternatives.
 - b. Details to the temporary service connections to the existing meters.
 - c. Details for connections to the existing water main

B. Field Test Reports:

1. Submit field testing reports per paragraph 3.05F.

1.04 QUALITY ASSURANCE

- A. All materials and equipment furnished under this Section shall be demonstrated to the satisfaction of the Owner that the quality is equal to the materials and equipment typically supplied for a temporary bypass system installation.

B. Compatibility of Equipment and Material:

1. Similar items, equipment, devices or products furnished under a single specification section shall all be made by the same maker and have interchangeable parts.
2. All similar materials or products that are interrelated or used together in an assembly shall be compatible with each other.

C. Installation Standards and Manufacturers' Recommendations:

1. Install all products and materials in strict compliance with the most restrictive of the following:
 - a. The manufacturer's or provider's written instructions or recommendations. Follow step-by-step installation procedures.
 - b. Recommendation of referenced trade associations or standards.
 - c. These specifications and drawings.
2. Where conflicts exist present alternatives with advantages and disadvantages to Engineer for decision.

D. Delivery, storage and handling:

1. Do not use handling methods or equipment that may gouge or damage the pipe or endanger persons or property. Field storage is to be in compliance with AWWA Manuals of Practice M23 for polyvinyl chloride pipes, M41 for ductile iron pipes, and M55 for HDPE pipe. Do not store material directly on the ground. Adequately support piping to prevent warping. Use protective covers where pipe may be damaged by direct sunlight.
2. If any gouges, scrapes, or other damage to pipe result in loss of 5% of the pipe wall thickness or if damaged pipe rejected by Engineer on site, cut out that section or do not use. Contractor shall replace damaged pipe at no additional expense to the Owner.

1.05 POTHOLING (CHECK ON LOCATIONS)

- A. Do not begin any construction until all utilities in that section of pipeline have been exposed, as specified in paragraph 3.02 of Section 33 1100 and until such time as no interferences are found between said existing utilities and the proposed pipeline alignment. If interferences are found in any particular section of pipeline, do not begin construction for that particular section of pipeline until the pipeline alignment has been modified by the Engineer to eliminate all such interferences.

1.06 CONSTRUCTION SCHEDULING/SEQUENCING

- A. Construction scheduling and sequencing shall be in accordance with Engineering Drawings and Section 01100. Contractor shall note that there are three distinct phases: Phase West-1, Phase West-2, and Phase East.

- B. The Contractor shall sequence the temporary bypass system installation and permanent pipe installation sequentially by phase as described in the Engineering Drawings and Section 01100. Any Contractor-proposed changes to the scheduling and sequencing must be approved by the Engineer.
- C. Connections and utilities changes must be programmed to provide the least possible interruptions of service. Prior to any shutdown, all materials, fittings, supports, equipment and tools shall be on the site and all necessary labor scheduled prior to starting any connection work. The Contractor shall notify the Owner and Engineer in writing at least 7 days in advance of any required shutdowns so that affected customers may be notified. In general, shutdowns shall not exceed eight (8) hours in duration unless specifically authorized or indicated in the suggested construction sequence.
- D. All work shall be conducted in a manner which will minimize shutdowns, open roadways, or traffic obstructions caused by the construction. Shutdowns causing damage to adjacent public and private property shall not be permitted, and any damage resulting shall be the sole responsibility of the Contractor.
- E. Planned water service shutdowns shall be accomplished during periods of minimum use. In some cases this will require night or weekend work. The Contractor shall program his work so that service will be restored in the minimum possible time, and shall cooperate with the Owner in reducing shutdowns of the water system to a minimum. No water interruption will be permitted without the prior approval of the Owner.
- F. Notify Owner 7 days prior to any disruption of water service as a result of the temporary bypass system.
- G. Notify affected property owners in writing 72 hours in advance of connecting temporary bypass service connections to residences.

1.07 FIRE MARSHALL COORDINATION

- A. The Contractor shall notify the City’s Fire Marshal in writing upon installation of the temporary bypass, and prior to bringing the temporary bypass system online, and schedule a site visit with the Fire Marshal. A copy of this notice shall be provided to the Engineer.

1.08 TEMPORARY BYPASS WATER MAIN SYSTEM OPERATION AND MAINTENANCE

- A. The Contractor is responsible for protection, operation, and maintenance of the temporary bypass system
- B. Provide Owner primary and secondary points of contact, available 24-7, per Section SC-06.
- C. In the event of a problem, Contractor shall:
 - 1. Notify the Owner and Fire Marshal within 30 minutes of an event or respond to Owner within 30 minutes of an emergency call.
 - 2. Arrive at work site within 2 hours of notification and notify Owner upon site arrival.
 - 3. Provide adequate equipment, materials, and labor to take remedial actions within 1 hour of arrival at site in order to restore temporary bypass system in a timely manner.
 - 4. Notify the Owner when temporary bypass system has been restored.
- D. Failure to respond back to Owner within 30 minutes or arrive at the work site within 2 hours or failure to take remedial action within 1 hour of arrival on site: \$1,000 fee per remedial action event and cost incurred by the Owner to restore service, assessed to Contractor.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Pipe and fitting sizes are nominal inner diameter unless otherwise noted.
- B. All materials delivered to the job site shall be free from defects and marked to identify the material, class, and other appropriate data such as thickness for piping.
- C. Acceptance of materials shall be subject to strength and quality testing in addition to inspection of the completed product. Acceptance of installed piping systems shall be based on inspection and leakage and bacteriological tests as specified herein and in Section 33 1300.

- D. All buried nuts and bolts and other hardware for flanges and couplings shall be Type 316 stainless steel unless otherwise specifically specified herein.
- E. Fusion Epoxy Coating: Materials and application shall be in accordance with AWWA C213, except application shall be by the fluid bed method only unless the greatest dimension of the article to be coated exceeds 10 feet, in which case electrostatic spray method may be used.
- F. All brass components in contact with potable water shall be composed of either CDA/UNS Brass Alloys C89520 or C89833 with a maximum lead content of 0.25% by weight in accordance with ANSI/AWWA C-800. Brass alloys not listed in the most current ANSI/AWWA C-800 Paragraph 4.1.2 are not acceptable. Brass saddles shall be composed of CDA/UNS C83600.

2.02 PIPING MATERIALS

A. Temporary Bypass and Service Lines:

- 1. Temporary bypass water mains shall be either heat fusion joined high-density polyethylene (HDPE) pipe or restrained joint PVC as shown on the Engineer’s Drawings:
 - a. Minimum pressure rating shall be 200 psi.
 - b. Pipe size shall be 4-inch minimum as shown on the Engineer’s Drawings.
- 2. Temporary service connections shall match existing size, be HDPE pipe, and shall connect to the existing meter.
- 3. All temporary bypass water main piping, service connections, valves and appurtenances shall meet the requirements of NSF/ANSI Standard 61.

2.03 APPURTENANCES

- A. Provide all necessary assembly bolts, washers and nuts, thrust blocks, supports, gaskets, flanges, and all other appurtenant items shown on the project Engineer’s or Owner’s Standard Details specified or required for the proper installation and operation of the piping, and devices included in or on the piping, equipment, and piping accessories.

2.04 TEMPORARY FIRE HYDRANTS

- A. Temporary fire hydrant shall consist of a 4 inch by 4 inch tee or 4 inch 90° bend, with a butterfly valve connected to the end of the tee or bend, and an operating nut to control the valve. Temporary fire hydrant shall be equipped with a 4-1/2 inch diameter National Standard threaded nozzle with hydrant cap installed.

PART 3 - EXECUTION

3.01 PIPE INSTALLATION

A. General Handling and Placing:

- 1. Exercise great care to prevent injury to or scoring of the pipe lining and coating, as applicable, during handling, transportation or storage. Handle fusion epoxy coated pipe in accordance with AWWA C21. Pipe shall not be stored on rough ground and rolling of the pipe on the coating will not be permitted. Repair any damaged pipe sections, specials, or fittings or replace at the direction of the Owner.
- 2. Inspect each pipe fitting, valve and accessories carefully before installation. Inspect the interior and exterior protective coatings and patch all damaged areas in the field or replaced at the direction of the Owner. Remove all dirt and foreign matter from the pipe interior prior to installation and thoroughly clean all joints before joining.
- 3. Use reducing fittings where any change in pipe size occurs. Bushings shall not be used. Use eccentric reducing fittings wherever necessary to provide free drainage of lines.
- 4. Connections between ferrous and non-ferrous piping and accessories shall be made using a dielectric coupling, union, or flange.

B. Above Ground Installation:

1. Where indicated on the Engineering Drawings, Contractor shall install the temporary main above ground in the gutter or along the side of the road where no gutter exists.
2. Contractor shall bury the temporary main at all road crossings.
3. At each drive way, Contractor shall bury the main or install the main in steel casing and construct a temporary ramp over the pipe with cold patch asphalt.
4. Protect piping against thrust. All joints shall be fused or fully restrained.
5. After the new permanent water main has been installed, tested, and accepted by the Owner and prior to initiating work in next phase, remove the temporary bypass system.

C. Buried Installation:

1. Where indicated on the Engineering Drawings, Contractor shall install temporary bypass system in a shallow trench, generally located in the road near to the edge of pavement so as to not damage the curb and gutter during installation and removal. Any damage to existing curbs, gutters, and/or sidewalks shall be the responsibility of the Contractor and shall be replaced at no additional charge to the Owner.
2. Contractor shall saw cut and remove the asphalt and subgrade. All removed asphaltic pavement material and subgrade is the property and disposal responsibility of the Contractor.
3. Temporary bypass system piping shall be installed in a shallow trench and covered with a minimum of 2-inches of cold mix asphalt above the top of pipe. The trench shall be deep enough to accommodate the pipe and cold mix asphalt and to protect the temporary piping at all times while in service.
4. After the new permanent water main has been installed, tested, and accepted by the Owner, remove and dispose of the temporary bypass system and cold mix asphalt, and install new hot mix asphalt and subgrade patch in accordance with Section 02722 and City Standard Detail UT-1.
5. Do not lay pipe in water or when trench conditions or weather are unsuitable for such work.
6. Protect buried piping against thrust. All joints shall be fused or fully restrained.

D. Temporary Service Installation:

1. All temporary services that cross the road shall be buried.
2. For water meters located on the same side of the road as the temporary bypass main, Contractor shall disconnect the existing service piping at the meter and connect the temporary service piping to the existing meter. Cap and protect the disconnected, existing service connection while the temporary bypass is in service.
3. For water meters located on the opposite side of the road as the temporary bypass main, Contractor shall disconnect the existing service piping from the existing main after closing the existing corporation stop and connect the temporary service piping to the existing service with a coupling.

3.02 INSTALLATION OF VALVES AND ACCESSORIES

- A. Valves and valve accessories shall be installed in accordance with Section 33 1216. If the Contractor selects HDPE for the temporary bypass piping, valve installation shall accommodate this pipe type.
- B. Above ground valves shall be chained and locked to prevent unauthorized opening and closing.
- C. Valves should be installed at least every 700 feet along the length of the temporary bypass.

3.03 FIELD QUALITY CONTROL

- A. The Contractor shall perform bacteriological analysis for pipelines to be disinfected in accordance with Section 33 1300.
- B. Factory Quality Control: The Contractor shall test all products as required herein and by the reference specifications.
- C. The Contractor shall:

1. Perform leakage tests.
2. Be responsible for the costs of additional inspection and retesting by the Owner resulting from non-compliance.

3.04 CLEANING

- A. Prior to testing, the inside of each completed pipeline shall be thoroughly cleaned of all dirt, loose scale, sand and other foreign material. Cleaning shall be by sweeping, flushing with water internal cleaning device or “pig” or blowing with compressed air, as appropriate for the size and type of pipe.
- B. Flushing shall achieve a velocity of at least 3 feet per second.
- C. The Contractor shall install temporary strainers, temporarily disconnect equipment or take other appropriate measures to protect equipment while cleaning piping.
- D. Cleaning shall be completed after any repairs.

3.05 FIELD TESTING

A. General:

1. Perform leakage tests on all pipe installed in this project in accordance with AWWA C605 for PVC pipe and AWWA M55 for HDPE pipe. Furnish all equipment, material, personnel, test media and supplies to perform the tests and make all taps. The test pressure, allowable leakage and test medium shall be as specified below. Perform leakage tests on all piping at a time agreed upon and in the presence of the Owner.

B. Buried Piping:

1. Perform the leakage test for buried piping after all pipe is installed and backfilled. However, preliminary tests may be conducted prior to backfill. If preliminary tests are conducted, provide any necessary temporary thrust restraint.

C. Accessories:

1. It is the responsibility of the Contractor to block off or remove equipment, valves, gauges, etc., which are not designed to withstand the full test pressure.

D. Testing Apparatus:

1. Provide pipe taps, temporary blowoffs, nozzles and connections as necessary in piping to permit testing, addition of test, media, and draining lines and disposal of water, as is necessary. Plug these openings in a manner favorably reviewed by the Engineer after use. Provide all required temporary bulkheads.

E. Correction of Defects:

1. If leakage exceeds the allowable, repair or replace the installation and repeat leakage tests as necessary until conformance to the leakage tests as necessary until conformance to the leakage test requirements specified herein have been fulfilled. All visible leaks shall be repaired even if the pipeline passes the allowable leakage test.

F. Reports:

1. Keep records of each piping test, including:
 - a. Description and identification of piping tested.
 - b. Test pressure.
 - c. Date of test.
 - d. Witnessing by Contractor and Owner.
 - e. Test evaluation.
 - f. Remarks, to include such items as:
 - ii. Leaks (type, location).
 - iii. Repairs made on leaks.
 - iv. Submit test reports to the Owner.

G. Venting:

1. Where not shown on the Engineer’s Drawings, the Contractor may install corporation stops with saddles or “TEES” with shutoff valves at high points on piping to permit venting of air. Valves shall be capped after testing is completed.

H. Testing Specifics:

1. Water Transmission Mains:
 - a. Method: AWWA C600 for PVC pipe and AWWA M55 for HDPE pipe, as modified herein.
 - b. Duration:
 - i. Two hours for PVC pipe
 - ii. For HDPE pipe, four-hour initial expansion phase and one-hour pressure test phase.
 - c. Pressure: Hydrostatic test equal to 150 psi.
 - d. Medium: Potable water.
 - e. Allowable Leakage: Leakage shall be defined as the quantity of test medium that must be added to the section of pipeline being tested to maintain the specified test pressure for the specified test duration. For HDPE pipe and service tubing, no leakage will be permitted. For PVC pipe, maximum allowable leakage shall not exceed the following:

Pipe Diameter	Allowable Leakage per 1000 Linear Feet of PVC Pipe during the 2-Hour Test Period
4"	0.66 gallons
6"	1.00 gallons
8"	1.32 gallons
10" and larger	1.66 gallons

- f. For HDPE pipe hydrostatic test procedures shall follow the procedures of AWWA M55 as summarized below:
 - i. Prepare the pipeline test section for hydrostatic leak testing. Water and pipe should be allowed to thermally stabilize. Ensure that the pipeline has been blocked to prevent movement in case of joint rupture and that there are no persons near the pipe while the pipe is pressurized.
 - ii. Raise the pressure in the section under test to the maximum test pressure. Maintain the maximum test pressure for 4 hours. Add make-up water as required during this initial expansion phase.
 - iii. Reduce the test pressure by 10 psi and monitor the pressure for 1 hour, do not add make-up water during this test phase.
 - iv. Monitor the pressure during the 1-hour test phase, ensure that the pressure remains steady (within 5% of the test phase pressure).
 - v. If the pressure remains steady (within 5% of the test phase pressure) and no visible leaks are observed, a passing test has been achieved.
 - vi. If leakage is observed at a fusion joint, immediately move all persons away from the joint and depressurize the pipeline.
 - vii. If unable to achieve and maintain specified pressure for 1 hour without additional pumping, locate and repair or replace defective pipe or joint at no cost to the Owner and without time extension. Retest the replaced or repaired pipe joint.

3.06 DISINFECTION OF POTABLE WATER SYSTEMS

- A. Disinfect all water mains and interconnected piping after testing and before being placed into service to ensure their bacteriological safety in accordance with Section 33 1300.

END OF SECTION

DIVISION 33 UTILITIES

SECTION 33 1213

WATER SERVICE CONNECTIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Requirements applicable for furnishing, installing, and testing all piping, fittings, and accessories for water service connections as shown on the Engineer's Drawings, as shown on Owner's Standard Details and Specifications, as described in the Specifications, and as required to completely interconnect all piping for complete and operable systems.

B. Related Sections:

1. The Contractor shall perform excavation and fill in accordance with Section 02318.
2. The Contractor shall furnish and install all public water utilities distribution piping in accordance with Section 33 1100.
3. The Contractor shall furnish and install all water valves and accessories in accordance with Section 33 1216
4. The Contractor shall furnish and install all fire hydrants and accessories in accordance with Section 33 1219.
5. The Contractor shall disinfect all water utilities in accordance with Section 33 1300.

1.02 REFERENCES

- A. American National Standards Institute (ANSI)
- B. American Society for Testing and Materials (ASTM)
- C. American Water Works Association (AWWA)
- D. Copper Development Association (CDA)
- E. Unified Numbering System (UNS)

1.03 SUBMITTALS

A. Shop Drawings:

1. Submit in accordance with Special Conditions Section 11 (SC-11).
2. Submit manufacturer's literature and certificates of compliance with standards set forth in this specification section for:
 - a. Water service connection pipe, fittings, valves, and accessories.
 - b. Water meter boxes.
2. Manufacturer's installation instructions or guide.

1.04 QUALITY ASSURANCE

- A. All materials and equipment furnished under this Section shall: (1) be made in America by an American manufacturer who has been regularly engaged in the design and manufacture of the materials and equipment and (2) be demonstrated to the satisfaction of the Owner that the quality is equal to the materials and equipment made by those manufacturers specifically named herein, if an alternate product manufacturer is proposed.

B. Compatibility of Equipment and Material:

1. Similar items, equipment, devices or products furnished under a single specification

- section shall all be made by the same maker and have interchangeable parts.
2. All similar materials or products that are interrelated or used together in an assembly shall be compatible with each other.

C. Installation Standards and Manufacturers' Recommendations:

1. Install all products and materials in strict compliance with the most restrictive of the following:
 - a. The manufacturer's or provider's written instructions or recommendations. Follow step-by-step installation procedures.
 - b. Recommendation of referenced trade associations or standards.
 - c. These specifications and drawings.
2. Where conflicts exist present alternatives with advantages and disadvantages to Engineer for decision.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Pipe, valve, and fitting sizes are nominal inner diameter unless otherwise noted.
- B. All materials delivered to the job site shall be new, free from defects, and marked to identify the material, class, and other appropriate data such as thickness for piping.
- C. Acceptance of materials shall be subject to strength and quality testing in addition to inspection of the completed product. Acceptance of installed piping systems shall be based on inspection and leakage and bacteriological tests as specified in Sections 33 1100 and 33 1300.
- D. All buried nuts and bolts and other hardware for flanges and couplings shall be Type 316 stainless steel unless otherwise specifically specified herein.
- E. All brass components in contact with potable water shall be composed of either CDA/UNS Brass Alloys C89520 or C89833 with a maximum lead content of 0.25% by weight in accordance with ANSI/AWWA C800. Brass alloys not listed in the most current ANSI/AWWA C-800 Paragraph 4.1.2 are not acceptable. Brass saddles shall be composed of CDA/UNS C83600.

2.02 SERVICE CONNECTIONS

A. General:

1. All corporation stops, service clamps or saddles, and service connection accessories shall meet AWWA C800. All wetted parts of all components shall be of No-Lead Alloy, in compliance with UNS/CDA No. C89833.
2. All service connection components shall be consistent with the Engineer's drawings and the Owner's Standard Specifications and Construction Details.

B. Copper Service tubing:

1. Shall conform to requirements for copper pipe in Section 33 1100.

C. Service Saddles:

1. Rating – 200 psi water
2. Type:
 - a. DI or AC main: Bronze, double strap, outlet shall be either AWWA taper or IPT as required for the pipe to be connected to the saddle. Mueller BR2B Series or Owner approved equal.
 - b. C-900 main: Stainless steel double strap service clamp with AWWA taper (C.C.) thread.

C. Corporation Stops:

1. Rating: 300 psi water
2. Type: AWWA thread inlet; compression connection outlet

3. Manufacturer: Muller Co. B-25008N or Owner favorably reviewed equivalent.

D. Meter Angle Stop:

1. Rating: 300 psi water
2. Type: AWWA compression connection inlet; meter swivel nut, quarter turn check – lock wing outlet.
3. Manufacturer:
 - a. Mueller Co. B-24258N or Owner favorably reviewed equivalent.

E. Meter Box:

1. Meter boxes shall be concrete, and shall be products of Christy Concrete Products, Inc. Meter box lids in non-traffic areas shall normally be concrete, and in traffic areas shall be galvanized steel. Lids shall have the word “Water” cast into the top. Extension pieces shall be provided as required so that the bottom of the meter box assembly is above the bottom of the meter or other device inside the box as shown on the Owner’s Standard Installation Details or as Directed by the Owner. For water meter service connections, the following boxes and lids shall be provided:

Water Meter Size	Non-Traffic Areas		Traffic Areas	
	Box No.	Lid No.	Box No.	Lid No.
5/8” – 3/4”	B-12	N12T	B1017 H/20	B1017 61GH with 5”x8” Reading Lid
1”	B16	N16T	B1324 H/20	B1324 61GH with 5”x8” Reading Lid
1-1/2” & 2”	B-36	N36T	B1730 H/20	B1730 61GH with 8”x12” Reading Lid

E. Water Meter:

1. To be furnished by the Owner to the Contractor at no cost.

F. Backflow Prevention Assembly:

1. Backflow prevention assemblies shall be reduced pressure type. The assembly shall be a type approved by the District. The Contractor shall submit catalog information for the backflow prevention assembly proposed for approval by the District.

G. Detector Checks:

1. Manufacturer: Hersey Model EDC3 or Owner favorably reviewed equivalent.

PART 3 - EXECUTION

3.01 GENERAL

- A. Installation: Installation of water service tubing, fittings and accessories shall be in conformance with the recommendations of the manufacturers of the tubing and fittings.
- B. Leak Test: Leak testing shall be performed in conformance with Section 33 1100.
- C. Construction scheduling/sequencing: existing water service shall continue and service shutdowns must be minimized during construction as required by Section 33 1100.

3.02 INSTALL OWNER-FURNISHED WATER METERS

- A. Contractor to install to install Owner-furnished water meters in accordance with the standard details shown on the Drawings.

END OF SECTION

DIVISION 33 UTILITIES

SECTION 33 1216

WATER UTILITY DISTRIBUTION VALVES

PART 1 - GENERAL**1.01 SUMMARY****A. Section Includes:**

- B. Requirements applicable for furnishing, installing, and testing all valves and accessories as shown on the Project Engineer's Drawings, as shown on Owner's Standard Details, as described in the Specifications, and as required to completely interconnect all piping for complete and operable systems.

C. Related Sections:

1. The Contractor shall furnish and install all water distribution piping, fittings, and accessories in accordance with Section 33 1100.
2. The Contractor shall furnish and install all water service connections in accordance with Section 33 1213.
3. The Contractor shall furnish and install all fire hydrants and accessories in accordance with Section 33 1219.
4. The Contractor shall disinfect all water utilities in accordance with Section 33 1300.

1.02 REFERENCES

- A. American National Standards Institute (ANSI)
- B. American Society of Mechanical Engineers (ASME)
- C. American Society for Testing and materials (ASTM)
- D. American Water Works Association (AWWA)
- E. Copper Development Association (CDA)
- F. Unified Numbering System (UNS)

1.03 SUMITTALS**A. Shop Drawings:**

1. Submit in accordance with Special Conditions Section 11 (SC-11).
2. Submit data to show that the following items meet or exceed the standards set forth in this specification section:
 - a. Valves.
 - b. Air relief valves
 - c. Blow off valves.

B. Publications:

1. The Contractor shall furnish manufacturers installation and operation manuals, bulleting, and spare parts lists for the following items:
 - a. All valves over 4-inch size.
 - b. Air release valves
 - c. Blow off valves assembly.

1.04 QUALITY ASSURANCE

- A. All materials and equipment furnished under this Section shall: (1) be made in America by an American manufacturer who has been regularly engaged in the design and manufacture of the

materials and equipment and (2) be demonstrated to the satisfaction of the Owner that the quality is equal to the materials and equipment made by those manufacturers specifically named herein, if an alternate product manufacturer is proposed.

B. Compatibility of Equipment and Material:

1. Similar items, equipment, devices or products furnished under a single specification section shall all be made by the same maker and have interchangeable parts.
2. All similar materials or products that are interrelated or used together in an assembly shall be compatible with each other.

C. Installation Standards and Manufacturers' Recommendations:

1. Install all products and materials in strict compliance with the most restrictive of the following:
 - a. The manufacturer's or provider's written instructions or recommendations. Follow step-by-step installation procedures.
 - b. Recommendation of referenced trade associations or standards.
 - c. These specifications and drawings.
2. Where conflicts exist present alternatives with advantages and disadvantages to Engineer for decision.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Valve sizes are nominal inner diameter unless otherwise noted.
- B. All materials delivered to the job site shall be new, free from defects, and marked to identify the material, class, and other appropriate data such as thickness for piping.
- C. Acceptance of materials shall be subject to strength and quality testing in addition to inspection of the completed product. Acceptance of installed piping systems shall be based on inspection and leakage and bacteriological tests as specified in Sections 33 1100 and 33 1300.
- D. All buried nuts and bolts and other hardware for flanges and couplings shall be Type 316 stainless steel unless otherwise specifically specified herein.
- E. Fusion Epoxy Coating: Materials and application shall be in accordance with AWWA C213, except application shall be by the fluid bed method only unless the greatest dimension of the article to be coated exceeds 10 feet, in which case electrostatic spray method may be used.
- F. All brass components in contact with potable water shall be composed of either CDA/UNS Brass Alloys C89520 or C89833 with a maximum lead content of 0.25% by weight in accordance with ANSI/AWWA C-800. Brass alloys not listed in the most current ANSI/AWWA C-800 Paragraph 4.1.2 are not acceptable. Brass saddles shall be composed of CDA/UNS C83600.

2.02 VALVES AND ACCESSORIES

- A. General Requirements for Valves:
 1. All valves of each type shall be the product of one manufacturer.
 2. All valves shall be furnished with control assembly, operators, handwheels, levers, or other suitable type wrench including handles as specified herein or as shown on the Engineer's or Owner's Standard Details.
 3. Provide internal and external epoxy coating and stainless steel bolt up kits for all valves.

- B. Valves and Accessories:
 1. Gate Valves:
 - a. Type: Resilient seated, non-rising stem, with 2-inch operating nut, AWWA C515, all body and bonnet bolts, studs, and nuts shall be Type 316 stainless steel, as modified herein
 - b. Rating: 250 psi working pressure. Leaktight in both directions.
 - c. Connection: push-on or mechanical joint type as required by Drawings. Drawings

- may require flanged joints.
 - d. Materials: Ductile iron body
 - e. Stem seal: O-ring
 - f. Interior and Exterior Coating: 10-mils epoxy in accordance with AWWA C550.
 - g. Manufacturer: Mueller Co. A2360 series or or approved equivalent.
- 2. Tapping Valves:
 - a. Type: Shall be tapping gate valves as specified above with a mechanical joint outlet connection.
- 3. Air relief valves: Combination air release valves, APCO, or owner approved equal.
 - a. Materials Cast iron body, Buna-N seat, and stainless steel float.
 - b. Operating pressure: Under 300 psi.
- 4. Valve boxes and riser pipes:
 - a. Christy G-5 Curb Valve Box with cast iron lid with the word "Water" cast into the lid.
 - b. 8-inch diameter PVC sewer riser pipe conforming to ASTM D-3034 SDR 35.
- 5. Insertion Valve:
 - a. Type: Resilient seated, non-rising stem, with 2-inch operating nut, AWWA C515, all body and bonnet bolts, studs, and nuts shall be Type 316 stainless steel, as modified herein.
 - b. Rating: 250 psi working pressure. Leaktight in both directions.
 - c. Connection: mechanical joint end types.
 - d. Materials: Ductile iron body
 - e. Stem seal: O-ring
 - f. Interior and Exterior Coating: 10-mils epoxy in accordance with AWWA C550.
 - g. Manufacturer: International Flow Technologies, Inc. InsertValve or approved equivalent.

PART 3 - EXECUTION

3.01 INSTALLATION OF VALVES AND ACCESSORIES

- A. Wrap buried valve bodies as specified for flexible couplings and flanged coupling adapters in Section 33 1100.
- B. Use reducing fittings where any change in pipe size occurs between valves or accessories and the attached pipeline. Bushings shall not be used. Use eccentric reducing fittings wherever necessary to provide free drainage of lines. Inspect each piece of pipe and each fitting carefully to see that there is no defective workmanship on pipe, or obstructions in pipes and fittings
- C. Install insertion valve with valve cover per manufacturer's recommendations. Contractor shall verify pipe type prior to valve sleeve order. For insertion valve installation, contractor may install in either horizontal or vertical orientation to avoid utility conflicts.

END OF SECTION

DIVISION 33 UTILITIES

SECTION 33 1219

WATER UTILITY DISTRIBUTION FIRE HYDRANTS

PART 1 - GENERAL

1.01 SUMMARY

- A. **Section Includes:**
- B. Requirements applicable for furnishing, installing, and testing all fire hydrant assemblies on the Project Engineer's Drawings, as shown on Owner's Standard Details and Specification, as described in the Specifications, and as required to completely interconnect all piping for complete and operable systems.
- C. **Related Sections:**
 - 1. The Contractor shall perform excavation and fill in accordance with Section 02318.
 - 2. The Contractor shall furnish and install all water distribution piping, fittings, and accessories in accordance with Section 33 1100.
 - 3. The Contractor shall furnish and install all water valves and accessories in accordance with Section 33 1216.
 - 4. The Contractor shall disinfect all water utilities in accordance with Section 33 1300.

1.02 REFERENCES

- A. American National Standards Institute (ANSI)
- B. American Society of Mechanical Engineers (ASME)
- C. American Society for Testing and materials (ASTM)
- D. American Water Works Association (AWWA)
- E. Copper Development Association (CDA)
- F. Unified Numbering System (UNS)

1.03 SUMITTALS

- A. **Shop Drawings:**
 - 1. Submit in accordance with Special Conditions Section 11 (SC-11).
 - 2. Submit data to show that the following items meet or exceed the standards set forth in this specification section:
 - a. Fire hydrants assemblies.

1.04 QUALITY ASSURANCE

- A. All materials and equipment furnished under this Section shall: (1) be made in America by an American manufacturer who has been regularly engaged in the design and manufacture of the materials and equipment and (2) be demonstrated to the satisfaction of the Owner that the quality is equal to the materials and equipment made by those manufacturers specifically named herein, if an alternate product manufacturer is proposed.
- B. **Compatibility of Equipment and Material:**
 - 1. Similar items, equipment, devices or products furnished under a single specification section shall all be made by the same maker and have interchangeable parts.
 - 2. All similar materials or products that are interrelated or used together in an assembly shall be compatible with each other.

C. Installation Standards and Manufacturers' Recommendations:

1. Install all products and materials in strict compliance with the most restrictive of the following:
 - a. The manufacturer's or provider's written instructions or recommendations. Follow step-by-step installation procedures.
 - b. Recommendation of referenced trade associations or standards.
 - c. These specifications and drawings.
2. Where conflicts exist present alternatives with advantages and disadvantages to Engineer for decision.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Pipe and fitting sizes are nominal inner diameter unless otherwise noted.
- B. All materials delivered to the job site shall be new, free from defects, and marked to identify the material, class, and other appropriate data such as thickness for piping.
- C. Acceptance of materials shall be subject to strength and quality testing in addition to inspection of the completed product. Acceptance of fire hydrant assemblies shall be based on inspection.
- D. Buried nuts and bolts and other hardware for flanges and couplings shall be Type 316 stainless steel unless otherwise specifically specified herein.
- E. Fusion Epoxy Coating: Materials and application shall be in accordance with AWWA C213, except application shall be by the fluid bed method only unless the greatest dimension of the article to be coated exceeds 10 feet, in which case electrostatic spray method may be used.
- F. All brass components in contact with potable water shall be composed of either CDA/UNS Brass Alloys C89520 or C89833 with a maximum lead content of 0.25% by weight in accordance with ANSI/AWWA C-800. Brass alloys not listed in the most current ANSI/AWWA C-800 Paragraph 4.1.2 are not acceptable. Brass saddles shall be composed of CDA/UNS C83600.

2.02 FIRE HYDRANT ASSEMBLIES

- A. All fire hydrant assembly components shall be consistent with Owner's Standard Specifications and Construction Details.
- B. Fire Hydrant assemblies shall use wet barrel type hydrants meeting AWWA C503 standards.
- C. Hydrants shall be Clow Valve, model 860 or Owner favorably reviewed equivalent. Outlets to have National Hose Threads.
- D. Hydrant bury shall meet ANSI C110/A21.10 standards, joints shall be mechanical joint by flange conforming to ANSI/AWWA C111/A21.11-80, with extension pieces as required.
- E. Bolts and nuts for flanged joints shall be Type 316 stainless steel.

2.03 FIRE HYDRANT GUARD POSTS

- A. Fire hydrant guard posts (bollards) shall be 4-inch diameter Schedule 40 galvanized steel pipe, 6 feet long.

PART 3 - EXECUTION

3.01 INSTALL FIRE HYDRANTS

- A. Install fire hydrants at locations shown on the Drawings in accordance with the Owner's standard details and manufacturer's requirements.
- B. Fire Hydrant Guard Posts: Guard posts (bollards) shall be installed at all fire hydrants not protected by curbing and at locations indicated on the drawings. The posts shall be installed 3 feet into the ground using concrete encasement. Following installation the interior of the pipe shall be filled with concrete.

3.02 ABANDON FIRE HYDRANTS

- A. For fire hydrants indicated to be removed and abandoned, remove hydrant and cut hydrant bury 12 inches (12") below surface and fill bury with concrete. Remove hydrant tee and gate valve and install concrete plug in hydrant lateral.
- B. Backfill with 6-inches of controlled density fill and 6-inches of top soil.
- C. If fire hydrant assembly to be abandoned is located within an existing street or sidewalk, saw cut around the fire hydrant assembly prior to removing. Repair the surface of the street or sidewalk and subgrade in accordance with the Owner's Standard Details and City standards.

END OF SECTION

DIVISION 33 UTILITIES

SECTION 33 1300

DISINFECTION OF WATER UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Requirements applicable for disinfection and bacteriological analyses of water utilities.

B. Related Sections:

1. The Contractor shall furnish and install all water distribution piping, fittings, accessories in accordance with Section 33 1100.
2. The Contractor shall furnish and install all temporary water distribution piping, fittings, accessories in accordance with Section 33 1150.
3. The Contractor shall furnish and install all water service connections in accordance with Section 33 1213.
4. The Contractor shall furnish and install all water valves and accessories in accordance with Section 33 1216.
5. The Contractor shall furnish and install all fire hydrants and accessories in accordance with Section 33 1219.

1.02 REFERENCES

- A. American Water Works Association (AWWA)

1.03 SUMITTALS

A. Disinfection Plan including, but not limited to, schedule and procedures including:

1. Submit in accordance with Special Conditions Section 11 (SC-11).
2. Normal disinfection procedure, including proposed plans for water conveyance, control, flushing, and disinfection. Proposed disinfection plans shall include:
 - a. Disinfecting agent(s) to be used.
 - b. Calculations to show the strength of solution to be used, the resulting concentration, and the flow rates.
 - c. Method for monitoring residual concentrations.
3. Emergency disinfection procedure for mains and services which must be returned to service immediately.
4. Bacteriological sampling procedure and analytical laboratory information.
5. Method of dechlorination, monitoring, and disposal of chlorinated water.
6. For each temporary and permanent pipeline connection, provide a location specific:
 - a. Testing and disinfection schedule;
 - b. Number and type of services to be disinfected;
 - c. Length and duration of disruption of service;
 - d. Source of testing and disinfection water;
 - e. Method for disposal of water and measures to prevent runoff and erosion.

1.04 QUALITY ASSURANCE

- A. Bacteriological Analyses – see Paragraph 3.01.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION**3.01 DISINFECTION OF POTABLE WATER SYSTEMS (TEMPORARY AND PERMANENT PIPE)**

- A. Provide all necessary appurtenances, required for the disinfection procedures.
- B. Prior to disinfecting, clean accessible surfaces of dust, dirt, and foreign matter
- C. Disinfect all water mains and interconnected piping, including service connection piping, after testing and before being placed into service to ensure their bacteriological safety. Disinfection shall be accomplished under the supervision of the Contractor by a person skilled and experienced in the operation of water systems. Following disinfection and flushing, the Contractor will take water samples for bacteriological analysis of the water. Sample collection shall be witnessed by Owner. If the specified bacteriological requirements are not satisfied, the disinfection procedure must be repeated until the requirements are met.
- D. Disinfection procedures including collection of required field samples as described in AWWA C651 shall not begin unless there are two working days remaining in the work week. Contractor shall obtain written approval from Engineer to proceed with the disinfection procedures.
- E. Mains:
 - 1. Standard: AWWA C651 as amended herein.
 - 2. Forms of Chlorine: Sodium hypochlorite or calcium hypochlorite.
 - 3. Method: Continuous-Feed.
- F. Chlorine Residual Testing: AWWA C651, Appendix A, DPD Drop Dilution Method, except where otherwise specified.
- G. Bacteriological Analyses of Water: After the completion of disinfecting procedure, including the final flushing as described heretofore, the Contractor will obtain water samples from this system consistent with AWWA C651 for standard conditions for new mains. Analyses will be paid for by Contractor. If bacteriological analyses do not satisfy the requirements AWWA C651 for standard conditions for new mains, then disinfection procedure must be repeated until these requirements are met.
- H. Disposal of Disinfection Solution: Dechlorinate and dispose of disinfection solution in accordance with applicable regulations. Final chlorine concentration of discharged solution shall be 0 mg/L, and pH of discharged solution shall be between 6.5 and 8.5. Take care to assure that chlorinated water is not spilled in drains and that no water is permitted to runoff from roadways.

END OF SECTION

APPENDIX A

KEYS TO SOIL CLASSIFICATION,

ROCK QUALITY DESCRIPTIONS

AND

LOGS OF DRILL HOLES DH-4 THROUGH DH-6 AND D-8 THROUGH D-12

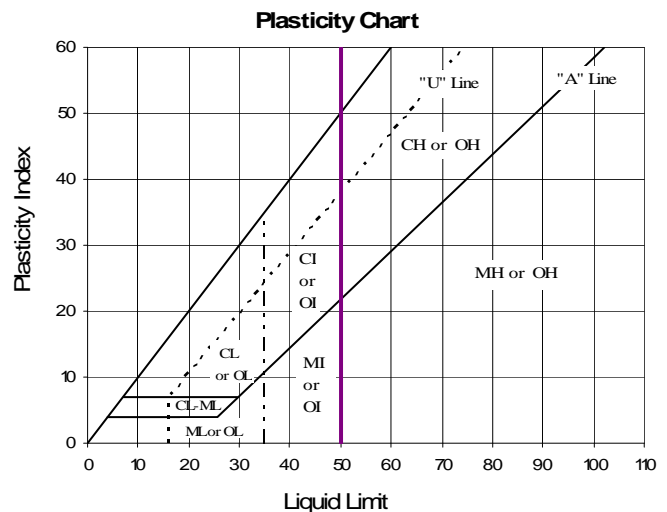
KEY TO SOIL CLASSIFICATION - FINE GRAINED SOILS
(50% OR MORE IS SMALLER THAN NO. 200 SIEVE SIZE)
(modified from ASTM D2487 to include fine grained soils with intermediate plasticity)

MAJOR DIVISIONS			GROUP SYMBOLS	GROUP NAMES
SILTS AND CLAYS (Liquid Limit less than 35) Low Plasticity	Inorganic	PI < 4 or plots below "A" line	ML	Silt, Silt with Sand or Gravel, Sandy or Gravelly Silt, Sandy or Gravelly Silt with Sand or Gravel
	Inorganic	PI > 7 or plots on or above "A" line	CL	Lean Clay, Lean Clay with Sand or Gravel, Sandy or Gravelly Lean Clay, Sandy or Gravelly Lean Clay with Sand or Gravel
	Inorganic	PI between 4 and 7	CL-ML	Silty Clay, Silty Clay with Sand or Gravel, Sandy or Gravelly Silty Clay, Sandy or Gravelly Silty Clay with Sand or Gravel
	Organic	See footnote 3	OL	Organic Silt (below "A" Line) or Organic Clay (on or above "A" Line) ^(1,2)
SILTS AND CLAYS (35 ≤ Liquid Limit < 50) Intermediate Plasticity	Inorganic	PI < 4 or plots below "A" line	MI	Silt, Silt with Sand or Gravel, Sandy or Gravelly Silt, Sandy or Gravelly Silt with Sand or Gravel
	Inorganic	PI > 7 or plots on or above "A" line	CI	Clay, Clay with Sand or Gravel, Sandy or Gravelly Clay, Sandy or Gravelly Clay with Sand or Gravel
	Organic	See footnote 3	OI	Organic Silt (below "A" Line) or Organic Clay (on or above "A" Line) ^(1,2)
SILTS AND CLAYS (Liquid Limit 50 or greater) High Plasticity	Inorganic	PI plots below "A" line	MH	Elastic Silt, Elastic Silt with Sand or Gravel, Sandy or Gravelly Elastic Silt, Sandy or Gravelly Elastic Silt with Sand or Gravel
	Inorganic	PI plots on or above "A" line	CH	Fat Clay, Fat Clay with Sand or Gravel, Sandy or Gravelly Fat Clay, Sandy or Gravelly Fat Clay with Sand or Gravel
	Organic	See note 3 below	OH	Organic Silt (below "A" Line) or Organic Clay (on or above "A" Line) ^(1,2)

1. If soil contains 15% to 29% plus No. 200 material, include "with sand" or "with gravel" to group name, whichever is predominant.
2. If soil contains ≥30% plus No. 200 material, include "sandy" or "gravelly" to group name, whichever is predominant. If soil contains ≥15% of sand or gravel sized material, add "with sand" or "with gravel" to group name.
3. Ratio of liquid limit of oven dried sample to liquid limit of not dried sample is less than 0.75.

CONSISTENCY	UNCONFINED SHEAR STRENGTH (KSF)	STANDARD PENETRATION (BLOWS/FOOT)
VERY SOFT	< 0.25	< 2
SOFT	0.25 – 0.5	2 – 4
FIRM	0.5 – 1.0	5 – 8
STIFF	1.0 – 2.0	9 – 15
VERY STIFF	2.0 – 4.0	16 – 30
HARD	> 4.0	> 30

MOISTURE	CRITERIA
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp, but no visible water
Wet	Visible free water, usually soil is below the water table



GEO-LOGIC ASSOCIATES

KEY TO SOIL CLASSIFICATION – COARSE GRAINED SOILS
(MORE THAN 50% IS LARGER THAN NO. 200 SIEVE SIZE)
(modified from ASTM D2487 to include fines with intermediate plasticity)

MAJOR DIVISIONS			GROUP SYMBOLS	GROUP NAMES ¹
GRAVELS (more than 50% of coarse fraction is larger than No. 4 sieve size)	Gravels with less than 5% fines	$Cu \geq 4$ and $1 \leq Cc \leq 3$	GW	Well Graded Gravel, Well Graded Gravel with Sand
		$Cu < 4$ and/or $1 > Cc > 3$	GP	Poorly Graded Gravel, Poorly Graded Gravel with Sand
	Gravels with 5% to 12% fines	ML, MI or MH fines	GW-GM	Well Graded Gravel with Silt, Well Graded Gravel with Silt and Sand
			GP-GM	Poorly Graded Gravel with Silt, Poorly Graded Gravel with Silt and Sand
		CL, CI or CH fines	GW-GC	Well Graded Gravel with Clay, Well Graded Gravel with Clay and Sand
			GP-GC	Poorly Graded Gravel with Clay, Poorly Graded Gravel with Clay and Sand
	Gravels with more than 12% fines	ML, MI or MH fines	GM	Silty Gravel, Silty Gravel with Sand
		CL, CI or CH fines	GC	Clayey Gravel, Clayey Gravel with Sand
		CL-ML fines	GC-GM	Silty Clayey Gravel; Silty, Clayey Gravel with Sand
	SANDS (50% or more of coarse fraction is smaller than No. 4 sieve size)	Sands with less than 5% fines	$Cu \geq 6$ and $1 \leq Cc \leq 3$	SW
$Cu < 6$ and/or $1 > Cc > 3$			SP	Poorly Graded Sand, Poorly Graded Sand with Gravel
Sands with 5% to 12% fines		ML, MI or MH fines	SW-SM	Well Graded Sand with Silt, Well Graded Sand with Silt and Gravel
			SP-SM	Poorly Graded Sand with Silt, Poorly Graded Sand with Silt and Gravel
		CL, CI or CH fines	SW-SC	Well Graded Sand with Clay, Well Graded Sand with Clay and Gravel
			SP-SC	Poorly Graded Sand with Clay, Poorly Graded Sand with Clay and Gravel
Sands with more than 12% fines		ML, MI or MH fines	SM	Silty Sand, Silty Sand with Gravel
		CL, CI or CH fines	SC	Clayey Sand, Clayey Sand with Gravel
		CL-ML fines	SC-SM	Silty, Clayey Sand; Silty, Clayey Sand with Gravel

US STANDARD SIEVES

3 Inch ¾ Inch No. 4 No. 10 No. 40 No. 200

	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES & BOULDERS	GRAVELS		SANDS			SILTS AND CLAYS

RELATIVE DENSITY (SANDS AND GRAVELS)	STANDARD PENETRATION (BLOWS/FOOT)
Very Loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	50+

1. Add "with sand" to group name if material contains 15% or greater of sand-sized particle. Add "with gravel" to group name if material contains 15% or greater of gravel-sized particle.

MOISTURE	CRITERIA
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp, but no visible water
Wet	Visible free water, usually soil is below the water table

GEO-LOGIC ASSOCIATES

ROCK QUALITY DESCRIPTIONS

HARDNESS**		WEATHERING**	
Very Hard	Cannot be scratched with knife or sharp pick. Breaking of hand specimens requires several hard blows of the geologist's pick	Fresh or Unweathered	Rock fresh, crystals bright, few joints and fractures may show slight staining. Rock rings under hammer if crystalline.
Hard	Can be scratched with knife or pick only with difficulty. Hard blow with hammer required to break sample.	Very Slight	Rock generally fresh, fractures and joints stained, some joints may show thin clay coatings, crystals in broken face show bright. Rock rings under hammer if crystalline.
Moderately Hard	Can be scratched with knife or pick. Gouges or grooves to ½ inch can be excavated by hard blow of point of a geologist's pick. Hand specimens broken with moderate blow.	Slight	Rock generally fresh, joints and fractures stained, and discoloration extends into rock up to 1 inch. Joints may contain clay. In granitic rock, some occasional feldspar crystals are dull and discolored. Crystalline rocks ring under hammer.
Medium	Can be grooved or gouged 1/16 inch deep by firm pressure on knife or pick point. Can be excavated in small chips about 1 inch maximum in dimension by hard blows of the point of a geologist's pick.	Moderate	Significant portions of rock show discoloration and weathering effects. In granitic rock, most feldspars are dull and discolored; some show clay. Rock has dull sound under hammer and shows significant loss of strength as compared with fresh rock.
Soft	Can be grooved or gouged readily with knife or pick point. Can be excavated in chips to pieces several inches in size by moderate blows of a pick point. Small pieces can be broken by finger pressure,	Moderately Severe	All rock except quartz discolored or stained. In granitic rock, all feldspars dull and discolored and majority show kaolinization. Rock shows severe loss of strength and can be excavated with geologist's pick. Rock goes "clunk" when struck.
Very Soft	Can be carved with knife. Can be excavated readily with point of pick. Pieces one inch or more thickness can be broken with finger pressure. Can be scratched readily by finger nail.	Severe	All rock except quartz discolored or stained. Rock "fabric" clear and evident, but reduced in strength to strong soil. In granitic rock, all feldspars kaolinized to some extent. Some fragments of strong rock usually left.

FRACTURE DIMENSIONS*

Fracture	Block Size (or Spacing)¹	Weathering
Crushed	~5 microns to 0.1 ft	Complete
Intensely	0.05 to 0.1 ft	Rock reduced to "soil." Rock "fabric" not discernible or discernible only in small scattered locations. Quartz may be present as dikes or stringers.
Closely	0.1 to 0.5 ft	
Moderately	0.5 to 1.0 ft	
Slightly	1.0 to 3.0 ft	
Massive	3.0 ft and larger	

1 Average distance between adjacent fractures

* Source of data unknown

** Source of data: "Subsurface Investigation for Design and Construction of Foundation Buildings," (1976) American Society of Civil Engineers, Manuals and Reports on Engineering Practice – No. 5

DATE: 10/24/2016

LOG OF EXPLORATORY DRILL HOLE

DH- 4

PROJECT NAME: Brisbane Water Main

PROJECT NUMBER: 2016.0122

DRILL RIG: Mobile B53 140# downhole hammer w wire winch

LOGGED BY: CSS

HOLE DIAMETER: 8" hollow stem auger

HOLE ELEVATION: ----

SAMPLER:
 D = 3" OD, 2½" ID Split-spoon
 X = 2½" OD, 2" ID Split-spoon
 I = Standard Penetrometer (2" OD SPT)
 S = Slough in sample

GROUND WATER DEPTH: Initial: ---
 Final: ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
PAVEMENT (±4 in. AC over ±4 in. base)												
BEDROCK, SANDSTONE: Brownish yellow; dry to moist; variably medium hard to hard; fine-grained; slightly to moderately weathered; fracture spacing cannot be determined in samples		1										
		2	D	50/6"								
		3										
		4										
		5	I	50/6"								
		6										
		7										
		8										
		9	S	I	50/6"		34					
		10										
		11										
		12										
		13										
		14	I	50/3"								
BOTTOM OF HOLE = 13.8 FEET No groundwater encountered		15										
		16										
		17										
		18										
		19										
		20										

DATE: 10/24/2016

LOG OF EXPLORATORY DRILL HOLE

DH- 5

PROJECT NAME: Brisbane Water Main

PROJECT NUMBER: 2016.0122

DRILL RIG: Mobile B53 140# downhole hammer w wire winch

LOGGED BY: CSS

HOLE DIAMETER: 8" hollow stem auger

HOLE ELEVATION: ----

SAMPLER:
 D = 3" OD, 2½" ID Split-spoon
 X = 2½" OD, 2" ID Split-spoon
 I = Standard Penetrometer (2" OD SPT)
 S = Slough in sample

GROUND WATER DEPTH: Initial: ---
 Final: ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
FILL, LEAN CLAY with SAND and GRAVEL: Dark yellowish brown (10YR 4/4); moist; stiff; mostly fine sand; with angular sandstone fragmetns	CL	1										
		2	S	18								
		3	D		74		11		104			
BEDROCK, SANDSTONE: Brownish yellow; dry; mostly medium hard to hard; fine-grained; slightly to moderately weathered; fracture spacing from roughly 6 in. to 24 in. observed in adjacent road cut		4										
		5	S									
		6	I	43								
		7										
		8										
		9	S	50/6"		35						
		10										
		11										
		12										
		13										
		14	I	50/2"								
BOTTOM OF HOLE = 13.7 FEET No groundwater encountered		15										
		16										
		17										
		18										
		19										
		20										

DATE: 10/24/2016

LOG OF EXPLORATORY DRILL HOLE

DH- 6

PROJECT NAME: Brisbane Water Main

PROJECT NUMBER: 2016.0122

DRILL RIG: Mobile B53 140# downhole hammer w wire winch

LOGGED BY: CSS

HOLE DIAMETER: 8" hollow stem auger

HOLE ELEVATION: ----

SAMPLER:
 D = 3" OD, 2½" ID Split-spoon
 X = 2½" OD, 2" ID Split-spoon
 I = Standard Penetrometer (2" OD SPT)
 S = Slough in sample

GROUND WATER DEPTH: Initial: ---
 Final: ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
BEDROCK, SANDSTONE: Mostly very pale brown to yellow brown; dry; hard; cemented; fine-grained; slightly weathered; fracture spacing from a few inches up to 2 feet observed in adjacent road cut very hard drilling drilling refusal		1										
		2	I	50/5"								
		3										
		4										
		5	I	50/2" (no sample recovery)								
BOTTOM OF HOLE = 4.7 FEET No groundwater encountered		6										
		7										
		8										
		9										
		10										
		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

DATE: 10/25/2016

LOG OF EXPLORATORY DRILL HOLE

DH- 8

PROJECT NAME: Brisbane Water Main

PROJECT NUMBER: 2016.0122

DRILL RIG: Mobile B53 140# downhole hammer w wire winch

LOGGED BY: CSS

HOLE DIAMETER: 8" hollow stem auger

HOLE ELEVATION: ----

SAMPLER:
 D = 3" OD, 2½" ID Split-spoon
 X = 2½" OD, 2" ID Split-spoon
 I = Standard Penetrometer (2" OD SPT)
 S = Slough in sample

GROUND WATER DEPTH: Initial: ---
 Final: ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
PAVEMENT (±4 in. AC over ±2 in. base)												
BEDROCK, SANDSTONE: Yellowish brown; dry; hard to very hard; slightly weathered; well cemented; fracture spacing from 4 in. to 2 ft. observed in adjacent road cut hard drilling		1										
		2	I	50/5"								
		3										
		4										
		5		S								
		6		I	50/3"		15					
		7		I	50/5"							
BOTTOM OF HOLE = 7.5 FEET No groundwater encountered		8										
		9										
		10										
		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

DATE: 10/25/2016

LOG OF EXPLORATORY DRILL HOLE

DH- 9

PROJECT NAME: Brisbane Water Main

PROJECT NUMBER: 2016.0122

DRILL RIG: Mobile B53 140# downhole hammer w wire winch

LOGGED BY: CSS

HOLE DIAMETER: 8" hollow stem auger

HOLE ELEVATION: ----

SAMPLER:
 D = 3" OD, 2½" ID Split-spoon
 X = 2½" OD, 2" ID Split-spoon
 I = Standard Penetrometer (2" OD SPT)
 S = Slough in sample

GROUND WATER DEPTH: Initial: ---
 Final: ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
PAVEMENT (±7 in. AC over ±4 in. base)												
<u>COLLUVIUM, LEAN CLAY:</u> Mostly dark grayish brown to brown (10YR 4/2 to 4/2); moist; very stiff	CL	1										
		2	S	24								
		3	I				28	17	11	113		
		4										
		5	S									
<u>WEATHERED BEDROCK, SANDSTONE</u> completely weathered to <u>LEAN CLAY</u> with <u>SAND:</u> Dark brown (7.5YR 3/3); moist; very stiff to hard; with mostly fine sand	CL	6	I	26		83						
		7	I									
		8										
		9	S	30		78						
		10	D									
	11											
	12											
	13											
	14	S	37									
	15	I										
BOTTOM OF HOLE = 15 FEET No groundwater encountered		16										
		17										
		18										
		19										
		20										

DATE: 10/24/2016

LOG OF EXPLORATORY DRILL HOLE

DH- 10

PROJECT NAME: Brisbane Water Main

PROJECT NUMBER: 2016.0122

DRILL RIG: Mobile B53 140# downhole hammer w wire winch

LOGGED BY: CSS

HOLE DIAMETER: 8" hollow stem auger

HOLE ELEVATION: ----

SAMPLER:
 D = 3" OD, 2½" ID Split-spoon
 X = 2½" OD, 2" ID Split-spoon
 I = Standard Penetrometer (2" OD SPT)
 S = Slough in sample

GROUND WATER DEPTH: Initial: ---
 Final: ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
PAVEMENT (±6 in. AC over ±7 in. base)		1										
COLLUVIUM, SANDY LEAN CLAY: Pale brown (10YR 6/3) to dark yellowish brown (10YR 4/4); dry to moist; very stiff to hard; mostly fine sand; some subangular medium to coarse gravel	CL	2	S D D	78		53		9		109		
		3										
		4										
WEATHERED BEDROCK, SANDSTONE completely weathered to LEAN CLAY with SAND: Yellowish red (5YR 4/6); moist, stiff; with mostly fine sand and fine to coarse angular gravel locally	CL	5	S I I	10								
		6										
		7										
		8										
		9										
		10										
		11										
		12										
		13										
		14										
BOTTOM OF HOLE = 14 FEET No groundwater encountered		15		50/6"								
		16										
		17										
		18										
		19										
		20										

DATE: 10/25/2016

LOG OF EXPLORATORY DRILL HOLE

DH- 11

PROJECT NAME: Brisbane Water Main

PROJECT NUMBER: 2016.0122

DRILL RIG: Mobile B53 140# downhole hammer w wire winch

LOGGED BY: CSS

HOLE DIAMETER: 8" hollow stem auger

HOLE ELEVATION: ----

SAMPLER: D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: Initial: ---
Final: ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
PAVEMENT (±6 in. AC over ±4 in. base)												
BEDROCK, SANDSTONE: Very pale brown, dry; medium hard to hard; fine grained; moderately to well cemented; slightly to moderately weathered; fracture not observed in samples		1										
		2	S	38								
		3	I									
		4										
		5	S									
		6	I	50/6"		55						
		7										
		8										
		9	I	50/6'								
		10										
		11										
		12										
		13										
		14	S	50/6"								
BOTTOM OF HOLE = 14.5 FEET No groundwater encountered		15										
		16										
		17										
		18										
		19										
		20										

DATE: 10/25/2016

LOG OF EXPLORATORY DRILL HOLE

DH- 12

PROJECT NAME: Brisbane Water Main

PROJECT NUMBER: 2016.0122

DRILL RIG: Mobile B53 140# downhole hammer w wire winch

LOGGED BY: CSS

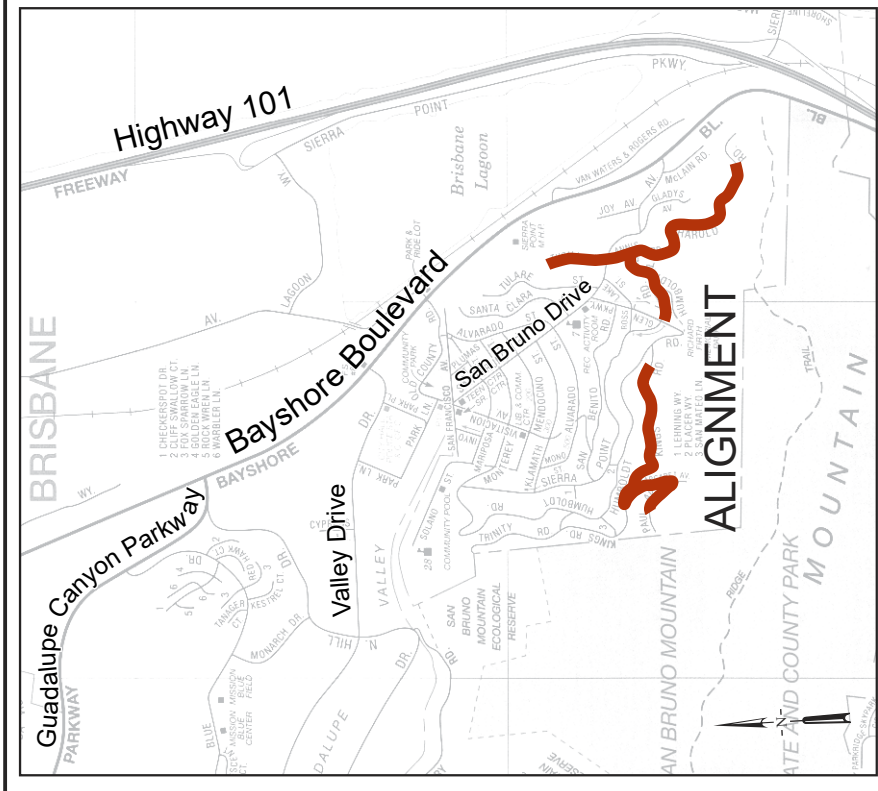
HOLE DIAMETER: 8" hollow stem auger

HOLE ELEVATION: ----

SAMPLER:
 D = 3" OD, 2½" ID Split-spoon
 X = 2½" OD, 2" ID Split-spoon
 I = Standard Penetrometer (2" OD SPT)
 S = Slough in sample

GROUND WATER DEPTH: Initial: ---
 Final: ---

DESCRIPTION OF EARTH MATERIALS	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
PAVEMENT (±3 in. AC over ±1 in. base)												
BEDROCK, SANDSTONE: Very pale brown and strong brown; dry; medium hard to hard; moderately to well cemented; slightly to moderately weather; very fine-grained; fracture not observed in sample		1										
		2	S	50/6"		27						
		3										
		4										
		5	I	50/5"								
		6										
		7										
		8										
		9	I	50/6"								
BOTTOM OF HOLE = 9 FEET No groundwater encountered		10										
		11										
		12										
		13										
		14										
		15										
		16										
		17										
		18										
		19										
		20										

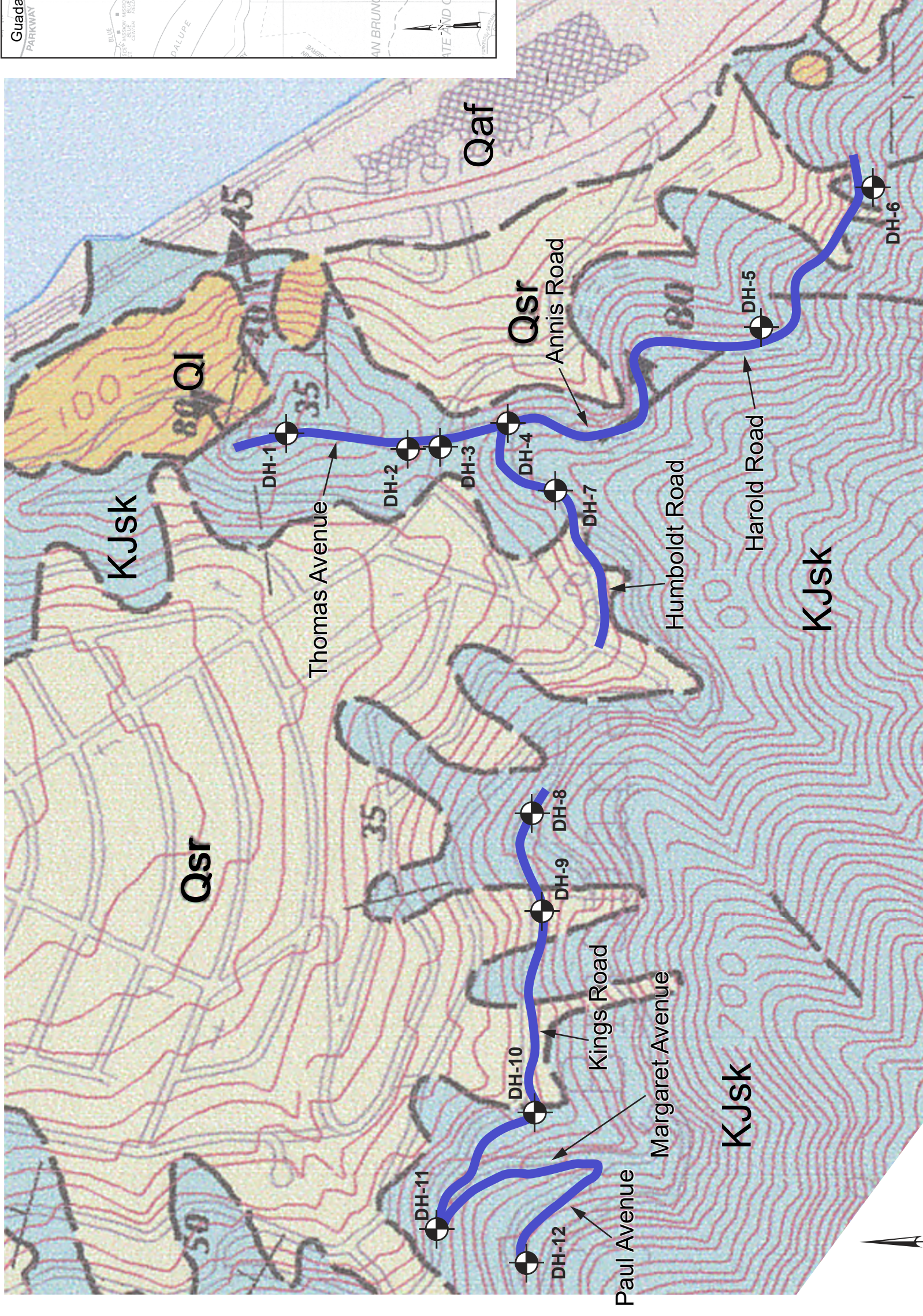


VICINITY MAP - no scale

EXPLANATION

- Qaf Artificial fill
- Ql Landslide deposits
- Qsr Slope debris and ravine deposits
- KJsk Franciscan Complex sandstone and shale

- Contact, approximately located
- Bedding
- Fault attitude
- Striations or grooves on fault
- DH-12 Exploratory drill hole



BASE MAP: "Preliminary Geologic Map of the San Francisco South 7.5' Quadrangle and part of the Hunter Point 7.5' Quadrangle, San Francisco Bay Area, California: A digital database," Bonilla and others, 1998. USGS Open File Report 98-354.



DATE
FEBRUARY
2017

SITE PLAN
BRISBANE WATER MAIN REPLACEMENT
BRISBANE, CALIFORNIA

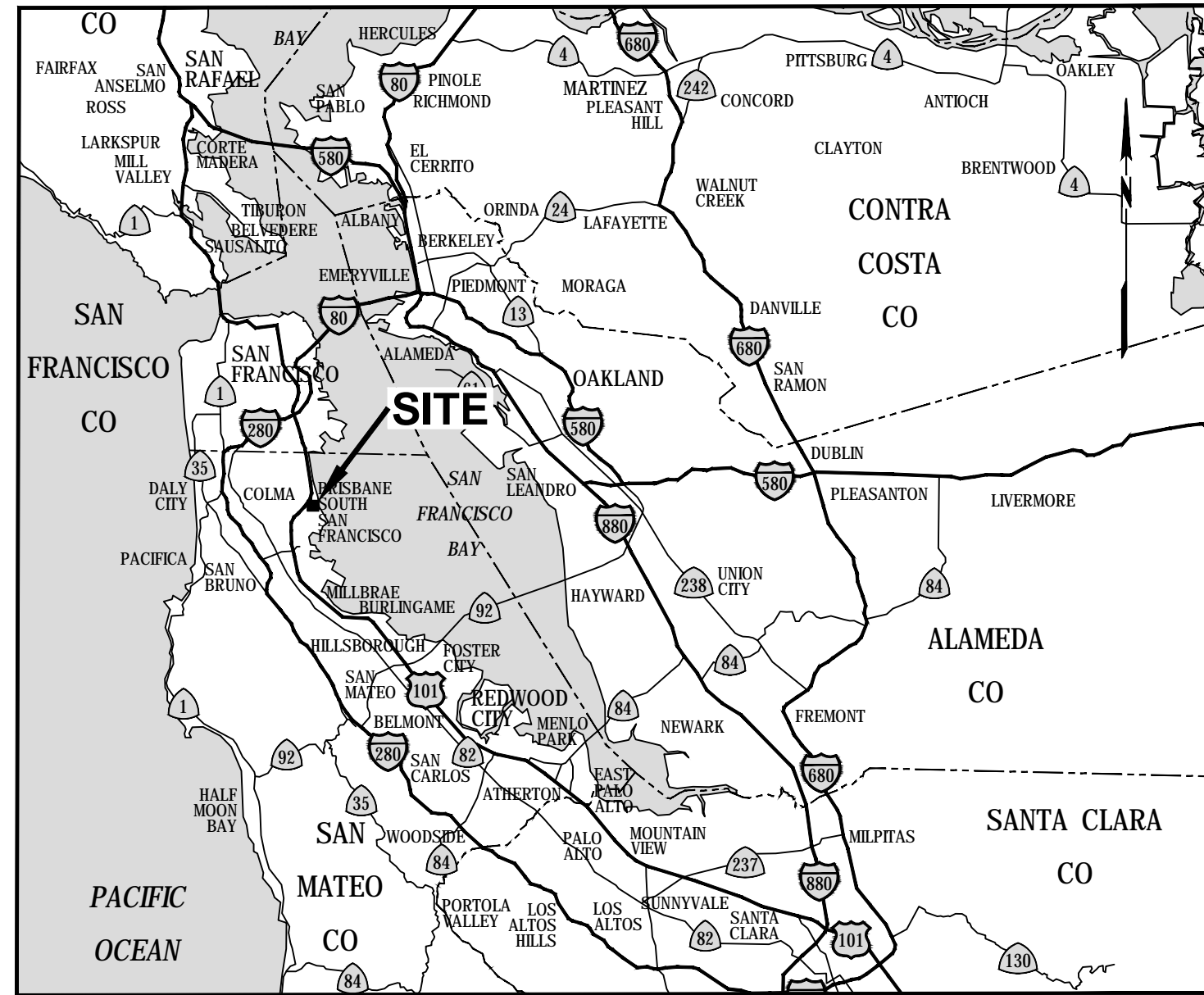
FIGURE
1

PROJECT
2016.0166

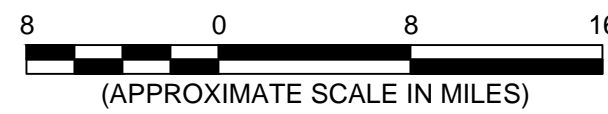
FIRE MAIN REPLACEMENT PROJECT - PHASE 2

BRISBANE, CALIFORNIA

JOB NO. 95F08



VICINITY MAP



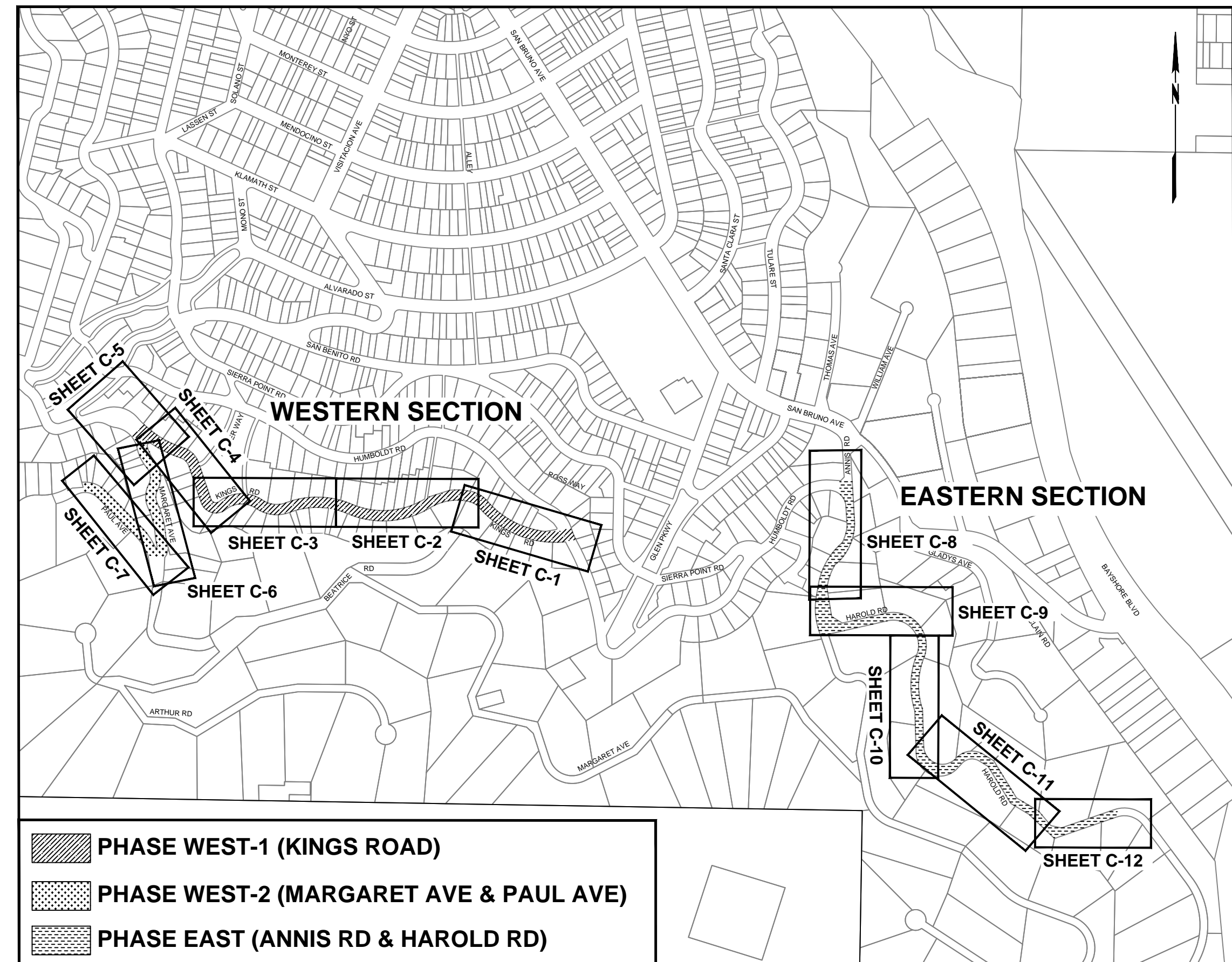
PREPARED BY
EKI ENVIRONMENT & WATER, INC

ISSUED FOR BID
 JUNE 2019

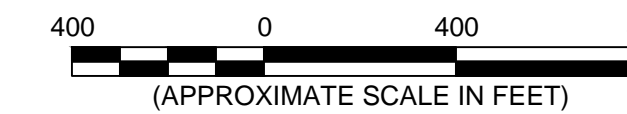
MAYOR: MADISON DAVIS
 MAYOR PRO TEMPORE: TERRY O'CONNELL
 COUNCIL MEMBER: KAREN CUNNINGHAM
 COUNCIL MEMBER: CLIFFORD R. LENTZ
 COUNCIL MEMBER: W. CLARKE CONWAY



CITY MANAGER: CLAYTON L. HOLSTINE
 DIRECTOR OF PUBLIC WORKS/CITY ENGINEER: RANDY L. BREAUULT, P.E.



PROJECT KEY MAP AND PHASING PLAN



SHEET INDEX

G-1	TITLE SHEET
G-2	GENERAL NOTES, ABBREVIATIONS, & LEGEND
C-1	PLAN, KINGS RD, STA. 0+00 TO STA. 1+60
C-2	PLAN, KINGS RD, STA. 1+60 TO STA. 6+50
C-3	PLAN, KINGS RD, STA. 6+50 TO STA. 11+00
C-4	PLAN, KINGS RD, STA. 11+00 TO STA. 15+00
C-5	PLAN AND PROFILE, KINGS RD AND MARGARET AVE, STA. 15+00 TO STA. 19+50
C-6	PLAN AND PROFILE, MARGARET AVE AND PAUL AVE, STA. 19+50 TO STA. 24+50
C-7	PLAN AND PROFILE, PAUL AVE, STA. 24+50 TO STA. 29+64
C-8	PLAN, ANNIS RD, STA. 50+00 TO 54+00
C-9	PLAN, ANNIS RD AND HAROLD RD, STA. 54+00 TO STA. 58+50
C-10	PLAN, HAROLD RD, STA. 58+50 TO STA. 63+50
C-11	PLAN, HAROLD RD, STA. 63+50 TO STA. 69+00
C-12	PLAN, HAROLD RD, STA. 69+00 TO STA. 71+38
C-13	WATER AND MISCELLANEOUS DETAILS 1
C-14	WATER AND MISCELLANEOUS DETAILS 2
C-15	SCHEDULE OF WATER METERS AND SERVICE CONNECTIONS
C-16	CONSTRUCTION BEST MANAGEMENT PRACTICES
TP-1	TEMPORARY BYPASS SYSTEM PLAN, PHASE WEST-1, STA. 00+00 TO STA. 17+65
TP-2	TEMPORARY BYPASS SYSTEM PLAN, PHASE EAST, STA. 50+00 TO STA. 71+38
TP-3	TEMPORARY BYPASS CONNECTION AND SEQUENCING DETAILS, PHASES WEST-1 AND WEST-2
TP-4	TEMPORARY BYPASS CONNECTION AND SEQUENCING DETAILS, PHASE EAST

DATE:	JUNE 2019
SCALE:	AS SHOWN
DRAWN:	PLT/A
DESIGNED:	JP/NS
APPROVED:	NS
JOB NO.:	B80053.06
REV	
DESCRIPTION	
APPRD	
DATE	

VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY



California and Nevada
 Call Two Working Days Before You Dig!
811/800-277-2600

<p>BID SET 05/21/2019</p>	<p>BID SET 05/21/2019</p>
-------------------------------	-------------------------------

GENERAL NOTES:

- THE LOCATIONS OF SURFACE UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY EXACT LOCATION. THIS VERIFICATION SHALL BE COORDINATED BY THE CONTRACTOR WITH THE APPROPRIATE UTILITY COMPANY AS REQUIRED. (CALL U.S.A. (UNDERGROUND SERVICE ALERT) FOR UTILITY LOCATION QUESTIONS AT LEAST 48 HOURS BEFORE DIGGING. PHONE 1-800-227-2600 (OR DIAL 811))
- THE CONTRACTOR SHALL COMPLY WITH THE PROVISIONS OF THE SAN MATEO COUNTY AND CITY OF BRISBANE MUNICIPAL REGIONAL PERMIT (MRP) NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND SHALL FOLLOW STORM WATER BEST MANAGEMENT PRACTICES AS SPECIFIED IN THE CITY OF BRISBANE STANDARD SPECIFICATIONS & PROJECT SPECIFICATIONS.
- THE CONTRACTOR SHALL RESTORE ALL DAMAGED, REMOVED, OR OTHERWISE DISTURBED WALLS, FENCES, SERVICES, UTILITIES, IMPROVEMENTS OR FEATURES OF WHATEVER NATURE. DUE TO CONTRACTOR WORK AT NO ADDITIONAL COST TO THE OWNER. UNLESS OTHERWISE NOTED, ALL PAVEMENT, GUTTERS, WALKS, FENCES AND OTHER SURFACE IMPROVEMENTS THAT ARE DISTURBED OR DAMAGED BY CONSTRUCTION SHALL BE RESTORED TO ORIGINAL CONDITIONS BY CONTRACTOR WITHOUT ADDITIONAL COST TO THE CITY OF BRISBANE.
- FOR LANE CLOSURES, THE CONTRACTOR SHALL PROVIDE A TRAFFIC CONTROL PLAN AND OBTAIN APPROVAL FROM THE ENGINEER BEFORE COMMENCING WORK. THE CONTRACTOR SHALL PROVIDE FLAGMEN, CONES, AND/OR BARRICADES, AS NECESSARY TO CONTROL TRAFFIC AND PREVENT HAZARDOUS CONDITIONS, PER THE CALIFORNIA STANDARD PLANS, SPECIFICATION, AND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITIONS.
- THE CONTRACTOR SHALL CONTROL DUST AT ALL TIMES AND SWEEP THE STREETS AS OFTEN AS NECESSARY DURING CONSTRUCTION, AS REQUIRED BY THE ENGINEER.
- ALL PAVEMENT MARKING AND STRIPING SHOWN WITHIN THE LIMITS OF CONSTRUCTION OR OTHER AREAS AS NOTED ON THE PLANS, SHALL BE REPLACED BY THE CONTRACTOR, IN ACCORDANCE WITH CALTRANS STANDARD PLANS & CITY OF BRISBANE SPECIFICATIONS & PROJECT SPECIFICATIONS, AS DIRECTED BY ENGINEER. CONTRACTOR TO SUBMIT STRIPING "AS-BUILT" PRIOR TO ANY CONSTRUCTION THAT WOULD DAMAGE OR REMOVE STRIPING PER SPECIFICATIONS, AND REPLACE STRIPING ACCORDING TO AS-BUILTS.
- NO TRENCHES OR HOLES IN THE PUBLIC RIGHT OF WAY SHALL BE LEFT OPEN OVERNIGHT; USE STEEL PLATING OR HOT-MIX ASPHALT AS REQUIRED TO PROTECT OPEN EXCAVATIONS OVERNIGHT.
- CONTRACTOR'S WORK INCLUDES ALL INCIDENTAL AND APPURTENANT WORK NECESSARY TO PROVIDE A COMPLETE AND FULLY FUNCTIONING FACILITY. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR ANY ACTIVITIES OTHER THAN THOSE LISTED IN THE BID SCHEDULE WITHOUT ANY AUTHORIZED CHANGE ORDER.
- PROPOSED WATER LINE SHALL BE INSTALLED WITH AT LEAST 3 FEET OF COVER UNLESS OTHERWISE PERMITTED BY THE ENGINEER OR CITY.

ABBREVIATIONS

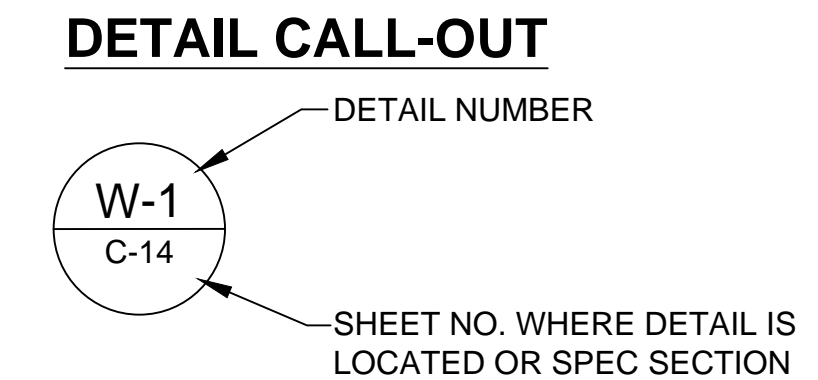
AC	ASPHALTIC CONCRETE
ACD	ASHPHALT CONCRETE DIKE
ARV	AIR RELEASE VALVE
BOW	BACK OF WALK
BRC	BACK OF ROLLED CURB
BRICK	BRICK/PAVERS
BSTAIR	BOTTOM OF STAIR
CONC	CONCRETE
CATV	CABLE TV
CB	CATCH BASIN
CULV	CULVERT
DAY	DAYLIGHT
DI	DRAIN INLET
DIP	DUCTILE IRON PIPE
DMH	STORM DRAIN MANHOLE
DWY	DRIVEWAY
E	EAST
(E) OR EX	EXISTING
ELEC	ELECTRIC
EM	ELECTRIC METER
EMH	ELECTRIC MANHOLE
EP	EDGE OF PAVEMENT
ETW	EDGE OF TRAVELWAY
EVL	ELECTRIC VAULT
FBW	BARBED WIRE FENCE
FCL	CHAIN LINK FENCE
FM	METAL FENCE
FL	FLOWLINE
FLG	FLANGED CONNECTION
FLVG	FLOWLINE VALLEYGUTTER
FW	WOOD FENCE
G	GAS
GB	GRADEBREAK
GM	GAS METER
GS	GROUND
GUY	GUY WIRE
GV	GAS VALVE OR GATE VALVE
ICV	IRRIGATION CONTROL VALVE
INV	INVERT
IRR	IRRIGATION
LIP	LIP OF GUTTER
MJ	MECHANICAL JOINT CONNECTION
(E)	NEW
N	NORTH
NE	NORTHEAST
NW	NORTHWEST
OH	OVERHEAD
PRV	PRESSURE REDUCING VALVE
PED	PEDESTAL
PGE	PACIFIC GAS & ELECTRIC
S	SOUTH
SE	SOUTHEAST
SL	STREET LIGHT
SMH	SEWER MANHOLE
SS	SANITARY SEWER
SW	SIDEWALK, SOUTHWEST
SWL	STRIPING - SOLID WHITE LINE
(N)	TEMPORARY
TC	TOP OF CURB
TOE	TOE OF SLOPE
TOP	TOP OF SLOPE
TSTAIR	TOP OF STAIR
TV	CABLE TV BOX
TVLT	TELECOMMUNICATIONS VAULT
TW	TOP OF WALL
USA	UNDERGROUND SERVICE ALERT
VLT	VAULT
VG	VALLEY GUTTER
VIF	VERIFY IN FIELD
W	WATER OR WEST
WM	WATER METER
WMA	WALL MASONRY
WS	WATER SERVICE
WV	WATER VALVE

LEGEND AND LINETYPES

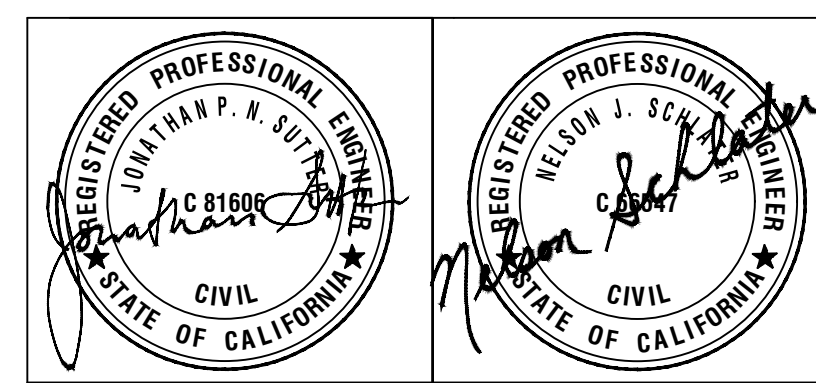
	EXISTING	PROPOSED
OVERHEAD	— OH — OH —	
STORM DRAIN	— SD — SD —	
SANITARY SEWER	— SS — SS —	
WATER	— W — W —	
PIPE STATION LINE		A8+00
BENCHMARK	⊕	
BOLLARD	●	
CATCH BASIN	⊞	
CLEAN OUT / LAMPHOLE	○	
CONTOUR	10	
CURB	—	
DRAIN INLET	⊞	
ELECTRIC METER/BOX	⊞	
ELECTROLIER	⊞	
ELEVATION W/ DESCRIPTION	x 100.65 EP	
NATURAL GROUND SHOT	x 100.7	
FIRE HYDRANT	⊞	⊞
GAS METER/BOX	⊞	⊞
GAS VALVE	⊞	⊞
HOSE BIB	⊞	
IRRIGATION VALVE	⊞	
SANITARY SEWER MANHOLE	⊞	
SIGN	⊞	
STORM DRAIN MANHOLE	⊞	
STREET/SITE LIGHT PULL BOX	⊞	
TELECOMMUNICATIONS BOX	⊞	
TOP OF SLOPE	—	
TREES W/ DRIP LINE	⊞	
UNDERGROUND UTILITY LINE LABEL AND DIRECTION	xx"SS xx"SD	
UTILITY POLE	⊞	
WALL (HEIGHT/TYPE NOTED)	—	
WATER LINE DIAMETER	12" W	
WATER LINE DIAMETER (ABANDONED)	12"W(A)	
WATER METER/BOX	⊞	⊞
WATER VALVE	⊞	⊞
GEOTECH BORING	⊞	
WATER REDUCER	⊞	
WATER BLOW OFF	⊞	⊞
TEMPORARY WATER BYPASS (BURIED)	---	---
TEMPORARY WATER BYPASS (ABOVE GRADE)	---	---

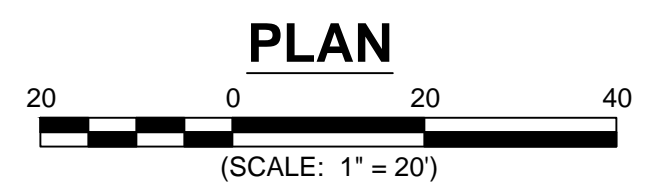
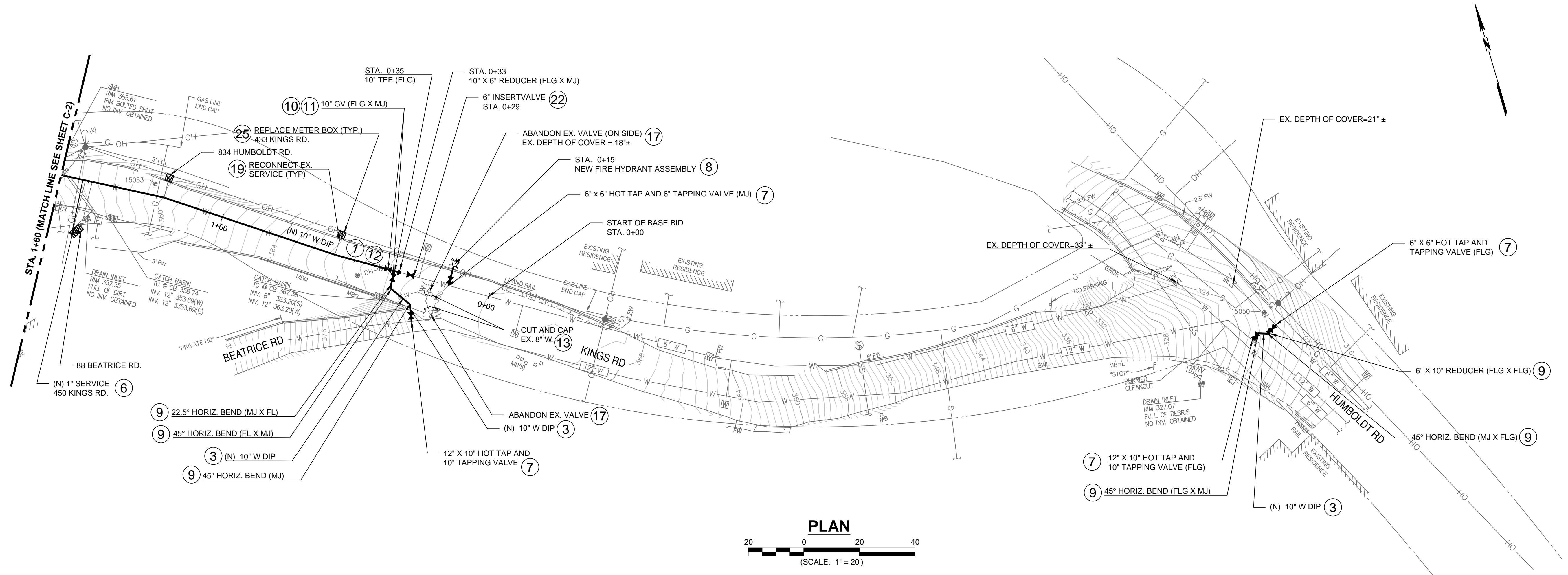
HARDSCAPE LINES	
—	BACK OF CURB
—	FACE OF CURB
---	FLOWLINE
---	LIP OF GUTTER
---	SIDEWALK

MISCELLANEOUS LINES	
—	BUILDING OUTLINE
— X — X —	FENCE, CHAIN-LINK OR BARB WIRE (HEIGHT AND TYPE NOTED)
— □ —	FENCE, METAL (HEIGHT NOTED)
— ○ —	FENCE, WOOD (HEIGHT NOTED)



DATE:	SCALE:	DRAWN:	DESIGNED:	APPROVED:	JOB NO.:	DESCRIPTION
JUNE 2019	AS SHOWN	PL/TA	J/PNS	NS	B60053.06	REV





GENERAL NOTES:

- ALL "C-" SHEETS DEPICT NEW PERMANENT WATER SYSTEM IMPROVEMENTS. REFER TO "TP-" SHEETS FOR TEMPORARY WATER SYSTEM IMPROVEMENTS, CONNECTION DETAILS, AND REQUIRED SEQUENCE OF CONSTRUCTION.
- WHERE AN EXISTING PIPE WILL BE REPLACED IN THE EXISTING TRENCH, CONTRACTOR SHALL CONFIRM EXACT LOCATION OF EXISTING PIPE AND TRENCH AFTER INSTALLATION OF TEMPORARY BYPASS SYSTEM BY RUNNING A LOCATOR WIRE THROUGH DRAINED, EXISTING PIPE OR BY USING ANOTHER CONTRACTOR-PROPOSED METHOD.
- NOTIFY THE ENGINEER IN THE POTHOLING REPORT OF LOCATIONS WHERE THE EXISTING SANITARY SEWER IS INSTALLED WITH LESS THAN 2-FOOT OF HORIZONTAL CLEARANCE FROM PROPOSED WATER MAIN ALIGNMENT. A METHOD FOR CORRECTING INTERFERENCES WILL BE PROVIDED BY ENGINEER IF REQUIRED.

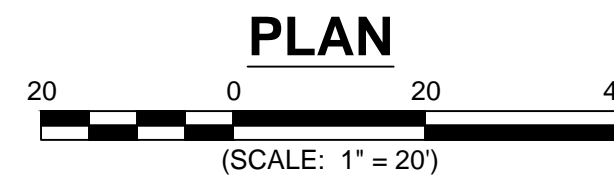
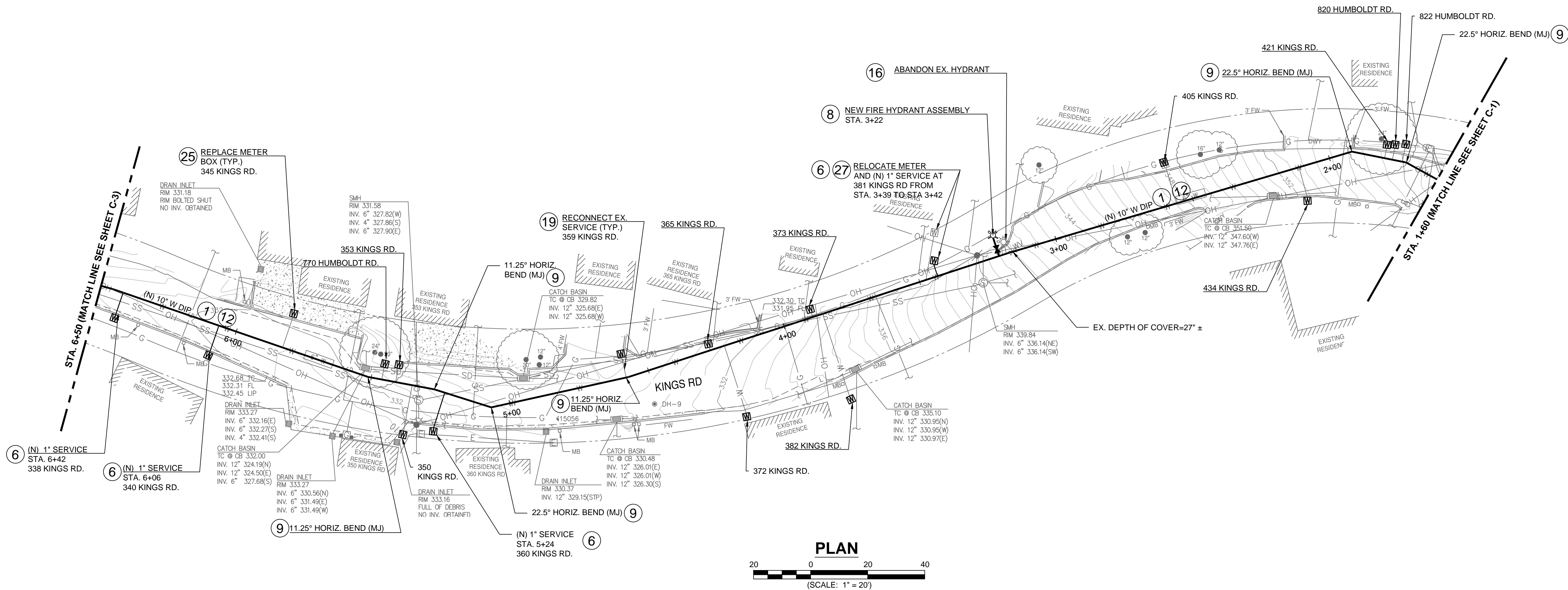
CONSTRUCTION NOTES:

- REMOVE EXISTING WATER MAIN AND INSTALL NEW WATER MAIN IN EXISTING TRENCH. OVER EXCAVATION MAY BE REQUIRED TO MEET MINIMUM TRENCH WIDTH AND COVER REQUIREMENTS. SEE SHEET TP-1 FOR TEMPORARY BYPASS PIPING AND SEQUENCE OF CONSTRUCTION. FOR TRENCH DETAIL, REFER TO (UT-1) (C-14).
- INSTALL NEW WATER MAIN BY OPEN TRENCH PER DETAIL (UT-1) (C-14).
- REPLACE EXISTING SERVICE LINE UP TO EXISTING METER PER DETAIL (W-3) (C-13).
- INSTALL HOT TAP PER DETAIL (W-5) (C-13).
- INSTALL NEW FIRE HYDRANT ASSEMBLY PER DETAIL (W-6) (C-13).
- INSTALL THRUST BLOCKS ON ALL FITTINGS PER DETAIL (W-7) (C-13).
- INSTALL LOCATOR WIRE PER DETAIL (W-9) (C-13).
- INSTALL VALVE BOX AND RISER PER DETAIL (W-10) (C-14) WHERE REQUIRED, INSTALL VALVE STEM EXTENSION PER DETAIL (W-11) (C-14).
- WHEN UTILITY CONFLICTS ARE ENCOUNTERED, INSTALL WATERLINE ABOVE OR BELOW EXISTING UTILITY PER DETAIL (W-12) (C-14).
 WATER MAIN SHALL BE INSTALLED ABOVE SANITARY SEWER, WHERE PRACTICAL.
- CAP ACTIVE LINE PER DETAIL (W-13) (C-14).
- REPLACE DAMAGED CONCRETE SIDEWALK, CURB AND GUTTER PER DETAIL (C-1) (C-14).
- ABANDON EXISTING VALVE PER DETAIL (15) (C-14).
- INSTALL SERVICE SADDLE, AND CORP STOP AND RECONNECT EXISTING WATER SERVICE LINE TO NEW WATER MAIN. EXTEND EXISTING WATER SERVICE AS NEEDED.
- ALL LOCATIONS AND DEPTHS OF UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POTHOLING AND VERIFYING SIZES, DEPTHS, AND LOCATIONS OF ALL UTILITIES. ANY CHANGES TO THESE PLANS AND SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER OR OWNER REPRESENTATIVE.
- INSTALL NEW INSERTVALVE BY IFT ON ACTIVE EXISTING WATER LINE WITH VALVE BOX AND RISER PER NOTE (11).
- REPLACE EXISTING WATER METER BOX PER DETAIL (W-3) (C-13).

C:\eki_construction\chgs\B60053.06\B60053.06_C-17.dwg 5-21-19

 BID SET 05/21/2019	 BID SET 05/21/2019
---------------------------	---------------------------

DATE: JUNE 2019	SCALE: AS SHOWN	DRAWN: PL/TA	DESIGNED: JP/NS	APPROVED: NS	JOB NO.: B60053.06	REV	DESCRIPTION	APPRD	DATE
△	△	△	△	△					
VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY									
SHEET NUMBER C-1 3 OF 22									



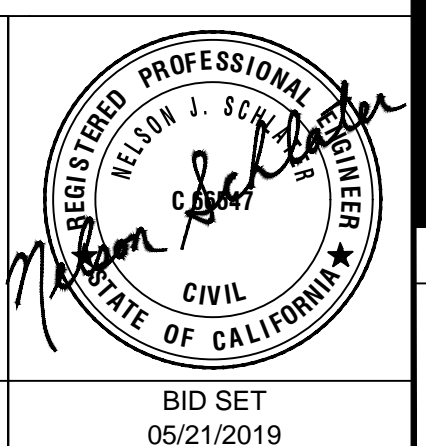
GENERAL NOTES:

- ALL "C-" SHEETS DEPICT NEW PERMANENT WATER SYSTEM IMPROVEMENTS. REFER TO "TP-" SHEETS FOR TEMPORARY WATER SYSTEM IMPROVEMENTS, CONNECTION DETAILS, AND REQUIRED SEQUENCE OF CONSTRUCTION.
- WHERE AN EXISTING PIPE WILL BE REPLACED IN THE EXISTING TRENCH, CONTRACTOR SHALL CONFIRM EXACT LOCATION OF EXISTING PIPE AND TRENCH AFTER INSTALLATION OF TEMPORARY BYPASS SYSTEM BY RUNNING A LOCATOR WIRE THROUGH DRAINED, EXISTING PIPE OR BY USING ANOTHER CONTRACTOR-PROPOSED METHOD.
- NOTIFY THE ENGINEER IN THE POTHOLING REPORT OF LOCATIONS WHERE THE EXISTING SANITARY SEWER IS INSTALLED WITH LESS THAN 2- FEET OF HORIZONTAL CLEARANCE FROM PROPOSED WATER MAIN ALIGNMENT. A METHOD FOR CORRECTING INTERFERENCES WILL BE PROVIDED BY ENGINEER IF REQUIRED.

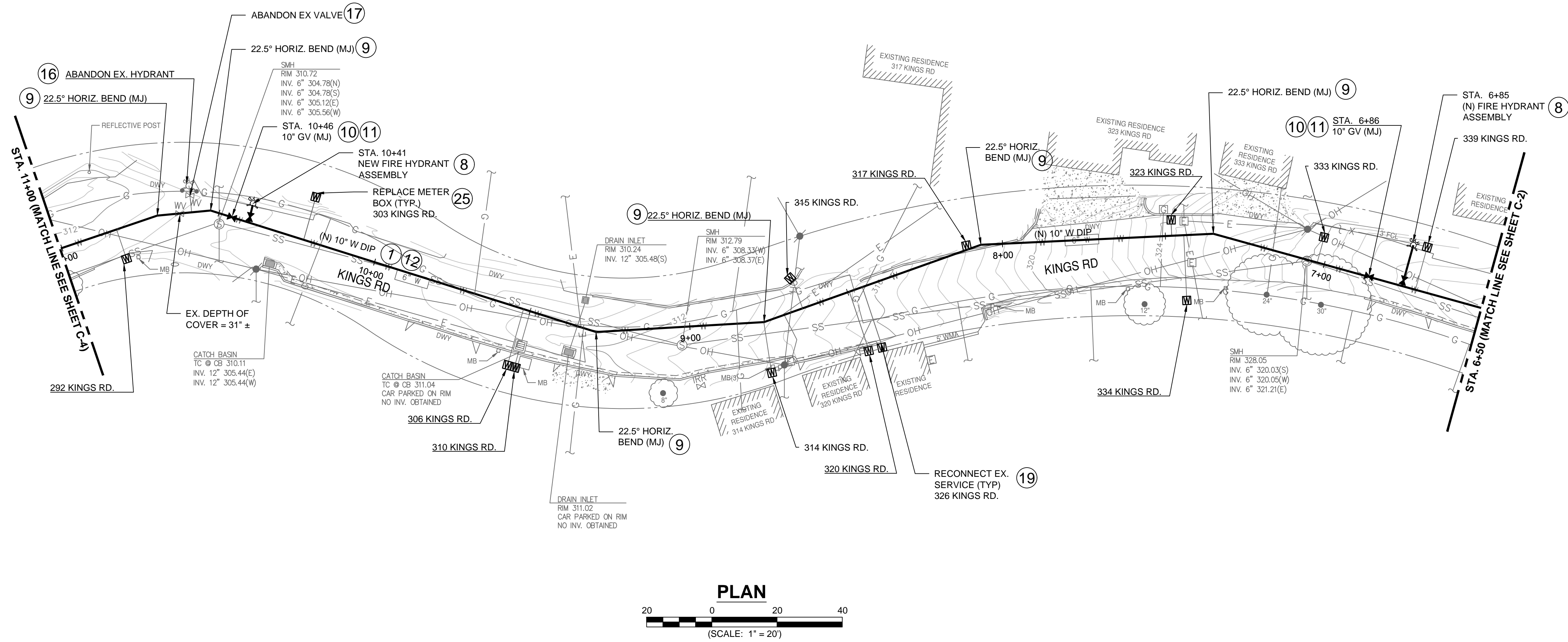
CONSTRUCTION NOTES:

- REMOVE EXISTING WATER MAIN AND INSTALL NEW WATER MAIN IN EXISTING TRENCH. OVER EXCAVATION MAY BE REQUIRED TO MEET MINIMUM TRENCH WIDTH AND COVER REQUIREMENTS. SEE SHEET TP-1 FOR TEMPORARY BYPASS PIPING AND SEQUENCE OF CONSTRUCTION. FOR TRENCH DETAIL, REFER TO (UT-1) (C-14).
- REPLACE EXISTING SERVICE LINE UP TO EXISTING METER PER DETAIL (W-3) (C-13).
- INSTALL NEW FIRE HYDRANT ASSEMBLY PER DETAIL (W-6) (C-13).
- INSTALL THRUST BLOCKS ON ALL FITTINGS PER DETAIL (W-7) (C-13).
- INSTALL LOCATOR WIRE PER DETAIL (W-9) (C-13).
- WHEN UTILITY CONFLICTS ARE ENCOUNTERED, INSTALL WATERLINE ABOVE OR BELOW EXISTING UTILITY PER DETAIL (W-12) (C-14).
 WATER MAIN SHALL BE INSTALLED ABOVE SANITARY SEWER, WHERE PRACTICAL.
- REPLACE DAMAGED CONCRETE SIDEWALK, CURB AND GUTTER PER DETAIL (C-1) (C-14).
- REMOVE AND DISPOSE OF EXISTING HYDRANT IN ACCORDANCE WITH PROJECT SPECIFICATIONS AFTER TESTING AND ACCEPTANCE OF NEW HYDRANT. CONTRACTOR SHALL CUT OUT, BURY TO 2 FEET, AND FILL WITH CONCRETE TO 6 INCHES ABOVE THE BURY. CONTRACTOR SHALL FILL REMAINING DEPTH WITH NATIVE MATERIAL.
- INSTALL SERVICE SADDLE, AND CORP STOP AND RECONNECT EXISTING WATER SERVICE LINE TO NEW WATER MAIN. EXTEND EXISTING WATER SERVICE AS NEEDED.
- ALL LOCATIONS AND DEPTHS OF UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POTHOLING AND VERIFYING SIZES, DEPTHS, AND LOCATIONS OF ALL UTILITIES. ANY CHANGES TO THESE PLANS AND SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER OR OWNER REPRESENTATIVE.
- REPLACE EXISTING WATER METER BOX PER DETAIL (W-3) (C-13).
- RELOCATE METER AND INSTALL NEW METER BOX AS SHOWN PER DETAIL (W-3) (C-13).
 VERIFY LOCATION OF NEW METER BOX WITH OWNER IN FIELD PRIOR TO INSTALLATION. REMOVE EXISTING METER BOX AND EXTEND CUSTOMER SIDE WATER SERVICE TO CONNECT TO NEW METER LOCATION.

C:\eki_construction\dwgs\B60053_06\B60053_06_C-17.dwg 5/21/19



DATE:	JUNE 2019	DESIGNER:	JPN	APPROVED:	NS	JOB NO.:	B60053.06	REV		DESCRIPTION	APPRD	DATE
SCALE:	AS SHOWN	DRAWN:	PLT/A	DESIGNED:	JPN	APPROVED:	NS	REV				
VERIFY SCALE	BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.											
SHEET NUMBER	C-2											
BID SET	05/21/2019											
BID SET	05/21/2019											
4 OF 22												



PLAN
 20 0 20 40
 (SCALE: 1" = 20')

GENERAL NOTES:

- ALL "C-" SHEETS DEPICT NEW PERMANENT WATER SYSTEM IMPROVEMENTS. REFER TO "TP-" SHEETS FOR TEMPORARY WATER SYSTEM IMPROVEMENTS, CONNECTION DETAILS, AND REQUIRED SEQUENCE OF CONSTRUCTION.
- WHERE AN EXISTING PIPE WILL BE REPLACED IN THE EXISTING TRENCH, CONTRACTOR SHALL CONFIRM EXACT LOCATION OF EXISTING PIPE AND TRENCH AFTER INSTALLATION OF TEMPORARY BYPASS SYSTEM BY RUNNING A LOCATOR WIRE THROUGH DRAINED, EXISTING PIPE OR BY USING ANOTHER CONTRACTOR-PROPOSED METHOD.
- NOTIFY THE ENGINEER IN THE POTHOLING REPORT OF LOCATIONS WHERE THE EXISTING SANITARY SEWER IS INSTALLED WITH LESS THAN 2-FEET OF HORIZONTAL CLEARANCE FROM PROPOSED WATER MAIN ALIGNMENT. A METHOD FOR CORRECTING INTERFERENCES WILL BE PROVIDED BY ENGINEER IF REQUIRED.

CONSTRUCTION NOTES:

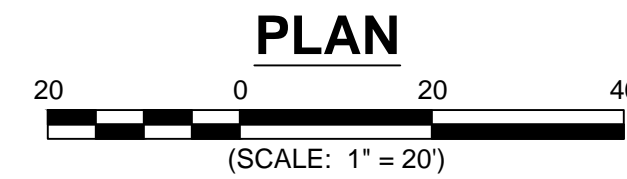
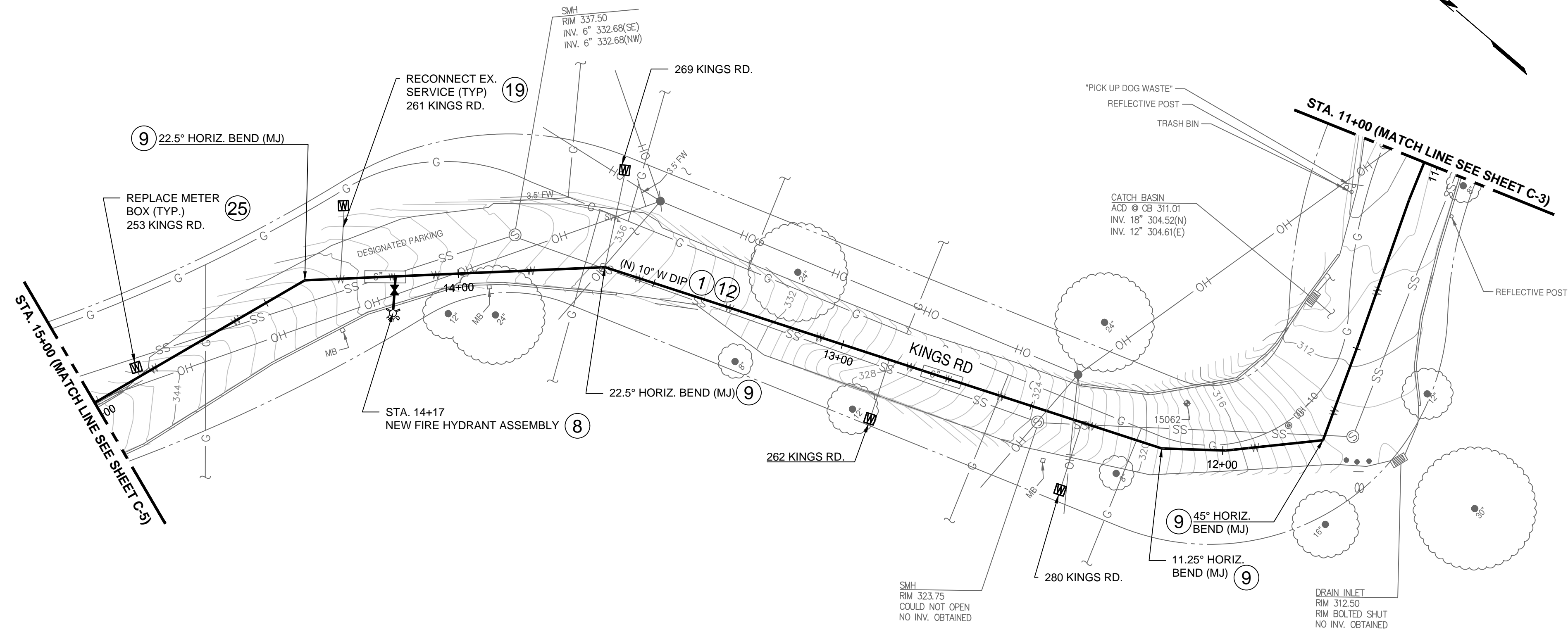
- REMOVE EXISTING WATER MAIN AND INSTALL NEW WATER MAIN IN EXISTING TRENCH. OVER EXCAVATION MAY BE REQUIRED TO MEET MINIMUM TRENCH WIDTH AND COVER REQUIREMENTS. SEE SHEET TP-1 FOR TEMPORARY BYPASS PIPING AND SEQUENCE OF CONSTRUCTION. FOR TRENCH DETAIL, REFER TO (UT-1) (C-14).
- INSTALL NEW FIRE HYDRANT ASSEMBLY PER DETAIL (W-6) (C-13).
- INSTALL THRUST BLOCKS ON ALL FITTINGS PER DETAIL (W-7) (C-13).
- INSTALL LOCATOR WIRE PER DETAIL (W-9) (C-13).
- INSTALL VALVE BOX AND RISER PER DETAIL (W-10) (C-14). WHERE REQUIRED, INSTALL VALVE STEM EXTENSION PER DETAIL (W-11) (C-14).
- WHEN UTILITY CONFLICTS ARE ENCOUNTERED, INSTALL WATERLINE ABOVE OR BELOW EXISTING UTILITY PER DETAIL (W-12) (C-14). WATER MAIN SHALL BE INSTALLED ABOVE SANITARY SEWER, WHERE PRACTICAL.
- REPLACE DAMAGED CONCRETE SIDEWALK, CURB AND GUTTER PER DETAIL (C-1) (C-14).
- REMOVE AND DISPOSE OF EXISTING HYDRANT IN ACCORDANCE WITH PROJECT SPECIFICATIONS AFTER TESTING AND ACCEPTANCE OF NEW HYDRANT. CONTRACTOR SHALL CUT OUT, BURY TO 2 FEET, AND FILL WITH CONCRETE TO 6 INCHES ABOVE THE BURY. CONTRACTOR SHALL FILL REMAINING DEPTH WITH NATIVE MATERIAL.
- ABANDON EXISTING VALVE PER DETAIL (W-3) (C-13).
- INSTALL SERVICE SADDLE, AND CORP STOP AND RECONNECT EXISTING WATER SERVICE LINE TO NEW WATER MAIN. EXTEND EXISTING WATER SERVICE AS NEEDED.
- ALL LOCATIONS AND DEPTHS OF UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POTHOLING AND VERIFYING SIZES, DEPTHS, AND LOCATIONS OF ALL UTILITIES. ANY CHANGES TO THESE PLANS AND SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER OR OWNER REPRESENTATIVE.
- REPLACE EXISTING WATER METER BOX PER DETAIL (W-3) (C-13).

C:\eki_construction\dwgs\B60053.06\B60053.06_C-17.dwg 5-21-19

DATE	DESCRIPTION	APPRD	DATE
JUNE 2018			
SCALE: AS SHOWN			
DRAWN: PL/TA			
DESIGNED: JP/NS			
APPROVED: NS			
JOB NO.: B60053.06			
REV			

VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

 JUN TRAN P. N. SULTANA CIVIL STATE OF CALIFORNIA BID SET 05/21/2019	 NELSON J. SCHMITT CIVIL STATE OF CALIFORNIA BID SET 05/21/2019
--	---

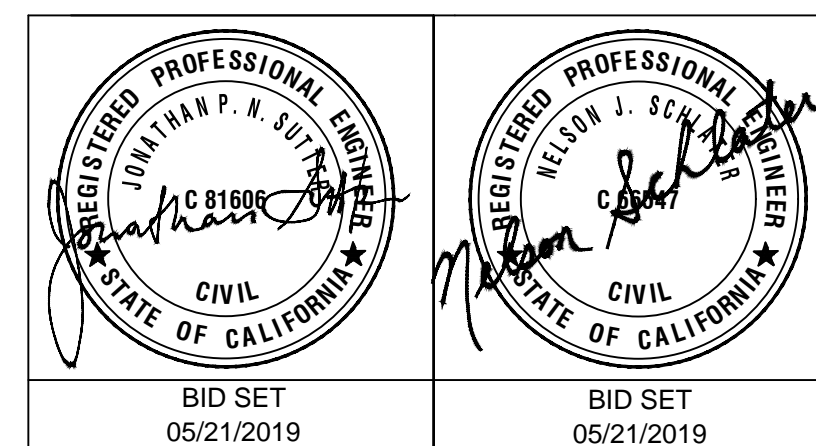


GENERAL NOTES:

- ALL "C-" SHEETS DEPICT NEW PERMANENT WATER SYSTEM IMPROVEMENTS. REFER TO "TP-" SHEETS FOR TEMPORARY WATER SYSTEM IMPROVEMENTS, CONNECTION DETAILS, AND REQUIRED SEQUENCE OF CONSTRUCTION.
- WHERE AN EXISTING PIPE WILL BE REPLACED IN THE EXISTING TRENCH, CONTRACTOR SHALL CONFIRM EXACT LOCATION OF EXISTING PIPE AND TRENCH AFTER INSTALLATION OF TEMPORARY BYPASS SYSTEM BY RUNNING A LOCATOR WIRE THROUGH DRAINED, EXISTING PIPE OR BY USING ANOTHER CONTRACTOR-PROPOSED METHOD.
- NOTIFY THE ENGINEER IN THE POTHOLING REPORT OF LOCATIONS WHERE THE EXISTING SANITARY SEWER IS INSTALLED WITH LESS THAN 2- FEET OF HORIZONTAL CLEARANCE FROM PROPOSED WATER MAIN ALIGNMENT. A METHOD FOR CORRECTING INTERFERENCES WILL BE PROVIDED BY ENGINEER IF REQUIRED.

CONSTRUCTION NOTES:

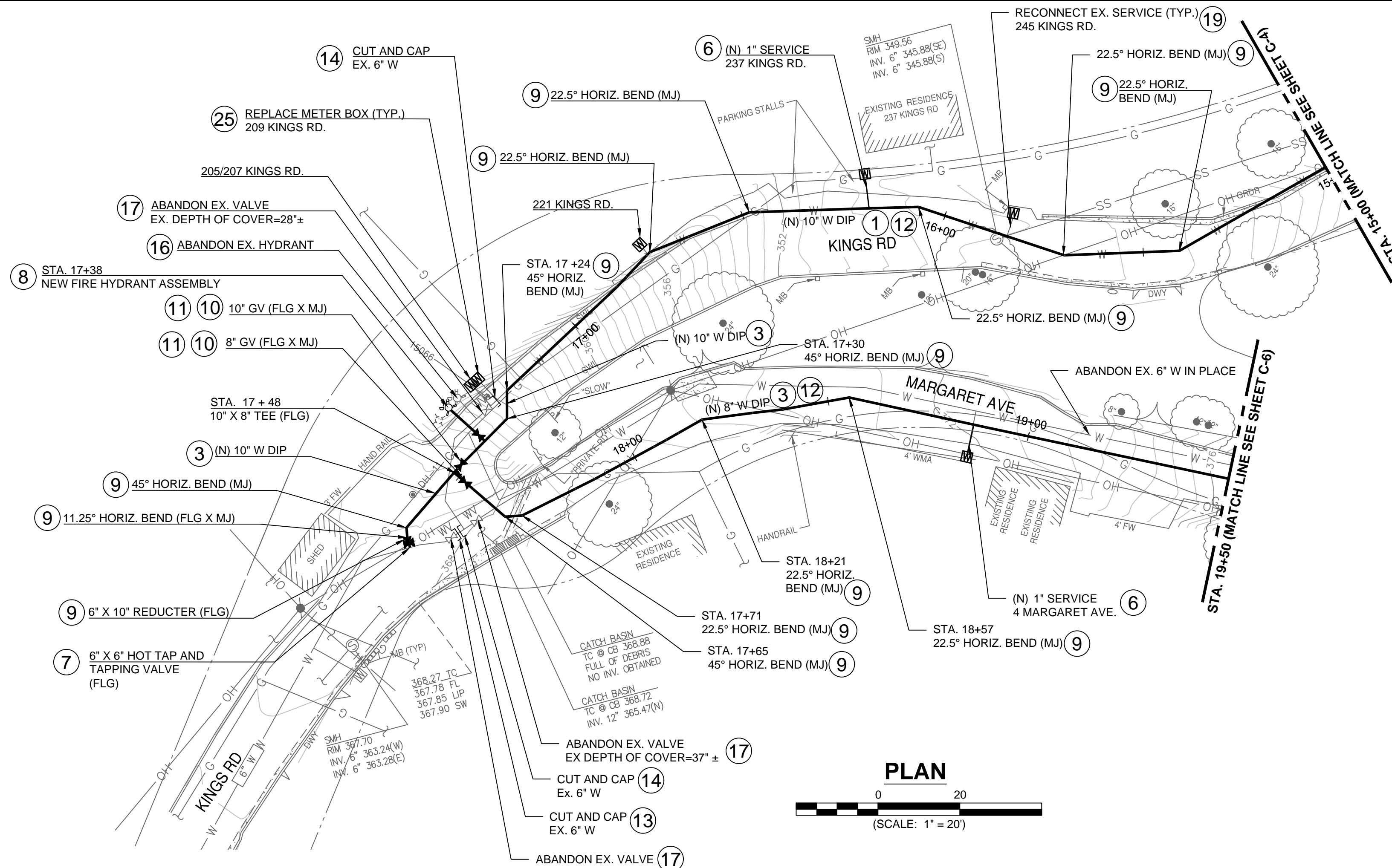
- REMOVE EXISTING WATER MAIN AND INSTALL NEW WATER MAIN IN EXISTING TRENCH. OVER EXCAVATION MAY BE REQUIRED TO MEET MINIMUM TRENCH WIDTH AND COVER REQUIREMENTS. SEE SHEET TP-1 FOR TEMPORARY BYPASS PIPING AND SEQUENCE OF CONSTRUCTION. FOR TRENCH DETAIL, REFER TO (UT-1) (C-14).
- INSTALL NEW FIRE HYDRANT ASSEMBLY PER DETAIL (W-6) (C-13).
- INSTALL THRUST BLOCKS ON ALL FITTINGS PER DETAIL (W-7) (C-13).
- INSTALL LOCATOR WIRE PER DETAIL (W-9) (C-13).
- WHEN UTILITY CONFLICTS ARE ENCOUNTERED, INSTALL WATERLINE ABOVE OR BELOW EXISTING UTILITY PER DETAIL (W-12) (C-14).
 WATER MAIN SHALL BE INSTALLED ABOVE SANITARY SEWER, WHERE PRACTICAL.
- REPLACE DAMAGED CONCRETE SIDEWALK, CURB AND GUTTER PER DETAIL (C-1) (C-14).
- INSTALL SERVICE SADDLE, AND CORP STOP AND RECONNECT EXISTING WATER SERVICE LINE TO NEW WATER MAIN. EXTEND EXISTING WATER SERVICE AS NEEDED.
- ALL LOCATIONS AND DEPTHS OF UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POTHOLING AND VERIFYING SIZES, DEPTHS, AND LOCATIONS OF ALL UTILITIES. ANY CHANGES TO THESE PLANS AND SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER OR OWNER REPRESENTATIVE.
- REPLACE EXISTING WATER METER BOX PER DETAIL (W-3) (C-13).



DATE	DESCRIPTION	APPRD	DATE
JUNE 2019			
SCALE: AS SHOWN			
DRAWN: PL/TA			
DESIGNED: JP/NS			
APPROVED: NS			
JOB NO.: B00053.06			
REV			

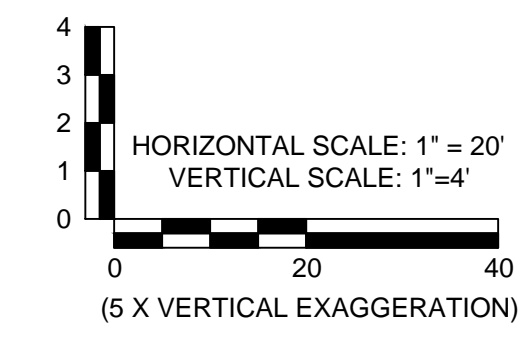
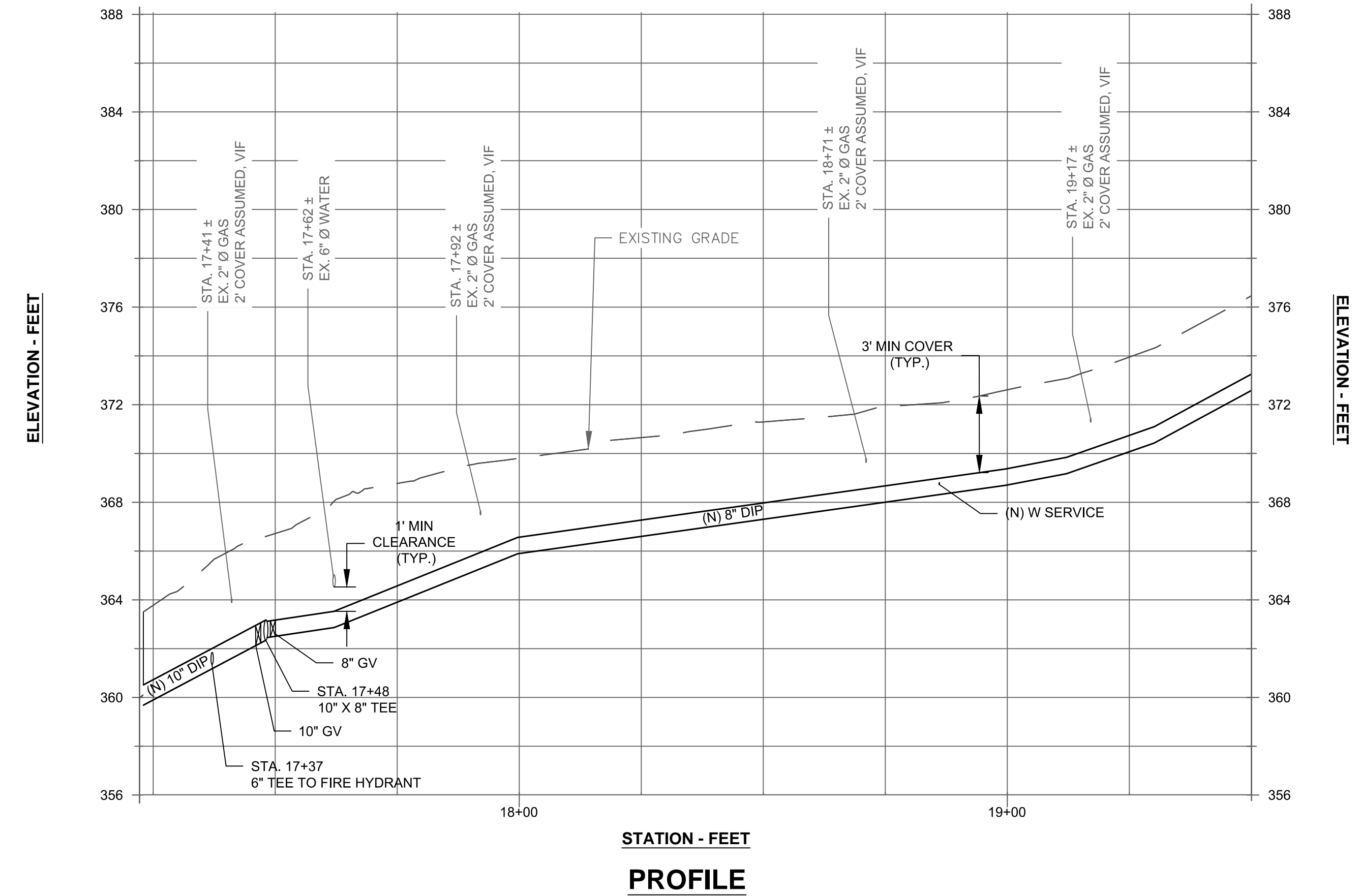
VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

SHEET NUMBER
C-4
 6 OF 22



GENERAL NOTES:

- ALL "C-" SHEETS DEPICT NEW PERMANENT WATER SYSTEM IMPROVEMENTS. REFER TO "TP-" SHEETS FOR TEMPORARY WATER SYSTEM IMPROVEMENTS, CONNECTION DETAILS, AND REQUIRED SEQUENCE OF CONSTRUCTION.
- WHERE AN EXISTING PIPE WILL BE REPLACED IN THE EXISTING TRENCH, CONTRACTOR SHALL CONFIRM EXACT LOCATION OF EXISTING PIPE AND TRENCH AFTER INSTALLATION OF TEMPORARY BYPASS SYSTEM BY RUNNING A LOCATOR WIRE THROUGH DRAINED, EXISTING PIPE OR BY USING ANOTHER CONTRACTOR-PROPOSED METHOD.
- NOTIFY THE ENGINEER IN THE POTHOLING REPORT OF LOCATIONS WHERE THE EXISTING SANITARY SEWER IS INSTALLED WITH LESS THAN 2- FEET OF HORIZONTAL CLEARANCE FROM PROPOSED WATER MAIN ALIGNMENT. A METHOD FOR CORRECTING INTERFERENCES WILL BE PROVIDED BY ENGINEER IF REQUIRED.



CONSTRUCTION NOTES:

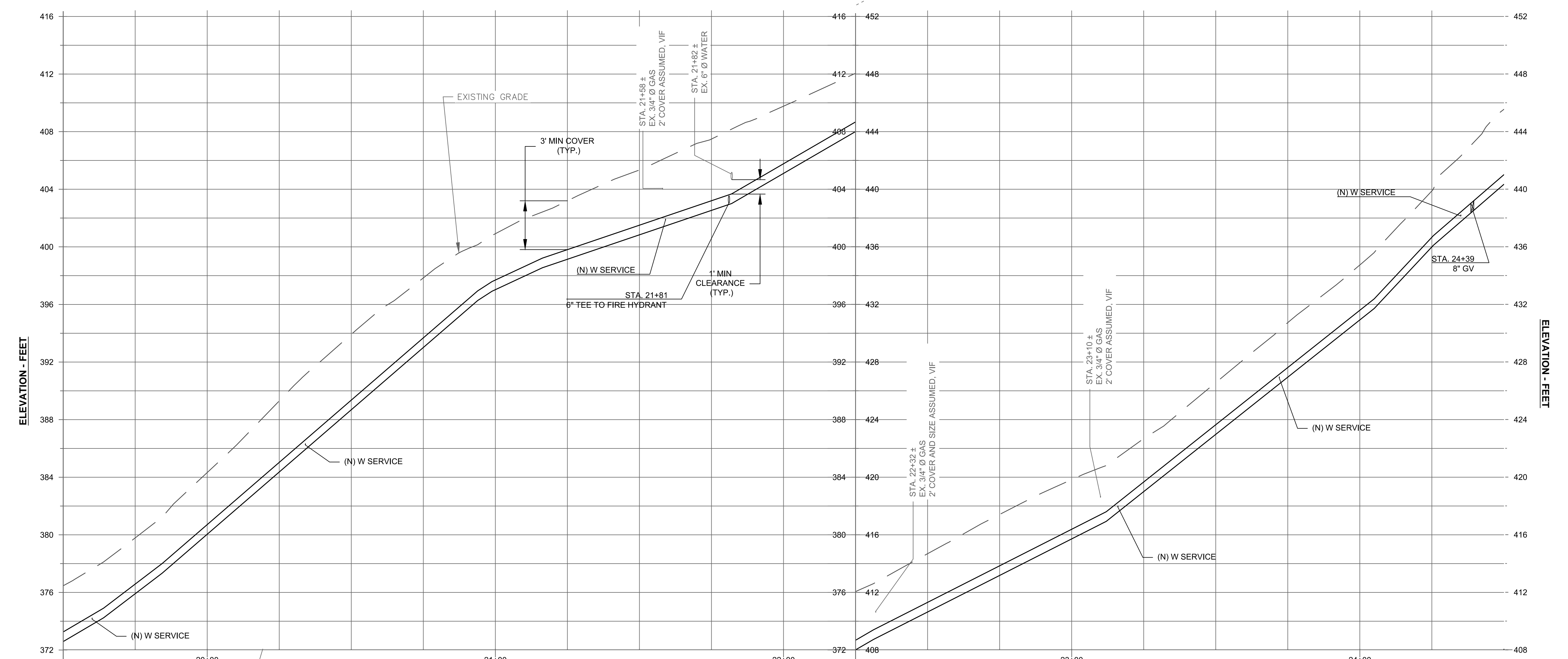
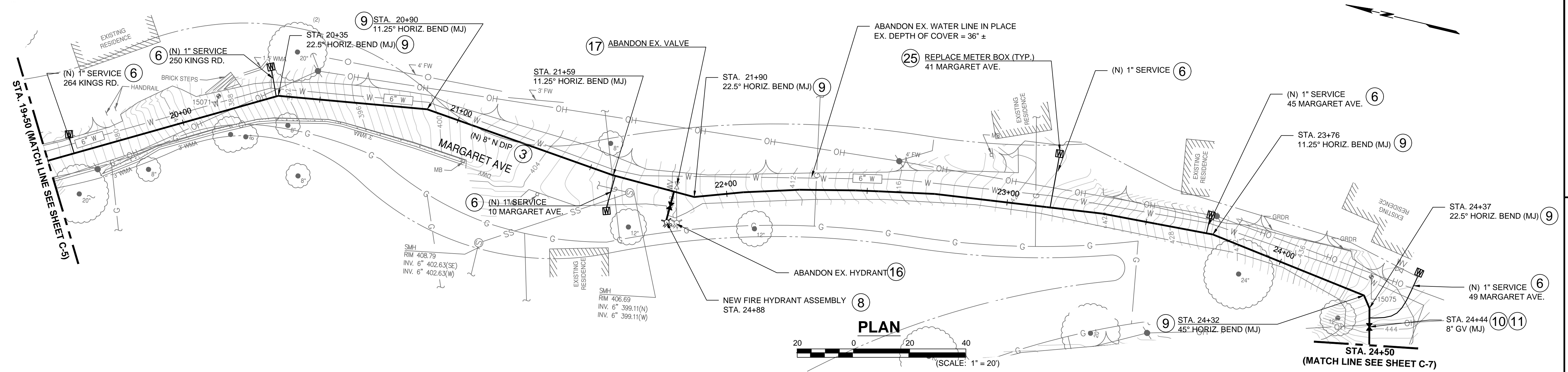
- REMOVE EXISTING WATER MAIN AND INSTALL NEW WATER MAIN IN EXISTING TRENCH. OVER EXCAVATION MAY BE REQUIRED TO MEET MINIMUM TRENCH WIDTH AND COVER REQUIREMENTS. SEE SHEET TP-1 FOR TEMPORARY BYPASS PIPING AND SEQUENCE OF CONSTRUCTION. FOR TRENCH DETAIL, REFER TO (UT-1) (C-14).
- INSTALL NEW WATER MAIN BY OPEN TRENCH PER DETAIL (UT-1) (C-14).
- REPLACE EXISTING SERVICE LINE UP TO EXISTING METER PER DETAIL (W-3) (C-13).
- INSTALL HOT TAP PER DETAIL (W-5) (C-13).
- INSTALL NEW FIRE HYDRANT ASSEMBLY PER DETAIL (W-6) (C-13).
- INSTALL THRUST BLOCKS ON ALL FITTINGS PER DETAIL (W-7) (C-13).
- INSTALL LOCATOR WIRE PER DETAIL (W-9) (C-13).
- INSTALL VALVE BOX AND RISER PER DETAIL (W-10) (C-14). WHERE REQUIRED, INSTALL VALVE STEM EXTENSION PER DETAIL (W-11) (C-14).
- WHEN UTILITY CONFLICTS ARE ENCOUNTERED, INSTALL WATERLINE ABOVE OR BELOW EXISTING UTILITY PER DETAIL (W-12) (C-14). WATER MAIN SHALL BE INSTALLED ABOVE SANITARY SEWER, WHERE PRACTICAL.
- CAP ACTIVE LINE PER DETAIL (W-13) (C-14).
- CUT AND PLUG INACTIVE LINE AND ABANDON IN PLACE PER DETAIL (W-14) (C-14).
- REPLACE DAMAGED CONCRETE SIDEWALK, CURB AND GUTTER PER DETAIL (C-1) (C-14).
- REMOVE AND DISPOSE OF EXISTING HYDRANT IN ACCORDANCE WITH PROJECT SPECIFICATIONS AFTER TESTING AND ACCEPTANCE OF NEW HYDRANT. CONTRACTOR SHALL CUT OUT, BURY TO 2 FEET, AND FILL WITH CONCRETE TO 6 INCHES ABOVE THE BURY. CONTRACTOR SHALL FILL REMAINING DEPTH WITH NATIVE MATERIAL.
- ABANDON EXISTING VALVE PER DETAIL (W-15) (C-14).
- INSTALL SERVICE SADDLE, AND CORP STOP AND RECONNECT EXISTING WATER SERVICE LINE TO NEW WATER MAIN. EXTEND EXISTING WATER SERVICE AS NEEDED.
- ALL LOCATIONS AND DEPTHS OF UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POTHOLING AND VERIFYING SIZES, DEPTHS, AND LOCATIONS OF ALL UTILITIES. ANY CHANGES TO THESE PLANS AND SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER OR OWNER REPRESENTATIVE.
- REPLACE EXISTING WATER METER BOX PER DETAIL (W-3) (C-13).

BID SET 05/21/2019	BID SET 05/21/2019

DATE	SCALE	DRAWN	DESIGNED	APPROVED	JOB NO.	REV	DESCRIPTION	APPRD	DATE
JUNE 2019	AS SHOWN	PLT/A	JPNS	NS	B00053.06				

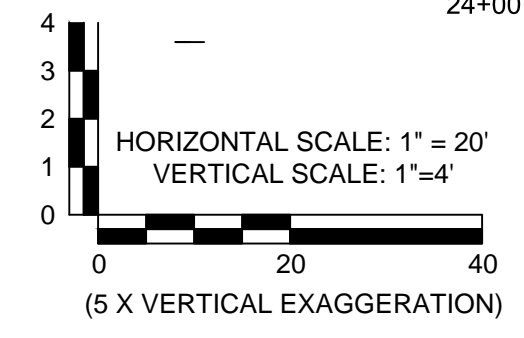
VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

SHEET NUMBER
C-5
 7 OF 22



CONSTRUCTION NOTES:

- ③ INSTALL NEW WATER MAIN BY OPEN TRENCH PER DETAIL (UT-1) (C-14)
- ④ REPLACE EXISTING SERVICE LINE UP TO EXISTING METER PER DETAIL (W-3) (C-13)
- ⑤ INSTALL NEW FIRE HYDRANT ASSEMBLY PER DETAIL (W-6) (C-13)
- ⑥ REPLACE EXISTING SERVICE LINE UP TO EXISTING METER PER DETAIL (W-3) (C-13)
- ⑦ INSTALL THRUST BLOCKS ON ALL FITTINGS PER DETAIL (W-7) (C-14)
- ⑧ INSTALL LOCATOR WIRE PER DETAIL (W-9) (C-13)
- ⑨ INSTALL VALVE BOX AND RISER PER DETAIL (W-10) (C-14) WHERE REQUIRED, INSTALL VALVE STEM EXTENSION PER DETAIL (W-11) (C-14)
- ⑩ WHEN UTILITY CONFLICTS ARE ENCOUNTERED, INSTALL WATERLINE ABOVE OR BELOW EXISTING UTILITY PER DETAIL (W-12) (C-14)
- ⑪ WATER MAIN SHALL BE INSTALLED ABOVE SANITARY SEWER, WHERE PRACTICAL.
- ⑫ REPLACE DAMAGED CONCRETE SIDEWALK, CURB AND GUTTER PER DETAIL (C-1) (C-14)
- ⑬ REMOVE AND DISPOSE OF EXISTING HYDRANT IN ACCORDANCE WITH PROJECT SPECIFICATIONS AFTER TESTING AND ACCEPTANCE OF NEW HYDRANT. CONTRACTOR SHALL CUT OUT, BURY TO 2 FEET, AND FILL WITH CONCRETE TO 6 INCHES ABOVE THE BURY. CONTRACTOR SHALL FILL REMAINING DEPTH WITH NATIVE MATERIAL.
- ⑭ ABANDON EXISTING VALVE PER DETAIL (C-14)
- ⑮ ALL LOCATIONS AND DEPTHS OF UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POTHOLING AND VERIFYING SIZES, DEPTHS, AND LOCATIONS OF ALL UTILITIES. ANY CHANGES TO THESE PLANS AND SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER OR OWNER REPRESENTATIVE.
- ⑯ REPLACE EXISTING WATER METER BOX PER DETAIL (W-3) (C-13)



BID SET
05/21/2019

BID SET
05/21/2019

eki environment & water
 577 AIRPORT BOULEVARD, SUITE 500
 BURLINGAME, CALIFORNIA 94010-5306
 (650) 292-9100 • FAX (650) 652-9012

FIRE MAIN REPLACEMENT PROJECT - PHASE 2
 BRISBANE, CALIFORNIA

**PLAN AND PROFILE, MARGARET AVE AND PAUL AVE,
 STA. 19+50 TO STA 24+50**

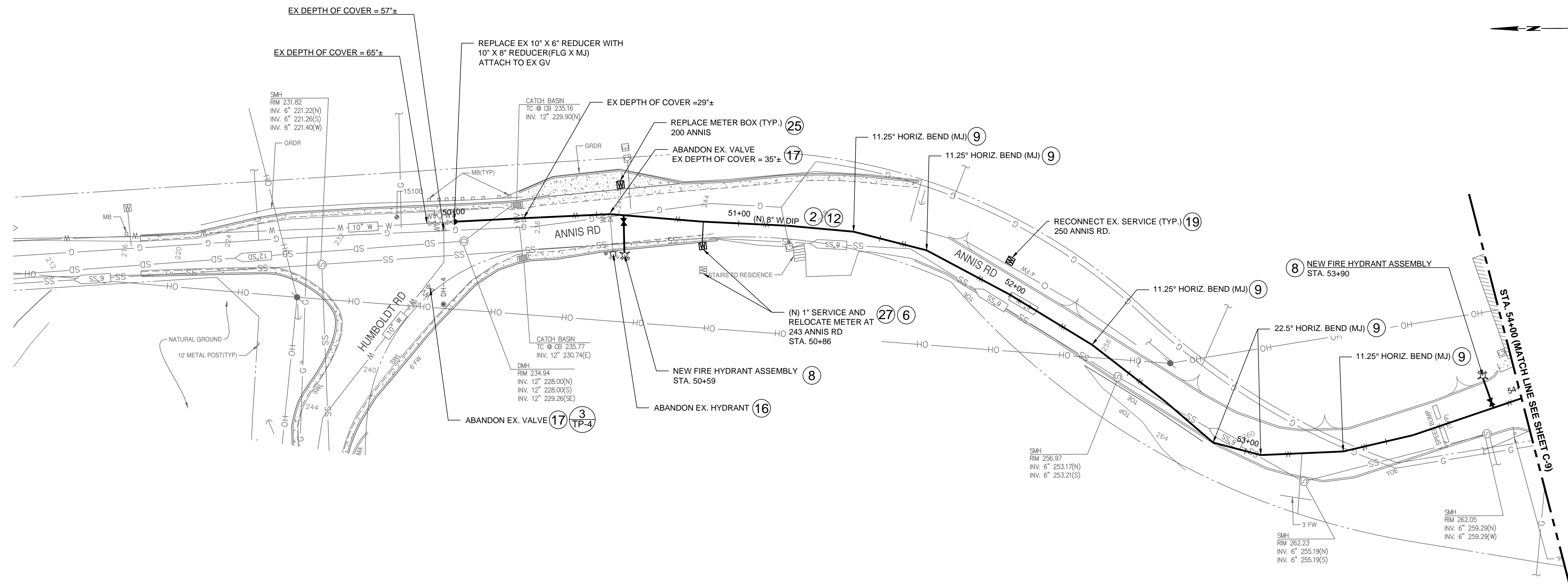
DATE	DESCRIPTION	APPRD	DATE
JUNE 2019	AS SHOWN ORIGINAL DRAWING.		
SCALE: AS SHOWN	DESIGNED: JPN		
DRAWN: PLT/A	APPROVED: NS		
DATE: JUNE 2019	JOB NO.: B00053.06	REV	

VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

C-6

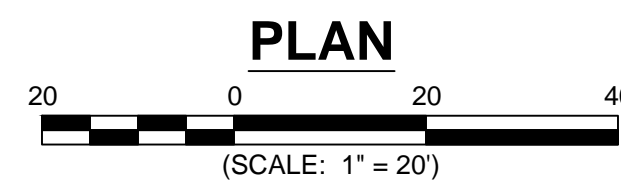
8 OF 22

C:\eki_construction\chgs\B00053.06\B00053.06_C-17.dwg 5-21-19



GENERAL NOTES:

- ALL "C-" SHEETS DEPICT NEW PERMANENT WATER SYSTEM IMPROVEMENTS. REFER TO "TP-" SHEETS FOR TEMPORARY WATER SYSTEM IMPROVEMENTS, CONNECTION DETAILS, AND REQUIRED SEQUENCE OF CONSTRUCTION.
- WHERE AN EXISTING PIPE WILL BE REPLACED IN THE EXISTING TRENCH, CONTRACTOR SHALL CONFIRM EXACT LOCATION OF EXISTING PIPE AND TRENCH AFTER INSTALLATION OF TEMPORARY BYPASS SYSTEM BY RUNNING A LOCATOR WIRE THROUGH DRAINED, EXISTING PIPE OR BY USING ANOTHER CONTRACTOR-PROPOSED METHOD.
- NOTIFY THE ENGINEER IN THE POTHOLING REPORT OF LOCATIONS WHERE THE EXISTING SANITARY SEWER IS INSTALLED WITH LESS THAN 2-FEET OF HORIZONTAL CLEARANCE FROM PROPOSED WATER MAIN ALIGNMENT. A METHOD FOR CORRECTING INTERFERENCES WILL BE PROVIDED BY ENGINEER IF REQUIRED.



CONSTRUCTION NOTES:

- REMOVE EXISTING WATER MAIN AND INSTALL NEW WATER MAIN IN EXISTING TRENCH. OVER EXCAVATION MAY BE REQUIRED TO MEET MINIMUM TRENCH WIDTH AND COVER REQUIREMENTS. SEE SHEET TP-2 FOR TEMPORARY BYPASS PIPING AND SEQUENCE OF CONSTRUCTION. FOR TRENCH DETAIL REFER TO (UT-1) (C-14).
- REPLACE EXISTING SERVICE LINE UP TO EXISTING METER PER DETAIL (W-3) (C-13).
- INSTALL NEW FIRE HYDRANT ASSEMBLY PER DETAIL (W-6) (C-13).
- INSTALL THRUST BLOCKS ON ALL FITTINGS PER DETAIL (W-7) (C-13).
- INSTALL LOCATOR WIRE PER DETAIL (W-9) (C-13).
- WHEN UTILITY CONFLICTS ARE ENCOUNTERED, INSTALL WATERLINE ABOVE OR BELOW EXISTING UTILITY PER DETAIL (W-12) (C-14).
 WATER MAIN SHALL BE INSTALLED ABOVE SANITARY SEWER, WHERE PRACTICAL.
- REPLACE DAMAGED CONCRETE SIDEWALK, CURB AND GUTTER PER DETAIL (C-1) (C-14).
- REMOVE AND DISPOSE OF EXISTING HYDRANT IN ACCORDANCE WITH PROJECT SPECIFICATIONS AFTER TESTING AND ACCEPTANCE OF NEW HYDRANT. CONTRACTOR SHALL CUT OUT, BURY TO 2 FEET, AND FILL WITH CONCRETE TO 6 INCHES ABOVE THE BURY. CONTRACTOR SHALL FILL REMAINING DEPTH WITH NATIVE MATERIAL.
- ABANDON EXISTING VALVE PER DETAIL (15) (C-14).
- INSTALL SERVICE SADDLE, AND CORP STOP AND RECONNECT EXISTING WATER SERVICE LINE TO NEW WATER MAIN. EXTEND EXISTING WATER SERVICE AS NEEDED.
- ALL LOCATIONS AND DEPTHS OF UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POTHOLING AND VERIFYING SIZES, DEPTHS, AND LOCATIONS OF ALL UTILITIES. ANY CHANGES TO THESE PLANS AND SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER OR OWNER REPRESENTATIVE.
- REPLACE EXISTING WATER METER BOX PER DETAIL (W-3) (C-13).
- RELOCATE METER AND INSTALL NEW METER BOX AS SHOWN PER DETAIL (W-3) (C-13).
 VERIFY LOCATION OF NEW METER BOX WITH OWNER IN FIELD PRIOR TO INSTALLATION. REMOVE EXISTING METER BOX AND EXTEND

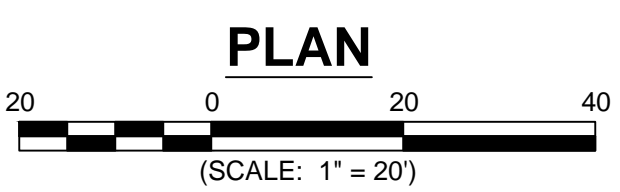
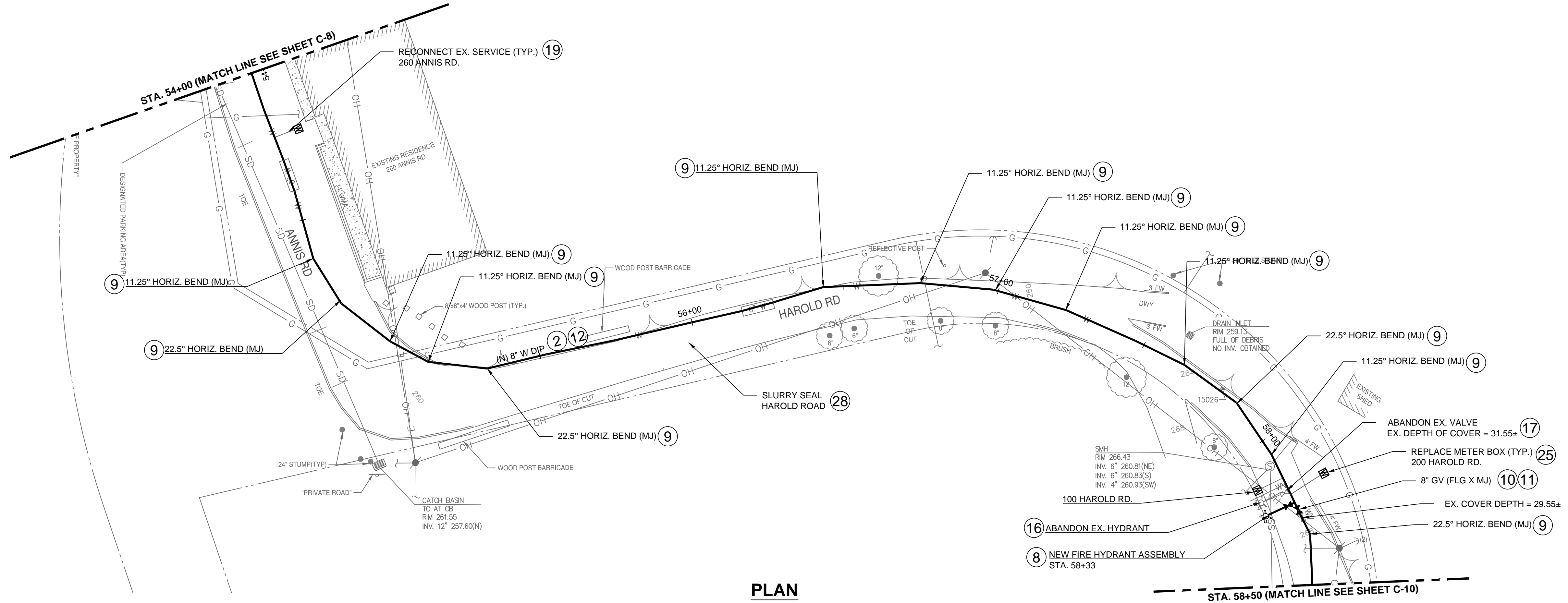
C:\eki_construction\chgs\B60053_06\B60053_06_C-8-12.dwg 5/21/19

BID SET 05/21/2019	BID SET 05/21/2019

DATE	DESCRIPTION	APPRD	DATE
JUNE 2019			
SCALE: AS SHOWN	PL/TA		
DRAWN: JPN	JPN		
DESIGNED: JPN	JPN		
APPROVED: NS	NS		
JOB NO.: B60053.06	REV		

VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

SHEET NUMBER
C-8
 10 OF 22



GENERAL NOTES:

- ALL "C-" SHEETS DEPICT NEW PERMANENT WATER SYSTEM IMPROVEMENTS. REFER TO "TP-" SHEETS FOR TEMPORARY WATER SYSTEM IMPROVEMENTS, CONNECTION DETAILS, AND REQUIRED SEQUENCE OF CONSTRUCTION.
- WHERE AN EXISTING PIPE WILL BE REPLACED IN THE EXISTING TRENCH, CONTRACTOR SHALL CONFIRM EXACT LOCATION OF EXISTING PIPE AND TRENCH AFTER INSTALLATION OF TEMPORARY BYPASS SYSTEM BY RUNNING A LOCATOR WIRE THROUGH DRAINED, EXISTING PIPE OR BY USING ANOTHER CONTRACTOR-PROPOSED METHOD.
- NOTIFY THE ENGINEER IN THE POTHOLING REPORT OF LOCATIONS WHERE THE EXISTING SANITARY SEWER IS INSTALLED WITH LESS THAN 2-FEET OF HORIZONTAL CLEARANCE FROM PROPOSED WATER MAIN ALIGNMENT. A METHOD FOR CORRECTING INTERFERENCES WILL BE PROVIDED BY ENGINEER IF REQUIRED.

CONSTRUCTION NOTES:

- REMOVE EXISTING WATER MAIN AND INSTALL NEW WATER MAIN IN EXISTING TRENCH. OVER EXCAVATION MAY BE REQUIRED TO MEET MINIMUM TRENCH WIDTH AND COVER REQUIREMENTS. SEE SHEET TP-2 FOR TEMPORARY BYPASS PIPING AND SEQUENCE OF CONSTRUCTION. FOR TRENCH DETAIL REFER TO (UT-1) (C-14).
- INSTALL NEW FIRE HYDRANT ASSEMBLY PER DETAIL (W-6) (C-13).
- INSTALL THRUST BLOCKS ON ALL FITTINGS PER DETAIL (W-7) (C-13).
- INSTALL LOCATOR WIRE PER DETAIL (W-9) (C-13).
- INSTALL VALVE BOX AND RISER PER DETAIL (W-10) (C-14) WHERE REQUIRED, INSTALL VALVE STEM EXTENSION PER DETAIL (W-11) (C-14).
- WHEN UTILITY CONFLICTS ARE ENCOUNTERED, INSTALL WATERLINE ABOVE OR BELOW EXISTING UTILITY PER DETAIL (W-12) (C-14).
 WATER MAIN SHALL BE INSTALLED ABOVE SANITARY SEWER, WHERE PRACTICAL.
- REPLACE DAMAGED CONCRETE SIDEWALK, CURB AND GUTTER PER DETAIL (C-1) (C-14).
- REMOVE AND DISPOSE OF EXISTING HYDRANT IN ACCORDANCE WITH PROJECT SPECIFICATIONS AFTER TESTING AND ACCEPTANCE OF NEW HYDRANT. CONTRACTOR SHALL CUT OUT, BURY TO 2 FEET, AND FILL WITH CONCRETE TO 6 INCHES ABOVE THE BURY. CONTRACTOR SHALL FILL REMAINING DEPTH WITH NATIVE MATERIAL.
- ABANDON EXISTING VALVE PER DETAIL (W-3) (C-14).
- INSTALL SERVICE SADDLE, AND CORP STOP AND RECONNECT EXISTING WATER SERVICE LINE TO NEW WATER MAIN. EXTEND EXISTING WATER SERVICE AS NEEDED.
- ALL LOCATIONS AND DEPTHS OF UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POTHOLING AND VERIFYING SIZES, DEPTHS, AND LOCATIONS OF ALL UTILITIES. ANY CHANGES TO THESE PLANS AND SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER OR OWNER REPRESENTATIVE.
- REPLACE EXISTING WATER METER BOX PER DETAIL (W-3) (C-13).
- SLURRY SEAL EXISTING PAVED PORTION OF ANNIS AND HAROLD ROAD (STA. 57+30 TO STA. 65+25) FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT. SLURRY SEAL SHALL BE PLACED AT THE COMPLETION OF ALL OTHER WORK AFTER ALL HEAVY CONSTRUCTION TRAFFIC IS FINISHED.

C:\eki_construction\dwgs\B60053.06\B60053.06_C-9-12.dwg 5/21/19

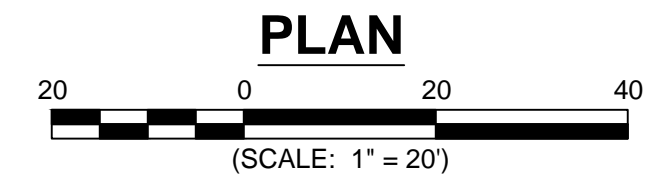
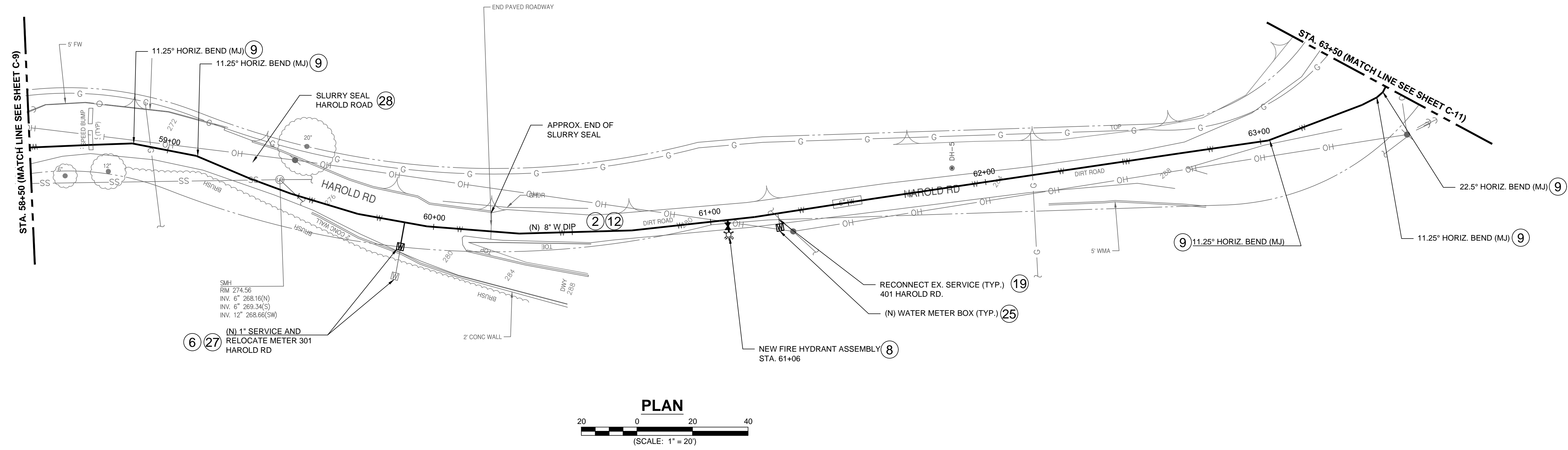
REGISTERED PROFESSIONAL ENGINEER
 LUNA TRAN P. N. SUTAR
 CIVIL
 STATE OF CALIFORNIA
 C 81606

REGISTERED PROFESSIONAL ENGINEER
 NELSON J. SCHULTZ
 CIVIL
 STATE OF CALIFORNIA
 C 6474

DATE:	JUNE 2019	REVISION:	
SCALE:	AS SHOWN	DESIGNED:	JPN
DRAWN:	PL/TA	APPROVED:	NS
JOB NO.:	B60053.06	REV	
DESCRIPTION:		APPRD	
DATE			

VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

SHEET NUMBER
C-9
 11 OF 22



GENERAL NOTES:

- ALL "C-" SHEETS DEPICT NEW PERMANENT WATER SYSTEM IMPROVEMENTS. REFER TO "TP-" SHEETS FOR TEMPORARY WATER SYSTEM IMPROVEMENTS, CONNECTION DETAILS, AND REQUIRED SEQUENCE OF CONSTRUCTION.
- WHERE AN EXISTING PIPE WILL BE REPLACED IN THE EXISTING TRENCH, CONTRACTOR SHALL CONFIRM EXACT LOCATION OF EXISTING PIPE AND TRENCH AFTER INSTALLATION OF TEMPORARY BYPASS SYSTEM BY RUNNING A LOCATOR WIRE THROUGH DRAINED, EXISTING PIPE OR BY USING ANOTHER CONTRACTOR-PROPOSED METHOD.
- NOTIFY THE ENGINEER IN THE POTHOLING REPORT OF LOCATIONS WHERE THE EXISTING SANITARY SEWER IS INSTALLED WITH LESS THAN 2-FEET OF HORIZONTAL CLEARANCE FROM PROPOSED WATER MAIN ALIGNMENT. A METHOD FOR CORRECTING INTERFERENCES WILL BE PROVIDED BY ENGINEER IF REQUIRED.

CONSTRUCTION NOTES:

- REMOVE EXISTING WATER MAIN AND INSTALL NEW WATER MAIN IN EXISTING TRENCH. OVER EXCAVATION MAY BE REQUIRED TO MEET MINIMUM TRENCH WIDTH AND COVER REQUIREMENTS. SEE SHEET TP-2 FOR TEMPORARY BYPASS PIPING AND SEQUENCE OF CONSTRUCTION. FOR TRENCH DETAIL REFER TO (UT-1) (C-14).
- REPLACE EXISTING SERVICE LINE UP TO EXISTING METER PER DETAIL (W-3) (C-13).
- INSTALL NEW FIRE HYDRANT ASSEMBLY PER DETAIL (W-6) (C-13).
- INSTALL THRUST BLOCKS ON ALL FITTINGS PER DETAIL (W-7) (C-13).
- INSTALL VALVE BOX AND RISER PER DETAIL (W-10) (C-14). WHERE REQUIRED, INSTALL VALVE STEM EXTENSION PER DETAIL (W-11) (C-14).
- WHEN UTILITY CONFLICTS ARE ENCOUNTERED, INSTALL WATERLINE ABOVE OR BELOW EXISTING UTILITY PER DETAIL (W-12) (C-14).
 WATER MAIN SHALL BE INSTALLED ABOVE SANITARY SEWER, WHERE PRACTICAL.
- ALL LOCATIONS AND DEPTHS OF UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POTHOLING AND VERIFYING SIZES, DEPTHS, AND LOCATIONS OF ALL UTILITIES. ANY CHANGES TO THESE PLANS AND SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER OR OWNER REPRESENTATIVE.
- RECONNECT EX. SERVICE (TYP.) 401 HAROLD RD.
 (N) WATER METER BOX (TYP.) (25)
- RELOCATE METER AND INSTALL NEW METER BOX AS SHOWN PER DETAIL (W-3) (C-13).
- RELOCATE METER AND INSTALL NEW METER BOX AS SHOWN PER DETAIL (W-3) (C-13).
 VERIFY LOCATION OF NEW METER BOX WITH OWNER IN FIELD PRIOR TO INSTALLATION. REMOVE EXISTING METER BOX AND EXTEND CUSTOMER SIDE WATER SERVICE TO CONNECT TO NEW METER LOCATION.
- SLURRY SEAL EXISTING PAVED PORTION OF ANNIS AND HAROLD ROAD (STA. 57+30 TO STA. 65+25) FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT. SLURRY SEAL SHALL BE PLACED AT THE COMPLETION OF ALL OTHER WORK AFTER ALL HEAVY CONSTRUCTION TRAFFIC IS FINISHED.
- REPLACE DAMAGED CONCRETE SIDEWALK, CURB AND GUTTER PER DETAIL (C-1) (C-14).
- INSTALL SERVICE SADDLE, AND CORP STOP AND RECONNECT EXISTING WATER SERVICE LINE TO NEW WATER MAIN. EXTEND EXISTING WATER SERVICE AS NEEDED.
- REPLACE EXISTING WATER METER BOX PER DETAIL (W-3) (C-13).

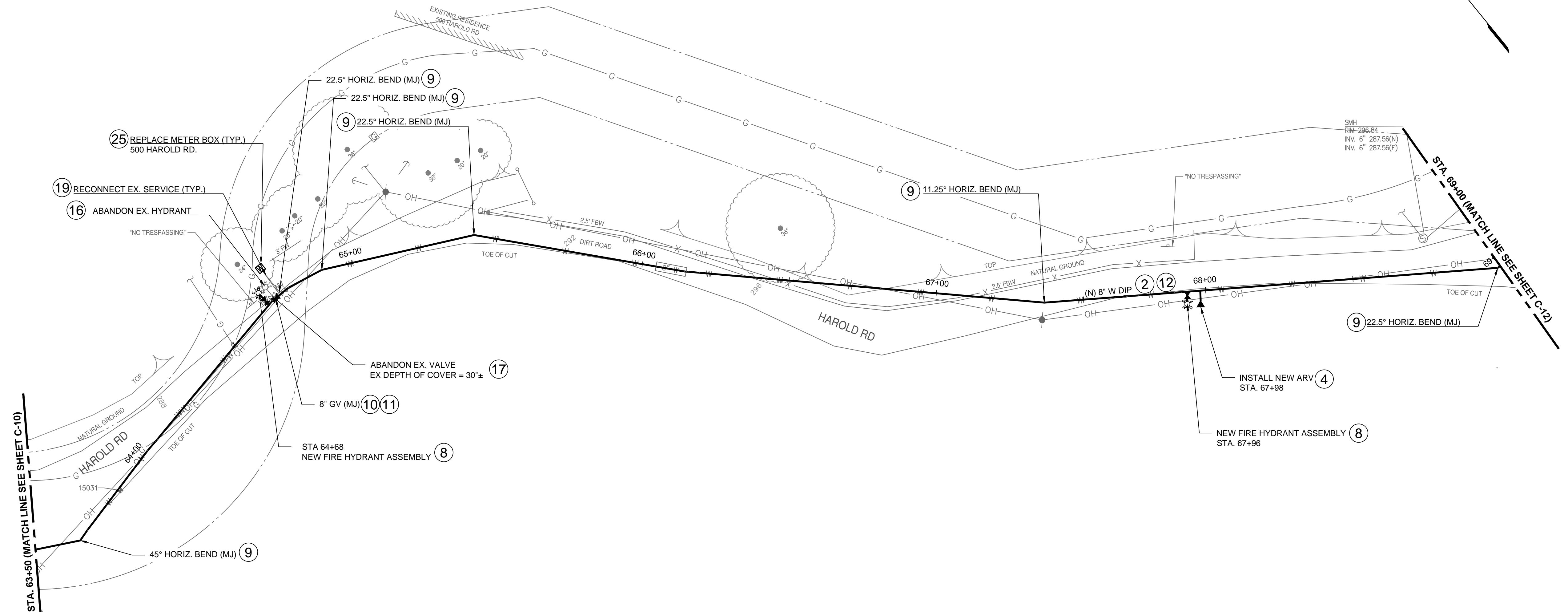
REGISTERED PROFESSIONAL ENGINEER
 JUNI TRAN P. N. SUJ
 CIVIL
 STATE OF CALIFORNIA
 C 81606

REGISTERED PROFESSIONAL ENGINEER
 NELSON J. SCHUBERT
 CIVIL
 STATE OF CALIFORNIA
 C 81606

BID SET 05/21/2019

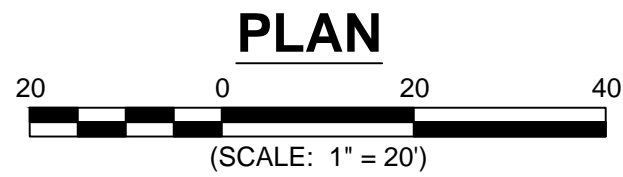
BID SET 05/21/2019

DATE:	JUNE 2019	REV	
SCALE:	AS SHOWN	DESCRIPTION	
DRAWN:	PLTA	DATE	
DESIGNED:	JFNS	APPRD	
APPROVED:	NS	DATE	
JOB NO.:	B00053.06	REV	
VERIFY SCALE		DATE	
BAR IS ONE INCH ON ORIGINAL DRAWING.			
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY			
SHEET NUMBER			
C-10			
12 OF 22			



GENERAL NOTES:

- ALL "C-" SHEETS DEPICT NEW PERMANENT WATER SYSTEM IMPROVEMENTS. REFER TO "TP-" SHEETS FOR TEMPORARY WATER SYSTEM IMPROVEMENTS, CONNECTION DETAILS, AND REQUIRED SEQUENCE OF CONSTRUCTION.
- WHERE AN EXISTING PIPE WILL BE REPLACED IN THE EXISTING TRENCH, CONTRACTOR SHALL CONFIRM EXACT LOCATION OF EXISTING PIPE AND TRENCH AFTER INSTALLATION OF TEMPORARY BYPASS SYSTEM BY RUNNING A LOCATOR WIRE THROUGH DRAINED, EXISTING PIPE OR BY USING ANOTHER CONTRACTOR-PROPOSED METHOD.
- NOTIFY THE ENGINEER IN THE POTHOLING REPORT OF LOCATIONS WHERE THE EXISTING SANITARY SEWER IS INSTALLED WITH LESS THAN 2-FEET OF HORIZONTAL CLEARANCE FROM PROPOSED WATER MAIN ALIGNMENT. A METHOD FOR CORRECTING INTERFERENCES WILL BE PROVIDED BY ENGINEER IF REQUIRED.

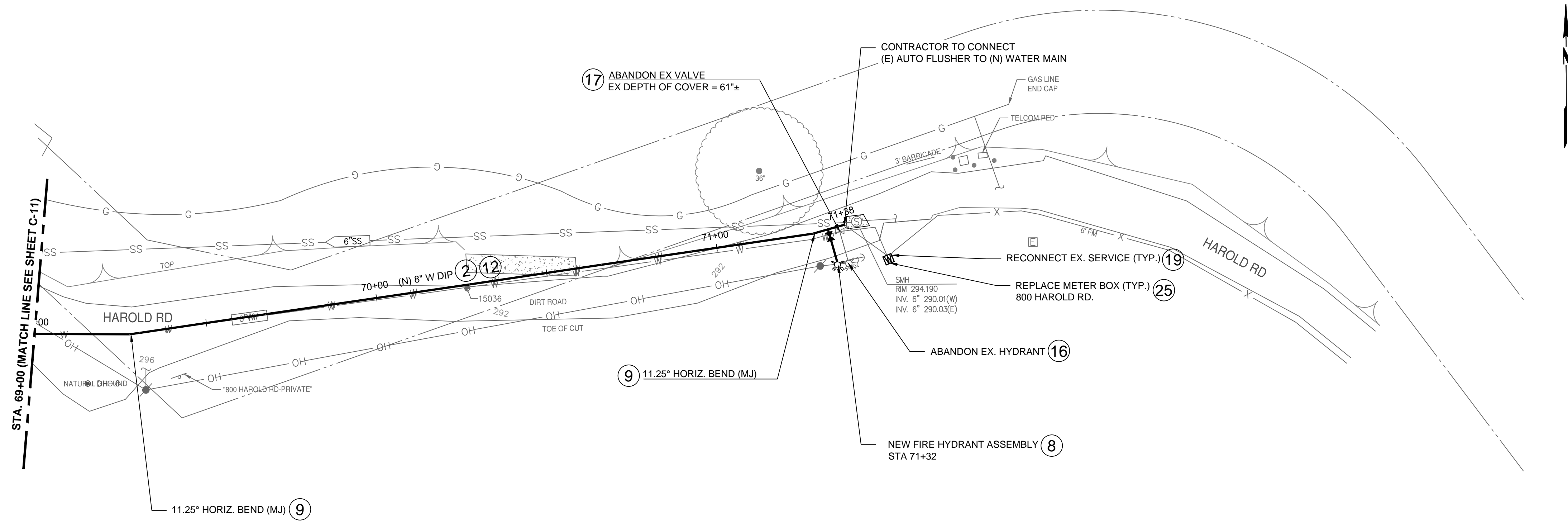


CONSTRUCTION NOTES:

- REMOVE EXISTING WATER MAIN AND INSTALL NEW WATER MAIN IN EXISTING TRENCH. OVER EXCAVATION MAY BE REQUIRED TO MEET MINIMUM TRENCH WIDTH AND COVER REQUIREMENTS. SEE SHEET TP-2 FOR TEMPORARY BYPASS PIPING AND SEQUENCE OF CONSTRUCTION. FOR TRENCH DETAIL REFER TO (W-1) / (C-14).
- INSTALL NEW AIR RELEASE VALVE PER DETAIL (W-1) / (C-13).
- INSTALL NEW FIRE HYDRANT ASSEMBLY PER DETAIL (W-6) / (C-13).
- INSTALL THRUST BLOCKS ON ALL FITTINGS PER DETAIL (W-7) / (C-13).
- INSTALL LOCATOR WIRE PER DETAIL (W-9) / (C-13).
- INSTALL VALVE BOX AND RISER PER DETAIL (W-10) / (C-14). WHERE REQUIRED, INSTALL VALVE STEM EXTENSION PER DETAIL (W-11) / (C-14).
- WHEN UTILITY CONFLICTS ARE ENCOUNTERED, INSTALL WATERLINE ABOVE OR BELOW EXISTING UTILITY PER DETAIL (W-12) / (C-14). WATER MAIN SHALL BE INSTALLED ABOVE SANITARY SEWER, WHERE PRACTICAL.
- REPLACE DAMAGED CONCRETE SIDEWALK, CURB AND GUTTER PER DETAIL (C-1) / (C-14).
- REMOVE AND DISPOSE OF EXISTING HYDRANT IN ACCORDANCE WITH PROJECT SPECIFICATIONS AFTER TESTING AND ACCEPTANCE OF NEW HYDRANT. CONTRACTOR SHALL CUT OUT, BURY TO 2 FEET, AND FILL WITH CONCRETE TO 6 INCHES ABOVE THE BURY. CONTRACTOR SHALL FILL REMAINING DEPTH WITH NATIVE MATERIAL.
- ABANDON EXISTING VALVE PER DETAIL (W-15) / (C-14).
- INSTALL SERVICE SADDLE, AND CORP STOP AND RECONNECT EXISTING WATER SERVICE LINE TO NEW WATER MAIN. EXTEND EXISTING WATER SERVICE AS NEEDED.
- ALL LOCATIONS AND DEPTHS OF UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POTHOLING AND VERIFYING SIZES, DEPTHS, AND LOCATIONS OF ALL UTILITIES. ANY CHANGES TO THESE PLANS AND SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER OR OWNER REPRESENTATIVE.
- REPLACE EXISTING WATER METER BOX PER DETAIL (W-3) / (C-13).

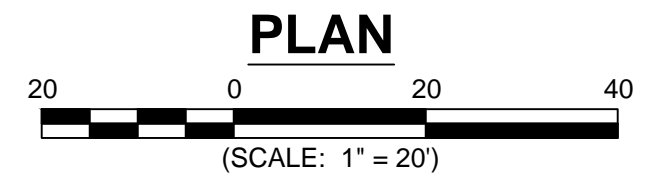
BID SET 05/21/2019	BID SET 05/21/2019

DATE: JUNE 2019	SCALE: AS SHOWN	DRAWN: PL/TA	DESIGNED: JP/NS	APPROVED: NS	JOB NO.: B00053.06	REV	DESCRIPTION	APPRD	DATE
△	△	△	△	△	△				



GENERAL NOTES:

- ALL "C-" SHEETS DEPICT NEW PERMANENT WATER SYSTEM IMPROVEMENTS. REFER TO "TP-" SHEETS FOR TEMPORARY WATER SYSTEM IMPROVEMENTS, CONNECTION DETAILS, AND REQUIRED SEQUENCE OF CONSTRUCTION.
- WHERE AN EXISTING PIPE WILL BE REPLACED IN THE EXISTING TRENCH, CONTRACTOR SHALL CONFIRM EXACT LOCATION OF EXISTING PIPE AND TRENCH AFTER INSTALLATION OF TEMPORARY BYPASS SYSTEM BY RUNNING A LOCATOR WIRE THROUGH DRAINED, EXISTING PIPE OR BY USING ANOTHER CONTRACTOR-PROPOSED METHOD.
- NOTIFY THE ENGINEER IN THE POTHOLING REPORT OF LOCATIONS WHERE THE EXISTING SANITARY SEWER IS INSTALLED WITH LESS THAN 2-FEET OF HORIZONTAL CLEARANCE FROM PROPOSED WATER MAIN ALIGNMENT. A METHOD FOR CORRECTING INTERFERENCES WILL BE PROVIDED BY ENGINEER IF REQUIRED.

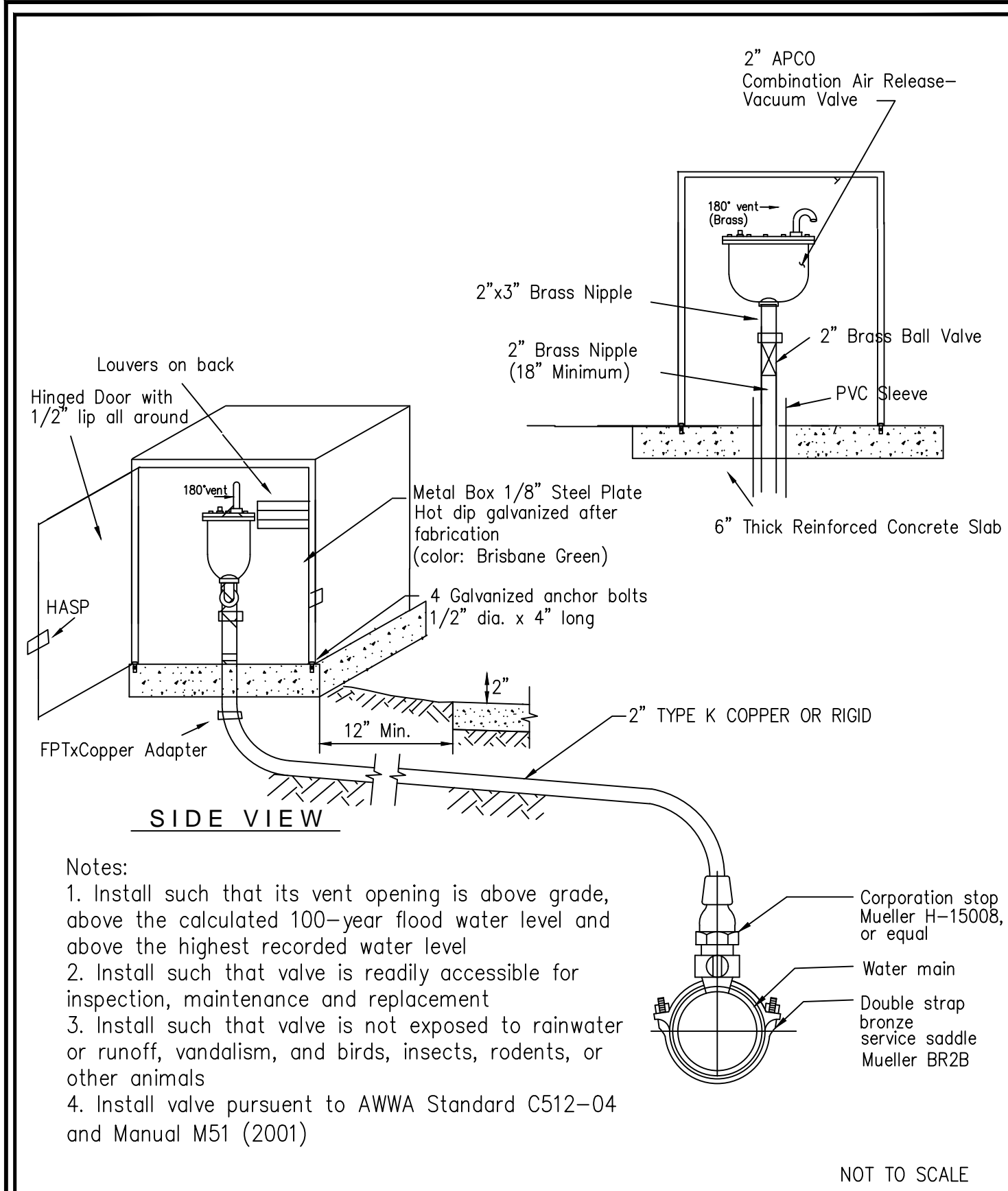


CONSTRUCTION NOTES:

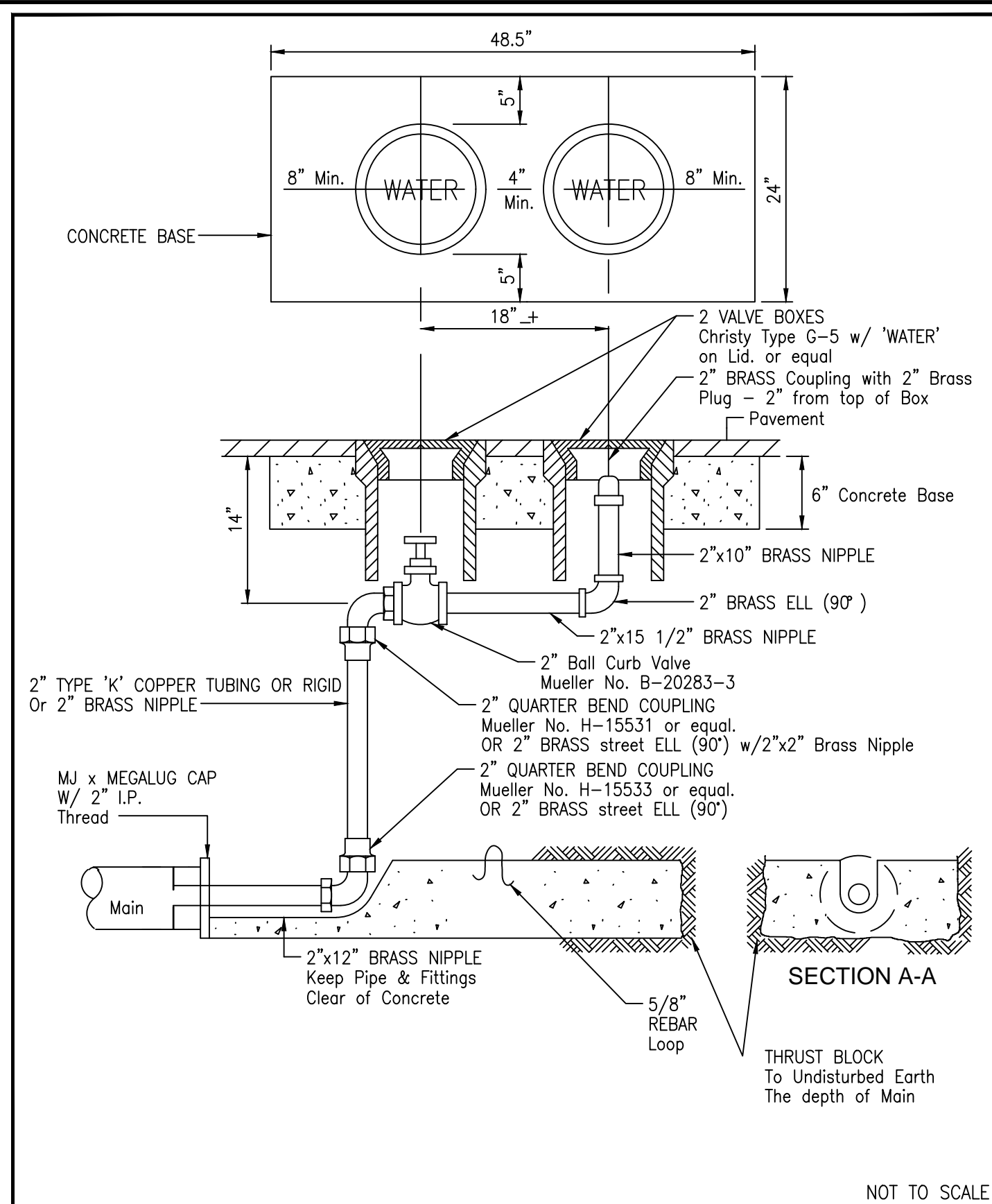
- REMOVE EXISTING WATER MAIN AND INSTALL NEW WATER MAIN IN EXISTING TRENCH. OVER EXCAVATION MAY BE REQUIRED TO MEET MINIMUM TRENCH WIDTH AND COVER REQUIREMENTS. SEE SHEET TP-2 FOR TEMPORARY BYPASS PIPING AND SEQUENCE OF CONSTRUCTION. FOR TRENCH DETAIL REFER TO (W-1) (C-14).
- INSTALL NEW FIRE HYDRANT ASSEMBLY PER DETAIL (W-6) (C-13).
- INSTALL THRUST BLOCKS ON ALL FITTINGS PER DETAIL (W-7) (C-13).
- INSTALL LOCATOR WIRE PER DETAIL (W-9) (C-13).
- INSTALL VALVE BOX AND RISER PER DETAIL (W-10) (C-14) WHERE REQUIRED, INSTALL VALVE STEM EXTENSION PER DETAIL (W-11) (C-14).
- WHEN UTILITY CONFLICTS ARE ENCOUNTERED, INSTALL WATERLINE ABOVE OR BELOW EXISTING UTILITY PER DETAIL (W-12) (C-14).
 WATER MAIN SHALL BE INSTALLED ABOVE SANITARY SEWER, WHERE PRACTICAL.
- REPLACE DAMAGED CONCRETE SIDEWALK, CURB AND GUTTER PER DETAIL (C-1) (C-14).
- REMOVE AND DISPOSE OF EXISTING HYDRANT IN ACCORDANCE WITH PROJECT SPECIFICATIONS AFTER TESTING AND ACCEPTANCE OF NEW HYDRANT. CONTRACTOR SHALL CUT OUT, BURY TO 2 FEET, AND FILL WITH CONCRETE TO 6 INCHES ABOVE THE BURY. CONTRACTOR SHALL FILL REMAINING DEPTH WITH NATIVE MATERIAL.
- ABANDON EXISTING VALVE PER DETAIL (W-15) (C-14).
- INSTALL SERVICE SADDLE, AND CORP STOP AND RECONNECT EXISTING WATER SERVICE LINE TO NEW WATER MAIN. EXTEND EXISTING WATER SERVICE AS NEEDED.
- ALL LOCATIONS AND DEPTHS OF UTILITIES ARE APPROXIMATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POTHOLING AND VERIFYING SIZES, DEPTHS, AND LOCATIONS OF ALL UTILITIES. ANY CHANGES TO THESE PLANS AND SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER OR OWNER REPRESENTATIVE.
- REPLACE EXISTING WATER METER BOX PER DETAIL (W-25) (C-13).

BID SET 05/21/2019	BID SET 05/21/2019

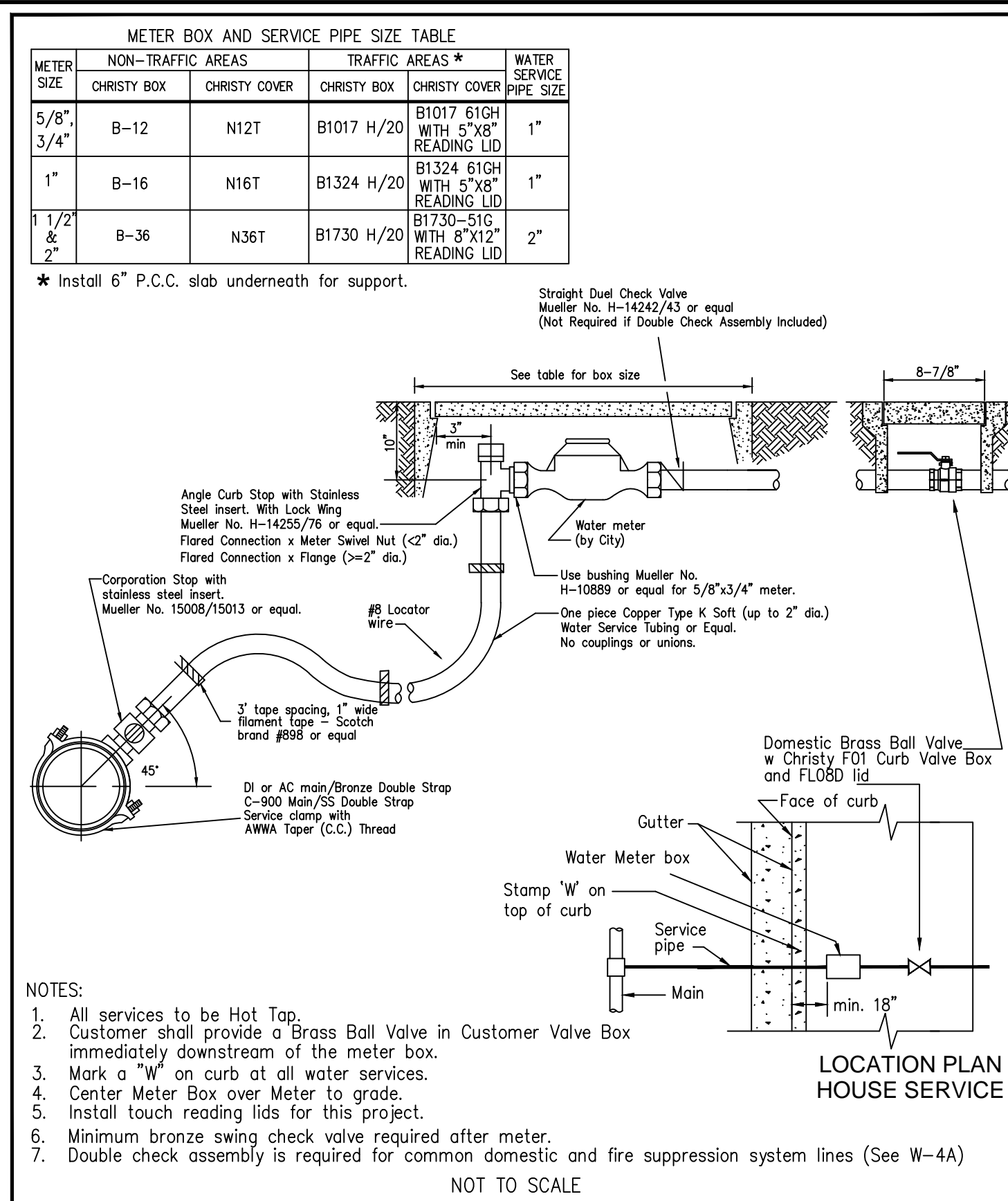
DATE: JUNE 2019	SCALE: AS SHOWN	DRAWN: PL/TA	DESIGNED: JP/NS	APPROVED: NS	JOB NO.: B00053.06	REV	DESCRIPTION	APPRD	DATE
△	△	△	△	△					
VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY									
SHEET NUMBER									
C-12									
14 OF 22									



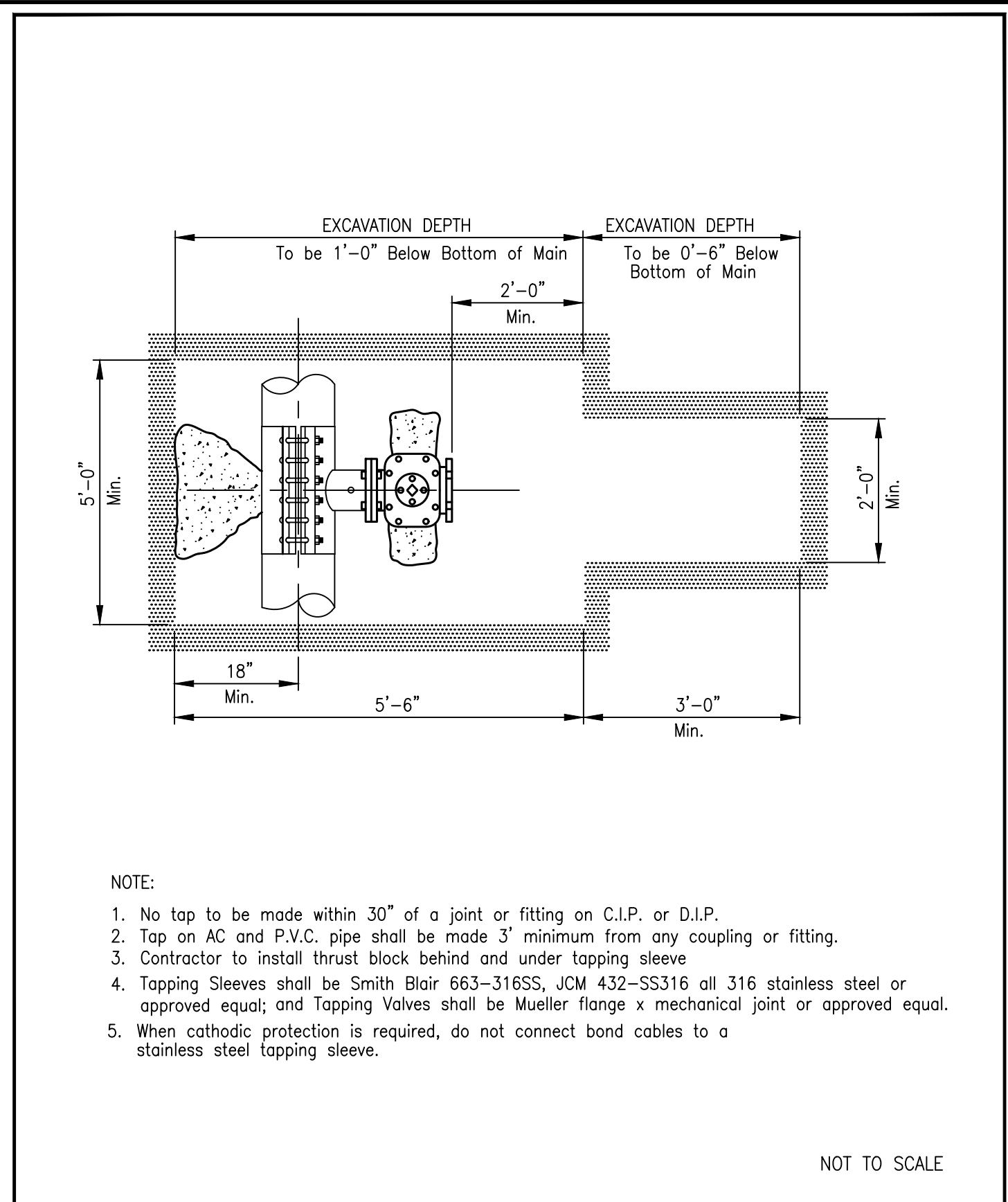
NOT TO SCALE



NOT TO SCALE



NOT TO SCALE



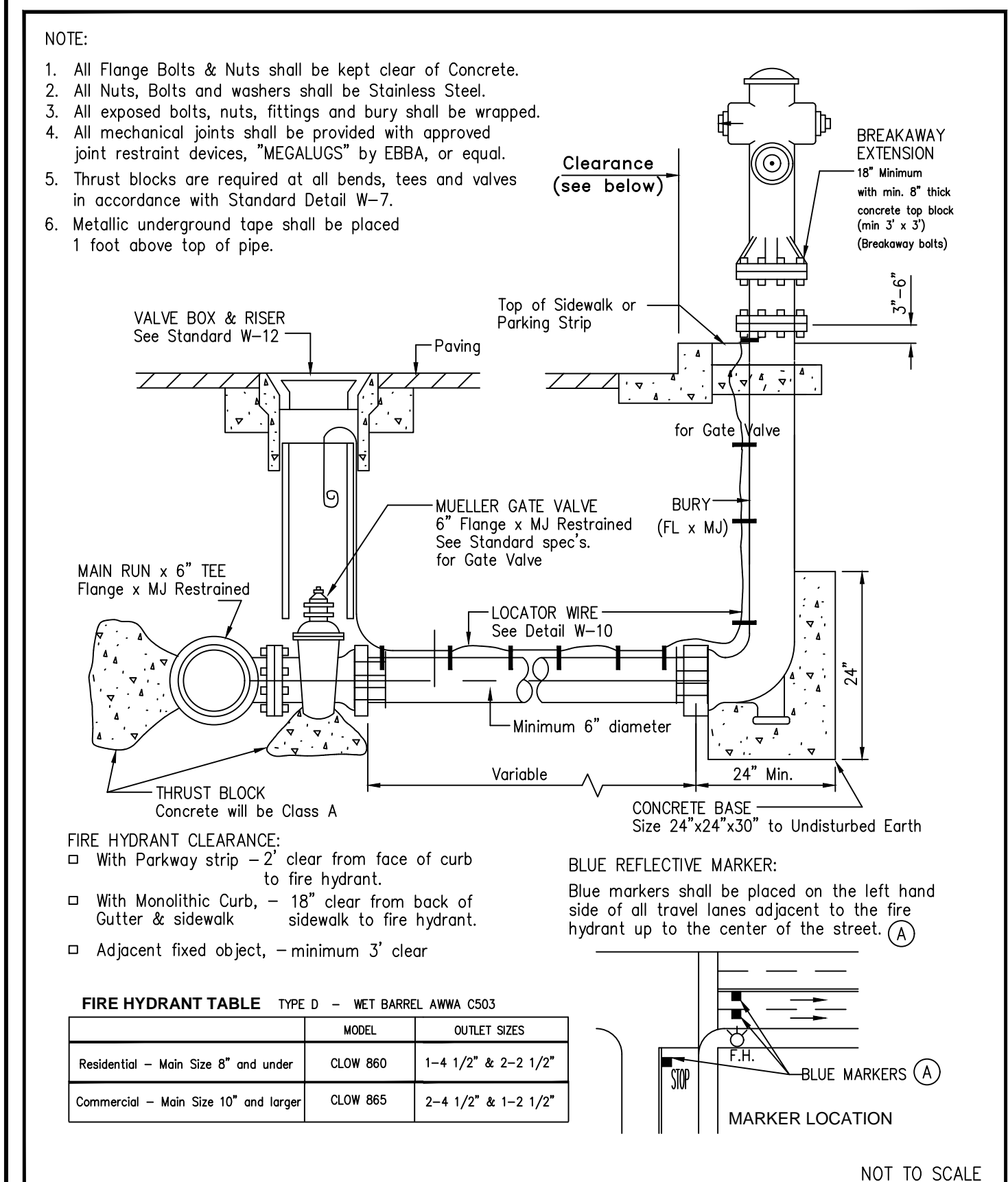
NOT TO SCALE

STANDARD DETAIL	CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS	
	ABOVE GROUND AIR RELEASE VALVE	W - 1
DATE: 08/12/08		

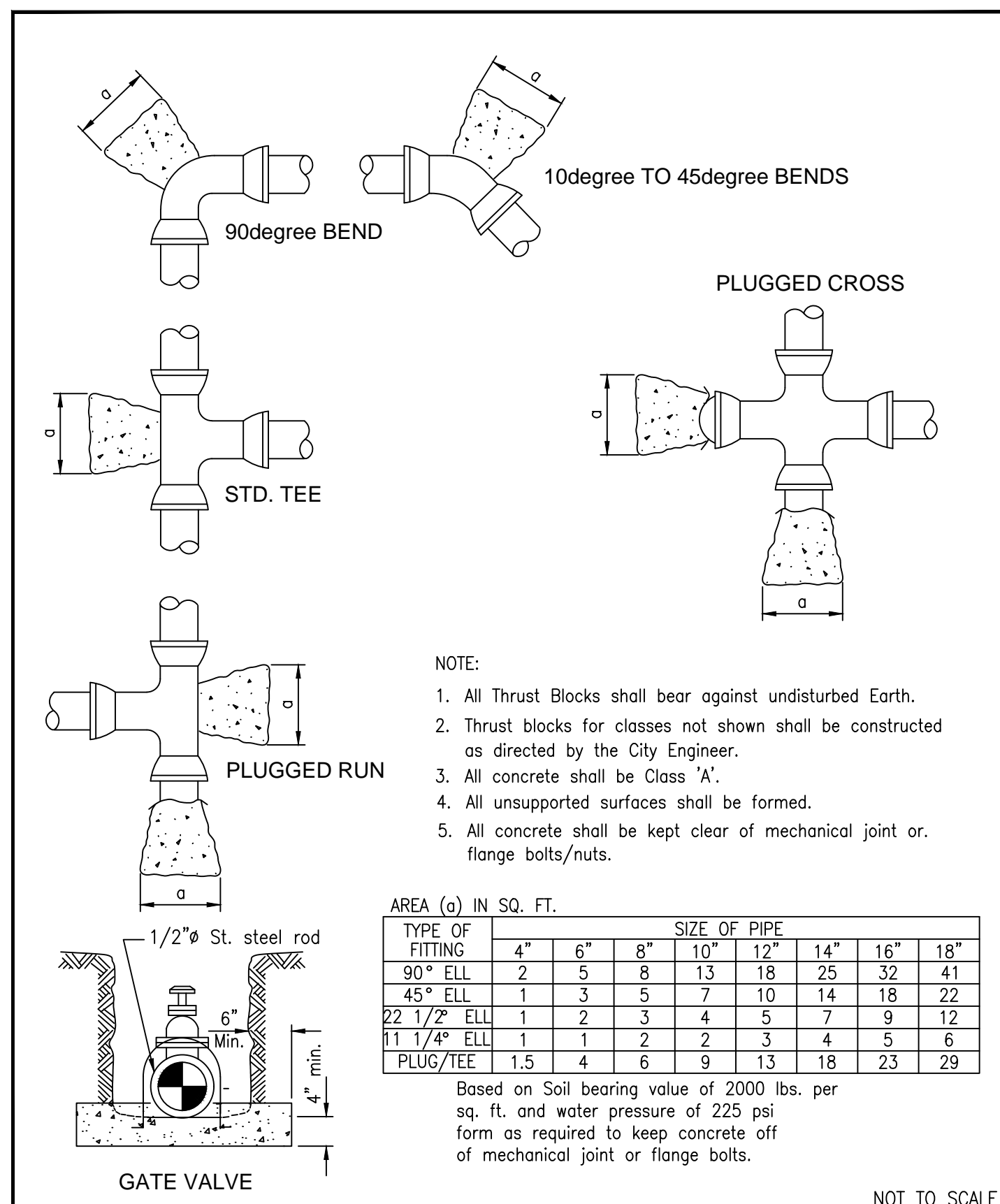
STANDARD DETAIL	CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS	
	2" BLOW OFF	W-2
DATE: 04/01/08		

STANDARD DETAIL	CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS	
	2" DIAMETER and UNDER SERVICE CONNECTION	W - 3
DATE: 10/05/15		

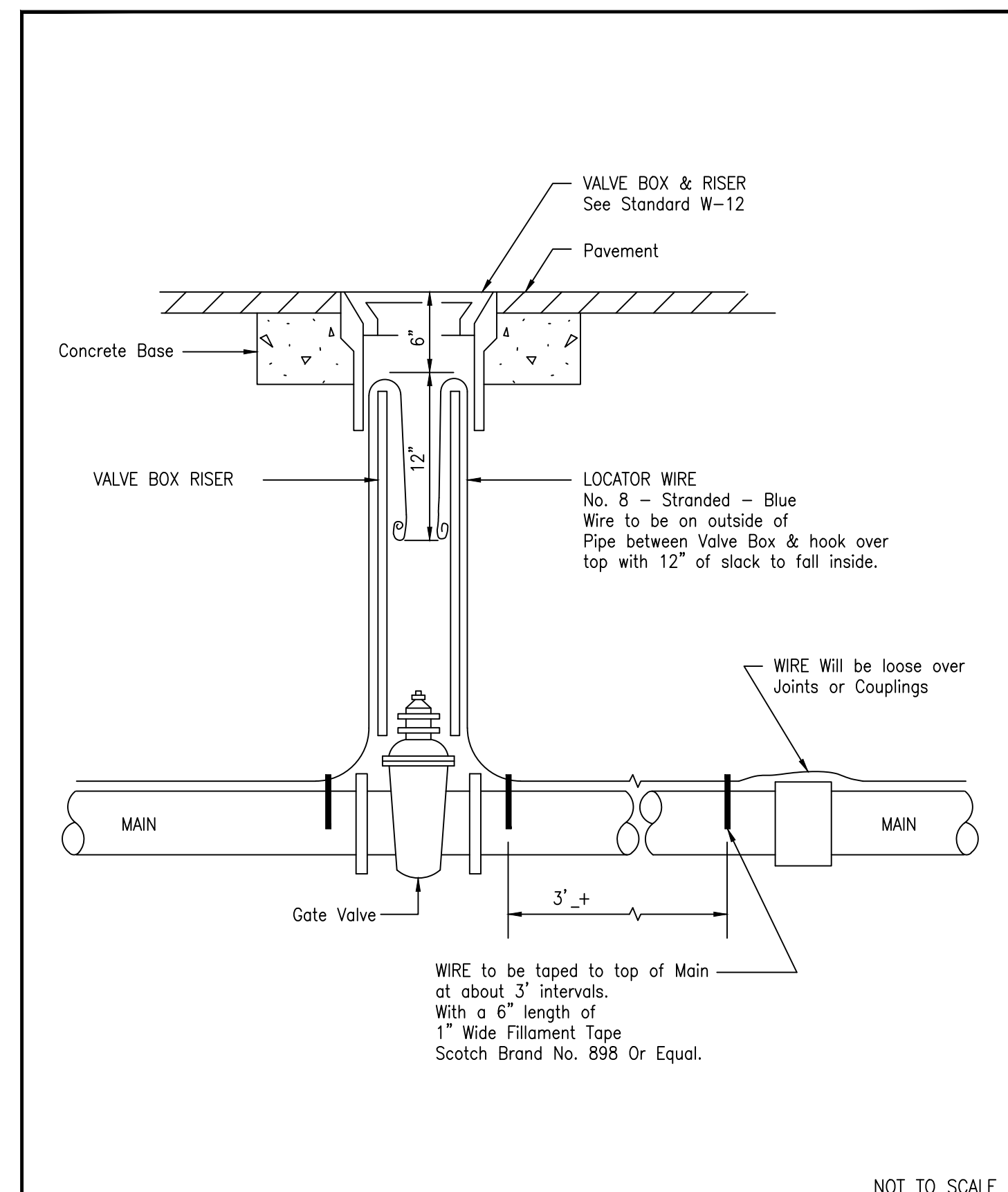
STANDARD DETAIL	CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS	
	EXCAVATION FOR TAPPING SLEEVES & VALVES	W-5
DATE: 06/25/07		



NOT TO SCALE



NOT TO SCALE



NOT TO SCALE

STANDARD DETAIL	CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS	
	FIRE HYDRANT	W - 6
DATE: 04/01/08		

STANDARD DETAIL	CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS	
	THRUST BLOCKS	W-7
DATE: 04/01/08		

STANDARD DETAIL	CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS	
	LOCATOR WIRE	W - 9
DATE: 06/25/07		

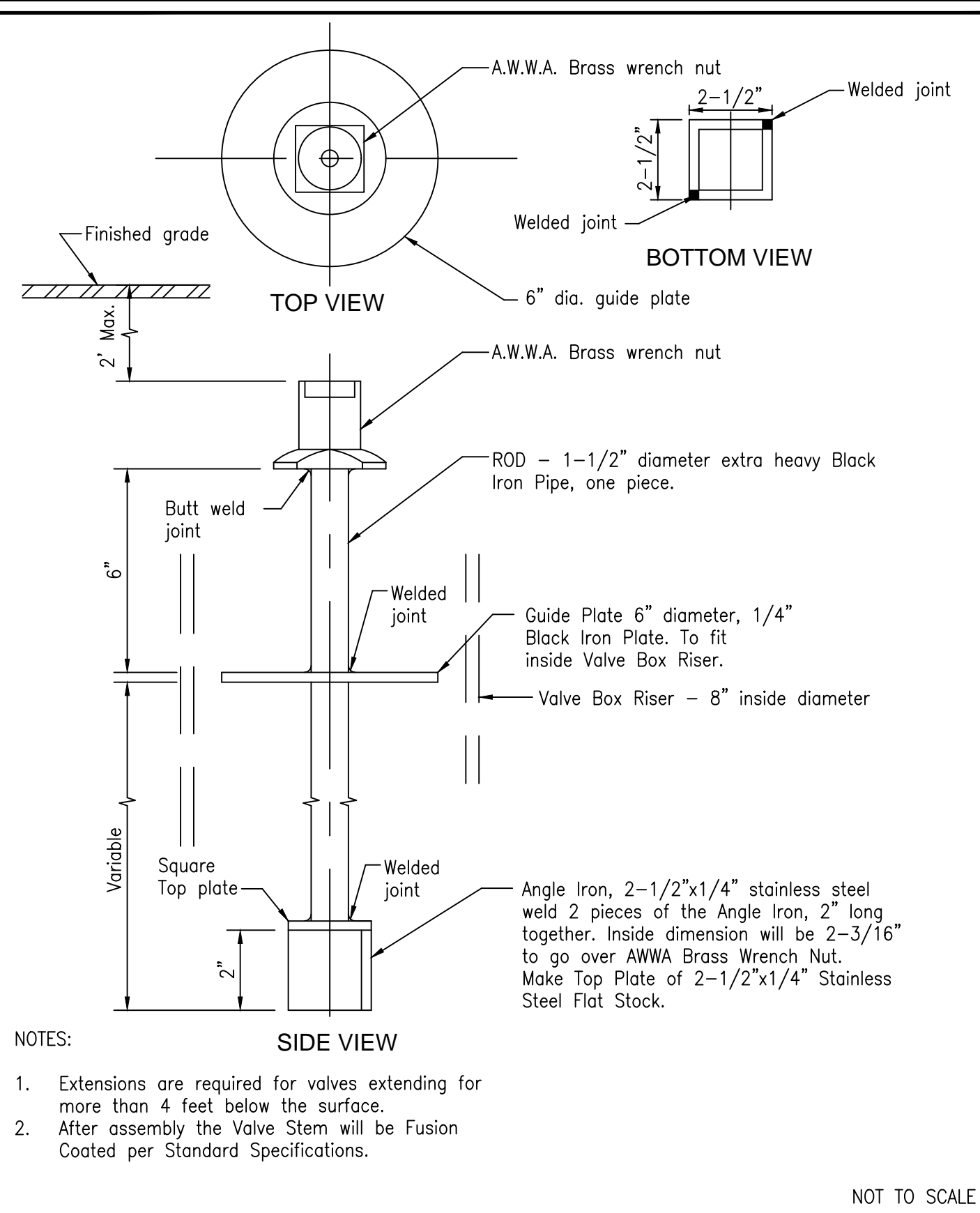
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.

DATE: JUNE 2018
SCALE: AS SHOWN
DRAWN: PL/TA
DESIGNED: J/PNS
APPROVED: NS
JOB NO.: B60053.06
REV

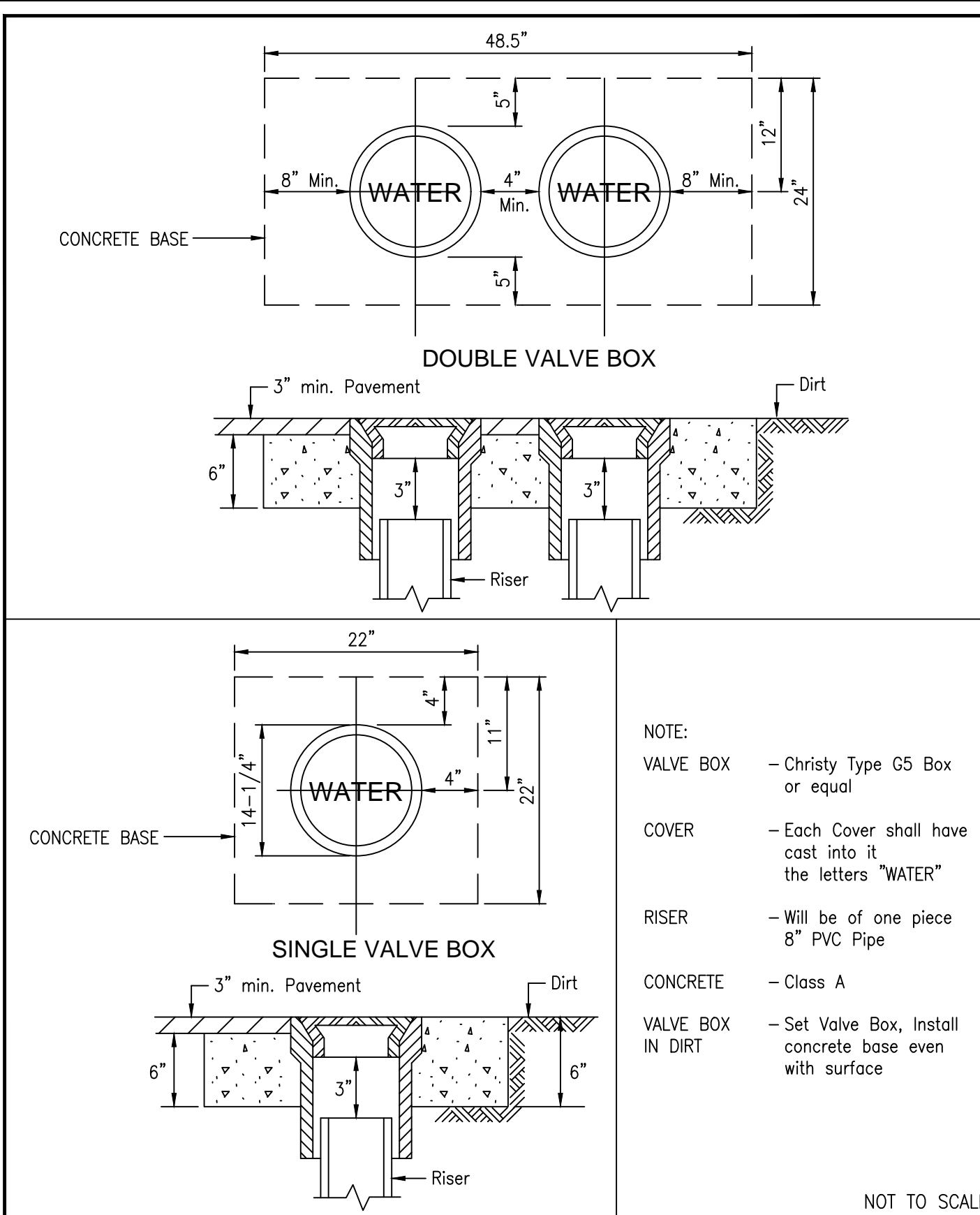
REGISTERED PROFESSIONAL ENGINEER
QUAN TRAN P. N. SUTHERLAND
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
NELSON J. SCHWABER
CIVIL
STATE OF CALIFORNIA

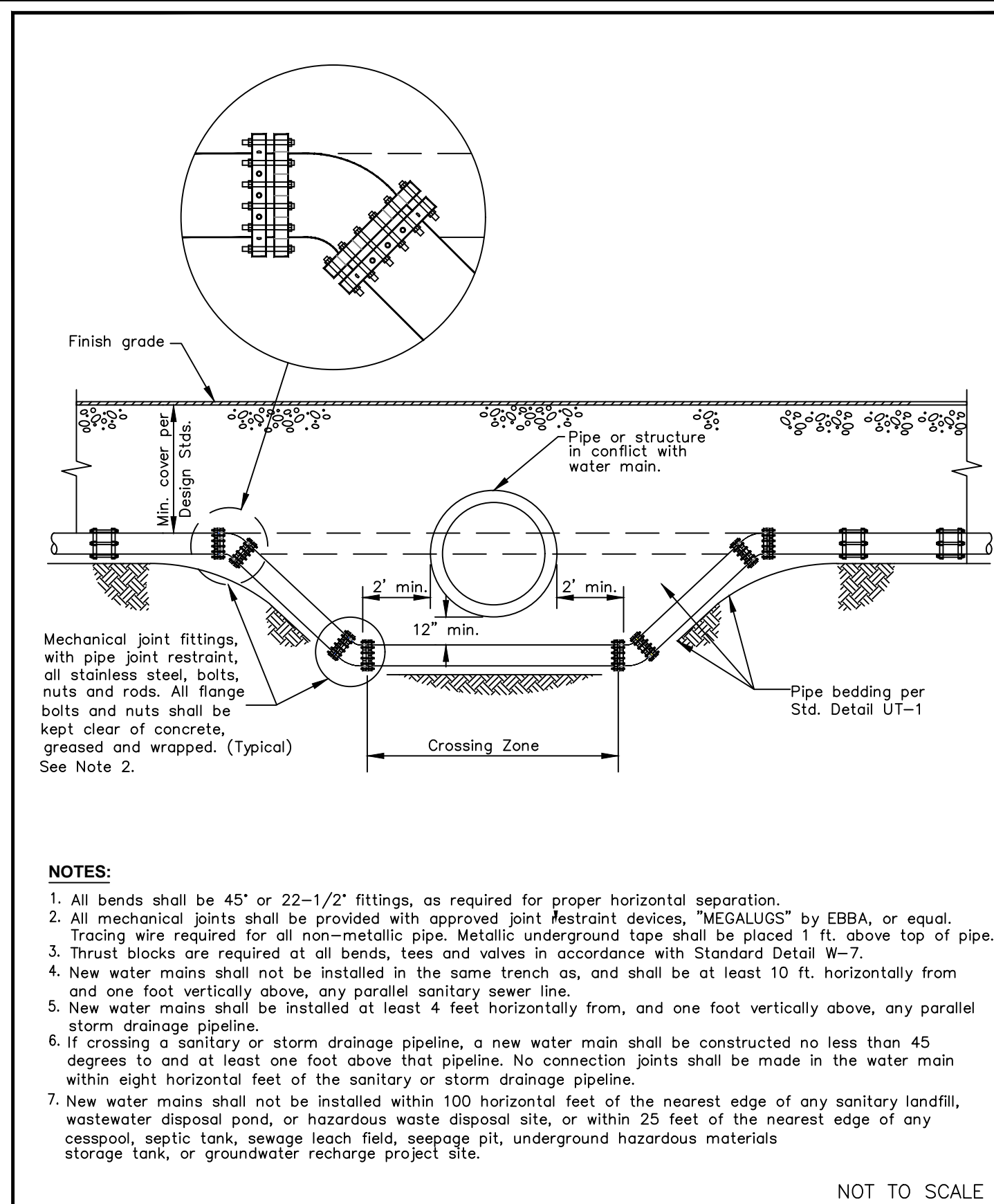
SHEET NUMBER
C-13
20 OF 22



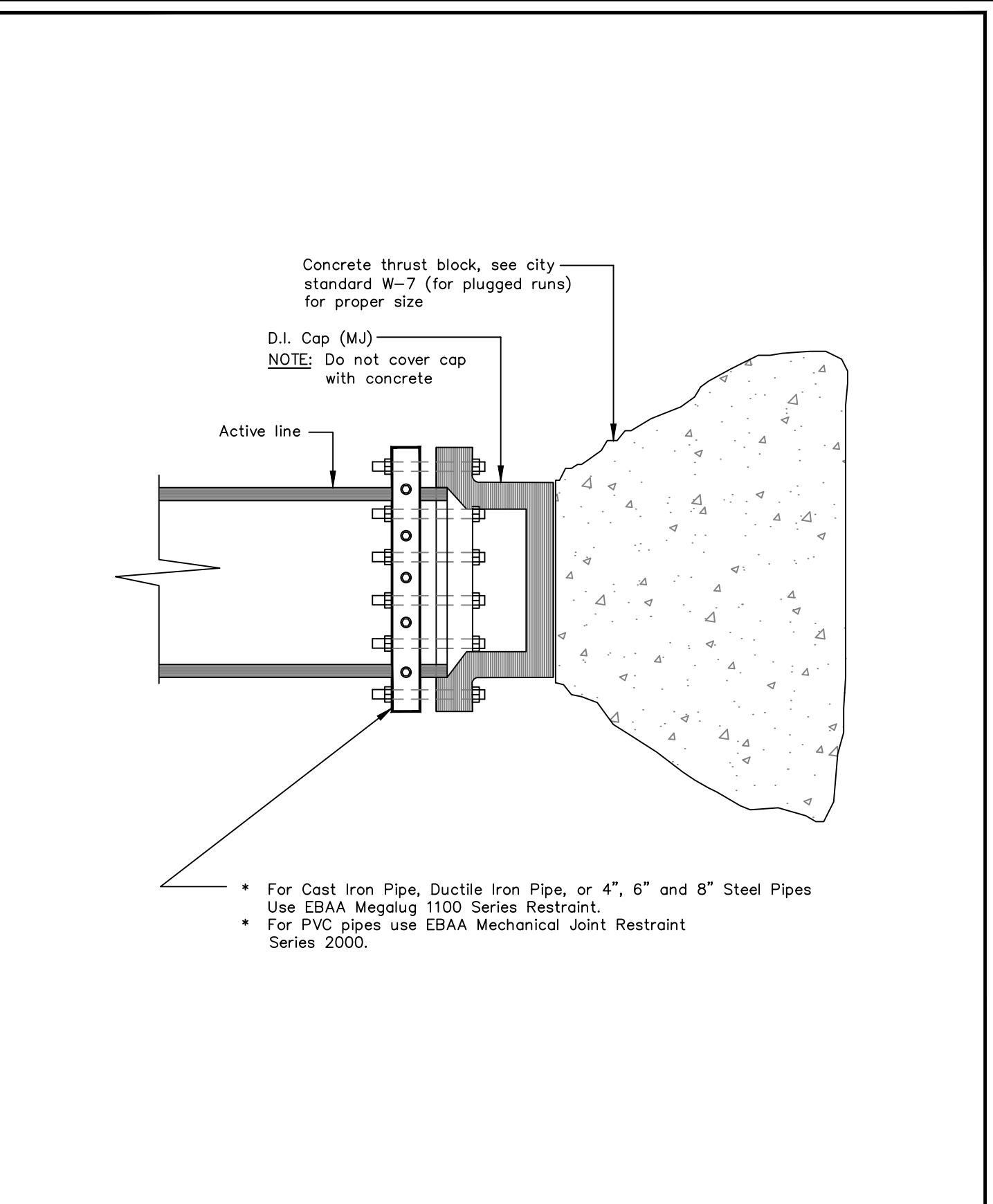
STANDARD DETAIL	CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS	
	VALVE STEM EXTENSION	W - 10
DATE: 06/25/07		



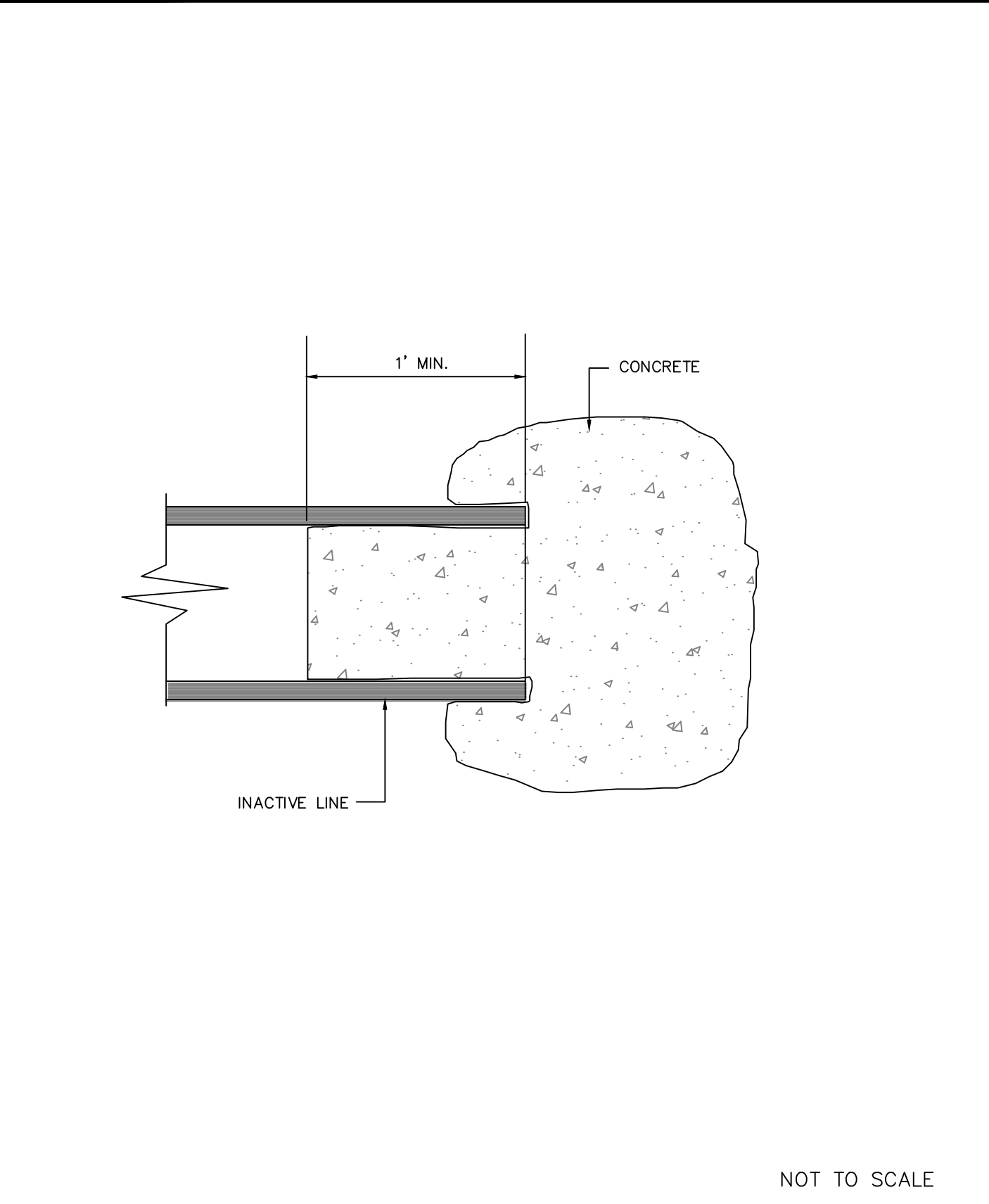
STANDARD DETAIL	CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS	
	VALVE BOX & RISER	W-11
DATE: 04/01/08		



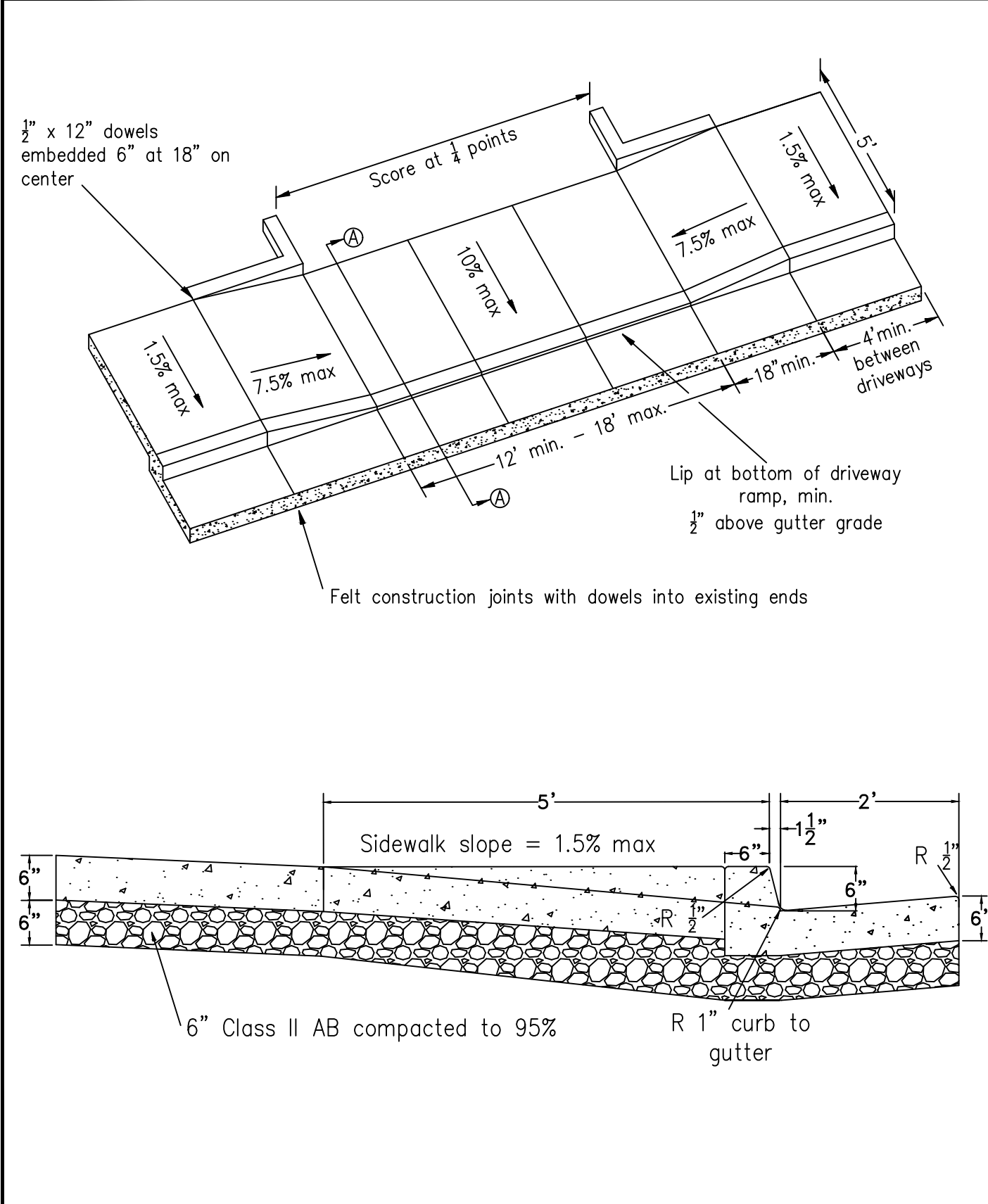
STANDARD DETAIL	CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS	
	WATER MAIN INSTALLATION AND PIPE LOWERING DETAIL	W-12
DATE: 06/25/07		



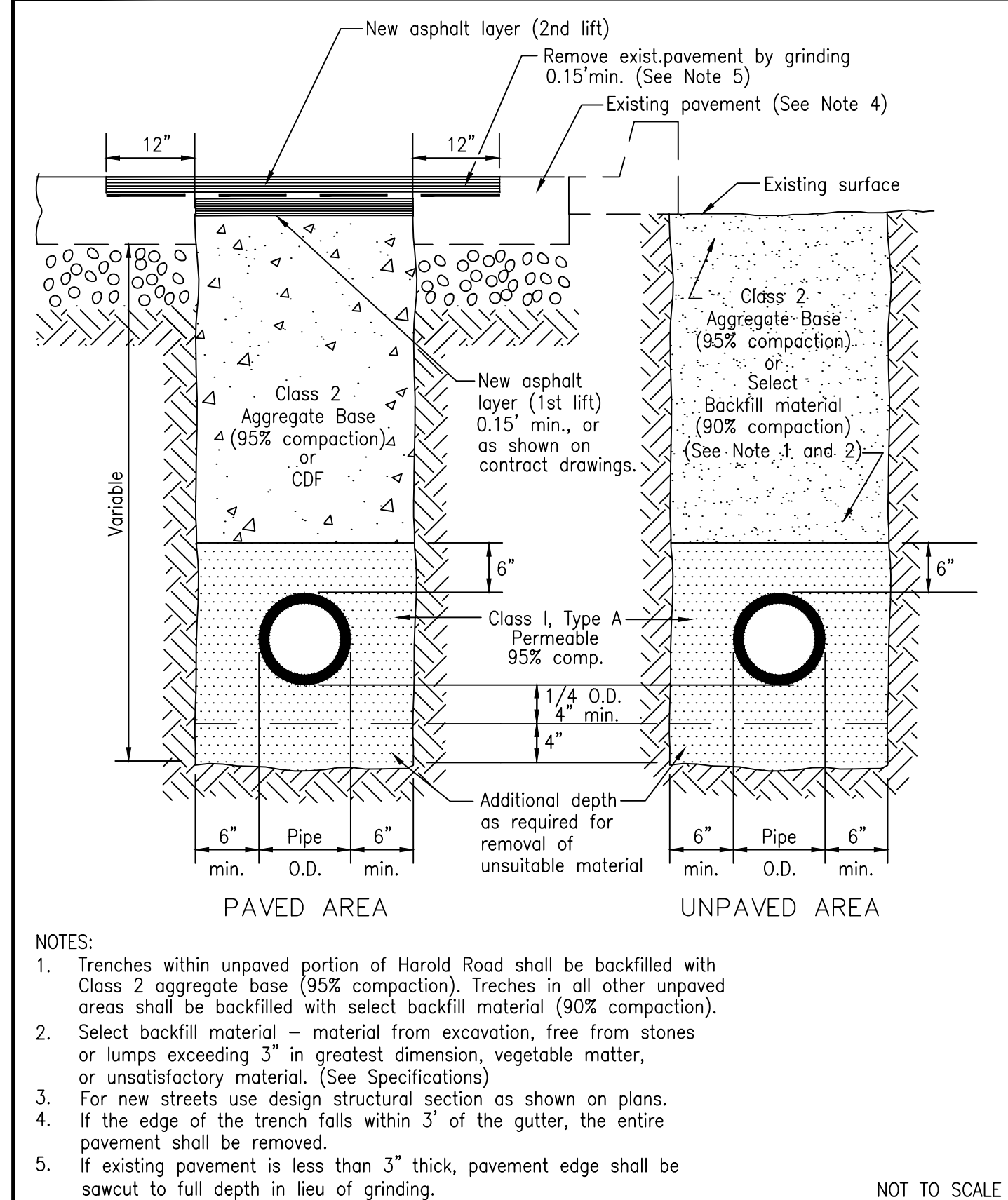
STANDARD DETAIL	CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS	
	CAPPING ACTIVE LINE (FOR EXISTING PLAIN END PIPE)	W-13
DATE: 06/25/07		



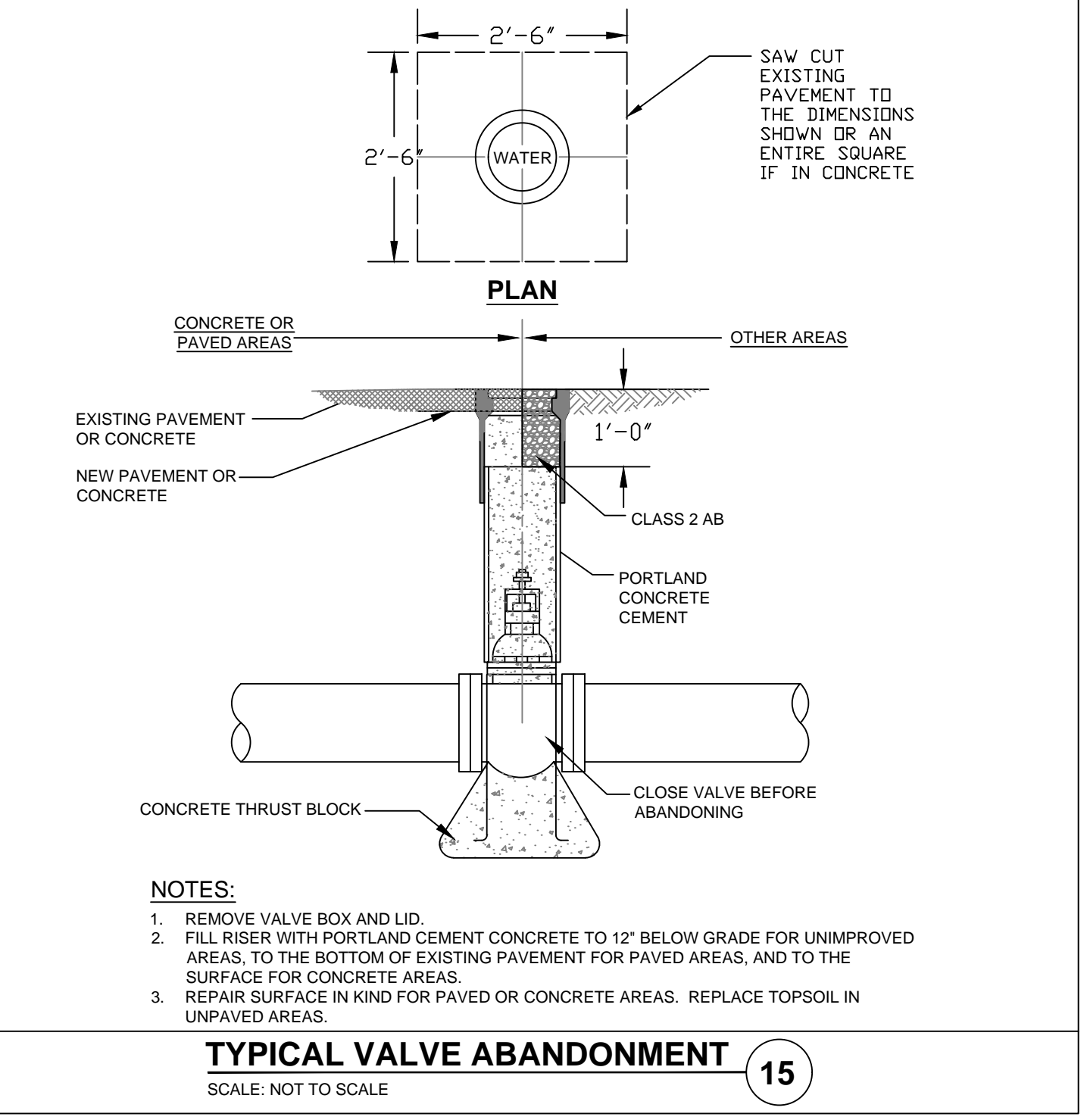
STANDARD DETAIL	CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS	
	CUT AND PLUG INACTIVE LINE	W-14
DATE: 06/25/07		



STANDARD DETAIL	CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS	
	RESIDENTIAL DRIVEWAY DETAIL	C-1
DATE: 07/08/15		



STANDARD DETAIL (MODIFIED)	CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS	
	UTILITY TRENCH DETAIL (MODIFIED)	UT-1
DATE: 06/25/07		



STANDARD DETAIL (MODIFIED)	CITY OF BRISBANE DEPARTMENT OF PUBLIC WORKS	
	UTILITY TRENCH DETAIL (MODIFIED)	UT-1
DATE: 06/25/07		

DATE: JUNE 2018	SCALE: AS SHOWN	DRAWN: PL/TA	DESIGNED: JP/NS	APPROVED: NS	JOB NO.: B00953.06	REV	DATE	APPRD	DESCRIPTION
△	△	△	△	△	△				
VERIFY SCALE	BAR IS ONE INCH ON ORIGINAL DRAWING.	1"	0	IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY					
SHEET NUMBER	C-14								
	21 OF 22								

SCHEDULE OF WATER METERS AND SERVICE CONNECTIONS

SERVICE ADDRESS	METER SIZE	NEW SERVICE SIZE	PROPOSED IMPROVEMENT	METER LOCATION (TRAFFIC/NON-TRAFFIC)
88 BEATRICE RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
205/07 KINGS RD	3/4"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
209 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
221 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
237 KINGS RD	5/8"	1"	INSTALL NEW SERVICE	TRAFFIC
245 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
250 KINGS RD	5/8"	1"	INSTALL NEW SERVICE	NON-TRAFFIC
253 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
261 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
262 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
264 KINGS RD	5/8"	1"	INSTALL NEW SERVICE	NON-TRAFFIC
269 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
280 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
292 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
303 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
306 KINGS RD	1"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
310 KINGS RD	1"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
314 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
315 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
317 KINGS RD	1"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
320 KINGS RD	1"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
323 KINGS RD	1"	--	RECONNECT EX. SERVICE TO N. MAIN	TRAFFIC
326 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	TRAFFIC
333 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	TRAFFIC
334 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
338 KINGS RD	5/8"	1"	INSTALL NEW SERVICE	NON-TRAFFIC
339 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
340 KINGS RD	3/4"	1"	INSTALL NEW SERVICE	NON-TRAFFIC
345 KINGS RD	1"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
350 KINGS RD	1"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
353 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
359 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	TRAFFIC
360 KINGS RD	1"	1"	INSTALL NEW SERVICE	TRAFFIC
365 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	TRAFFIC

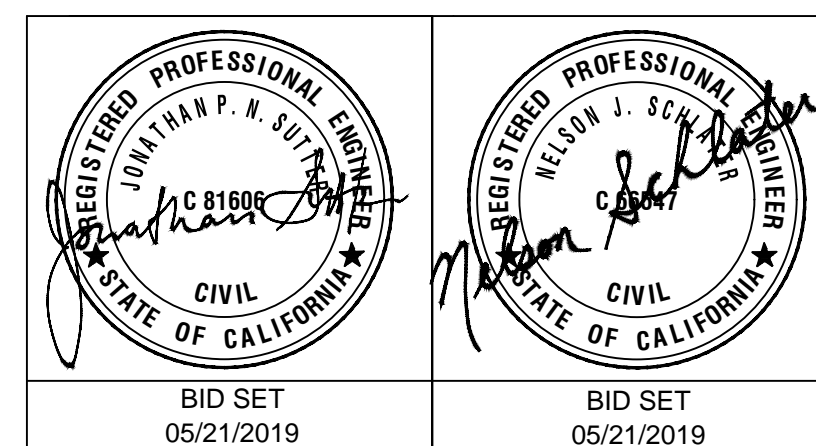
SERVICE ADDRESS	METER SIZE	NEW SERVICE SIZE	PROPOSED IMPROVEMENT	METER LOCATION (TRAFFIC/NON-TRAFFIC)
372 KINGS RD	1"	--	RECONNECT EX. SERVICE TO N. MAIN	TRAFFIC
373 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	TRAFFIC
381 KINGS RD	5/8"	1"	INSTALL NEW SERVICE	NON-TRAFFIC (RELOCATE)
382 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
405 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
421 KINGS RD	1"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
433 KINGS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	TRAFFIC
434 KINGS RD	3/4"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
450 KINGS RD	1"	1"	INSTALL NEW SERVICE	NON-TRAFFIC
770 HUMBOLDT RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
820 HUMBOLDT RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
822 HUMBOLDT RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
834 HUMBOLDT RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
4 MARGARET RD	5/8"	1"	INSTALL NEW SERVICE	NON-TRAFFIC
8 MARGARET RD	5/8"	1"	INSTALL NEW SERVICE	NON-TRAFFIC
10 MARGARET RD	5/8"	1"	INSTALL NEW SERVICE	NON-TRAFFIC
41 MARGARET RD	5/8"	1"	INSTALL NEW SERVICE	NON-TRAFFIC
45 MARGARET RD	5/8"	1"	INSTALL NEW SERVICE	NON-TRAFFIC
49 MARGARET RD	5/8"	1"	INSTALL NEW SERVICE	NON-TRAFFIC
81 PAUL AVE	5/8"	1"	INSTALL NEW SERVICE	NON-TRAFFIC
91 PAUL AVE	5/8"	1"	INSTALL NEW DOUBLE SERVICE	NON-TRAFFIC
93 PAUL AVE	5/8"			NON-TRAFFIC
95 PAUL AVE	5/8"	1"	INSTALL NEW SERVICE	NON-TRAFFIC
200 ANNIS RD	1 1/2"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
243 ANNIS RD	5/8"	1"	INSTALL NEW SERVICE	NON-TRAFFIC (RELOCATE)
250 ANNIS RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
260 ANNIS RD	3/4"	--	RECONNECT EX. SERVICE TO N. MAIN	TRAFFIC
100 HAROLD RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
200 HAROLD RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
301 HAROLD RD	5/8"	1"	INSTALL NEW SERVICE	TRAFFIC (RELOCATE)
401 HAROLD RD	5/8"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
500 HAROLD RD	3/4"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC
800 HAROLD RD	3/4"	--	RECONNECT EX. SERVICE TO N. MAIN	NON-TRAFFIC

ABBREVIATION:

-- = EXISTING SERVICE SIZE

DATE: JUNE 2019	SCALE: AS SHOWN	DRAWN: PL/TA	DESIGNED: JP/NS	APPROVED: NS	JOB NO.: B60053.06
△	△	△	△	△	REV

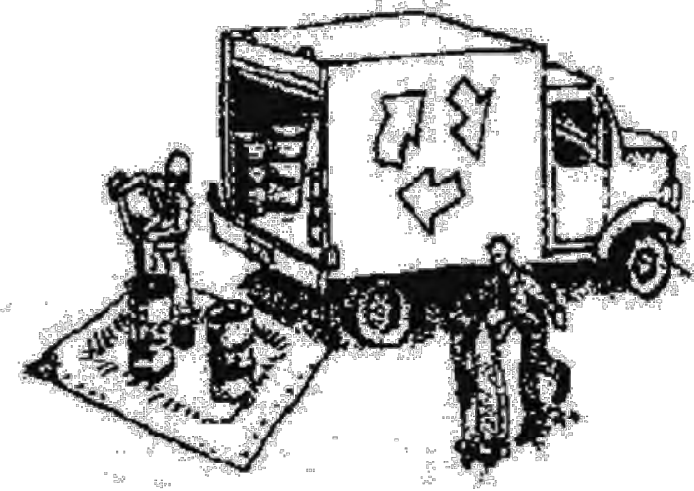
VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY



Construction Best Management Practices (BMPs)

Construction projects are required to implement the stormwater best management practices (BMP) on this page, as they apply to your project, all year long.

Materials & Waste Management



Non-Hazardous Materials

- Berm and cover stockpiles of sand, dirt or other construction material with tarps when rain is forecast or if not actively being used within 14 days.
- Use (but don't overuse) reclaimed water for dust control.

Hazardous Materials

- Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, county, state and federal regulations.
- Store hazardous materials and wastes in water tight containers, store in appropriate secondary containment, and cover them at the end of every work day or during wet weather or when rain is forecast.
- Follow manufacturer's application instructions for hazardous materials and be careful not to use more than necessary. Do not apply chemicals outdoors when rain is forecast within 24 hours.
- Arrange for appropriate disposal of all hazardous wastes.

Waste Management

- Cover waste disposal containers securely with tarps at the end of every work day and during wet weather.
- Check waste disposal containers frequently for leaks and to make sure they are not overfilled. Never hose down a dumpster on the construction site.
- Clean or replace portable toilets, and inspect them frequently for leaks and spills.
- Dispose of all wastes and debris properly. Recycle materials and wastes that can be recycled (such as asphalt, concrete, aggregate base materials, wood, gyp board, pipe, etc.)
- Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste.

Construction Entrances and Perimeter

- Establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from site and tracking off site.
- Sweep or vacuum any street tracking immediately and secure sediment source to prevent further tracking. Never hose down streets to clean up tracking.

Equipment Management & Spill Control



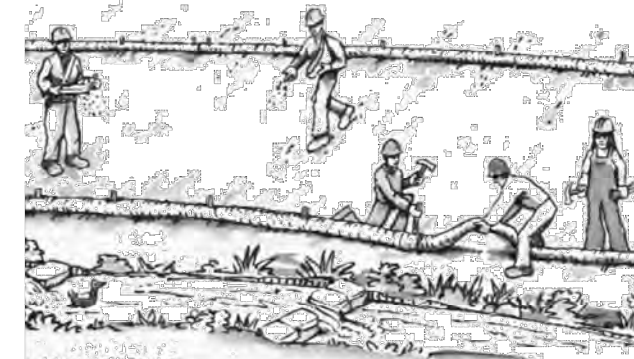
Maintenance and Parking

- Designate an area, fitted with appropriate BMPs, for vehicle and equipment parking and storage.
- Perform major maintenance, repair jobs, and vehicle and equipment washing off site.
- If refueling or vehicle maintenance must be done onsite, work in a bermed area away from storm drains and over a drip pan or drop cloths big enough to collect fluids. Recycle or dispose of fluids as hazardous waste.
- If vehicle or equipment cleaning must be done onsite, clean with water only in a bermed area that will not allow rinse water to run into gutters, streets, storm drains, or surface waters.
- Do not clean vehicle or equipment onsite using soaps, solvents, degreasers, or steam cleaning equipment.

Spill Prevention and Control

- Keep spill cleanup materials (e.g., rags, absorbents and cat litter) available at the construction site at all times.
- Inspect vehicles and equipment frequently for and repair leaks promptly. Use drip pans to catch leaks until repairs are made.
- Clean up spills or leaks immediately and dispose of cleanup materials properly.
- Do not hose down surfaces where fluids have spilled. Use dry cleanup methods (absorbent materials, cat litter, and/or rags).
- Sweep up spilled dry materials immediately. Do not try to wash them away with water, or bury them.
- Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- Report significant spills immediately. You are required by law to report all significant releases of hazardous materials, including oil. To report a spill: 1) Dial 911 or your local emergency response number, 2) Call the Governor's Office of Emergency Services Warning Center, (800) 852-7550 (24 hours).

Earthmoving



- Schedule grading and excavation work during dry weather.
- Stabilize all denuded areas, install and maintain temporary erosion controls (such as erosion control fabric or bonded fiber matrix) until vegetation is established.
- Remove existing vegetation only when absolutely necessary, and seed or plant vegetation for erosion control on slopes or where construction is not immediately planned.
- Prevent sediment from migrating offsite and protect storm drain inlets, gutters, ditches, and drainage courses by installing and maintaining appropriate BMPs, such as fiber rolls, silt fences, sediment basins, gravel bags, berms, etc.
- Keep excavated soil on site and transfer it to dump trucks on site, not in the streets.

Contaminated Soils

- If any of the following conditions are observed, test for contamination and contact the Regional Water Quality Control Board:
 - Unusual soil conditions, discoloration, or odor.
 - Abandoned underground tanks.
 - Abandoned wells
 - Buried barrels, debris, or trash.

Paving/Asphalt Work



- Avoid paving and seal coating in wet weather or when rain is forecast, to prevent materials that have not cured from contacting stormwater runoff.
- Cover storm drain inlets and manholes when applying seal coat, tack coat, slurry seal, fog seal, etc.
- Collect and recycle or appropriately dispose of excess abrasive gravel or sand. Do NOT sweep or wash it into gutters.
- Do not use water to wash down fresh asphalt concrete pavement.

Sawcutting & Asphalt/Concrete Removal

- Protect nearby storm drain inlets when saw cutting. Use filter fabric, catch basin inlet filters, or gravel bags to keep slurry out of the storm drain system.
- Shovel, absorb, or vacuum saw-cut slurry and dispose of all waste as soon as you are finished in one location or at the end of each work day (whichever is sooner!).
- If sawcut slurry enters a catch basin, clean it up immediately.

Concrete, Grout & Mortar Application



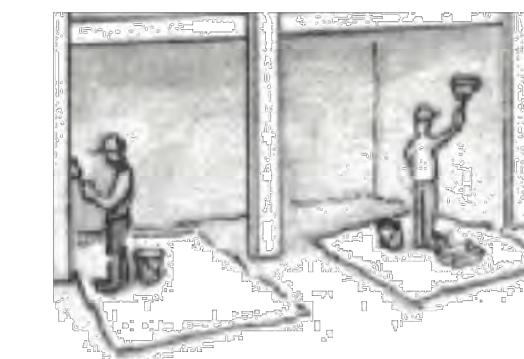
- Store concrete, grout, and mortar away from storm drains or waterways, and on pallets under cover to protect them from rain, runoff, and wind.
- Wash out concrete equipment/trucks offsite or in a designated washout area, where the water will flow into a temporary waste pit, and in a manner that will prevent leaching into the underlying soil or onto surrounding areas. Let concrete harden and dispose of as garbage.
- When washing exposed aggregate, prevent washwater from entering storm drains. Block any inlets and vacuum gutters, hose washwater onto dirt areas, or drain onto a bermed surface to be pumped and disposed of properly.

Landscaping



- Protect stockpiled landscaping materials from wind and rain by storing them under tarps all year-round.
- Stack bagged material on pallets and under cover.
- Discontinue application of any erodible landscape material within 2 days before a forecast rain event or during wet weather.

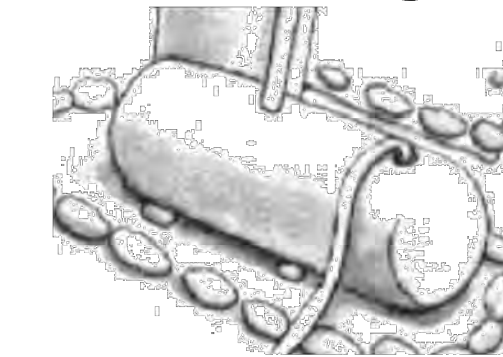
Painting & Paint Removal



Painting Cleanup and Removal

- Never clean brushes or rinse paint containers into a street, gutter, storm drain, or stream.
- For water-based paints, paint out brushes to the extent possible, and rinse into a drain that goes to the sanitary sewer. Never pour paint down a storm drain.
- For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of excess liquids as hazardous waste.
- Paint chips and dust from non-hazardous dry stripping and sand blasting may be swept up or collected in plastic drop cloths and disposed of as trash.
- Chemical paint stripping residue and chips and dust from marine paints or paints containing lead, mercury, or tributyltin must be disposed of as hazardous waste. Lead based paint removal requires a state-certified contractor.

Dewatering

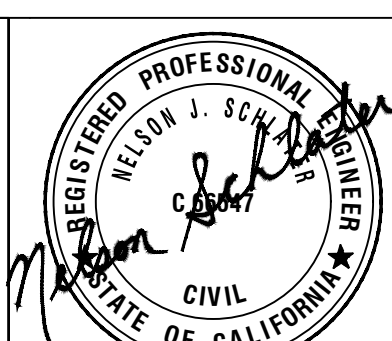
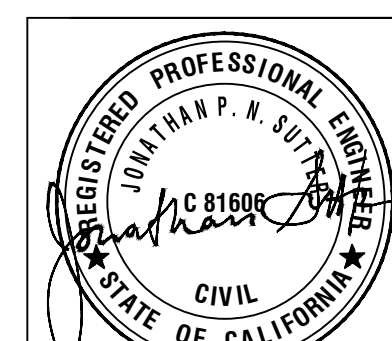


- Discharges of groundwater or captured runoff from dewatering operations must be properly managed and disposed. When possible send dewatering discharge to landscaped area or sanitary sewer. If discharging to the sanitary sewer call your local wastewater treatment plant.
- Divert run-on water from offsite away from all disturbed areas.
- When dewatering, notify and obtain approval from the local municipality before discharging water to a street gutter or storm drain. Filtration or diversion through a basin, tank, or sediment trap may be required.
- In areas of known or suspected contamination, call your local agency to determine whether the ground water must be tested. Pumped groundwater may need to be collected and hauled off-site for treatment and proper disposal.

Storm drain polluters may be liable for fines of up to \$10,000 per day!

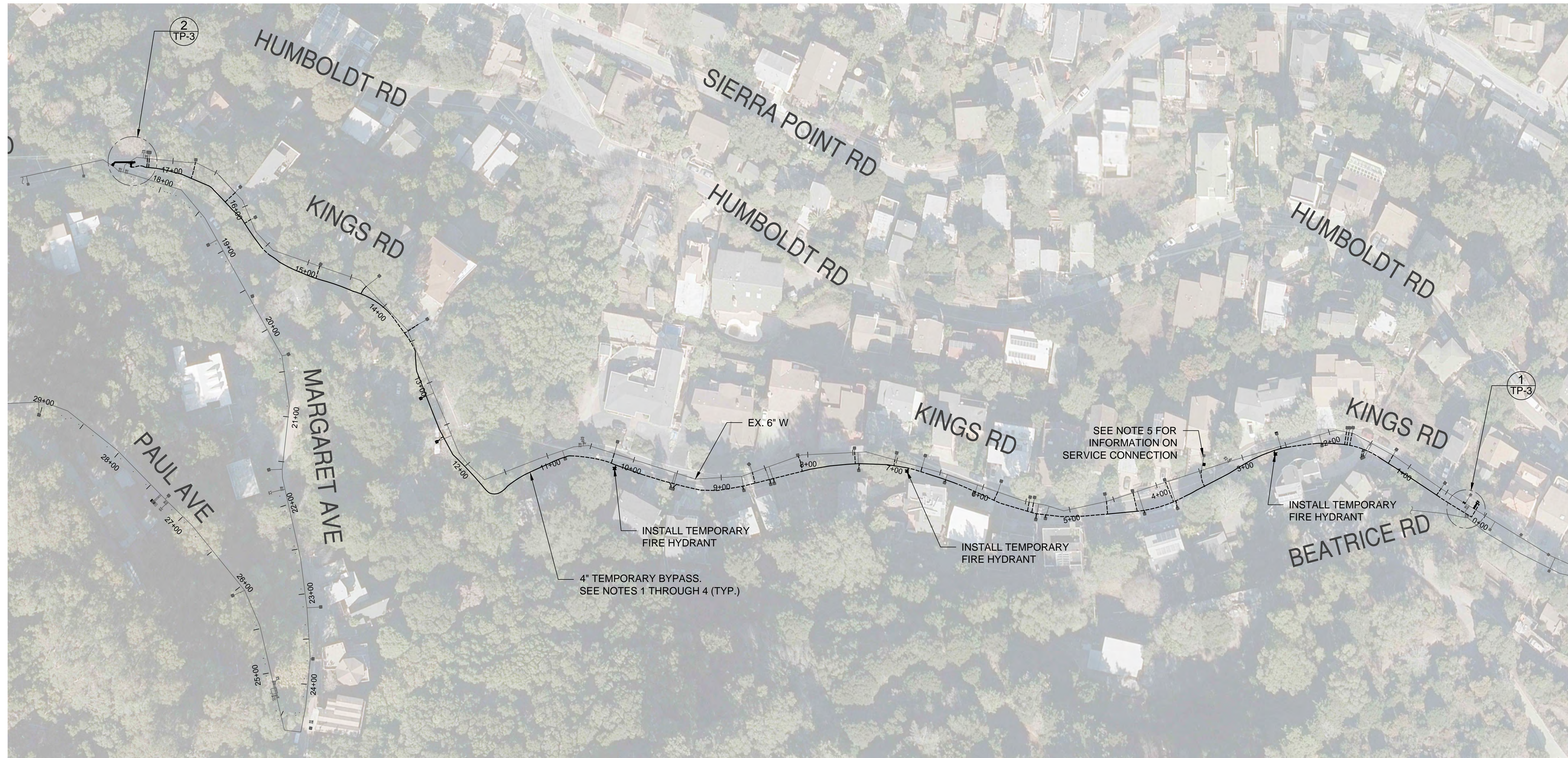
DATE	SCALE	DRAWN	DESIGNED	APPROVED	JOB NO.	DESCRIPTION	APPRD	DATE
JUNE 2019	AS SHOWN	PL/TA	J/PNS	NS	B60053.06	REV		

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY



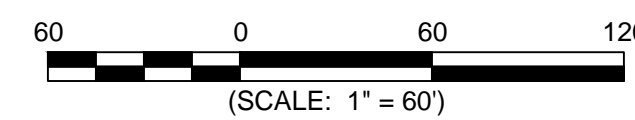
BID SET
05/21/2019

BID SET
05/21/2019



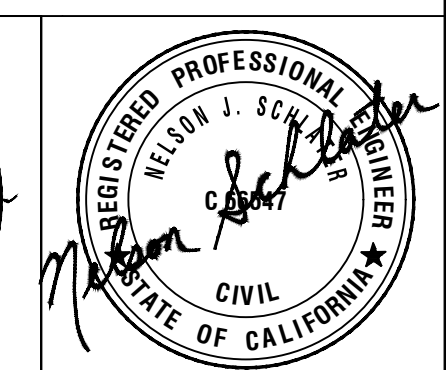
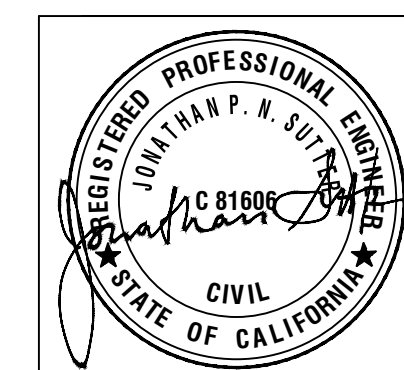
NOTES:

- CONTRACTOR SHALL INSTALL COMPLETE TEMPORARY BYPASS SYSTEM AS SHOWN PRIOR TO CONSTRUCTION OF NEW WATER MAIN IN PHASE WEST-1. CONTRACTOR SHALL ONLY BEGIN CONSTRUCTION OF NEW WATER MAIN AFTER OWNER ACCEPTANCE OF TEMPORARY BYPASS SYSTEM FULLY IN SERVICE, INCLUDING CONNECTION OF ALL TEMPORARY SERVICES TO EXISTING METERS.
- CONTRACTOR SHALL COMPLETE CONSTRUCTION OF THE NEW WATER MAIN SEQUENTIALLY FROM PHASE WEST-1 TO PHASE WEST-2, AS SHOWN. CONTRACTOR SHALL ONLY REMOVE TEMPORARY BYPASS PIPING AND BEGIN CONSTRUCTION OF PHASE WEST-2 AFTER OWNER ACCEPTS PHASE WEST-1 OF NEW WATER MAIN, FULLY IN SERVICE.
- CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE AND PROTECTION OF THE TEMPORARY BYPASS SYSTEM 24-HOURS PER DAY, 7-DAYS PER WEEK WHILE IN SERVICE.
- THE TEMPORARY BYPASS SHALL BE INSTALLED ABOVE GROUND OR BURIED IN A SHALLOW TRENCH AS SHOWN ON THE PAN PER SPECIFICATION SECTION 33 1150.
- FOR WATER METERS LOCATED ON THE SAME SIDE OF THE STREET AS THE TEMPORARY BYPASS, CONTRACTOR SHALL INSTALL TEMPORARY SERVICE THAT CONNECTS TO (E) METER. FOR WATER METERS LOCATED ON THE OPPOSITE SIDE OF THE STREET AS THE TEMPORARY BYPASS, CONTRACTOR SHALL DISCONNECT THE EXISTING SERVICE FROM THE EXISTING MAIN, AND INSTALL A TEMPORARY SERVICE THAT CONNECTS TO THE EXISTING SERVICE AT THE EXISTING MAIN WITH A COUPLING.



LEGEND:

- EXISTING WATER LINE
- ABOVE GROUND TEMPORARY BYPASS
- BELOW GROUND TEMPORARY BYPASS
- PROPOSED WATER LINE



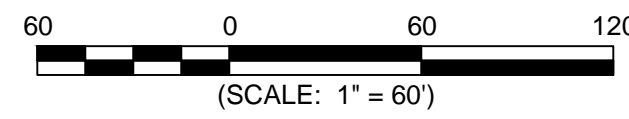
BID SET
05/21/2019

BID SET
05/21/2019

DATE	DESCRIPTION	APPRD	DATE
JUNE 2019	REV		
AS SHOWN	PL/TA		
JPN	NS		
B00053.06	REV		

VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

SHEET NUMBER
TP-1
 19 OF 22



NOTES:

1. CONTRACTOR SHALL INSTALL COMPLETE TEMPORARY BYPASS SYSTEM AS SHOWN PRIOR TO CONSTRUCTION OF NEW WATER MAIN. CONTRACTOR SHALL ONLY BEGIN CONSTRUCTION OF NEW WATER MAIN AFTER OWNER ACCEPTANCE OF TEMPORARY BYPASS SYSTEM FULLY IN SERVICE, INCLUDING CONNECTION OF ALL TEMPORARY SERVICES TO EXISTING METERS.
2. CONTRACTOR SHALL ONLY REMOVE TEMPORARY BYPASS PIPING AFTER OWNER ACCEPTS THE NEW WATER MAIN, FULLY IN SERVICE.
3. CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE AND PROTECTION OF THE TEMPORARY BYPASS SYSTEM 24-HOURS PER DAY, 7-DAYS PER WEEK WHILE IN SERVICE.
4. THE TEMPORARY BYPASS SHALL BE INSTALLED ABOVE GROUND OR BURIED IN A SHALLOW TRENCH AS SHOWN ON THE PLAN PER SPECIFICATION SECTION 33 1150.
5. FOR WATER METERS LOCATED ON THE SAME SIDE OF THE STREET AS THE TEMPORARY BYPASS, CONTRACTOR SHALL INSTALL TEMPORARY SERVICE THAT CONNECTS TO (E) METER. FOR WATER METERS LOCATED ON THE OPPOSITE SIDE OF THE STREET AS THE TEMPORARY BYPASS, CONTRACTOR SHALL DISCONNECT THE EXISTING SERVICE FROM THE EXISTING MAIN, AND INSTALL A TEMPORARY SERVICE THAT CONNECTS TO THE EXISTING SERVICE AT THE EXISTING MAIN WITH A COUPLING.

LEGEND:

- EXISTING WATER LINE
- ABOVE GROUND TEMPORARY BYPASS
- BELOW GROUND TEMPORARY BYPASS

<p>BID SET 05/21/2019</p>	<p>BID SET 05/21/2019</p>
-------------------------------	-------------------------------

eki environment & water
 577 AIRPORT BOULEVARD, SUITE 500
 BURLINGAME, CALIFORNIA 94010-5306
 (650) 292-9100 • FAX (650) 552-9012

FIRE MAIN REPLACEMENT PROJECT - PHASE 2
 BRISBANE, CALIFORNIA
TEMPORARY BYPASS SYSTEM, PHASE EAST,
STA. 55+00 TO 71+38

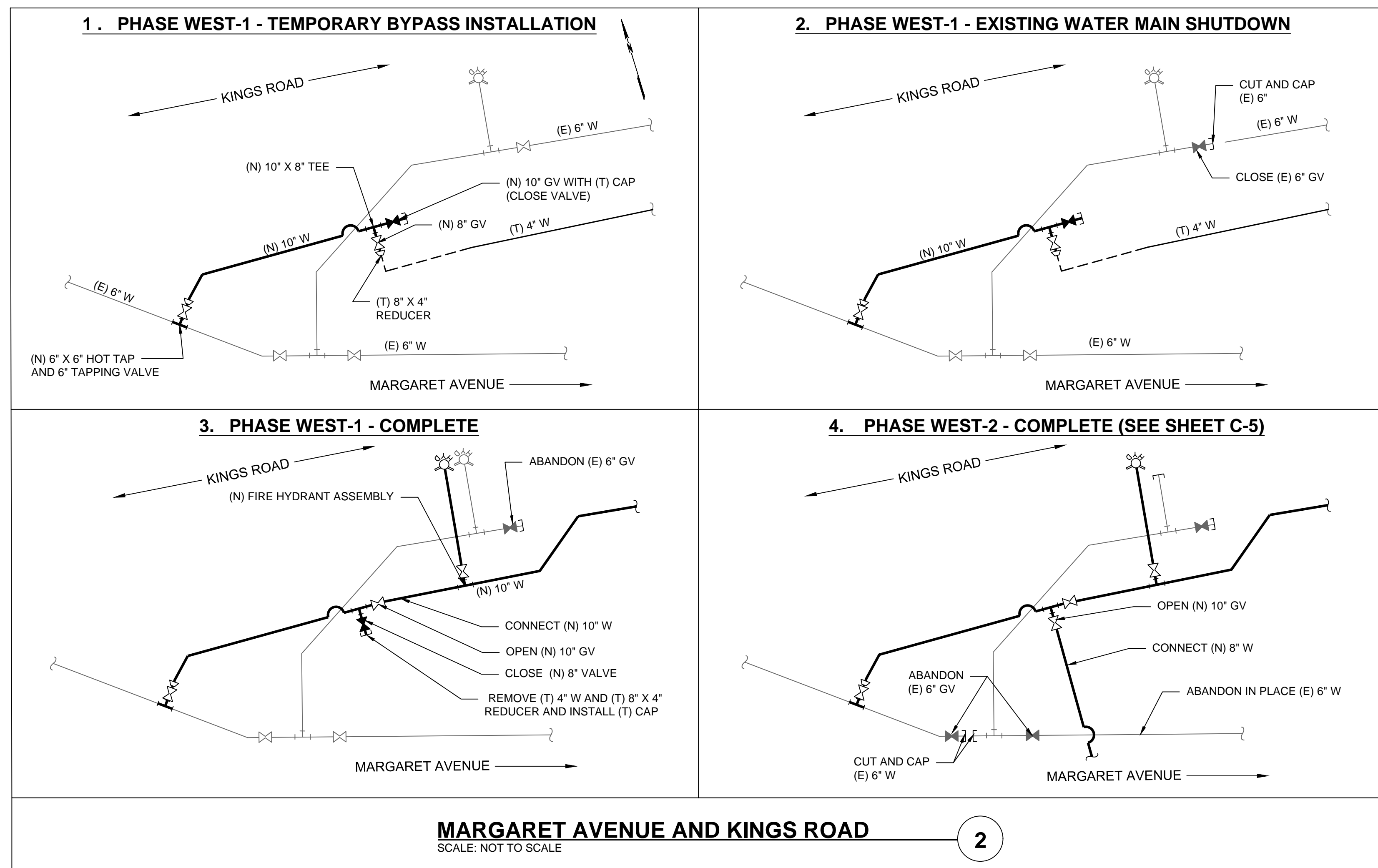
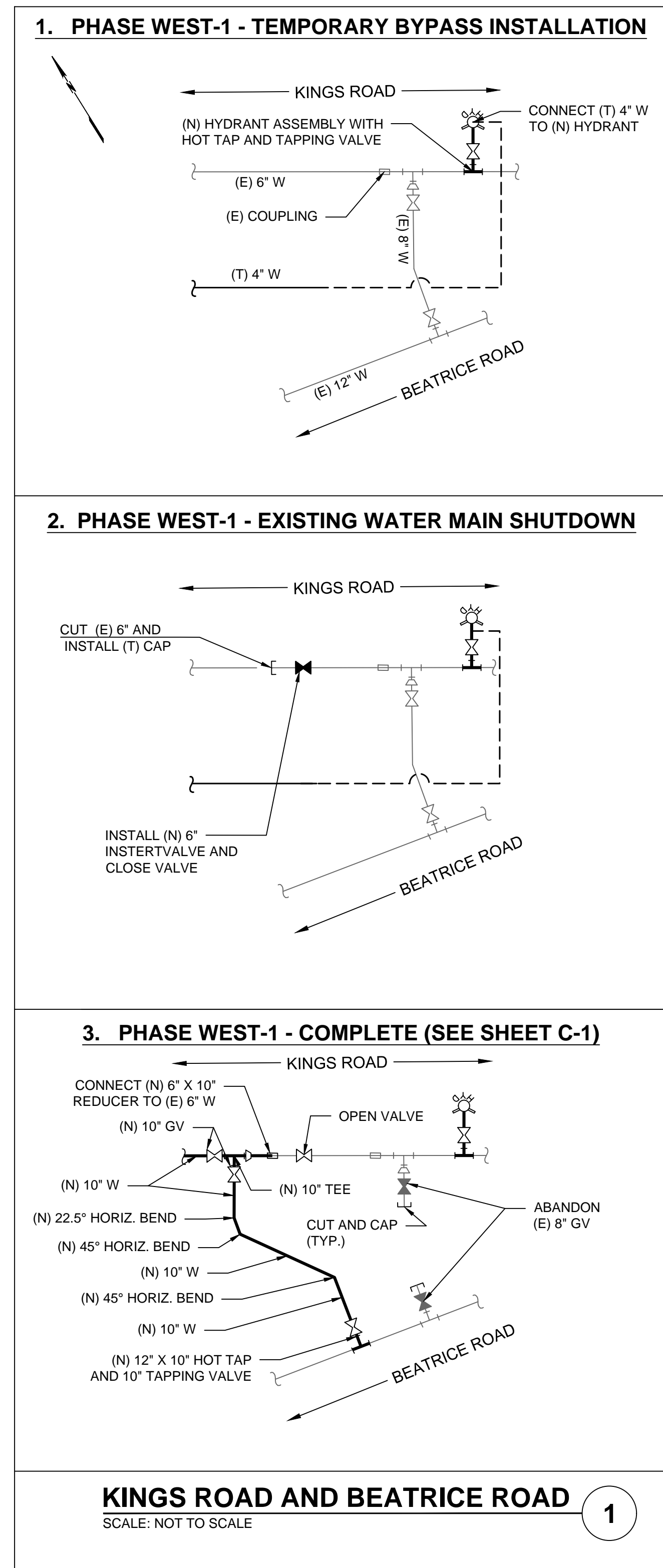
DATE:	JUNE 2019	REV	DATE
SCALE:	AS SHOWN	REV	DATE
DRAWN:	PL/TA	REV	DATE
DESIGNED:	J/PNS	REV	DATE
APPROVED:	NS	REV	DATE
JOB NO.:	B00953.06	REV	DATE
DESCRIPTION		APPRD	DATE
SHEET NUMBER		TP-2	
20 OF 22			

C:\eki_construction\dwgs\B00953.06\B00953.06_TP-2.dwg 5-21-19

DATE:	JUNE 2019	APPR	DATE
SCALE:	AS SHOWN	APPR	DATE
DRAWN:	PL/TA	APPR	DATE
DESIGNED:	JP/NS	APPR	DATE
APPROVED:	NS	APPR	DATE
JOB NO.:	B00953.06	REV	DATE

VERIFY SCALE
 BAR IS ONE INCH ON ORIGINAL DRAWING.
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

SHEET NUMBER
TP-3
 21 OF 22



GENERAL NOTES:

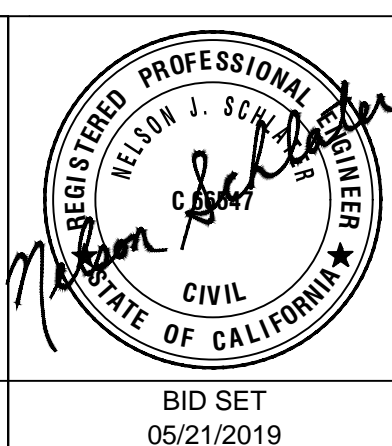
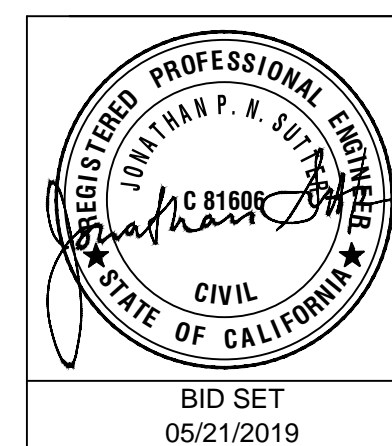
- CONTRACTOR SHALL COMPLETE CONSTRUCTION OF THE NEW WATER MAIN SEQUENTIALLY FROM PHASE WEST-1 TO PHASE WEST-2. DETAILS SHOW THE TRANSITIONS BETWEEN OPERATION OF EXISTING MAIN, TEMPORARY BYPASS, AND NEW MAIN AND THE TRANSITION BETWEEN CONSTRUCTION PHASES.
- WATER SERVICES AND METER BOXES NOT SHOWN ON DETAILS FOR CLARITY.

ABBREVIATIONS:

- (E) EXISTING
 (N) NEW
 (T) TEMPORARY

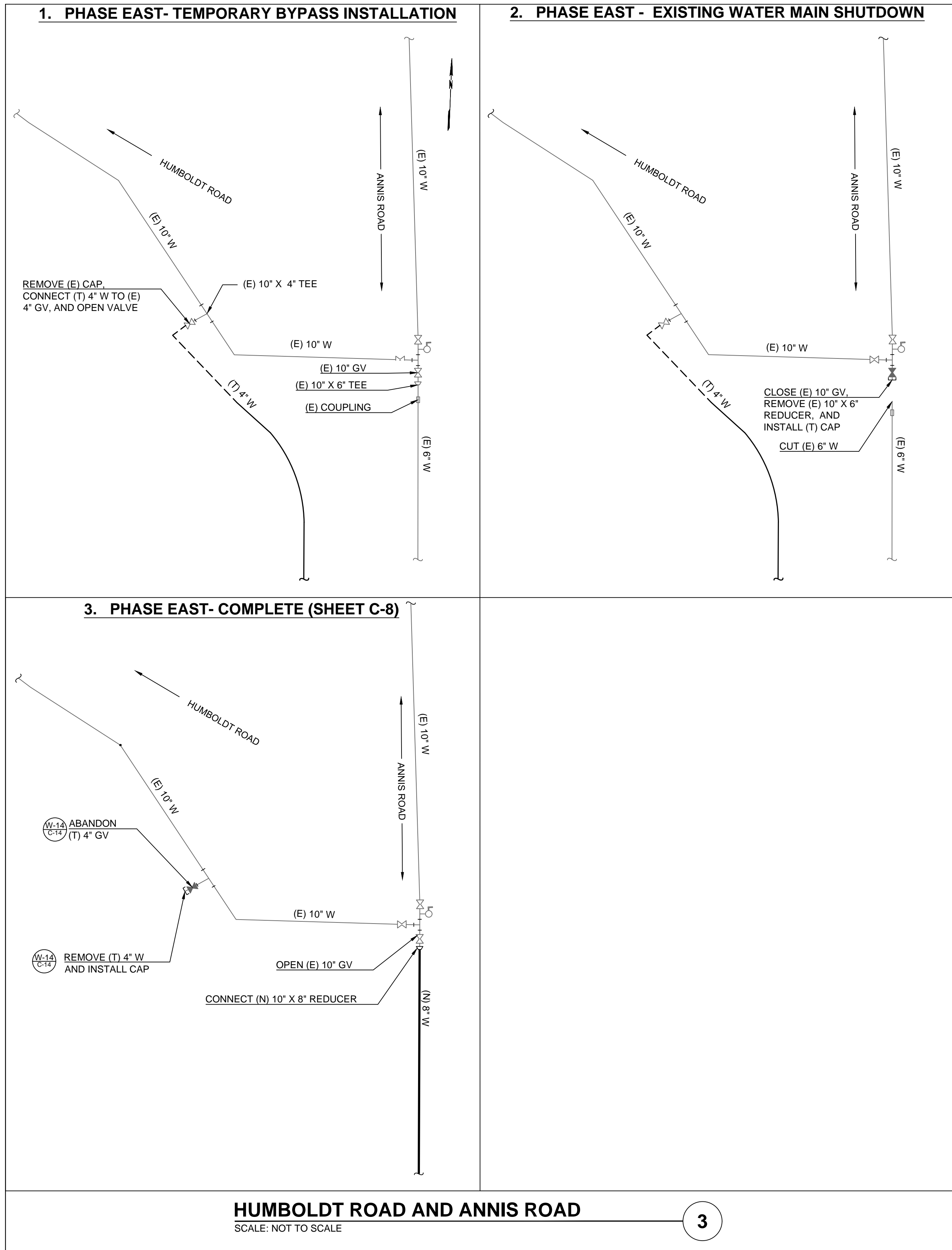
DETAIL LEGEND:

- EXISTING PROPOSED
- OPEN VALVE
- CLOSED VALVE



BID SET
05/21/2019

BID SET
05/21/2019



HUMBOLDT ROAD AND ANNIS ROAD
SCALE: NOT TO SCALE

3

- GENERAL NOTES:**
- CONTRACTOR SHALL COMPLETE CONSTRUCTION OF THE NEW WATER MAIN SEQUENTIALLY AS SHOWN. DETAILS SHOW THE TRANSITIONS BETWEEN OPERATION OF THE EXISTING MAIN, TEMPORARY BYPASS, AND NEW MAIN.
 - WATER SERVICES AND METER BOXES NOT SHOWN ON DETAILS FOR CLARITY.

- ABBREVIATIONS:**
- (E) EXISTING
 - (N) NEW
 - (T) TEMPORARY
- DETAIL LEGEND:**
- | | | |
|--------------|----------|----------|
| EXISTING | EXISTING | PROPOSED |
| OPEN VALVE | | |
| CLOSED VALVE | | |

FIRE MAIN REPLACEMENT PROJECT - PHASE 2
BRISBANE, CALIFORNIA
TEMPORARY BYPASS CONNECTION AND SEQUENCING DETAILS, PHASE EAST

DATE	DESCRIPTION	APPRD	DATE
JUNE 2019 <td>AS SHOWN <td></td> <td></td> </td>	AS SHOWN <td></td> <td></td>		
	PL/TA <td></td> <td></td>		
	JPNS <td></td> <td></td>		
	NS <td></td> <td></td>		
JOB NO.:	B60053.06	REV	

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

BID SET 05/21/2019