CITY OF OROVILLE, CALIFORNIA

SPECIFICATIONS AND CONTRACT DOCUMENTS

LOWER WYANDOTTE CULVERT REHABILITATION

EMERGENCY REPAIR

NOVEMBER 2019

PREPARED FOR:

CITY OF OROVILLE PUBLIC WORKS DEPARTMENT
OROVILLE, CALIFORNIA

PREPARED BY:

BENNETT ENGINEERING SERVICES
ROSEVILLE, CALIFORNIA

SPECIFICATIONS AND CONTRACT DOCUMENTS FOR

LOWER WYANDOTTE CULVERT REHABILITATION EMERGENCY REPAIR

TABLE OF CONTENTS

SECTION - BR

BIDDING REQUIREMENTS

INVITATION FOR BIDS

CITY OF OROVILLE
1735 MONTGOMERY STREET
OROVILLE, CALIFORNIA 95965-4897

Sealed proposals for the work described in the specifications and contract documents entitled:

LOWER WYANDOTTE CULVERT REHABILITATION
EMERGENCY REPAIR

will be received at the City of Oroville, office of the City Clerk, 1735 Montgomery Street, Oroville, California 95965 until:

TUESDAY, DECEMBER 3, 2019 AT 2:00 PM

at which time they will be publicly opened and read aloud in Conference Room 1 at said address.

Proposal forms for this work are included in the document entitled:

LOWER WYANDOTTE CULVERT REHABILITATION
EMERGENCY REPAIR

The proposed work for this project consists of the following generalized scope of work:

- Removal and replacement of 59 linear feet of existing 72" culvert
- Injection grouting around existing 72" culvert not to be replaced to fill voids
- 2-inch grind and overlay of existing roadway above the culvert
- Installation of curb, gutter, sidewalk, and a commercial driveway

Contractor's License Classification. The Contractor shall possess a Class A General Engineering Contractor license issued by the State of California Contractors State License Board at the time of contract award. The Contractor's subcontractor(s) performing work shall possess the appropriate State licenses for the work being performed. The awarded Contractor and subcontractors will also be required to obtain a City Business License.

Obtaining or Inspecting Contract Documents. The plans, specifications and contract documents (Contract Documents) are available for download on the City of Oroville website at:

http://www.cityoforoville.org/business/rfp-rfq-public-bids/project-documentation

The City will also be posting the Contract Documents to CIP List (http://ciplist.com/). The City will not be proving Contractors paper copies of the Contract Documents. Further information regarding wage requirements, contract time, bonding requirements, federal requirements and other contract provisions are included in the Instructions for Bidders as part of the Contract Documents. Any questions or clarifications regarding the Contract Documents requested by Contractors shall be emailed to the City of Oroville, Project Manager, Mike Massaro, P.E., at mmassaro@ben-en.com.

Questions or clarifications to the Contract Documents will be responded to through the issuance of addendum(s) by the City. As required, Contractors that submit written questions or clarifications to the City by email (mmassaro@ben-en.com) will be automatically placed on the bidders list. Addendums

will be email to all Contractors who have submitted questions and have been placed on the bidders list. Addendums will also be placed on the City's website and CIP List (website addresses above).

Wage Requirements. The Contractor and Subcontractors on this project must comply with Nondiscrimination, Equal Employment Opportunity, Antitrust, Occupational Safety and Health Standards and Regulations as set forth in the Contract Bid Documents. This municipality is an equal opportunity employer and businesses owned by women or minorities are strongly encouraged to bid. The Department of Public Works hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, gender, color or national origin in consideration for the award.

All labor on the project shall be paid the higher of the minimum wage rates as established by the U.S. Secretary of Labor, or the California Director of Industrial Relations. If a discrepancy exists between these two determinations, then all labor on the project shall be paid the higher of the two minimum wage rates. Refer to the Wage Determinations OnLine.gov (https://beta.sam.gov/) for the latest wage rates established by the U.S. Secretary of Labor as of the date of advertisement. This project is subject to State general prevailing wage rates unless a construction trade as part of the project is not listed as part of the State general prevailing wage rate. In this case, and only if there is no listed federal wage rate for a specific and necessary trade, the State general prevailing wage rate shall apply. It shall be mandatory upon the Contractor to whom the Contract is awarded, and upon any subcontractors under such contract, to pay not less than said prevailing rates to all workers employed by them in the execution of the Contract. The applicable California prevailing wage rate can be found at www.dir.ca.gov.

Contract Time. This work shall be constructed in accordance with details as shown on the plans and described in the specifications for this project. The construction work for the entire project shall be completed within sixty (60) working days.

Bidder's Bond. Bids must be from an appropriately licensed contractor, must be sealed and accompanied by cash, a certified or cashier's check, equivalent to ten percent (10%) of the proposal, payable to the order of the City of Oroville, to guarantee that if a proposal is accepted, a contract will be entered into and its performance secured. A Bidder's Bond to like effect and amount with a corporate surety will be acceptable for this project. Bids must be in writing and signed by or on behalf of the bidder.

Award of Contract. The contract will be awarded on the basis of lowest price for the combination of the base bid and the additive alternative bid from a responsive and responsible bidder and will provide for progressive payments and liquidated damages as fixed in the specifications. Although the additive bid alternative will be use in the determination of the lowest bidder, the additional work for the additive bid alternative will be the sole discretion of the City of Oroville. All proposals must be made on the forms as contained in the specifications for the previously described project and shall in all respects comply with the Instructions to Bidders and Contract Documents. Bids must be in writing and signed by or on behalf of the bidder.

Bonding Requirements. The successful bidder will be required to furnish a Performance Bond for 100 percent of the contract price to secure fulfillment of all the bidder's obligations under such contract. The successful bidder will further be required to furnish a Labor and Material Bond for 100 percent of the contract price to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

Retainage from Payments. Monthly progress payments shall be made to the Contractor for the value

of the work completed during the preceding month, less a five percent (5%) security withhold.

Public Works Contractor Law. Bidders are advised that effective January 1, 2015, SB854 requires that no contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations (DIR) pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)]. Furthermore, no contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. After registration, contractors and subcontractors shall submit be required to electronic certified payroll reports to DIR.

The City of Oroville reserves the right to reject any and/or all bids or to utilize any alternate procedures as authorized by California Public Contracts Code Sections 20166 and 20167, and accept such bids as are to the best interest of the City. No bidder may withdraw his/her bid for a period of ninety (90) days after the date set for the opening thereof.

Engineer's Estimate: $226,600

CITY OF OROVILLE

Dated:

Mike Massaro, P.E.
Contract City Engineer

November 12, 2019

Advertising Dates: Tuesday November 12, 2019

INFORMATION FOR BIDDERS

Bids will be received by the City of Oroville at the office of the City Clerk, City Hall, 1735 Montgomery Street, Oroville, California 95965-4897, until:

TUESDAY, DECEMBER 3, 2019 AT 2:00 PM

at which time they will be publicly opened and read aloud.

Each bid must be submitted in a sealed envelope, addressed to the City of Oroville, 1735 Montgomery Street, Oroville, California 95965-4897. Each sealed envelope containing a bid must be plainly marked on the outside as bid for:

LOWER WYANDOTTE CULVERT REHABILITATION EMERGENCY REPAIR

and the envelope should bear on the outside the name of the bidder, his/her address, his/her license number and classification, and the name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed to the City of Oroville.

1. SCOPE OF PROJECT

The work to be done under this contract consists of furnishing all materials, plant and equipment, and performing all necessary labor in accordance with the prepared plans, specifications, and special provisions as directed by the City or its authorized representative, as follows:

CONSTRUCTION OF THE LOWER WYANDOTTE CULVERT REHABILITATION EMERGENCY REPAIR

2. FORM OF PROPOSAL

All bids must be made on the required bid form, and other forms furnished with the contract documents. All blank spaces for bid prices must be filled in, in ink or typewritten, and the bid form must be fully completed and executed when submitted. Only one copy of the bid form is required. Each bid shall be accompanied by a certified check, cashier's check, or surety bond for not less than ten (10) percent of the amount of the bid, made payable to the order of the City Clerk, City of Oroville. Such check or bond shall be given as a guarantee that the bidder will enter into the contract if awarded to him/her and will be declared forfeited if the bidder refuses to enter into said contract and give the required contract bonds within ten (10) days after being notified to do so by the City. The check or bond accompanying the accepted bid will be retained until the contract documents have been signed by the successful bidder and approved by the City of Oroville.

The following forms shall be completed and signed (where required), and submitted together to constitute a fully responsive bid:

- Bid Form (Pages BD-1 through BD-3)
- Bid Schedule (Page BD-4)
- List of Subcontractors (Page BD-5)
- Bidder’s Bond (Page BD-6)

- Equal Opportunity Certification (Page BD-7)
- Noncollusion Affidavit (Page BD-8)
- Public Contract Code Section 10285.1 Statement (Page BD-9)
- Public Contract Code Section 10162 Questionnaire (Page BD-10)

The Contractor shall possess a Class A General Engineering License issued by the State of California Contractors State License Board at the time of contract award. The Contractor's subcontractor performing work elements shall possess the appropriate state licenses for the work being performed. The awarded Contractor and subcontractors will also be required to obtain a City Business License.

The City may waive any informalities or minor defects or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within ninety (90) days after the actual date of the opening thereof. The City intends to award the contract at a regularly scheduled City Council Meeting as soon as possible thereafter. Should there be reasons why the contract cannot be awarded within the specified period; the time may be extended by mutual agreement between the City and the bidder.

The proposals may be rejected if they show any alteration of forms, additions not called for, conditional or alternative bids, incomplete bids, erasures or irregularities of any kind. The City of Oroville reserves the right to retain the checks or bonds of the three lowest bidders until an approved contract has been signed. All other bidders' checks will be returned by the City of Oroville.

3. LOCAL CONDITIONS

Bidders must satisfy themselves of the accuracy of the estimated quantities in the bid schedule by examination of the site and a review of the drawings and specifications including addenda. After bids have been submitted, the bidder shall not assert that there was a misunderstanding concerning the quantities of work, the nature of the work to be done or other requirements that are being called for in these specifications.

The City shall provide to bidders, prior to bidding, all information that is pertinent to, and delineates and describes, the land owned and rights-of-way acquired or to be required. The contract documents contain the provisions required for the construction of the project. Information obtained from an officer, agent, or employee of the City or any other person shall not affect the risks or obligations assumed by the Contractor or relieve him/her from fulfilling any of the conditions of the contract.

If any bidder is in doubt as to the true meaning of any part of the drawings, specifications, or other Contract Documents, or finds discrepancies in, or omissions from, the drawings or specifications, he/she may submit to the Design Engineer a written request for a clarification or correction thereof not later than five (5) days before the date bids will be opened. The person submitting the request will be responsible for its prompt delivery. Any clarification or correction will be made by written addendum, which shall be mailed or delivered to each person receiving a set of such documents.

The City will not be responsible for any other explanation or interpretation of the Contract Documents.

Any addenda issued before the time in which to submit bids expires shall form a part of the Contract Documents and shall be covered in the bid. Each bidder shall confirm receipt of any and all addenda in the space provided in the bid form.

4. BASIS OF AWARD

Award will be made to the lowest responsive and responsible bidder. A conditional or qualified bid will not be accepted. All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout. Each bidder is responsible for inspecting the site and for reading and being thoroughly familiar with the Contract Documents. The failure or omission of any bidder to do any of the foregoing shall in no way relieve any bidder from any obligation in respect to his/her bid. The low bidder shall supply the names and addresses of major material suppliers and subcontractors with the bid proposal on the form provided.

In making the award of the contract the City will consider the balanced character of the bids, the experience and ability of the bidders, as well as the extension of the estimate of quantities at the unit prices bid. The Contract will be awarded to the lowest cost for the work subject to the conditions for the basis of award of a contract. The Owner reserves the right to reject any or all bids and to waive irregularities not affecting substantial rights.

In case of conflict in the proposal between unit price bid and the extended total, the unit price bid shall govern. The basis of the award is subject to all conditions as contained in these specifications. The party to whom the contract is awarded will be required to execute the agreement and obtain the performance bond and payment bond within fourteen (14) calendar days from the date when notice of award (either verbal or written) is delivered to the bidder. The notice of award shall be accompanied by the necessary agreement and bond forms. In case of failure of the bidder to execute the agreement, the City may, at its option, consider the bidder in default, in which case the bid bond accompanying the proposal shall become the property of the City.

5. CONTRACT BONDS

Upon receipt of written notice of award of the contract and not more than ten (10) days thereafter, the Contractor shall furnish the following bonds with power of attorney issued by a surety licensed to do business in the State of California and approved by the City. Attorneys-in-fact who sign bid bonds or payment bonds and performance bonds must file with each bond a certified and effective dated copy of their power of attorney. The form of the bonds shall be acceptable to the Owner:

a. Faithful Performance Bond in a sum equal to one hundred percent (100%) of the amount of the contract awarded. This bond shall be made payable to the City of Oroville to guarantee the faithful performance of the contract.

b. Labor and Material Bond in a sum equal to one hundred percent (100%) of the amount of the contract awarded. This bond shall be made payable to the City of Oroville to guarantee the payment of all labor, materials, rentals, etc. This bond shall have specific provisions to assure payment of all unemployment contributions which become due and payable.

6. PRECONSTRUCTION CONFERENCE

Prior to the issuance of the Notice to Proceed, a pre-construction conference will be held at a location determined by the City Engineer for the purpose of discussing with the Contractor the Scope of Work, contract drawings, specifications, existing conditions, materials to be ordered, equipment to be used, and all essential matters pertaining to the prosecution and the satisfactory completion of the project as required. The Contractor's representative at this conference shall include all major superintendents for the work and may include major sub-contractors.

7. NOTICE TO PROCEED

The Notice to Proceed (NTP) shall be issued for the date agreed by the city and contractor as long as the agreement has been executed and the City has received the bonds and insurance documentation required per contract.
Should there be reasons why the notice to proceed cannot be issued within such period, the time may be extended by mutual agreement between the City and the Contractor.

8. BIDDER'S QUALIFICATIONS

The City may make such investigations as it deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the City all such information and data of this purpose as the City may request. The City reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the City that such bidder is properly qualified to carry out the obligations of the agreement and to complete the work contemplated therein.

9. WAGE RATES

All labor on the project shall be paid no less than the minimum wage rates as established by the U.S. Secretary of Labor. Further, pursuant to California Labor Code Section 1770, the California Director of Industrial Relations has specified the general prevailing wage rates for all public projects in California. The wages to be paid to all workers on such projects shall not be less than those specified in such wage rate determination.

10. ESTIMATE OF QUANTITIES

The estimate of quantities of work to be done under the specifications is approximate and is given only as a basis of calculation upon which the award of the contract will be made. The Contractor will be paid for the actual work done including materials and equipment actually installed at the contract unit price as shown on the plans, or as directed by the engineer. The Owner reserves the right to increase or decrease the amount of any class of work or material deemed necessary without restrictions. Bidders must submit balanced bids in order that they may not be affected adversely by an increase or decrease of quantities.

11. SUBLETTING OF CONTRACT

The Contractor shall not sublet, sell, transfer, assign or otherwise dispose of the contract or contracts or any portion thereof, or of his/her right, title, or interest therein, without written consent of the Owner. In case such consent is given, the Contractor will be permitted to sublet a portion thereof but shall perform with his/her own organization not less than 50 percent of the total contract cost,

except that any items designated by the Contractor and approved by the Owner as "specialty items" may be performed by subcontract and the cost of any such specialty items so performed by subcontract may be deducted from the total cost before computing the amount of work to be performed by the Contractor with his/her own organization. No subcontracts or transfer of contract shall release the Contractor of his/her liability under contracts and bonds.

12. WORKER'S COMPENSATION INSURANCE

The Contractor shall provide worker's compensation insurance, as required under the laws of the State of California, protecting the employees on the work, and shall pay all premiums due thereunder.

13. PUBLIC LIABILITY INSURANCE

The Contractor shall not commence any work or permit any subcontractor to commence any work until he/she obtains at his/her expense all required insurance. Such insurance must have the approval of the Owner as to limit, form and amount. Any insurance bearing on adequacy of performance shall be maintained after completion of the project for the full guarantee period.

14. CONTRACT TIME

The Contractor shall begin work within ten (10) calendar days after the date set in the written Notice to Proceed by the Owner and shall diligently prosecute same to completion for all of the proposed construction. The Contract time for the completion of the total project shall be sixty (60) working days beginning on the date of the written Notice to Proceed.

15. LIQUIDATED DAMAGES

If the Contractor refuses or fails to complete the work within the time specified, including authorized extensions, there shall be deducted from monies due the Contractor, not as a penalty, but as liquidated damages the sum of Two Thousand Seven Hundred Dollars ($2,700.00) for each working day subsequent to the time specified for each project and the time the work is actually completed and accepted. Delays caused by adverse weather conditions or conditions for which the Owner is clearly responsible will be added to the contract time.

16. PAYMENTS

Progress payments shall be made at least once each month as the work progresses. These progress payments shall be based on work accomplished during the previous working month, based on the various contract bid items and the unit bid prices included in the Bid Schedule submitted by the Contractor with his/her bid. In applying for payments, the Contractor shall submit a statement based on this schedule. Payment will be made only for material and work actually incorporated in the work.

17. WITHHOLDING

Owner shall withhold from each payment due the Contractor five percent (5%) of the amount claimed. This 5% of the payment shall be withheld until final acceptance of the total project is given by the Owner. After final acceptance of the project is given and the Contractor has submitted

acceptable release of all liens and furnished the Engineer acceptable red-lined drawings showing the "as-built" condition of the completed project, then the Owner shall release for payment the 5% retention. Owner will make such final payment of retention within thirty-five (35) days of final acceptance of the project and submittal of release of liens and red-lined as-built drawings.

Pursuant to Government Code Section 4590, at the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the City or with a state or federally chartered bank as the escrow agent, who shall pay such monies to the Contractor upon satisfactory completion of the contract. Securities eligible for investment under this section shall include those listed in Government Code Section 16430 or bank or savings and loan certificates of deposit. The Contractor shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.

18. DEFINITIONS

Whenever in the specifications or on the drawings the word directed, required, permitted, designated, ordered, or words of like import are used, it shall be understood that the direction, requirement, permission, designation or order of the City of Oroville is intended; and, similarly, the words approved, satisfactory, suitable, acceptable, or words of like import, shall mean approved by the representative of the City of Oroville authorized to express such approval.

19. TAXES

Bidders shall have included in their bids any and all Federal, State and local taxes of whatever nature in connection with material to be furnished to the City. Absolutely no extras shall be allowed for such by the City.

20. CONTRACT DOCUMENTS

The form of agreement which the successful bidder, as Contractor, will be required to execute and the form of bonds which he/she will be required to furnish are included in the Contract Documents and should be carefully examined by each bidder. The agreement and bonds will be executed in two (2) original counterparts. The complete contract consists of the Contract Documents as defined in the agreement, and are intended to cooperate and be complementary so that any work called for in one and not mentioned in the other, or vice versa, is to be executed the same as if mentioned in all said documents. The intention of the documents is to include all labor, materials, equipment, transportation and services necessary for the proper execution of the work.

21. DECLARATION FOR FINAL PAYMENT

After the completion of the work of this contract, the Contractor shall file with the City his/her declaration under penalty of perjury stating that all workers and persons employed, all firms supplying the materials and all subcontractors upon the project, have been paid in full and that there are no bills outstanding against the project for either labor or materials except certain items, if any, to be set forth in detail in the declaration. The filing of such declaration by the Contractor and the submittals referred to in the General Provisions shall be a condition precedent to Contractor's receipt of the final payment on this contract.

22. ADMONITION

All bidders hereby are advised that the City of Oroville has adopted General Provisions for this work which might differ from the general provisions provided for private projects or projects undertaken by other governmental agencies. Contractors are admonished to carefully read the General Provisions, as well as the technical provisions, and are advised that the General Provisions shall be enforced strictly.

23. QUALITY

a. Conduct of Work. The construction in place, and all operations on the site and in conjunction with the work of construction, shall comply with all laws, ordinances and regulations of legally constituted authorities having jurisdiction.

b. Manufacturer's Directions. Where specifications require work to be performed in accordance with manufacturer's directions, the Contractor shall obtain and distribute copies of said directions to City, Architect and field office before starting the affected part of the work.

c. Materials. All materials and equipment incorporated in the work shall be new, except where reuse of existing materials or equipment is specified. All similar materials and equipment shall be products of one manufacturer, and shall be the same model, type and style for the same use throughout the project. This requirement shall apply whether item is furnished under one or several sections of the specifications. It shall be the Contractor's responsibility to coordinate and assure compliance of this requirement. The conditions of this paragraph shall be sufficient cause for rejection of the substitutions.

d. Workmanship.
1. All workmanship shall be performed by skilled laborers in accordance with established standards of first-class workmanship in each of the various trades. All items shown or indicated shall be plumb, level, flat or straight, throughout their entire extent, within limits of tolerances specified. In cases where tolerances are not specified, all items shall be installed in accordance with established standards for first-class work in each trade.
2. Contractor shall, prior to installing any item or material, assure himself that surfaces to receive such items or materials are plumb, level, true to line and straight to the degree necessary to achieve tolerances specified or required. All shimming, blocking, stripping, grinding, or patching required shall be performed without extra cost.
3. All joints in finish materials shall be tight, straight, even and smooth.
4. All operable items shall operate smoothly, without sticking or binding, and without excessive "play" or looseness
5. Finished appearance of all items, and of joints or transitions between items, shall be indicative of highest-quality workmanship.

24. SUBMITTALS

The contractor shall prepare and provide all submittals, shop drawings and samples required by other pertinent sections of the specifications for work, and all incidental submittals required for proper performance of the work. The City shall prepare a submittal schedule prior to the issuance of the Notice to Proceed. All submittals shall be submitted in a timely manner allowing the City a 1 week review time. It is the expressed responsibility of the Contractor to ensure that the submittal, review and approval of submittals by the City do not delay the project schedule.

25. GUARANTEE

In addition to requirements for a guarantee specified in "General Conditions," the effective date of the guarantee shall be the date of recording the notice of final completion.

SECTION - BD

BIDDING DOCUMENTS

BID FORM

Bid Opening Date: December 3, 2019
Hour of Bid Opening: 2:00 p.m.
Place of Bid Opening:

City of Oroville
1735 Montgomery Street, Conference Room 1
Oroville, California 95965

TO: The City of Oroville, State of California:

Bid of,_____,
organized and existing under the laws of the State of California, and doing business as:

( ) a Corporation
( ) a Partnership
( ) an Individual

to the City of Oroville, 1735 Montgomery Street, Oroville, California 95965.

The bidder, in compliance with the Invitations for Bids for:

LOWER WYANDOTTE CULVERT REHABILITATION EMERGENCY REPAIR

having examined the plans and specifications with related documents of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the contract documents, within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this proposal is a part.

The bidder is required to examine carefully the work site, the proposal form, plans, Specifications, Supplemental Specifications, special provisions and contract forms for the work contemplated. It will be assumed that the bidder has investigated and is satisfied as to the conditions to be encountered for performing the work as scheduled, and as to the character, quality and quantities of work to be performed and materials to be furnished, and as to the requirements of the plans, Specifications, Supplemental Specifications, special provisions and contract. The submission of a proposal shall be considered conclusive evidence that the bidder has made such examination and is satisfied as to all the conditions and contingencies.

Bidder hereby agrees to commence work under this contract within 10 working days after issuance of the Notice to Proceed by the City and, will fully complete the project within 60 working days after the issuance of the Notice to Proceed, unless the period of completion is extended thereafter as stipulated in the specifications. Liquidated damages established for this contract are established at $2,700 per day for each working day that all project work is not

completed after the 60th working day.

Bidder further agrees that should he/she fail to complete any segment of work in the time specified, he/she will pay liquidated damages to the City as prescribed in these specifications. It is understood that the City reserves the right to increase or decrease the quantities of items bid in the contract with no change in the unit prices bid, provided the change in a major item does not exceed 25 percent and of other items, 30 percent.

All items contained in the project bid schedule, including the additive bid alternatives, must be submitted for the entire work. Award of contract will be based on the lowest responsible bidder for the combination of base bid schedule with the additive alternatives, at the City's discretion. The amount of the bid for comparison purposes will be the total bid of all items for each respective Bid Schedule. The unit prices shall include all labor, materials, tools, equipment, overhead, profit, fees and all other items of expense necessary for and incidental to the finished work.

The bidder understands that the City reserves the right to award or reject any or all bids for each respective Bid Schedule. The bidder agrees that their bids shall be good and may not be withdrawn for a period of sixty (60) calendar days after the actual date of opening thereof.

Upon receipt of written notice of the acceptance of this bid, bidder will execute the formal contract attached within ten (10) calendar days and deliver surety bonds as required by the general conditions. The bid security, attached, is to become the property of the City in the event the contract and bonds are not executed within the time set forth as liquidated damages for the delay and additional expense to the City caused thereby.

Accompanying this bid is _____

(Note: Insert the words "cash," "cashier's check," "certified check," or "bidders bond" as the case may be in the amount equal to at least ten (10) percent of the total bid.)

The names of all persons interested in the foregoing proposal as principals are as follows:

IMPORTANT NOTICE: If bidder or other interested person is a corporation, state legal name of corporation, also names of the president, secretary, treasurer and manager thereof; if a co-partnership, state true name of firm, also names of all individual copartners composing firm; if bidder or other interested person is an individual, state first and last names in full.

_____

_____

_____

_____

Licensed in accordance with an act providing for the registration of Contractors,

License No. & Exp. Date:_____ Classification(s)_____

ADDENDA: This proposal is submitted with respect to the changes to the contract included in addendum number(s) _____

(Fill in addendum numbers if addenda have been received and insert, in this Proposal, any Engineer's Estimate sheets that were received as part of the addenda.)

Addendum or addenda issued by the department must be noted above.

By my signature on this proposal I certify, under penalty of perjury under the laws of the State of California, that the foregoing questionnaire and statements of Public Contract Code Sections 10162, 10232 and 10285.1 are true and correct and that the bidder has complied with the requirements of Section 8103 of the Fair Employment and Housing Commission Regulations (Chapter 5, Title 2 of the California Administrative Code). By my signature on this proposal I further certify, under penalty of perjury under the laws of the State of California and the United States of America, that the Noncollusion Affidavit required by Title 23 United States Code are true and correct.

Signature of Bidder_____ Date:_____

Name and Title of Bidder:_____

Name of Business:_____

Business Address:_____

Telephone Number:_____

Attest: _____

Dated: _____

License No. & Exp. Date:_____

Classification:_____

SEAL: (If bid by corporation)

LOWER WYANDOTTE CULVERT REHABILITATION EMERGENCY REPAIR
BID SCHEDULE

Bidder agrees to perform all of the work described in the contract documents and this bid form for the amounts shown in the "Bid Amount" column.

_____

Contractor's Company Name, Address and Phone Number

_____

Contractor's Title, Signature and Date

We hereby propose to furnish all labor, materials, equipment, tools, transportation, and services, and to discharge all duties and obligations necessary and required to perform and complete the Project in strict accordance with the Contract Documents for the TOTAL BID PRICE:

BASE BID SCHEDULE

BID ITEM	ITEM DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	LINE ITEM COST
1	MOBILIZATION & DEMOBILIZATION	LS	1		
2	TRAFFIC CONTROL	LS	1		
3	CHEMICAL GROUT INJECTION	LS	1		
4	HOT MIX ASPHALT, TYPE A (3/4″)	TON	45		
5	ADJUST STRUCTURE TO GRADE	EA	1		
6	COLD PLANE ASPHALT CONCRETE	SY	301		
7	72″ CMP CULVERT	LF	59		
8	VERTICAL CURB AND GUTTER	LF	38		
9	4″ PCC SIDEWALK	SF	268		
10	6″ PCC DRIVEWAY	SF	222		
11	REMOVE DRIVEWAY	SF	150		
		Total Bid Items 1-11:			

Bidders must provide pricing for every bid item. Base Bid items above reflect in the project plans.

The estimated quantities for unit price items are for purposes of comparing bids only and the City makes no representation that the actual quantities of work performed will not vary from the estimates.

In case of discrepancy between the unit price and the line item cost set forth for a unit price item, the line item cost, calculated at the unit price multiplied by the estimated quantity, shall prevail and shall be utilized as the basis for determining the lowest responsive, responsible bidder. However, if the amount set forth as a unit price is ambiguous, unintelligible or uncertain for any cause, or is omitted, or is the same amount as the entry in the "Line Item Cost" column, then the amount set forth in the "Line Item Cost" column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price. If any of the above discrepancies exist, the City may recalculate the bid price based on the unit price and the bidder agrees to be bound by such recalculation. Final payment for unit price items shall be determined by the City from measured quantities of work performed.

BASE BID PRICE:

$ _____

Base Bid in Numbers

_____

Base Bid in Written Form

LIST OF SUBCONTRACTORS

Bidder shall list below the name, business address and portion of work of each subcontractor to whom it is proposed to award a subcontract under this contract in excess of one-half of one percent of the total amount shown on the bid proposal. Subcontractors must be licensed under the applicable laws of the State of California and with the Department of Industrial Relations for the work they are to perform.

TRADE DESCRIPTION AND PERCENT BID	**SUBCONTRACTOR'S NAME, ADDRESS, LICENSE NUMBER, AND DIR NUMBER**

BIDDER'S BOND

CITY OF OROVILLE

We, _____

_____ as Principal, and

_____

_____

as Surety are bound unto the City of Oroville, hereafter referred to as "Obligee," in the penal sum of ten percent (10%) of the total amount of the bid of the Principal submitted to the Obligee for the work described below, for the payment of which sum we bind ourselves, jointly and severally.

THE CONDITION OF THIS OBLIGATION IS SUCH, THAT:

WHEREAS, the Principal is submitting a bid to the Obligee, for the **LOWER WYANDOTTE CULVERT REHABILITATION EMERGENCY REPAIR** as shown on the Project Plans and Technical Specification, for which bids are to be opened at 1735 Montgomery Street, Oroville, California 95965 on **December 3, 2019 at 2:00 P.M.**

NOW, THEREFORE, if the Principal is awarded the contract and, within the time and manner required under the specifications, after the prescribed forms are presented to him/her for signature, enters into a written contract, in the prescribed form, in accordance with the bid, and files two bonds with the Obligee, one to guarantee faithful performance of the contract and the other to guarantee payment for labor and materials as provided by law, then this obligation shall be null and void; otherwise, it shall remain in full force.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including a reasonable attorney's fee to be fixed by the court.

Dated:_____, 20___ _____

_____

THIS DOCUMENT
MUST BE NOTARIZED _____
Principal

_____
Surety

By:_____

Note: Correspondence or claims relating to this bond should be sent to the surety at the following address:

_____

EQUAL OPPORTUNITY CERTIFICATION

The bidder and proposed subcontractor(s) hereby certify the he/she has____, has not_____ participated in a previous contract or subcontract subject to the equal opportunity clauses, as required by Executive Orders 10925, 11114, or 11246, and that, where required, he/she has filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filling requirements.

Notes: The bidder must place a checkmark after "has" or "has not" in one of the blank spaces provided above. The above Certification is part of the Bid. Signing this Bid on the signature portion of the Bid Schedule thereof shall also constitute signature of this certification. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b) (1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

NONCOLLUSION AFFIDAVIT

In conformance with Title 23 United States Code Section 112 and Public Contract Code 7106 the bidder declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Note: The above Statement, Questionnaire, and Non-Collusion Affidavit are a part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Affidavit. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

PUBLIC CONTRACT CODE SECTION 10285.1 STATEMENT

In accordance with Public contract Code Section 10285.1 (Chapter 376, Stats. 1985), the bidder hereby declares under penalty of perjury under the laws of the State of California that the bidder has , has not , been convicted within the preceding three years of any offenses referred to in that section, including any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or federal antitrust law in connection with the bidding upon, award of, or performance of, any public works contract, as defined in Public Contract Code Section 1101, with any public entity, as defined in Public Contract Code Section 1100, including the Regents of the University of California or the Trustees of the California State University. The term "bidder" is understood to include any partner, members, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

Note: The bidder must place a checkmark after "has" or "has not" in one of the blank spaces provided. The above Statement is part of the Bid. Signing this Bid on the signature portion of the bid schedule thereof shall also constitute signature of this Statement. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

PUBLIC CONTRACT CODE SECTION 10162 QUESTIONNAIRE

In accordance with Public Contract Code Section 10162, the Bidder shall complete, under penalty of perjury, the following questionnaire:

Has the bidder, any officer of the bidder, or any employee of the bidder who has a proprietary interest in the bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or safety regulation?

YES____ NO____

If the answer is yes, explain the circumstances in the following space.

Note: The bidder must place a checkmark after "YES" or "NO" in one of the blank spaces provided. The above Questionnaire is part of the Bid. Signing this Bid on the signature portion of the bid schedule thereof shall also constitute signature of this Questionnaire. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

PUBLIC CONTRACT CODE SECTION 10232 STATEMENT

In conformance with Public Contract Code Section 10232, the Contractor, hereby states under penalty of perjury, that no more than one final un-appealable finding of contempt of court by a federal court has been issued against the Contractor within the immediately preceding two-year period because of the Contractor's failure to comply with an order of a federal court which orders the Contractor to comply with an order of the National Labor Relations Board.

Note: The above Statement is part of the Bid. Signing this Bid on the signature portion thereof shall also constitute signature of this Statement. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

DEBARMENT AND SUSPENSION CERTIFICATION

TITLE 49, CODE OF FEDERAL REGULATIONS, PART 29

The bidder, under penalty of perjury, certifies that, except as noted below, he/she or any other person associated therewith in the capacity of owner, partner, director, officer, manager:

- is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any Federal agency;
- has not been suspended, debarred, voluntarily excluded or determined ineligible by any Federal agency within the past 3 years;
- does not have a proposed debarment pending; and
- has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions in the following space.

Exceptions will not necessarily result in denial of award, but will be considered in determining bidder responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action.

Notes: Providing false information may result in criminal prosecution or administrative sanctions. The above certification is part of the Bid. Signing this Bid on the signature portion thereof shall also constitute signature of this Certification.

SECTION - CF

CONTRACT FORMS

PROJECT CONTRACT

THIS PROJECT CONTRACT (the "contract" or "Contract"), is made and entered into this day of_____, by and between City of Oroville (referred to herein as the "Owner" or the "City") and_____(the "Contractor").

WITNESSETH: That the parties hereto have mutually covenanted and agreed, and by these presents do covenant and agree with each other as follows:

1. THE CONTRACT DOCUMENTS.

The complete contract is comprised of and may or may not include: Invitation for Bids; Information for Bidders; Bid Schedule; Proposal Form; Bidder's Bond; Contract; General Conditions; Special Provisions; Technical Provisions; Payment Bond; Performance Bond; Notice of Award; Notice to Proceed; Change Orders; Supplemental Drawings Issued; Drawings; Specifications and Contract Documents; All addenda or bulletins issued during the time of bidding or forming a part of the documents loaned to the bidder for preparation of the bid; The complete plans and provisions, regulations, ordinances, codes, and laws incorporated therein or herein by reference or otherwise applicable to the Project.

All of the above documents are intended to cooperate so that any work called for in one and not mentioned in the other, or vice versa, is to be executed the same as if mentioned in all said documents. The documents comprising the complete contract are hereinafter referred to collectively as the Contract Documents.

2. THE WORK.

Contractor agrees to furnish all tools, apparatus, facilities, equipment, labor and materials (except that specifically mentioned as being furnished by others) necessary to perform and complete the work in a "good and workmanlike manner" as called for, and in the manner designated in, and in strict conformity with the Plans, Detail Specifications, and other Contract Documents which are identified by the signatures of the parties to this Contract and are, collectively, entitled:

LOWER WYANDOTTE CULVERT REHABILITATION EMERGENCY REPAIR

3. CONTRACT PRICE.

The City agrees to pay and the Contractor agrees to accept, in full payment for the work above agreed to be done, the following compensation: $_____. In no event shall Contractor's compensation exceed the amount of $_____without additional written authorization from the City. Payment by City under this Agreement shall not be deemed a waiver of defects in Consultant's services, even if such defects were known to the City at the time of payment

For the purpose of fixing the amount of bonds referred to in the Instructions to Bidders, it is estimated by both Parties that the total contract price shall be based on the Contractor's Base Bid amount.

4. DISPUTES PERTAINING TO PAYMENT FOR WORK.

Should any dispute arise respecting the true value of any work done or any work omitted, or of any extra work which the Contractor may be required to do, or respecting the size of any payment to the Contractor during the performance of this Contract, the dispute shall be informally mediated between the parties. Following such mediation, either party may file an action exclusively in the Butte County Superior Court or in the United States District Court, Eastern District of California. Under no condition shall there be a cessation of work by the Contractor during any such dispute. This article does not exclude recovery of damages by either party for delays.

5. PAYMENT.

Not later than the 20th day of each calendar month, the Contractor shall make a partial payment request to the City on the basis of an estimate approved by the Engineer of the work performed since the last partial payment request during the preceding month by the Contractor with five percent (5%) of the amount of each such estimate retained by the City, until completion of the Project and the recordation of a Notice of Completion of all work covered by this Contract. The City shall make any partial payments provided for in this contract to the Contractor within 30 days of the City's receipt of an undisputed and properly executed partial payment request from the Contractor. The City shall pay the Contractor interest on the amount of any portion of a partial payment, excluding retention amounts, not made to the Contractor within 30 days of the City's receipt of an undisputed and properly executed partial payment request from the Contractor at the legal rate set forth in California Code of Civil Procedure Section 685.010. Upon receipt of a partial payment request from the Contractor, the City shall review the partial payment request for the purpose of determining whether or not the partial payment request is a proper partial payment request. Any partial payment request determined by the City not to be a proper partial payment request suitable for payment shall be returned to the Contractor by the City within 14 days of the City's receipt of such partial payment request. A partial payment request returned to the Contractor by the City under the provisions of this section shall be accompanied by a written document setting forth the reason(s) why the partial payment request is not proper. The number of days for the City to make a certain partial payment provided for in this Contract, without incurring interest pursuant to this section, shall be reduced by the number of days by which the City exceeds the 14 day return period for such partial payment request, if determined to be improper, as set forth in this section. For the purposes of this section, a "partial payment" means all payments due to the Contractor under this contract, exclusive of that portion of the final payment designated as retention earnings. Also, for the purposes of this section, a partial payment request shall be considered properly executed by the City, if funds are available to pay the partial payment request and payment is not delayed due to an audit inquiry by the City's financial officer. The City will release Contractor's retention earnings within 45 days after recordation of Notice of Completion, as defined in California Civil Code Section 3093. Recordation of a Notice of Completion for the Project by the City shall constitute the City's acceptance of the Project work.

6. TIME FOR COMPLETION.

All work under this contract shall be completed within a period of 60 working days from the date of the Contractor's receipt of a Notice to Proceed from the City.

7. EXTENSION OF TIME.

If the Contractor is delayed by acts of negligence of the City, or its employees or those under it by contract or otherwise, or by changes ordered in the work, or by strikes, lockouts, fire, unavoidable casualties, or any causes beyond the Contractor's control, or by delay authorized by the City, or by any justifiable cause which the Engineer shall authorize, then the Contractor shall make out a written claim addressed to the City setting forth the reason for the delay and the extension of the time requested and forward a copy of the claim to the Engineer for approval. The Engineer will evaluate the claim and if the claim is justifiable, will request the City's approval. No such extension will be allowed unless written claim therefore has been made within 3 days after the delay became apparent.

If the Contractor fails or refuses to complete the work within the time specified, including authorized extensions, there shall be deducted from monies due the Contractor, not as a penalty, but as liquidated damages the sum of Two Thousand Seven Hundred Dollars ($2,700.00) for each calendar day subsequent to the time specified for each project and the time the work is actually completed and accepted. Delays caused by adverse weather conditions or conditions for which the Owner is clearly responsible will be added to the contract time.

8. LABOR PROVISIONS.

The project is subject to both federal and state prevailing wages. The Contractor shall pay laborers the higher of either the federal or state prevailing wage rate determination for the trades to be utilized. The contractor and all subcontractors on the project shall complete electronic reporting of prevailing wage rate reports through the Department of Industrial Relations, with copies of such reports to be provided to the City. Contractors are reminded of the need for compliance with Labor Code Section 1774-1775 (the payment of prevailing wages and documentation of such), Section 1776 (the keeping and submission of accurate certified payrolls) and 1777.5 in the employment of apprentices on public works projects. Special prevailing wage rates apply to work performed on weekends, holidays, and for certain shift work. Depending on the location of the project and the amount of travel incurred by workers on the project, certain travel and subsistence payments may also be required. Contractors and subcontractors are on notice that information about such special rates, holidays, premium pay, shift work and travel and subsistence requirements can be found on the DIR website.

Penalties may be imposed on the Contractor and/or subcontractors for failure to comply with prevailing wage requirements. These penalties are up to $200 per day per worker for each wage violation identified, up to $100 per day per worker for failure to provide the required paperwork and documentation requested within a 10 day window, and up to $25 per day per worker for any overtime violation.

9. CONTRACT WORK HOURS AND SAFETY STANDARDS REQUIREMENTS.

As used in the following provision, the term “laborers” and “mechanics” include watchmen and guards.

a. Overtime Requirements. Neither the Contractor nor any subcontractor contracting for any part of the Project which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek, whichever is greater. Overtime is pursuant to Labor Code Section 1811-1813.

b. Violation; Liability for Unpaid Wages; Liquidated Damages. In the event of any violation of the clause set forth in paragraph a. above, the Contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, the Contractor and subcontractor shall be liable to the City for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph a. above, in the sum of $2,700 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph a. above.

c. Withholding for Unpaid Wages and Liquidated Damages. The City shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any monies payable on account of work performed by the Contractor or subcontractor under any such contract or any other Federal contract with the same Contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph b. above.

d. Working conditions. Neither the Contractor nor any subcontractor may require any laborer or mechanic employed in the performance of any contract to work in surroundings or under working conditions that are unsanitary, hazardous or dangerous to his health or safety as determined under construction safety and health standards (29 CFR Part 1926) issued by the Department of Labor.

e. Subcontracts. The Contractor and any subcontractor shall insert in any subcontracts the clauses set forth in paragraphs a. through d. and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs a. through d.

10. NONDISCRIMINATION.

The Contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

11. DISADVANTAGED BUSINESS ENTERPRISE PROGRAM PROVISIONS.

The Contractor, sub recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as recipient deems appropriate.

The Contractor agrees to pay each subcontractor under this contract for satisfactory performance of its contract no later than 10 days from the receipt of each payment the Contractor receives from City. The Contractor agrees further to return retainage payments to each subcontractor within 30 days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the City. This clause applies to both DBE and non-DBE subcontractors.

12. CIVIL RIGHTS.

The Contractor assures that it will comply with pertinent statutes, Executive Orders and such rules as are promulgated to assure that no person shall, on the grounds of race, creed, color, national origin, sex, age or handicap be excluded from participating in any activity conducted with or benefiting from Federal assistance. This Provision binds the Contractor from the bid solicitation period through the completion of the contract. This provision shall be inserted in all subcontracts, subleases and other agreements at all tiers.

13. SOLICITATIONS FOR SUBCONTRACTS, INCLUDING PROCUREMENTS OF MATERIALS AND EQUIPMENT.

In all solicitations either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color or national origin.

14. INFORMATION AND REPORTS.

The Contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the City to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the City and shall set forth what efforts it has made to obtain the information.

15. SANCTIONS FOR NONCOMPLIANCE.

In the event of the Contractor's noncompliance with the nondiscrimination provisions of this contract, the City shall impose such contract sanctions as it may determine to be appropriate, including but not limited to:

a. Withholding of payments to the Contractor under the contract until the Contractor complies, and/or

b. Cancellation, termination or suspension of the contract, in whole or in part.

16. INSPECTION OF RECORDS.

The Contractor shall maintain an acceptable cost accounting system. The City, the Federal Aviation Administration, the Comptroller General of the United States or any of their duly authorized representatives shall have access to any books, documents, paper, and records of the Contractor which are directly pertinent to this Contract or the Project for the purposes of making an audit, examination, excerpts, and transcriptions. The Contractor shall maintain all required records for 3 years after the City makes final payment and all other pending matters are closed.

17. RIGHTS IN INVENTIONS.

All rights to inventions and materials, if any, generated under this contract are subject to regulations issued by the City. Information regarding these rights is available from the City.

18. BREACH OF CONTRACT TERMS.

Any violation or breach of terms of this Contract on the part of the Contractor or its subcontractors may result in the suspension or termination of this Contract or such other action that may be necessary to enforce the rights of the City under this Contract. The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

19. TERMINATION OF CONTRACT BY CITY

a. The City may, by written notice, terminate this Contract in whole or in part at any time, either for the City’s convenience or because of the Contractor’s failure to fulfill it’s contract obligations. Upon receipt of such notice, services shall be immediately discontinued (unless the notice directs otherwise) and all materials as may have been accumulated in performing this Contract, whether completed or in process, delivered to the City.

b. If the termination is for the convenience of the City, an equitable adjustment in the contract price shall be made, but no amount shall be allowed for anticipated profit on unperformed services.

c. If the termination is due to failure to fulfill the Contractor’s obligations, the City may take over the work and prosecute the same to completion by contract or otherwise. In such case, the Contractor shall be liable to the City for any additional cost occasioned to the City thereby.

d. If, after notice of termination for failure to fulfill contract obligations, it is determined that the Contractor had not so failed, the termination shall be deemed to have been effected for the convenience of the City. In such event, adjustment in the contract price shall be made as provided in the second paragraph of this clause.

e. The rights and remedies of the City provided in this clause are in addition to any other rights and remedies provided by law or under this contract.

20. INCORPORATION OF PROVISIONS.

The Contractor shall include the provisions of this contract in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations of directives issued pursuant thereto. The Contractor shall take such action with respect to any subcontract or procurement as the City may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Contractor may request the City to enter into such litigation to protect the interests of the City and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

21. CONTRACTOR CLAIMS OF $375,000 OR LESS.

Claims by the Contractor relating to the Project for (a) a time extension, (b) money or damages arising from work done by, or on behalf of, the Contractor on the Project for which payment is not expressly provided for or to which the Contractor is not otherwise entitled, or (c) an amount that is disputed by the City, with a value of $375,000 or less, are subject to the claims procedures set forth in California Public Contract Code Sections 20104, et seq., except as otherwise provided in this Contract and the incorporated documents, conditions and specifications.

22. LOBBYING AND INFLUENCING FEDERAL EMPLOYEES.

a. No Federal appropriated funds shall be paid, by or on behalf of the Contractor or its subcontractors, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the making of any Federal grant or the amendment or modification of any Federal grant.

a. If any funds other than Federal appropriated funds have been paid or will be paid by the Contractor or its subcontractors to any person for influencing or attempting to influence an officer or employee of the City, any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any Federal grant, the contractor shall complete and submit Standard Form-LLL, “Disclosure of Lobby Activities,” in accordance with its instructions.

23. ASSIGNMENT OF CERTAIN RIGHTS TO THE CITY.

In entering into this Contract or a subcontract to supply goods, services, or materials pursuant to this Contract, the Contractor and/or subcontractor offers and agrees to assign to the City all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to this Contract or the subcontract. This assignment shall be made and become effective at the time the City tenders final payment to the Contractor, without further acknowledgement by the parties.

24. ENERGY CONSERVATION REQUIREMENTS

The contractor agrees to comply with mandatory standards and policies relating to energy efficiency that are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Public Law 94-163)

IN WITNESS WHEREOF, two identical counterparts of this Contract, each of which shall for all purposes be deemed an original thereof, have been duly executed by the parties hereinabove named, on the day and year first herein written.

AGENCY: City of Oroville (First Party)

By: _____
(Chuck Reynolds)

Mayor
(Official Title)

CONTRACTOR: _____ (Second Party)

By: _____
(Authorized Representative)

_____
(Official Title)

FORM OF PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS: That WHEREAS, the City of Oroville, California hereinafter called City, on _____, 20_____, awarded

_____

Name and Address of Contractor

hereinafter designated as the "Principal", the contract for:

LOWER WYANDOTTE CULVERT REHABILITATION EMERGENCY REPAIR

NOW THEREFORE, we the Principal, and _____

_____as Surety, are held and firmly bound unto_____, hereinafter called the _____, in the penal sum of _____

_____Dollars ($_____)

lawful money of the United States, for the payment of which sum we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH that, if the above bounden Principal, his/her or its heirs, executors, administrators, successors or assign, shall in all things stand to and abide by and keep and perform the covenants, conditions and agreements in the said contract and any alteration thereof made as therein provided, on his/her or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless the City, its officers and agents, as therein stipulated, then this obligation shall become null and void: otherwise, it shall be and remain in full force and virtue, and also in case suit is brought upon such bond, the above bounden principal and the said surety will pay a reasonable attorney's fee which shall be awarded by the court to the prevailing party in said suit, said attorney's fee to be taxed as costs in said suit and to be included in the judgment therein rendered.

And the surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed or materials and/or equipment to be furnished thereunder or the Specifications accompanying the same, shall in anywise affect its obligations on this bond; and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the Specifications.

IN WITNESS WHEREOF three identical counterparts of this instrument, each of which shall for all purposes be deemed an original thereof, have been duly executed by the Principal and Surety above named, on the day of_____, 20___.

By _____ By _____

_____ _____

Surety Contractor

FORM OF LABOR AND MATERIAL BOND

KNOW ALL PERSONS BY THESE PRESENTS: That we_____ as Surety, and

_____, as Principal, are held and firmly bound unto City of Oroville, in the sum of _____ Dollars ($_____), said sum being (100% of the estimated amount of the foregoing and annexed contract,

LOWER WYANDOTTE CULVERT REHABILITATION EMERGENCY REPAIR

to be paid to said_____, for which payment, well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors or assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH: That if the above bounden principal, as Contractor in the annexed contract or his/her subcontractors, shall fail to pay for any materials, provisions, provender, or other supplies or teams used in, upon, for or about the performance of the work contracted to be done, or shall fail to pay any person, company or corporation renting or hiring teams or implements or machinery for or contributing to said work to be done, or any person who supplies both work and materials therefore, or the amount due under the Employment Insurance Act with respect to such work or labor, the surety will pay for the same, in an amount not exceeding the above obligation, and also, in case suit is brought upon such bond, the above bounden principal and the said surety will pay a reasonable attorney's fee which shall be awarded by the court to the prevailing party in said suit, said attorney's fee to be taxed as costs in said suit and to be included in the judgment therein rendered. This obligation and bond shall insure to the benefit of any and all persons entitled to file claims under Section 1184C of the Code of Civil Procedure and said persons or any of them or their assigns shall have a right to action thereunder.

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this _____ day of_____, A.D., 20___.

Principal _____

Surety _____

(Seal) By _____

(Attorney in Fact)

STATE OF CALIFORNIA)
) ss.
COUNTY OF BUTTE)

On this_____day of_____, 20__, before me_____a Notary Public in and for the County of_____, _____ known to me to be the person whose name is subscribed to the within instrument as the Attorney in Fact of_____and acknowledged to me that he has subscribed the name of_____thereto as surety, and **his/her** own name as Attorney in Fact.

In witness whereof I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

_____
Notary Public in and for said County and State

SECTION - GC

GENERAL CONDITIONS

GENERAL CONDITIONS

1. DEFINITIONS AND TERMS

Wherever used in the Contract Documents, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:

ADDENDA - Written or graphic instruments issued prior to the execution of the Agreement, which modify or interpret the Contract Documents, drawings and specifications by additions, deletions, clarifications or corrections.

BID - The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the work to be performed.

BIDDER - Any person, firm or corporation submitting a bid for the work.

BONDS - Bid, performance and payment bonds and other instruments of security, furnished by the Contractor and his/her surety in accordance with the Contract Documents.

CALENDAR DAY - Each and every day, including Saturdays, Sundays and legal holidays.

CHANGE ORDER - A written order to the Contractor authorizing an addition, deletion or revision in the work within the general scope of the Contract Documents, or authorizing an adjustment in the contract price or the contract time.

CITY - City of Oroville, 1735 Montgomery Street, Oroville, California.

CONTRACTOR - The person or persons, firm, partnership, corporation or combination thereof, licensed to perform the type of work involved, who has entered into a contract with the City of Oroville for the construction of the improvements within the City of Oroville described herein.

DEPARTMENT OF PUBLIC WORKS - The Department of Public Works of the City of Oroville.

ENGINEER - The Contract City Engineer of the City of Oroville acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

PROJECT - The undertaking to be performed as provided in the contract documents.

RESIDENT PROJECT REPRESENTATIVE - The authorized representative of the City who is assigned to the project site or any part thereof.

SHOP DRAWINGS - All drawing, diagrams, illustration, brochures, schedules and other data which are prepared by the Contractor, a subcontractor, manufacturer, supplier or distributor, which illustrate how specific portions of the work shall be fabricated or installed.

SPECIFICATIONS - The directions, provisions and requirements contained herein.

STANDARD PLANS AND SPECIFICATIONS - Whenever reference is made to the "Standard Plans and Specifications" such reference shall be made to the most current of those

certain plans and specifications entitled “State of California, Department of Transportation, Standard Plans and Standard Specifications”.
As used in the Standard Specifications, unless the content otherwise requires, the following terms have the following meanings:

Department of Transportation: The City of Oroville.

Director of Transportation: The Public Works Director of the City of Oroville.

Division of Highways: Department of Public Works of the City of Oroville.

Engineer: The Contract City Engineer of the City of Oroville, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

Laboratory: The designated laboratory authorized by the City of Oroville to test materials and work involved in the contract.

Office of Administrative Hearings: The City Council of the City of Oroville.

Standard Specifications: The most current or 2015 Edition of those certain specifications entitled "State of California, Department of Transportation, Standard Specifications 2015"

Standard Plans: The most current or 2015 Edition of those certain standard plans entitled "State of California, Department of Transportation, Standard Plans 2015"

State: The City of Oroville.

Reference is made to Section 1 of the Standard Specifications for other pertinent definitions.

SUBCONTRACTOR - An individual, firm or corporation having a direct contract with the Contractor or with any other subcontractor for the performance of a part of the work at the site.

SUBSTANTIAL COMPLETION - That date as certified by the Engineer when the construction of the project or a specified part thereof is sufficiently completed, in accordance with the contract documents, so that the project or specified part can be utilized for the purpose for which it is intended.

SUPPLEMENTAL GENERAL CONDITIONS - Modifications to general conditions required by a federal agency for participation in the project or such requirements that may be imposed by applicable State laws.

SUPPLIER - A person or organization who supplies material or equipment for the work, including that fabricated to a special design, but who does not perform labor on the site.

WORK - All labor necessary to produce the construction required by the contract documents and all materials and equipment incorporated or to be incorporated in the project.

WORKING DAY - Each and every day, except Saturdays, Sundays, legal holidays, days on which the Contractor is specifically required by the special provisions to suspend construction operation and days on which the Contractor is prevented by inclement weather or conditions resulting immediately therefrom adverse to the current controlling operation or operations, as determined by the Engineer, from proceeding with at least 75 percent of the normal labor and equipment force engaged on such operation or operations for at least 60 percent of the total daily time being currently spent on the controlling operation or operations.

WRITTEN NOTICE - Any notice to any party of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his/her last given address, or delivered in person to said party or his/her authorized representative on the work.

2. EXAMINATION OF CONTRACT DOCUMENTS, BID ITEMS AND BID SUBMITTAL

The Contractor shall do all of the work and furnish all labor, materials, tools, equipment, and appliances, except as otherwise herein expressly stipulated, necessary or proper for performing and completing the work herein required, including any Change Order work or disputed work directed by the Engineer in conformity with the true meaning and intent of the Plans and Specifications for the project. The Engineer attempts to express all or most elements of the work with bid items that allow both the Engineer and the Contractor to view, evaluate and understand the cost of the project. At the Engineer's discretion, certain improvements within the project boundaries may not be specifically identified as a line item in the project bid schedule. At times, the project plans may show required construction elements of the project for which there is no discrete bid item. It is the responsibility of the Contractor to account for construction elements for which there may be no discrete bid item. The Contractor shall be responsible for the construction of any and all improvements or construction elements shown on the Project Plans whether there is a bid item or not in the project bid schedule.

By submission of a Bid, the Bidder acknowledges acceptance of the nature and location of the Work, the general and local conditions, conditions of the site, the character, quality and scope of work to be performed, the availability of labor, electric power, water, the kind of surface and subsurface materials on the site, the materials and equipment to be furnished, and all requirements of the Contract or other matters which may affect the Work or the cost. Any failure of a Bidder to become acquainted with all of the available information concerning conditions will not relieve the Bidder from the responsibility for estimating properly the difficulties or cost of the Work. Bidder agrees to inform the Engineer of any errors or oversight by Engineer it perceives in the Bid documents prior to submission of its bid.

Bid prices shall include everything necessary for the completion of the Work and fulfillment of the Contract, including but not limited to furnishing all materials, equipment, tools, excavation sheeting, bracing and supports, plant, labor and services, except as may be provided otherwise in the Contract. Bid prices shall also include labor and material escalation and all Federal, State, and local taxes.

3. INTERPRETATION OF PLANS AND PROJECT SPECIFICATIONS

The component Contract documents (Project Plans, Project-specific Specifications, City Standard Drawings, etc.) are essential parts of the Contract, and intended to provide explanation

for each other. Any work and/or improvements shown on the Plans and not in the Specifications, or vice versa, are to be executed as if indicated both on the Plans and in the Specifications. In case of conflict in the Contract, the Project plans shall govern over project-specific specifications (materials specifications excluded). Any physical construction-related work necessary to complete the improvements shown on the Project Plans for which there are no provisions in the project specifications or elsewhere in the Contract documents shall be performed and completed in accordance with either State Standards and/or Specifications where such specifications exist, City Engineer Standards where such standards exist, or in conformance with generally accepted practices for public works construction.

4. FIELD INSTRUCTIONS OR OTHER WRITTEN DIRECTIVES

The Engineer may issue Field Instructions or other written directives during the course of the Work, and the Contractor shall comply with the Field Instruction or other written directive. A Field Instruction or other written directive may be used to add, delete, modify, or reject work, to note deficiencies in work, to clarify the Contract or to order work to be performed. Work required by a Field Instruction or other written directive shall be in accordance with the Contract and any previously executed Contract Change Orders, except as delineated otherwise in the Field Instruction or other written directive. Drawings included with Field Instructions or other written directives are part of the Contract and shall be incorporated into the Record Drawings. If the Contractor neglects to comply with or make progress in the execution of any Field Instruction or other written directive, the Engineer may employ any person or persons to perform such work and the Contractor shall not interfere with the person or persons so employed. Field Instructions and other written directives issued by the City that serve to alter (either add to or deduct from) the Contract scope and price will be grouped to form a Contract Change Order.

5. SCHEDULES, REPORTS, AND RECORDS

The Contractor shall submit to the City such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data where applicable as are required by the contract documents for the work to be performed.

Prior to the first partial payment estimate, the Contractor shall submit construction progress schedules showing the order in which he/she proposes to carry out the work, including dates at which he/she will start the various parts of the work, estimated date of completion of each part and as applicable.

6. DRAWINGS AND SPECIFICATIONS

The intent of the drawings and specifications is that the Contractor shall furnish all labor, materials, tools, equipment and transportation necessary for the proper execution of the work in accordance with the contract documents and all incidental work necessary to complete the project in an acceptable manner; ready for use or operation by the City.

In case of conflict between the drawing and specifications, the specifications shall govern. Figure dimensions on drawings shall govern over scale dimensions and detailed drawings shall govern over general drawings.

Any discrepancies found between the drawings and specifications and site conditions or any inconsistencies or ambiguities in the drawings or specifications shall be immediately reported to

the Engineer, in writing, who shall promptly correct such inconsistencies or ambiguities, in writing. Work done by the Contractor after his/her discovery of such discrepancies, inconsistencies or ambiguities shall be done at the Contractor's risk.

7. SHOP DRAWINGS

The Contractor shall provide shop drawings as may be necessary for the construction of the work required by the contract documents. The Engineer shall promptly review all shop drawings. The Engineer's approval of any shop drawings shall not release the Contractor from responsibility for deviations from the requirements of the contract documents. The approval of any shop drawing, which substantially deviates from the requirements of the contract documents, shall be evidenced by a change order.

When submitted for the Engineer's review, shop drawings shall bear the Contractor's certification that he/she has reviewed, checked and approved the shop drawings and that they are in conformance with the requirement of the contract documents.

Portions of the work requiring a shop drawing or sample submission shall not begin until the shop drawing or submission has been approved by the Engineer. A copy of each approved shop drawing and each approved sample shall be kept in good order by the Contractor at the site and shall be available to the Engineer.

8. MATERIALS, SERVICES AND FACILITIES

It is understood that, except as otherwise specifically stated in the contract documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, lights, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete and deliver the work within the specified time. Material and equipment shall be so stored as to ensure the preservation of their quality and fitness for the work. Stored materials and equipment to be incorporated in the work shall be located so as to facilitate prompt inspection. Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.

Materials, supplies and equipment shall be in accordance with samples submitted by the Contractor and approved by the Engineer. Materials, supplies or equipment to be incorporated into the work shall not be purchased by the Contractor or the subcontractor subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

9. INSPECTION AND TESTING

All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with general accepted standards, as required and defined in the contract documents. The City will provide the inspection and testing services to be employed pursuant to the City Quality Assurance Plan (QAP) for Federally Funded Highway Projects dated January 2015. The City will provide the Contractor a written QAP schedule that will list the types of materials to be tested, test methods and sample and test quantities. The Contractor shall be responsible for coordinating and scheduling the QAP schedule with the City’s material testing consultant.

If the contract documents, laws, ordinances, rules, regulations or order of any public authority having jurisdiction require any work to specifically be inspected, tested or approved by someone other than the Contractor, the Contractor will give the Engineer timely notice of readiness. The Contractor will then furnish the Engineer the required certificates of inspection, testing or approval. Inspections, test or approvals by the Engineer or others shall not relieve the Contractor from his/her obligations to perform the work in accordance with the requirements of the contract documents. The Engineer and his/her representative will at all times have access to the work. In addition, authorized representatives and agents of any participating Federal or State agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials and other relevant data and records. The Contractor will provide proper facilities for such access and observation of the work and also for any inspection or testing thereof.

If any work is covered contrary to the written instructions of the Engineer, it must, if requested by the Engineer, be uncovered for his/her observation and replaced at the Contractor's expense. If the Engineer considers it necessary or advisable that covered work be inspected and tested by others, the Contractor, at the Engineer's request, will uncover, expose or otherwise make available for observation, inspection or testing as the Engineer may require of that portion of the work in question, furnishing all necessary labor, materials, tools and equipment. If it is found that such work is defective, the Contractor will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction. If, however, such work is not found to be defective, the Contractor will be allowed an increase in the contract price or an extension of the contract time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing reconstruction and an appropriate change order shall be issued.

All required QAP testing of construction materials, including aggregate base compaction testing, will be provided by the City at no cost to the Contractor. Should tests show materials or methods to be unacceptable, however, and retesting of the same material is required, the City’s cost of such retesting will be deducted from payment due the Contractor. The Contractor is encouraged (not required) to perform roadway aggregate base compaction testing independently of the City’s QAP. All required performance testing shall be done by the Contractor in the presence of the Engineer.

The specific tests to be performed for this particular job, and the party, Contractor or City, responsible for providing equipment and technical personnel shall be enumerated in the section entitled "REQUIRED TESTING" in the Special Provisions. During each field test, an authorized representative of the Contractor and of the City shall be present. The City inspector will maintain the TEST RECORD for the entire job which lists details of each test performed. The inspector will provide a copy of the TEST RECORD to the Contractor upon request.

10. SUBSTITUTIONS

Whenever a material, article or piece of equipment is identified on the drawings or specifications by reference to a brand name or catalog number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered.

The Contractor may recommend the substitution of a material, article or piece of equipment of equal substance and function for those referred to in the contract documents by reference to brand name or catalog number, and if, in the opinion of the Engineer, such material, article or

piece of equipment is of equal substance and function to that specified, the Engineer may approve its substitution and use by the Contractor.

Any cost differential shall be deductible from the contract price and the contract documents shall be appropriately modified by change order. The Contractor warrants that if substitutes are approved, no major changes in the function or general design of the project will result. Incidental changes or extra work component parts required to accommodate the substitute will be made by the Contractor without a change in the contract price or contract time.

11. PATENTS

The Contractor shall pay all applicable royalties and license fees. He/she shall defend all suits or claims for infringement of any patent rights and save the City harmless from loss on account thereof, except that the City shall be responsible for any such loss when a particular process, design, or the product of a particular manufacturer or manufacturers is specified. However, if the Contractor has reason to believe that the design, process or product specified is an infringement of a patent, he/she shall be responsible for such loss unless he/she promptly gives such information to the Engineer.

12. PERMITS - REGULATIONS

Permits and licenses of a temporary nature necessary for the prosecution of the work shall be secured and paid for by the Contractor unless otherwise stated in the Supplemental General Conditions. Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the City, unless otherwise specified. If the Contractor observes that the contract documents are at variance therewith, he/she shall promptly notify the Engineer, in writing and any necessary changes shall be adjusted as provided in Section 13, Changes in the Work.

13. PROTECTION OF WORK, PROPERTY AND PERSON

The Contractor will be responsible for initiating, maintaining and supervising of all safety precautions and programs in connection with the work. He/she will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the work and other persons who may be affected thereby, and all the work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocations or replacement in the course of construction.

The Contractor will comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He/she will erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for safety and protection. He/she will notify owners or adjacent utilities when prosecution of the work may affect them.

The Contractor will remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, except damage or loss attributable to the fault of the contract documents, or to the acts or omission of the City or the Engineer, or anyone employed by either of them, or anyone for whose acts either

of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the Contractor.

In emergencies affecting the safety of persons or the work or the property at the site or adjacent thereto; the Contractor, without special instruction or authorization from the Engineer or the City, shall act to prevent threatened damage, injury or loss. He/she will give the Engineer prompt written notice of any significant changes in the work or deviations from the contract documents caused thereby and a change order shall thereupon be issued covering the changes and deviations involved.

14. SUPERVISION BY CONTRACTOR

The Contractor will supervise and direct the work. He/she will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor will employ and maintain on the work site, a qualified supervisor or superintendent who shall have been designated, in writing, by the Contractor as the Contractor's representative at the site. The supervisor shall have full authority to act on behalf of the Contractor and all communications given to the supervisor shall be as binding as if given to the Contractor. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the work.

15. CHANGES IN THE WORK

The City may, at any time as the need arises, order changes within the scope of the work without invalidating the Agreement. If such changes increase or decrease the amount due under the contract documents, or in the time required for performance of the work, an equitable adjustment shall be authorized by change order.

The Engineer also may, at any time by issuing a field order, make changes in the details of the work. The Contractor shall proceed with the performance of any changes in the work so ordered by the Engineer unless the Contractor believes that such field order entitles him/her to a change in contract price or time, or both, in which event he/she shall give the Engineer written notice thereof within seven (7) days after the receipt of the ordered change.

Thereafter, the Contractor shall document the basis for a change in contract price or time within thirty (30) days. The Contractor shall not execute such changes pending the receipt of an executed change order or further instruction from the City.

16. CHANGES IN CONTRACT PRICE

The contract price may be changed only by a change order. The value of any work covered by a change order, or of any claim for increase or decrease in the contract price, shall be determined by one or more of the following methods in order of precedence listed below:

a. Unit prices previously approved
b. An agreed upon lump sum
c. The actual cost for labor, direct overhead, materials, supplies, equipment and other services necessary to complete the work. Said costs shall be computed and documented in accordance with Section 9-1.04, "Force Account", of the Standard Specifications.

17. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

The date of beginning and the time for completion of the work are essential conditions of the contract documents and the work embraced shall be commenced on a date specified in the Notice to Proceed.

The Contractor will proceed with the work at such rate of progress to ensure full completion within the contract time. All contract work shall be completed within 60 working days after issuance of the Notice to Proceed. Liquidated damages established for this contract are $2,700.00 for each day beyond the 60 working day timeframe. It is expressly understood and agreed, by and between the Contractor and the City, that the contract time for the completion of the work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the work.

If the contractor shall fail to complete the work within the contract time, or extension of time granted by the City, the Contractor will pay to the City the amount of liquidated damages as specified in the bid for each calendar day that the Contractor shall be in default after time stipulated in the contract documents.

The Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due to the following, and the contractor has promptly given written notice of such delay to the City or Engineer:

- To any preference, priority, or allocation order duly issued by the City.

- To unforeseeable causes beyond the control and without fault or negligence of the Contractor; including but not restricted to acts of God, or of the public enemy, acts of the City, acts of another Contractor in the performance of a contract with the City, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes and abnormal and unforeseeable weather.

- To any delays of subcontractors occasioned by any of the causes specified above.

18. CORRECTION OF WORK

The Contractor shall promptly remove from the premises all work rejected by the Engineer for failure to comply with the contract documents, whether incorporated in the construction or not, and the Contractor shall promptly replace and re-execute the work in accordance with the contract documents and without expense to the City and shall bear the expense of making good all work of other Contractors destroyed or damage by such removal or replacement.

All removal and replacement work shall be done at the Contractor's expense. If the Contractor does not take action to remove such rejected work within ten (10) days after receipt of written notice, the City may remove such work and store the materials at the expense of the Contractor.

19. UNUSUAL CONDITIONS

The Contractor shall promptly and before such conditions are disturbed, except in the event of an emergency, notify the City by written notice of:

- Subsurface or latent physical conditions at the site differing materially from those indicated in the contract documents; or

- Unknown physical conditions at the site of any unusual nature differing from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the contract documents.

The City shall promptly investigate the conditions, and if it finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the work, an equitable adjustment shall be made and the contract documents shall be modified by change order. Any claim of the Contractor for adjustment hereunder shall not be allowed unless he/she has given the required written notice; provided that the City may, if it determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

20. SUSPENSION OF WORK, TERMINATION AND DELAY

The City may suspend the work or any portion thereof for a period of not more than ninety (90) days or such further time as agreed upon by the Contractor, by written notice to the Contractor and the Engineer, which notice shall fix the date on which work shall be resumed. The Contractor will resume that work on the date so fixed. The Contractor will be allowed an increase in the contract price or an extension in the contract time, or both, directly attributable to any suspension.

If the Contractor is adjudged as bankrupt or insolvent, or if he/she makes a general assignment for the benefit of his/her creditors, or if a trustee or receiver is appointed for the Contractor or for any of his/her property, or if he/she files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or if he/she repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he/she repeatedly fails to make prompt payments to subcontractors or for labor, materials or equipment, or if he/she disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction over the work, or if he/she otherwise violates any provision of the contract documents; then the City may, without prejudice to any other right or remedy and after giving the Contractor and his/her surety a minimum of ten (10) days from delivery of written notice, terminate the services of the Contractor and take possession of the project and all materials, equipment, tools, construction equipment and machinery thereon owner by the Contractor, and finish the work by whatever method it may deem expedient.

In such case, the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the contract price exceeds the direct and indirect cost of completing the project, including compensation for additional professional services, such excess shall be paid to the Contractor. If such costs exceed such unpaid balance, the Contractor will pay the difference to the City. Such costs incurred by the City will be determined by the Engineer and incorporated into a change order.

When the Contractor's services have been so terminated by the City, said termination shall not affect any right of the City against the Contractor then existing or which may thereafter accrue. Any retention or payment of monies by the City due to the Contractor will not release the Contractor from compliance with the contract documents. After ten (10) days from delivery of a written notice to the Contractor and the Engineer, the City may, without cause and without

prejudice to any other right or remedy, elect to abandon the project and terminate the contract. In such case, the Contractor shall be paid for all work executed and any expense sustained plus a reasonable profit.

If, through no act or fault of the Contractor, the work is suspended for a period of more than ninety (90) days by the City, or under an order of the court, or other public authority, or the Engineer fails to act on any request for payment within thirty (30) days after it is submitted, or the City fails to pay the Contractor substantially the sum approved by the Engineer or awarded by the arbitrators within thirty (30) days of its approval and presentation, the Contractor may, after ten (10) days from delivery of a written notice to the City and the Engineer, terminate the contract and recover from the City payment for all work executed and all expenses sustained. In addition and in lieu of terminating the contract, if the Engineer fails or has failed to act on a request for payment or if the City has failed to make any payment as aforesaid, the Contractor may upon ten (10) days written notice to the City and the Engineer, stop the work until he/she has been paid all amounts then due, in which event and upon resumption of the work, change orders shall be issued for adjusting the contract price or extending the contract time, or both, to compensate for the costs and delays attributable to the stoppage of work.

If the performance of all or any portion of the work is suspended, delayed or interrupted as a result of a failure of the City or Engineer to act within the time specified in the contract documents, or if no time is specified, within a reasonable time, an adjustment in the contract price or an extension of the contract time, or both, shall be made by change order to compensate the Contractor for the costs and delays necessarily caused by the failure of the City or Engineer.

21. PAYMENTS TO CONTRACTOR

Within ten (10) days after receipt of the Notice to Proceed, the Contractor shall submit to the City a proposed Schedule of Values broken down in sufficient detail to evaluate progress at any point in the work. Labor and material costs for each line item shall be shown separately. Cost of contract closeout shall be shown as an individual line item. The schedule of values, when approved by the City, shall be used as a basis for the Contractor's Application and Certification for Payment. Application and Certification for Payment shall utilize American Institute of Architects (AIA) Document G702 (cover sheet) and Document G703 (continuation sheets). The AIA Document G703 sheets will list the Schedule of Values approved by the City and will trach any Change Orders that may be issued during the project.

At least ten (10) days before each progress payment falls due, but not more often than once a month, the Contractor will submit to the Engineer a partial payment estimate filled out and signed by the Contractor covering the work performed during the period covered by the partial payment estimate and supported by such data as the Engineer may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the work but delivered and suitably stored at or near the site, the partial payment estimated shall also be accompanied by such supporting data, satisfactory to the City, that will establish the City's title to the material and equipment and protect its interest therein, including applicable insurance. The Engineer will, within ten (10) days after receipt of each partial payment estimate, either indicate in writing his/her approval of payment and present the partial payment estimate to the City, or return the partial payment estimate to the Contractor indicating in writing his/her reasons for refusing to approve the payment. In the latter case, the Contractor may make the necessary corrections and resubmit the partial payment estimate.

The City will, within ten (10) days of presentation to it of an approved partial payment estimate, pay the Contractor a progress payment on the basis of the approved partial payment estimate. The City shall retain ten (10) percent of the amount of each payment until final completion and acceptance of all work covered by the contract documents. The City at any time, however, after fifty (50) percent of the work has been completed, if it finds that satisfactory progress is being made, may reduce retention to five (5) percent on the current and remaining estimates. When the work is substantially complete, operational or beneficial occupancy, the retained amount may be further reduced below five (5) percent to only that amount necessary to assure completion. Upon completion and acceptance of a part of the work on which the price is stated separately in the contract documents, payment may be made in full, including retention percentages, less authorized deductions. The request for payment may also include an allowance for the cost of such major materials and equipment, which are suitably stored either at or near the site.

Prior to substantial completion, the City, with the approval of the Engineer and the concurrence of the Contractor, may use any completed or substantially completed portion of the work. Such use shall not constitute an acceptance of such portions of the work.

The City shall have the right to enter the premises for the purpose of doing work not covered by the contract documents. This provision shall not be construed as relieving the Contractor of the sole responsibility for the care and protection of the work, or the restoration of any damaged work except such as may be caused by agents or employees of the City.

Upon completion and acceptance of the work, the Engineer shall issue a certificate attached to the final payment request that the work has been accepted by him/her under the conditions of the contract documents. Within fifteen (15) days after the date of acceptance, the City shall cause to be filed in the office of the County Recorder, a Notice of Completion of the work. The entire balance found to be due to the Contractor, including the retained percentages, but except such sums as may be lawfully retained by the City, shall be paid to the Contractor within forty-five (45) days after the date of filing the Notice of Completion.

The Contractor will indemnify and save the City, or the City's agents, harmless from all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, manufacturers, suppliers and furnishers of machinery and parts thereof, equipment, tools, and all supplies incurred in the furtherance of the performance of the work. The Contractor shall, at the City's request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged or waived.

If the Contractor fails to do so, the City may, after having notified the Contractor, either pay unpaid bills or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed in accordance with the contract documents, but in no event shall the provisions of this sentence be construed to impose any obligations upon the City to either the Contractor, his/her surety or any third party. In paying any unpaid bills of the Contractor, any payment so made by the City shall be considered as a payment made under the contract documents by the City to the Contractor and the City shall not be liable to the Contractor for any such payments made in good faith.

If the City fails to make payment forty-five (45) days after the filing of the Notice of Completion, in addition to other remedies available to the Contractor, there shall be added to

each such payment interest at the maximum legal rate commencing on the first day after said payment is due and continuing until the payment is received by the Contractor.

22. ACCEPTANCE OF FINAL PAYMENT AS RELEASE

The acceptance by the Contractor of final payment shall be, and shall operate as, a Release to the City of all claims of Contractor. The Release shall include all things done or furnished by Contractor in connection with the work and every act and neglect of the City relating to or arising out of the work. If the Contractor intends to exclude any claim or claims from the Release, the Contractor must provide a written list of such claims to City, stating the exact dollar amount, within forty-five (45) days after the date of filing the Notice of Completion. No payment, whether a final payment or not, shall serve to release the Contractor or the Contractor's sureties from any obligations under the Contract Documents, or the Performance Bond or the Payment Bond.

23. INSURANCE REQUIREMENTS FOR CONTRACTORS

At no additional cost to City, Contractor shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his/her agents, representatives, employees or subcontractors.

A. MINIMUM SCOPE OF INSURANCE:

Coverage shall be at least as broad as:

1. Insurance Services Office Commercial General Liability coverage (occurrence form CG 00 01).

2. Insurance Services Office form number CA 00 01 covering Automobile Liability, code 1 (any auto).

3. Workers' Compensation as required by the State of California and Employer’s Liability Insurance.

B. MINIMUM LIMITS OF INSURANCE:

Contractor shall maintain limits no less than:

1. General Liability: $1,000,000 per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.

2. Automobile Liability: $1,000,000 per accident for bodily injury and property damage.

3. Workers' Compensation and Employers' Liability: $1,000,000 per accident for bodily injury or disease.

C. DEDUCTIBLES AND SELF-INSURED RETENTIONS:

Any deductibles or self-insured retentions shall be declared to and approved by the City. At the option of the City, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the City, its officers, officials, employees and volunteers; or the Contractor shall provide a financial guarantee satisfactory to the City guaranteeing payment of losses and related investigations, claim administration and defense expenses.

D. OTHER INSURANCE PROVISIONS:

The policies are to contain, or be endorsed to contain, the following provisions:

1. General Liability and Automobile Liability Coverages.

    a. The City, its officers, officials, employees and volunteers are to be covered as additional insureds with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of the Contractor; and with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts or equipment furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance, or as a separate owner's policy.

    b. For any claims related to this project, the Contractor's insurance coverage shall be primary insurance as respects the City, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees, or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.

    c. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be canceled by either party, except after thirty (30) days' prior written notice has been given to the City.

    d. Coverage shall not extend to any indemnity coverage for the active negligence of the additional insured in any case where an agreement to indemnify the additional insured

E. ACCEPTABILITY OF INSURERS:

Insurance is to be placed with insurers with a current A.M. Bests' rating of no less than A:VII.

F. VERIFICATION OF COVERAGE:

Contractor shall furnish the City with original certificates and amendatory endorsements effecting coverage required by this clause. The endorsements should be on forms that conform to the requirements. All certificates and endorsements are to be received and approved by the City before work commences. The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements affecting the coverage required by these specifications at any time. Any confidential or proprietary information may be removed.

G. SUBCONTRACTORS:

Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.

24. CONTRACT SECURITY

The Contractor shall, within ten (10) days after the receipt of the Notice of Award, furnish the City with a Performance Bond in the amount of one hundred (100) percent of the contract price, and a Payment Bond in the amount of one hundred (100) percent of the contract price, conditioned upon the performance of the Contractor of all undertakings, covenants, terms, conditions and agreements of the contract documents, and upon prompt payment by the Contractor to all persons supplying labor and materials in the prosecution of the work provided by the contract documents. Such bonds shall be executed by the Contractor and a corporate bonding company approved by the City and licensed to transact business in the State of California. The expense of these bonds shall be borne by the Contractor. If, at any time, a surety on any such bond is declared bankrupt or loses its right to do business in the State of California the Contractor shall, within ten (10) days after notice from the City to do so, substitute an acceptable bond, or bonds, in such form and sum and signed by such other surety or sureties as may be satisfactory to the City. No further payments shall be deemed due, nor shall be made, until the new surety or sureties shall have furnished an acceptable bond to the City.

25. ASSIGNMENTS

Neither the Contractor nor the City shall sell, transfer, assign or otherwise dispose of the contract or any portion thereof, or of his/her right, title or interest therein or his/her obligations thereunder without written consent of the other party.

26. INDEMNIFICATION

The Contractor will indemnify and hold harmless the City, the Engineer, and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the work, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death; or to injury or destruction of tangible property including the loss therefrom; and is caused in whole or in part by any negligent or willful act or omission by the Contractor, subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

In any and all claims against the City or the Engineer, or any of their agents or employees, by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Workmen's Compensation acts, disability acts or other employee benefit acts.

The obligation of the Contractor under this paragraph shall not extend to the liability of the Engineer, his/her agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications. The City will not be held liable for any accident, loss or damage to work prior to its completion and acceptance.

27. SEPARATE CONTRACTS

The City reserves the right to let other contracts in connection with this project. The Contractor shall afford other Contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work and shall properly connect and coordinate his/her work with theirs. If the proper execution or results of any part of the Contractor's work depends upon the work of any other Contractor, the Contractor shall inspect and promptly report to the Engineer any defects in such work that render it unsuitable for such property execution and results.

The City may perform additional work related to the project by itself, or it may let other contracts containing provisions similar to these. The Contractor will afford the other Contractors who are parties to such contracts, or the City if it is performing the additional work itself, reasonable opportunity for the introduction and storage of materials and equipment and the execution of work, and shall properly connect and coordinate his/her work with theirs.

If the performance of additional work by other Contractors or the City, is not noted in the Contract documents prior to the execution of the contract, written notice thereof shall be given to the Contractor prior to starting such additional work. If the Contractor believes that the performance of such additional work by the City or others involves him/her in additional expense or entitles him/her to any extension of contract time, he/she may make a claim therefore as provided in Sections 14 and 15.

28. SUBCONTRACTING

The Contractor may utilize the services of specialty Contractors on those parts of the work, which, under normal contracting practices, are performed by specialty Contractors. The Contractor shall be fully responsible to the City for the acts and omissions of his/her subcontractors and of persons either directly or indirectly employed by them, as he/she is responsible for the acts and omissions of persons directly employed by him/her.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the contract documents insofar as applicable to the work of the subcontractors and to give the Contractor the same power as regards terminating any subcontract that the City may exercise over the Contractor under the provisions of the contract documents. Nothing contained in this contract shall create any contractual relation between any subcontractor and the City.

29. ENGINEER'S AUTHORITY

The Engineer shall act as the City's representative during the construction period. He/she shall decide questions, which may arise as to quality and acceptability of materials furnished and work performed. He/she shall interpret the intent of the contract documents in a fair and unbiased manner. The Engineer will make visits to the site and determine if the work is proceeding in accordance with the contract documents.

30. LAND AND RIGHT-OF-WAY

Prior to the issuance of Notice to Proceed, the City shall obtain all land and rights-of-way necessary for carrying out and for the completion of the work to be performed pursuant to the contract documents, unless otherwise mutually agreed.

The City shall provide to the Contractor information, which delineates and describes the lands owned and rights-of-way acquired. The Contractor shall provide, at his/her own expense and without liability to the City, any additional land and access thereto that the Contractor may desire for temporary construction facilities, or for storage of equipment or materials.

31. GUARANTEE

The Contractor shall guarantee all materials and equipment furnished and work performed for a period of one (1) year from the date of substantial completion. The Contractor warrants and guarantees for a period of one (1) year from the date of substantial completion of the system that the completed system is free from all defects due to faulty materials or workmanship and the Contractor shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the system resulting from such defects.

The City will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments or other work that may be necessary by such defects, the City may do so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in force and effect through the guarantee period.

32. CONTRACT DISPUTES AND NOTICE OF POTENTIAL CLAIM

If the Contractor and Engineer fail to agree whether or not any work or other matter is within the scope of the Contract, the Contractor shall nevertheless immediately perform such work upon receipt of a written Field Instruction or other written directive. It is the intention of this section that disputes between the parties arising under and by virtue of the contract be brought to the attention of the Engineer at the earliest possible time in order that the matters may be resolved, if possible, or other appropriate action can be undertaken.

For disputes arising under and by virtue of the contract, including an act or failure to act by the Engineer, the Contractor shall provide a signed written initial notice of potential claim to the Engineer within 5 days from the date the dispute first arose. The initial notice of potential claim shall provide the nature and circumstances involved in the dispute which shall remain consistent through the dispute. The initial notice of potential claim shall be submitted on State Form CEM-6201A to be furnished by the Engineer and shall be certified with reference to the California False Claims Act, Government Code Sections 12650-12655. The Contractor shall assign an exclusive identification number for each dispute, determined by chronological sequencing, based on the date of the dispute.

The exclusive identification number for each dispute shall be used on the following corresponding documents:

- Initial notice of potential claim.
- Supplemental notice of potential claim.
- Full and final documentation of potential claim.

- Corresponding claim included in the Contractor's written statement of claims.

The Contractor shall provide the Engineer the opportunity to examine the site of work within 5 days from the date of the initial notice of potential claim. The Contractor shall proceed with the performance of contract work unless otherwise specified or directed by the Engineer. Throughout the disputed work, the Contractor shall maintain records that provide a clear distinction between the incurred direct costs of disputed work and that of undisputed work. The Contractor shall allow the Engineer access to the Contractor's project records deemed necessary by the Engineer to evaluate the potential claim within 20 days of the date of the Engineer's written request.

Within 15 days of submitting the initial notice of potential claim, the Contractor shall provide a signed supplemental notice of potential claim to the Engineer that provides the following information:

- A narrative describing the complete nature and circumstances of the dispute which caused the potential claim.
- The contract provisions that provide the basis of claim.
- The estimated cost of the potential claim, including an itemized breakdown of individual labor and material costs and how the estimate was determined.
- A time impact analysis of the project schedule that illustrates the effect the effect on the scheduled completion date due to schedule changes or disruptions where a request for adjustment of contract time is made.

The supplemental notice of potential claim shall be submitted on State Form CEM-6201B to be furnished by the Engineer and shall be certified with reference to the California False Claims Act, Government Code Sections 12650-12655. The Engineer will evaluate the information presented in the supplemental notice of potential claim and provide a written response to the Contractor within 20 days of its receipt. If the estimated cost or effect on the scheduled completion date changes, the Contractor shall update this information as soon as the change is recognized and submit this information to the Engineer.

Within 30 days of the completion of work related to the potential claim, the Contractor shall provide the full and final documentation of potential claim to the Engineer that provides the following information:

- A detailed factual narration of events fully describing the nature and circumstances that caused the dispute, including, but not limited to, necessary dates, locations, and items of work affected by the dispute.

- The specific provisions of the contract that support the potential claim and a statement of the reasons these provisions support and provide a basis for entitlement of the potential claim.

- When additional monetary compensation is requested, the exact amount requested shall be segregated into the following cost categories:

  1. Labor – A listing of individuals, classifications, regular hours and overtime hours worked, dates worked, and other pertinent information related to the requested reimbursement of labor costs.

2. Materials – Invoices, purchase orders, location of materials either stored or incorporated into the work, dates materials were transported to the project or incorporated into the work, and other pertinent information related to the requested reimbursement of material costs.
3. Equipment – Listing of detailed description (make, model, and serial number), hours of use, dates of use and equipment rates. Equipment rates shall be at the applicable State rental rate as listed in the Department of Transportation publication entitled "Labor Surcharge and Equipment Rental Rates," in effect when the affected work related to the dispute was performed.

- When an adjustment of contract time is requested the following information shall be provided:

  1. The specific dates for which contract time is being requested.
  2. The specific reasons for entitlement to a contract time adjustment.
  3. The specific provisions of the contract that provide the basis for the requested contract time adjustment.
  4. A detailed time impact analysis of the project schedule. The time impact analysis shall show the effect of changes or disruptions on the scheduled completion date to demonstrate entitlement to a contract time adjustment.

The full and final documentation of the potential claim shall be submitted on State Form CEM-6201C to be furnished by the Engineer and shall be certified with reference to the California False Claims Act, Government Code Sections 12650-12655.

Pertinent information, references, arguments, and data to support the potential claim shall be included in the full and final documentation of potential claim. Information submitted subsequent to the full and final documentation submittal will not be considered. Information required in the full and final documentation of potential claim, as listed in items above, that is not applicable to the dispute may be exempted as determined by the Engineer. No full and final documentation of potential claim will be considered that does not have the same nature and circumstances, and basis of claim as those specified on the initial and supplemental notices of potential claim.

The Engineer will evaluate the information presented in the full and final documentation of potential claim and provide a written response to the Contractor within 30 days of its receipt unless otherwise specified. The Engineer's receipt of the full and final documentation of potential claim shall be evidenced by postal receipt or the Engineer's written receipt if delivered by hand. If the full and final documentation of potential claim is submitted by the Contractor after acceptance of the work by the Director, the Engineer need not provide a written response.

Failure of the Contractor to conform to specified dispute procedures shall constitute a failure to pursue diligently and exhaust the administrative procedures in the contract, and is deemed as the Contractor's waiver of the potential claim.

33. DISPUTE RESOLUTION

In the event that disputes cannot be resolved pursuant to the provisions of Section 32, disputes of $375,000 or less between that parties shall be subject to the provisions set forth in California Public Contract Code sections 20104 et seq.

34. TAXES

The Contractor will pay all sales, consumer, use and other similar taxes required by the law of the place where the work is performed.

35. APPLICABLE WAGE RATES

The Contractor's attention is directed to Section 7-1.02K(2) "Wages" of the Standard Specification and the most recent General Prevailing Wage Determination made by the Director of Industrial Relations, which can be found on the DIR website (https://www.dir.ca.gov/). These prevailing wage rates, and any subsequent amendments thereto made prior to the date of the Invitation for Bids, are the minimum rates to be paid during the life of the contract.

Certified copies of all payroll records shall be submitted to the Engineer each week for the prior week's work. Certified payroll records and submittal thereof shall be in accordance with Section 7-1.02K(3) "Certified Payroll Records" of the Standard Specifications.

In accordance with the California Labor Code, and other applicable labor provisions, the prevailing wages applicable to the project will be determined by the United States Secretary of Labor and/or the State of California Department of Industrial Relations.

The listings of or reference to minimum rates herein is not a representation that labor can be obtained at these rates. It is the responsibility of bidders to inform themselves as to local labor conditions and prospective changes or adjustments of wage rates. No increase in the contract price shall be allowed or authorized on account of payment of wage rates in excess of those listed or referred to herein.

SECTION TS

TECHNICAL SPECIFICATIONS

SECTION 01150

MEASUREMENT AND PAYMENT

PART 1: GENERAL

1.01 DESCRIPTION

Payment shall be made at the bid prices and shall be considered as full compensation for furnishing all labor, materials, tools, supplies, and services as required for proper completion of the work described in the following bid items, complete in place, and to the satisfaction of the Engineer.

Items of work or other services which the Contractor is required to supply, such as final clean-up or other incidental items, and which are not listed as separate bid items shall be included in the related bid items and shall be considered as paid in those items, whether or not specifically identified in the following descriptions. Also considered to be included in such costs are any costs associated with the repair of damage which may occur to existing facilities as a result of the Contractor's operations.

1.02 LUMP SUM BREAKDOWN SUBMITTALS

After award of the Contract and prior to approval of initial progress payment requests, the Contractor shall submit a cost breakdown list to the Engineer for all Lump Sum bid items. The list shall consist of the major elements of work that make up each of the lump sum bid items and shall be used for determining progress pay estimates. The Contractor shall provide amounts for each element, pro-rating general costs such as mobilization, setup, temporary facilities and controls, and overhead and profit for each element. The distribution breakdown that the contractor indicates for any lump sum bid item may be revised as deemed necessary by the Engineer if it appears such items are unbalanced, unless the Contractor can substantiate these costs. Only elements of work of value to the City shall be included in the list.

PART 2: BID ITEMS

Bid Item 1 – Mobilization/Demobilization

The lump sum bid for Mobilization shall not exceed four percent (4%) of the total bid price. Mobilization shall include: the obtaining of insurance and bonds; moving onto the site of all equipment; submittal and approval of initial project schedule; obtaining and paying for all permits by other agencies as applicable and not delineated in other bid items; furnishing temporary construction utilities (temporary power, toilets, water, fences, etc.); installing construction signs; temporary buildings and field office trailer(s); establishment of temporary site access and staging area; installation of temporary construction fencing; and all other construction as required for the proper performance and completion of work.

The lump sum bid for Demobilization shall not exceed four percent (4%) of the total bid price. Demobilization shall include: site cleaning and restoration of surfaces within the job site; post-construction meeting; removal of all temporary facilities and equipment from the work area; disconnection of the temporary construction utilities; and turnover of a project to the Owner.

Contractor may apply for payment of mobilization on a percent complete basis as the items covered in Mobilization are being completed.

Contractor may apply for payment of Demobilization after the overall project substantial completion is achieved and the project begins to demobilize.

The lump sum price shall be full compensation for the preparation and installation or submittal of these materials, and for all labor, equipment, tools and incidentals to complete this item.

Bid Item 2 - Traffic Control

The lump sum amount shall include all work and materials necessary to create, obtain approval, and implement a traffic control plan as required by the City of Oroville and/or Caltrans for this project. Measurement and payment shall be made on a percent complete basis. The price shall be full compensation for updates or changes required by the City.

The lump sum price shall be full compensation for the preparation, submittal, approvals, fees, and implementation of these materials, and for all labor, equipment, tools, and incidentals to complete this item.

Bid Item 3 - Chemical Grout Injection

The lump sum amount shall include all work and materials necessary for chemical grout injection, including soil densification material procurement and installation, equipment for installation, monitoring during installation, filling of grout holes when injection is complete, clearing of all material in pipe that may impede flow, mortar, and all other essentials to complete this item as detailed in the Specifications and Plans.

The lump sum price shall be full compensation for all labor, equipment, tools, and incidentals to complete this item.

Bid Item 4 – Hot Mix Asphalt, Type A (3/4")

The per ton amount shall include all work and materials necessary for all hot mix asphalt, type A to be used on this project, including furnishing and placement of material, compaction, testing, and all other essentials required to complete this item as detailed in the Specifications and Plans.

The per ton price shall be full compensation for all labor, equipment, tools, and incidentals to complete this item.

Bid Item 5 – Adjust Structure to Grade

The per each amount shall include all work and materials necessary for adjusting structures to grade, including furnishing and installation of grade rings and cast collars, and all other essentials required to complete this item as detailed in the Specifications and Plans.

The per each price shall be full compensation for all labor, equipment, tools, and incidentals to complete this item.

Bid Item 6 – Cold Plane Asphalt Concrete

The price per square yard for cold plane asphalt concrete shall include all work and materials necessary to cold plane existing asphalt concrete including milling equipment, removal and disposal of milled material, and all other essentials required to complete this item as detailed in the Specifications and Plans.

The price per square yard shall be full compensation for all labor, equipment, tools, and incidentals to complete this item.

Bid Item 7 – 72” CMP Culvert

The price per linear foot for 72” CMP culvert shall include all work and materials necessary to install new 72” CMP culvert, including sawcutting, trenching, disposal of spoils, installation of bedding, temporary plating, trench dam, utility crossing protection, backfill and compaction, aggregate base, furnishing of pipe, and all other essentials required to complete this item as detailed in the Specifications and Plans.

The price per linear foot shall be full compensation for all labor, equipment, tools, and incidentals to complete this item.

Bid Item 8 – Vertical Curb and Gutter

The price per linear foot for vertical curb and gutter shall include all work and materials necessary to remove and dispose of the existing AC dike, install new vertical curb and gutter, including sawcutting, aggregate base, furnishing and placement of curb and gutter, and all other essentials required to complete this item as detailed in the Specifications and Plans.

The price per linear foot shall be full compensation for all labor, equipment, tools, and incidentals to complete this item.

Bid Item 9 – 4” PCC Sidewalk

The price per square foot for 4” PCC sidewalk shall include all work and materials necessary to install new 4” PCC sidewalk, including sawcutting, aggregate base, furnishing and placement of PCC sidewalk, and all other essentials required to complete this item as detailed in the Specifications and Plans.

The price per square foot shall be full compensation for all labor, equipment, tools, and incidentals to complete this item.

Bid Item 10 – 6” PCC Driveway

The price per square foot for 6” PCC driveway shall include all work and materials necessary to install new 6” PCC driveway, including sawcutting, aggregate base, furnishing and placement of PCC driveway and transitions, and all other essentials required to complete this item as detailed in the Specifications and Plans.

The price per square foot shall be full compensation for all labor, equipment, tools, and incidentals to complete this item.

Bid Item 11 – Remove Driveway

The price per square foot for remove driveway shall include all work and materials necessary to remove and dispose of existing concrete driveway and all other essentials required to complete this item as detailed in the Specifications and Plans.

The price per square foot shall be full compensation for all labor, equipment, tools, and incidentals to complete this item.

END OF SECTION

SECTION 02140

DEWATERING

PART 1: GENERAL

1.01 SCOPE

The work of this section consists of providing all labor, materials, and equipment necessary to dewater trench and structure excavations.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02200: Earthwork

B. Section 02223: Trenching, Backfilling, and Compacting

C. Section 02225: Structure Excavation and Backfill

1.03 SUBMITTALS

A. Two weeks prior to installation of dewatering facilities and commencement of excavation, submit:

1. A dewatering plan prepared and submitted to the Engineer for approval.

2. Drawings and descriptions indicating numbers, locations, arrangements, depths, capacities, and construction details, as applicable, of all dewatering system equipment and components, including standby equipment and components.

3. Methods of disposal of pumped water.

4. Methods of diverting precipitation and surface water away from excavations.

5. Method for collecting and removing precipitation within excavations as necessary.

6. Copies of executed permits necessary to perform work.

1.04 PERMITS

The Contractor shall obtain and comply with all required permits for the dewatering system and operation, disposal of water, and pay all associated fees.

PART 2: MATERIALS

2.01 FACILITIES AND EQUIPMENT

The Contractor shall provide all necessary facilities and equipment for the dewatering operations.

PART 3: EXECUTION

3.01 GENERAL REQUIREMENTS

A. The Contractor shall have on hand, at all times, sufficient pumping equipment and machinery in good working condition and shall have available, at all times, competent workmen for the operation of the pumping equipment. Adequate standby equipment shall be kept available at all times to insure efficient dewatering and maintenance of dewatering operation during power failure.

B. Dewatering shall commence at an appropriate time prior to commencing excavation, and shall be continuous until facilities and structures are completed, backfilled, and, as appropriate, filled with water to prevent damage from hydrostatic uplift and/or floatation.

C. Excavations extending below site groundwater levels or encounter perched groundwater within permeable soil layers shall be dewatered. Dewatering of narrow trench excavations that penetrate less than a few feet below the groundwater level and do not encounter loose and/or cohesionless soils may be possible by directing inflow to a sump where water can be removed by a pump. Temporary dewatering of wider, deeper, and/or more extensive excavations may require well points, perimeter trench drains, and/or deep sumps. To help maintain bottom stability of wider, deeper, and/or more extensive excavations, groundwater levels shall be drawn-down a minimum of 3 feet below the lowest portion of the excavation.

D. Dewatering shall at all times be conducted in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation and protect temporary excavation slope stability during construction. If foundation soils are disturbed or loosened by the upward seepage of water or an uncontrolled flow of water, the affected areas shall be excavated and replaced with drain rock on geotextile fabric at no additional cost to the Owner.

3.02 DISPOSAL OF WATER

A. The Contractor shall be responsible to design and control the dewatering operations such that disposal of water does not cause erosion or other damage and such that water to be disposed of is free from silt and other objectionable materials and in compliance with any applicable permit requirements. Settling basins and/or other means shall be used as necessary.

B. Contractor shall utilize applicable construction activity Best Management Practices (BMP) for the project. Refer to “Caltrans Storm Quality Handbooks, Construction Site Best Management Procedures Manual”, Latest Edition.

3.03 TERMINATION OF DEWATERING

The termination of dewatering operations shall be performed in such a manner as to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted backfill and prevent flotation or movement of structures, pipelines and sewers. Dewatering devices/features shall either be removed or abandoned in place in accordance with legal regulatory requirements and as approved by the Engineer.

END OF SECTION

SECTION 02200

EARTHWORK

PART 1: GENERAL

1.1 DESCRIPTION

A. Contractor furnished labor, materials, equipment, and incidentals necessary to perform all excavation, backfill, grading, and compaction required to complete the work shown on the Plans and specified herein. The work shall include, but not necessarily be limited to, excavation for structures, footings, conduit, pipe, and paving; backfilling and fill; embankment and grading; disposal of surplus and unsuitable materials; hydroseeding; and all incidental related work.

1.2 REFERENCED SECTIONS

A. The following Sections are referenced in this Section:

1. Section 02140: Dewatering
2. Section 02223: Trenching, Backfilling, and Compacting

1.3 GEOTECHNICAL REPORT - NOT USED

1.4 QUALITY ASSURANCE

A. Reference Specifications, Codes, and Standards

1. This section references the following documents. They are a part of this section insofar as specified and modified herein. The latest edition of referenced publications in effect at the time of bid opening shall govern. In case of conflict between the requirements of this section and the listed documents, the requirements of this section shall prevail.

Reference	Title
ASTM D1556	Density of Soil in Place by the Sand-Cone Method
ASTM D1557	Moisture Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb. (4.54-kg) Rammer and 18-in. (457-mm) Drop
ASTM D2922	Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D3017	Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow

B. Tests

1. The City or their Representative shall take samples and perform moisture content, gradation, compaction, and density tests during compaction and placement of backfill materials to check compliance with these specifications.
2. The Contractor shall remove surface material at locations designated by the Engineer and provide such assistance as necessary for sampling and testing.

3. The Engineer may direct the Contractor to construct inspection trenches in compacted or consolidated backfill to determine that the Contractor has complied with these specifications.

4. Tests will be made in accordance with the following:

Test	Standard Procedure
Moisture content	ASTM D3017
Density in-place	ASTM D1556 or ASTM D2922
Moisture-density relationships	ASTM D1557

1.5 SUBMITTALS

A. Comply with the General Provisions and include test results, certifications, and source for all earthwork materials.

PART 2: PRODUCTS

2.1 MATERIALS

A. Imported fill

1. Imported fill shall be imported granular material with a maximum plasticity index 12 and a three-inch maximum particle size. Imported fill shall be approved by the Engineer prior to importation to the site.

B. Engineered Fill

1. Engineered fill material shall consist of soil excavated onsite, free of debris, wood, trash, peat, and other objectionable material which may be compressible, or which cannot be compacted properly.

2. Engineered fill shall be well graded and shall possess sufficient fines such that no nesting or voids result in the compacted mass.

3. Engineered fill shall contain less than 3% organic matter or other deleterious substances by weight and shall not contain rocks or rubble fragments over three inches in greatest dimension.

4. Soil removed during excavations will require drying prior to use as engineered fill material. Lime can be mixed with soil to dry it to compactable moisture content. The percentage of lime is dependent on the moisture content of the soils.

C. Crushed Rock (Drain Rock)

1. In accordance with Section 02225.

D. Pipe Bedding and Pipe Zone Material

1. Pipe bedding and pipe zone material shall be 3/8-inch minus granular material conforming to the following gradation:

Sieve Size	**% Passing**
3/4"	100
3/8"	100
#4	35 - 55

#30	20-60
#200	0-10
Sand Equivalent	30min
Minimum Dry Density	80 lb/cu ft
Coefficient of Permeability	1.4 in/hr

E. Trench Backfill Material

1. Native material meeting the requirement of Engineered Fill.

F. Gravel Material

1. 1-inch minus aggregate material obtained from a single source of uniformly graded angular rock, shall be clean and free draining with no more than 2% passing a No. 4 sieve, and shall be of such a nature that it can be spread and compacted to produce a stable driving surface.

G. Filter Fabric Material

1. Permeable, nonwoven, shall not act as a wicking agent, and shall conform to the requirements of the Filter Fabric found in Section 88 of the most current Standard Specifications, as issued by the California Department of Transportation.

H. Controlled Low Strength Material (CLSM)

1. Hand-excavatable, free-flowing and self-compacting material that consists of cement, pozzolan fly ash, fine and coarse aggregates, and water that has been mixed in accordance with ASTM C94.
2. The CLSM shall have a minimum 28-day compressive strength of not less than 50 psi and a maximum 28- day compressive strength of no more than 150 psi.
3. Placement of backfill or concrete on top of the CLSM is not allowed until the CLSM passes a ball drop test described in ASTM D6024.

PART 3: EXECUTION

3.1 GENERAL

A. Control of Water

1. Keep excavations free from water during construction. Groundwater shall be maintained either naturally or by dewatering at least three feet below the lowest anticipated excavation depth.
2. In accordance with Section 02140.

B. Surplus Material

1. Unless otherwise specified, surplus excavated material shall be disposed of at the Contractor's expense.
2. The Contractor shall satisfy himself that there is sufficient material available for the completion of the work before disposing of any material inside or outside the site. Shortage of material, caused by premature disposal of any material by the Contractor, shall be replaced by the Contractor at his expense.

C. Hauling

1. When hauling is done over highways or city streets, the loads shall be trimmed and the vehicle shelf areas shall be cleaned after each loading. The loads shall be watered after trimming to eliminate dust.

D. Maintenance of Roadways

1. All earthwork operations shall be performed in a manner which does not disrupt the continuous flow of traffic on existing roadways. All streets shall be swept clean daily where dirt and debris result from contractor's operations.

E. Finish Grading

1. Finish grades and existing or natural grades in the area of work are indicated on the plans. If no finished grade is shown on the Plans, Contractor shall grade to existing.
2. The Contractor shall do all grading, filling or excavating as required to completely grade the site to lines and grades shown, and to provide for the indicated drainage.
3. Where finished grade corresponds practically with existing grade, the ground shall be worked up and graded off evenly with existing grade.
4. Filled areas shall be compacted so as to prevent settlements and the Contractor shall be responsible for a period of one year after final acceptance of the project to provide additional fill as necessary to bring to grade any areas which settle below the indicated grades and to replace or repair any planting or work damaged by such settlement.

F. Tolerances

1. Finished grade shall be to the line and grade shown on the plans to within a tolerance of plus or minus 0.05 ft.
2. Allowance for topsoil and grass cover, and sub-base and pavement thickness shall be made so that the specified thickness can be applied to attain the finished grade.

G. Control of Erosion

1. The Contractor shall maintain earthwork surfaces true and smooth and protected from erosion.
2. Erosion control measures, such as silt fences, filter fabric, sedimentation ponds, placement of straw waddles along the peripheries of construction sites, temporary detention ponds, and terraced slopes, shall be employed as appropriate and shall be in place prior to any clearing or grading activity.

3.2 EXCAVATION

A. General

1. Excavation shall be in accordance with the Plans and as required for construction. Excavations shall be kept free from water while construction is in progress. The Engineer shall be notified immediately in writing if it becomes necessary to remove soft, weak, or wet material. Wet excavated materials may need to be dried by aeration prior to being used as engineered fill.

2. Soil disturbed or weakened by the Contractor's operations and soils permitted to soften from exposure to weather shall be excavated to firm foundation and refilled with engineered fill material compacted to 95 percent of ASTM D1557, maximum density. All work of this nature will be at the Contractor's expense.

B. Trench Excavation

In accordance with Section 02223.

C. Structural Excavation:

In accordance with Section 02225.

3.3 SUBGRADE PREPARATION

A. Ground surfaces receiving fill shall be prepared by clearing and grubbing as specified in these specifications, and by removing soil which is high in organic content and other deleterious material.

B. Subgrade shall then be scarified to a depth of 8 inches, brought to a uniform moisture content of one (1%) to three percent (3%) above optimum and compacted to at least 90 percent (90%) maximum dry density as determined by ASTM D1557.

3.4 FILLING OPERATIONS

A. General

1. The Contractor shall be responsible for the maintenance and protection of all embankments and fills made during the contract period and shall bear the expense of replacing any portion which has been displaced due to carelessness, negligent work, erosion or failure to take proper precautions.

2. If the existing slope in an area to be filled is greater than 5:1, the Contractor shall bench the area prior to filling to allow each lift to be keyed 1 foot into the existing slope.

B. Construction of Engineered Fill and Imported Fill

1. Finish grade shall be established with onsite engineered fill and imported fill placed in lifts not to exceed eight inches in compacted thickness and uniformly compacted at or near the optimum moisture content.

2. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to promote uniformity of the material in each layer.

3. When the moisture content of Engineered Fill with clay materials is less than two percent (2%) over optimum, water shall be added until a moisture content of at least two percent (2%) over optimum is achieved.

4. When the moisture content of Imported Fill is less than optimum, water shall be added until a moisture content of at least optimum is achieved.

5. When the moisture content of the Engineered Fill is too high to permit the specified compaction, the fill shall be aerated by blading or other methods until satisfactory moisture content is achieved.

6. No fill shall be placed during weather conditions, which will alter the moisture content of the fill materials sufficiently to make adequate compaction impossible.

7. After placing operations have been stopped because of adverse weather conditions, no additional fill material shall be placed until the last layer compacted has been checked and found to be compacted to the specified densities.

C. Pipe Bedding and Trench Backfill

1. Bedding

a. Provide six-inch minimum bedding material under pipe. Bedding shall be placed in 6-inch maximum loose lifts.

b. Provide uniform and continuous support for each section of utility except at bell holes or depressions necessary for making proper joints.

c. Bring up evenly on each side and along the full length of the pipe.

d. Ensure that no damage is done to piping or their protective coatings.

e. Compact each loose lift as specified below before placing the next lift.

f. Do not place bedding in freezing weather or where the material in the trench is already frozen or is muddy, except as authorized.

2. Backfilling

a. Backfill shall be placed in 6-inch maximum loose lifts, mechanically consolidated and shovel sliced under the haunches of the pipe. See City Improvement Standards for backfill and compaction requirements.

b. Where settlements greater than the tolerance allowed herein for grading occur in trenches and pits due to improper compaction, excavate to the depth necessary to rectify the problem, then backfill and compact the excavation as specified herein and restore the surface to the required elevation.

c. Coordinate backfilling with testing of utilities.

3. Unsuitable Material Under Bedding

a. If soft, spongy, unstable, or similar other material is encountered upon which the bedding material or pipe is to be placed, this unsuitable material shall be removed to a minimum depth of 12-inches below the pipe.

b. The 12-inch depth shall be backfilled with pervious material or accepted bedding material suitably compacted.

c. Sufficient pervious material shall be installed to provide a stable base accepted by the Engineer prior to installation of the utility, pipe, or structure.

3.5 COMPACTION

A. General

1. Each layer or lift of material specified shall be compacted so that the in-place density tested is not less than the percentage of maximum density identified herein. Compaction shall be accomplished by mechanical equipment such as tamping rollers, sheepsfoot rollers, pneumatic tire

rollers, vibrating rollers, or other mechanized tampers suitable for the work.

2. Compaction of materials by ponding and jetting is prohibited.

3. Compaction equipment and procedures are subject to approval by the Engineer.

4. Compaction shall be in accordance with the following:

Item	Compaction, Percentage of ASTM 1557 Maximum Density
Subgrade:	
Under Fill	95% to a depth of 8 inches
Under Concrete Slabs	95% to a depth of 8 inches
Engineered Fill and Imported Fill:	
Under Pavement to 24 inch depth	95%
Under Culvert to Subgrade	95%
All Other	90%
Pipe Bedding:	
Below pipe To 6 inches above top of pipe	95% 95%
Trench Backfill:	
Below 24 inches	95%
Under Pavement to 24 inch depth	95%

B. Consolidation of Crushed Rock

1. Crushed rock shall be consolidated by one of three methods, as follows:

   a. A minimum of three (3) passes with a vibrator plate compactor

   b. Tamping of the crushed rock as it is placed, using the bucket of the backhoe

   c. Thoroughly wheel rolling with equipment

2. Each lift of rock shall not exceed 12 inches of unconsolidated thickness.

3.6 CLEAN UP

A. After completing all earthwork, the Contractor shall leave the site in a neat and clean condition, doing all such grading as is required by the plans. Any existing features, structures, and other facilities damaged or affected by the work shall be replaced, repaired, or restored to their original condition or better.

END OF SECTION

SECTION 02223

TRENCHING, BACKFILLING, AND COMPACTING

PART 1: GENERAL

1.01 DESCRIPTION

The work of this section consists of trenching and backfilling for the construction and installation of pipelines, conduits, and cables. All trenching will be open cut, unless otherwise approved in writing. It includes all clearing and grubbing, trenching or tunneling, construction of cribbing and cofferdams, dewatering, incidental work, and providing specified backfill.

Excavated soil at the site will generally be suitable for use as backfill above the pipe zone provided it does not contain deleterious matter, vegetation or cementations larger than 3 inches in maximum dimension. Pipe zone materials (bedding shading, etc.) shall conform to the requirements of the pipe manufacturer or utility authority, as appropriate and will likely consist of imported aggregate or sand.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02140: Dewatering

B. Section 02200: Earthwork

C. Section 02225: Structure Excavation and Backfill

D. Section 02510: Paving and Road Surfacing

1.03 SUBMITTALS

A. Submit an electronic copy of a report from a testing laboratory verifying that backfill material conforms to the specified gradations of characteristics for granular material, imported sand, rock refill for foundation stabilization, and water.

B. Submit method of compaction in pipe zone, including removal sequence of shoring where used.

C. Provide written description of barricading, shoring, cribbing, bracing, and sloping precautions.

1.04 PROJECT CONDITIONS

A. Obtain all required permits and licenses before installing utilities under existing roads, other than City roads, and follow the rules and requirements of the authority having jurisdiction.

B. Arrange construction sequences to provide the shortest practical time that the trenches will be open to avoid hazard to City staff, subcontractors, and the public, and to minimize the possibility of trench collapse.

1.05 TESTING FOR COMPACTION

A. The Contractor shall test for compaction every 100 feet at locations determined by the Engineer.

B. Relative compaction is defined as the ratio, as a percentage, of the as-compacted dry density to the laboratory maximum dry density. The laboratory maximum dry density is defined in accordance with ASTM D1557, latest edition.

C. Where compaction tests indicate a failure to meet the specified compaction, the Contractor will take additional tests every 50 feet in each direction until the extent of the failing area is identified. Rework the entire failed area until the specified compaction has been achieved.

1.06 STREET ZONE

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

1.07 TRENCH ZONE

The trench zone includes the portion of the trench from the top of the pipe zone to the bottom of the street zone in paved areas or to the existing surface in unpaved areas.

1.08 PIPE ZONE

The pipe zone shall include the full width of trench from the bottom of the pipe or conduit to a horizontal level above the top of the pipe, as shown on the contract drawings. Where multiple pipes or conduits are placed in the same trench, the pipe zone shall extend from the bottom of the lowest pipes to a horizontal level above the top of the highest or topmost pipe.

1.09 EXCAVATION BOTTOM CONDITIONS

Based on conditions encountered in our exploratory borings, materials exposed at the base of excavations are expected to be variable ranging from lean clay with sand and gravel to silty sand with gravel.

Generally, some form of excavation bottom stabilization will be necessary where wet, unstable soils are exposed. Since we do not know the extent of potential locally soft or unstable areas, our field representative shall provide mitigation recommendations in the field at the time of construction. Typical mitigation alternatives include overexcavation and replacement with a gravel mat wrapping in geosynthetic fabric to prove a stable bottom.

The weight of pipe, contents and compacted backfill above the pipe will not result in significant increased load over present overburden. Assuming soft and/or unsuitable subgrade areas are mitigated, pipeline settlement shall be negligible.

1.10 PIPE BEDDING

All earthwork operations shall be observed, and all fills tested for recommended compaction and moisture content by a geotechnical inspector.

Pipe zone materials (bedding, shading, etc.) shall conform to the requirements of the City and/or pipe manufacturer, as appropriate, and will likely consist of imported aggregate or sand.

The pipe base or bedding shall be defined as a minimum 6-inches thick layer of material immediately below the bottom of the pipe or conduit and extending over the full trench width in which the pipe is bedded.

Trench backfill shall be mechanically compacted. Flooding or jetting will not be allowed. Backfill shall be placed in lifts 6 inches or less in loose thickness, moisture-conditioned above optimum moisture content, and compacted to at least 90% relative compaction. Excavated soils may require drying prior to placement.

PART 2: MATERIALS

2.01 GRANULAR MATERIAL FOR BACKFILL - STREET ZONE

Granular material or granular soil for backfill used above the pipe zone shall be ¾-inch – Class 2 Aggregate Base conforming to the most recent Caltrans Standard Specification 26-1.02.

2.02 IMPORTED SAND - PIPE BASE AND PIPE ZONE

Imported sand used for the pipe base and pipe zone shall be free of clay or organic material and have the following gradation:

Sieve Size	Percent Passing By Weight
3/8-Inch	100
No. 4	90 – 100
No. 30	12 – 50
No. 100	5 – 20
No. 200	0 – 5

Imported sand shall have a sand equivalent not less than 28 per ASTM D2419.

2.03 PIPE ZONE MATERIAL ALTERNATIVE

In accordance with Section 02200.

2.04 TRENCH ZONE MATERIAL

Trench zone material shall consist of native material conforming to engineered fill, in accordance with Section 02200.

2.05 CEMENT SLURRY - PIPE BASE AND PIPE ZONE ALTERNATIVE

Cement slurry backfill shall consist of Type I or II Portland cement, imported sand, and sufficient water for workability, per the most recent Caltrans Standard Specification 19-3.062. The mix shall produce a minimum 28-day strength of 50 PSI and 1 x 10 -6 cm/sec permeability. Submit a mix design and confirming test results per Section 01300.

2.06 REFILL FOR FOUNDATION STABILIZATION

¾-inch crushed rock shall be used in areas where pipelines extend into loose medium dense sands below the water table.

2.07 CONCRETE FOR PIPE ENCASEMENT AND THRUST BLOCKS - NOT USED

A. Concrete for pipe encasement and thrust blocks shall be per Section 03100, unless otherwise shown in the drawings.

B. Provide thrust blocks at fittings in pipe having rubber gasket bell and spigot or unrestrained mechanical joints as directed by the Engineer. Provide thrust blocks at all tees and elbows 45° and greater, or as noted on contract plans and in the general or specific pipe specifications.

C. Size thrust block bearing area for 1500 psf. Size thrust blocks based on the test pressures provided in the contract documents.

2.08 WATER FOR COMPACTION

Water for compaction shall be clean and free of oil, acids, salts, and other deleterious substances. Water shall be supplied by the Contractor at no additional expense to the Owner. The Contractor shall coordinate with the Engineer for the use of the water, shall provide all necessary labor and equipment to extract the water, and shall be responsible for the repair of any damage to the existing facilities which can be attributed to this operation.

PART 3: EXECUTION

3.01 COMPACTION REQUIREMENTS

Unless otherwise shown in the drawings or otherwise described in the specifications for the particular type of pipe installed, relative compaction in pipe trenches shall be as follows:

A. Pipe Base: 95% relative compaction.

B. Pipe Zone: 95% relative compaction.

C. Backfill in Trench Zone not Beneath Paving or Aggregate Base Access Roadways: 90% relative compaction.

D. Backfill in Trench Zone to Street Zone in Paved Areas or Within Limits of Aggregate Base Roadways: 95% relative compaction.

E. Backfill in Street Zone in Paved Areas or within Limits of Aggregate Base Roadways: 95% of relative compaction.

F. Refill for Foundation Stabilization: 95% relative compaction.

G. Refill for Over-excavation: 95% relative compaction.

3.02 MATERIAL REPLACEMENT

Remove and replace any trenching and backfilling material which does not meet the specifications, at the Contractor's expense.

3.03 SLOPING, SHEETING, SHORING, AND BRACING OF TRENCHES

Trenches shall have sloping, sheeting, shoring, and bracing conforming with 29CFR1926, Subpart P – Excavations, CAL/OSHA requirements.

3.04 SIDEWALK, PAVEMENT, AND CURB REMOVAL

Cut bituminous and concrete pavements regardless of the thickness and curbs and sidewalks prior to excavation of the trenches with a pavement saw or pavement cutter. Width of the pavement cut shall be at least equal to the required width of the trench at ground surface. Haul pavement and concrete materials from the site. Do not use for trench backfill.

3.05 TRENCH WIDTHS

Trench widths in the pipe zone shall be as shown in the drawings. If no details are shown, maximum width shall be 24 inches greater than the pipe outside diameter. Comply with 29CFR Part 1926 Subpart P – Excavations. Trench width at the top of the trench will not be limited except where width of excavation would undercut adjacent structures and footings. In such case, width of trench shall be such that there is at least 2 feet between the top edge of the trench and the structure or footing.

3.06 TRENCH EXCAVATION

Excavate the trench to the lines and grades shown in the drawings with allowance for pipe thickness, sheeting and shoring if used, and for pipe base or special bedding. If the trench is excavated below the required grade, refill any part of the trench excavated below the grade at no additional cost to the Owner with foundation stabilization material. Place the refilling material over the full width of trench in compacted layers not exceeding 6-inches deep to the established grade with allowance for the pipe base or special bedding.

3.07 DEWATERING

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

B. Dewater in accordance with Section 02140.

3.08 LOCATION OF EXCAVATED MATERIAL

During trench excavation, place the excavated material only within the working area. Do not obstruct any roadways or streets. Conform the federal, state, and local codes

governing the safe loading of trenches with excavated material. All trenches shall be backfilled at the end of each day's operation. Trench patching with asphalt concrete shall be completed within 24 hours of trench backfill.

3.09 LENGTH OF OPEN TRENCH

Limit the length of open trench to 50 feet in advance of pipe laying or amount of pipe installed in one working day, whichever is less, and not more than 50 feet in the rear of pipe laying, except as modified by encroachment permit requirements. At the end of each working day, the trench shall be backfilled to match existing surface.

3.10 TRENCH EXCAVATION IN BACKFILL AND EMBANKMENT AREAS

A. Construct trench excavation for pipe, pipes, or conduit in backfill or embankment areas in accordance with the following procedures:

B. Construct and compact the embankment to an elevation of 1-foot minimum over the top of the layer of the largest pipe or conduit to be installed.

C. Excavate trench in the compacted backfill or embankment. Place cement slurry in the pipe base and pipe zone. Compact backfill above the pipe zone to the relative compaction required for trench zone backfill.

3.11 FOUNDATION STABILIZATION

A. After the required excavation has been completed, the Owner and/or Agency will inspect the exposed subgrade to determine the need for any additional excavation. It is the intent that additional excavation is conducted in all areas within the influence of the pipeline where unacceptable materials exist at the exposed sub-grade. Over-excavation shall include the removal of all such unacceptable materials that exists directly beneath the pipeline to the required trench width and to the depth required. Backfill the trench to sub-grade of pipe base with fill material adequate for foundation stabilization. Place the foundation stabilization material over the full width of the trench and compact in layers not exceeding 6-inches deep to the required grade. Foundation stabilization work above and beyond the recommended stabilization of bedding and foundation preparation in this section and Section 02225 may be executed in accordance with a change order. Any claims relating to this work without prior written authorization will be at the contractor's expense.

B. Refill used by the Contractor for his convenience will not receive any additional payment.

3.12 INSTALLING BURIED PIPING

A. Backfill per the detailed piping specification for the particular type of pipe and per the following.

B. Handle pipe in such a manner as to avoid damage to the pipe. Do not drop or dump pipe into trenches under any circumstances.

C. Inspect each pipe or fitting prior to placing into the trench. Inspect the interior and exterior protective coatings. Patch damaged areas in the field with material recommended by the protective coating manufacturer. Clean ends of pipe

thoroughly. Remove foreign matter and dirt from inside of pipe and keep clean during and after installation.

D. Grade the bottom of the trench to the line and grade to which the pipe is to be laid, with allowance for pipe thickness and bedding depth. Remove hard spots that would prevent a uniform thickness of bedding. Place the specified thickness pipe base material over the full width of trench. Grade the top of the pipe base ahead of the pipe laying to provide firm, continuous, uniform support along the full length of pie, and compact to the relative compaction specified herein. After laying each section of the pipe, check the grade and alignment and correct any irregularities prior to laying next joint.

E. Excavate bell holes at each joint to permit proper assembly and inspection of entire joint. Fill the area excavated for the joints with the bedding material specified or detailed in the drawings.

F. When installing pipe, do not deviate more than 1-inch from line or 1/4 –inch from grade. Measure elevation at the pipe invert. The Contractor shall verify pipe grade at not more than 80 feet intervals, in the presence of the Owner's Representative.

G. After pipe has been bedded, place pipe zone material simultaneously on both sides of the pipe, in maximum 6-inch lifts, keeping the level of backfill the same on each side. Carefully place the material around the pipe so that the pipe barrel is completely supported and that no voids or compacted areas are left beneath the pipe. Use particular care in placing material on the underside of pipe to prevent lateral movement during subsequent backfilling.

H. For pipe sizes greater than 12-inches in diameter, no more backfill material than the lesser of 6-inches or 1/3rd of the pipe diameter shall be placed prior to shovel slicing. Sufficient care shall be taken to prevent movement of the pipe during shovel slicing. Shovel slicing shall be witnessed by the Field Inspector and/or Geotechnical Engineer.

I. Compact each lift to the relative compaction specified herein.

J. Push the backfill material carefully onto the backfill previously placed in the pipe zone. Do not permit free fall of the material until at least 2 feet of cover is provided over the top of the pipe. Do not drop sharp, heavy pieces of material directly onto the pipe or the tamped material around the pipe. Do not operate heavy equipment over the pipe until at least 3 feet of backfill has been placed and compacted over the pipe.

K. When pipe laying is not in progress, including the noon hours, close the open ends of pipe. Do not allow trench water, animals, or foreign material to enter the pipe.

L. Remove and dispose of all water entering the trench during the process of pipe laying. Keep the trench dry until the pipe laying and jointing are completed.

3.13 BACKFILL COMPACTION

Compact per the detailed piping specification for the particular type of pipe and per the following:

A. Compact trench backfill to the specified relative compaction. Compact by using mechanical compaction or hand tamping. Do not use high impact hammer-type equipment except where the pipe manufacturer warrants in writing that such use will not damage the pipe. Ponding or jetting is not allowed.

B. Compact material placed within 12-inches of the outer surface of the pipe by hand tamping only.

C. Do not use any axle-driven or tractor-drawn compaction equipment within 5 feet of building walls, foundations, or other structures.

3.14 CEMENT SLURRY BACKFILL

When cement slurry backfill is utilized, pipe shall be supported by mounding imported backfill material or sandbags filled with imported backfill material. Pipe shall not be supported on wooden or concrete blocks.

END OF SECTION

SECTION 02225

STRUCTURE EXCAVATION AND BACKFILL

PART 1: GENERAL

1.01 DESCRIPTION

The work of this section consists of all structure excavation and backfill required to complete the work, including rock excavation and furnishing select or imported backfill. It includes disposal of surplus or unsuitable material.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02140: Dewatering

B. Section 02200: Earthwork

C. Section 02223: Trenching, Backfilling, and Compacting

1.03 QUALITY ASSURANCE

Evaluation of all fill materials and testing required to determine compliance for the work of this section will be the responsibility of the Contractor and at the Contractor's expense. Areas where test results indicate noncompliance shall be corrected before placing additional backfill.

1.04 PROJECT CONDITIONS

Excavations should be performed carefully to avoid damaging existing underground utilities and adjacent structures. Adjacent improvements should be monitored by the Contractor so that excavation methods and support systems can be modified in a timely manner, if surface deflections are observed.

Take necessary precautions to prevent the entrance of soils and other materials into streambeds, lakes, or water courses.

1.05 RELATIVE COMPACTION TEST

A. The Contractor will test for compaction every 100 square feet at locations determined by the Engineer.

B. Relative compaction is defined as the ratio, in percent, of the as-compacted dry density to the laboratory maximum dry density. The laboratory maximum dry density is defined in accordance with ASTM D1557, latest edition.

C. Where compaction tests indicate a failure to meet the specified compaction, the Contractor will take additional tests every 50 square feet in each direction until the extent of the failing area is identified. Rework the entire failed area until the specified compaction has been achieved.

PART 2: MATERIALS

2.01 ENGINEERED FILL

In accordance with Section 02200.

2.02 CRUSHED ROCK

Material shall be crushed rock of one-inch (1") maximum size, with no material passing a Number four (#4) sieve.

2.03 AGGREGATE BASE

Aggregate base shall be Class 2 aggregate base, ¾" maximum as specified in Section 26 of the most recent California Department of Transportation Standard specifications.

2.04 DRAIN ROCK

Drain rock shall be Class 1, Type B permeable material as specified in Section 68 of the most recent California Department of Transportation Standard specifications.

2.05 DRAIN ROCK FABRIC

Drain rock fabric shall be non-woven geotextile fabric.

PART 3: EXECUTION

3.01 CLEARING - NOT USED

Perform clearing operations in accordance with Section 02100.

3.02 STRUCTURAL EXCAVATION

A. General: All excavation for structures shall be done to the dimensions and levels indicated on the drawings or specified herein.

1. Under all structures, the Contractor shall:

    a. Excavate to sub-grade, remove and dispose of organic material and unsuitable soils.

    b. Scarify the surface a minimum depth of 12 inches; bring the moisture content to at least 3 percent above optimum and compact to not less than 90 percent relative compaction.

    c. Place Engineered Fill in 8-inch maximum lifts to obtain sub-grade elevations. Compact to not less than 95 percent relative compaction and at a moisture content of at least 2 percent above optimum.

2. Under all pavements, the Contractor shall:

    a. Excavate to below sub-grade, remove and dispose of organic material and unsuitable soils.

    b. Scarify the surface a minimum depth of 12 inches; bring the moisture content to at least 3 percent above optimum and compact to not less than 95 percent relative compaction.

    c. Place Engineered Fill in 8-inch maximum lifts to obtain sub-grade elevations. Compact to not less than 95 percent relative compaction and at a moisture content of at least 2 percent above optimum.

3. Under all embankments, the Contractor shall:

    a. Excavate to below sub-grade, remove and dispose of organic material and unsuitable soils.

b. Scarify the surface a minimum depth of 12 inches; bring the moisture content to at least 3 percent above optimum and compact to not less than 95 percent relative compaction.

c. Place Engineered Fill in 8-inch maximum lifts to obtain sub-grade elevations. Compact to not less than 95 percent relative compaction and at a moisture content of at least 2 percent above optimum.

Excavation shall be made to such width outside the lines of the structure to be constructed therein as may be required for proper working methods, the erection of forms and the protection of the work. Care shall be taken to preserve the foundation surfaces shown on the drawings in an undisturbed condition. If the Contractor excavates or disturbs the foundation surfaces shown on the drawings or specified herein without written authorization of the Engineer, he shall replace at his expense such foundations with compacted gravel foundation fill or other material approved by the Engineer in a manner which will show by test an equal bearing strength with the undisturbed foundation material.

B. Bracing, Sheeting, and Shoring: Care shall be exercised in excavating for lower footings not to disturb bearing under higher adjacent footings or structures. Existing structures and pipework shall be adequately braced and cared for so that no damage will result. The Contractor shall submit structural calculations and drawings signed and sealed by a civil engineer registered in the State of California showing members, connections, and anchorage of the proposed bracing, sheeting, and shoring. The Contractor shall provide suitable sheeting and shoring, where necessary, for protection of the excavations. All such sheeting and shoring shall be removed unless otherwise specifically authorized.

C. Unsuitable Materials: To suit field conditions, excavation below the depths shown may be ordered, but changes may only be made as directed. Soft, spongy, or unsuitable bearing material of any kind shall be entirely removed down to solid bearing soil and replaced with an engineered fill as specified herein. In such event only the excess excavation and fill will be paid for as extra work.

D. Dewatering: Any water that may be encountered or that may accumulate in excavations shall be removed and kept out by pumping or other approved methods, and all construction shall be carried on in the dry. Water shall be kept down until structures are complete to above water, safe from uplift and horizontal water pressure and the backfill has been placed. Dewatering shall be in accordance with Section 02140.

E. Approval of Excavation: The Contractor shall notify the Engineer when excavation for a structure is complete and no forms, reinforcing steel or concrete, shall be placed until the excavation has been deemed acceptable by the Engineer. Once the excavation is deemed acceptable, the Contractor must protect the work from flooding or groundwater uplift.

F. Disposal of Waste Excavation: Excavated material determined by the Engineer to be unsuitable, or in excess of the amounts required for backfill shall be disposed off-site at no additional cost to the Owner.

3.03 ENGINEERED FILL

A. General: All soil under structures, pavements, embankments, and at other locations where indicated on the drawings shall be made using Engineered Fill sub-base, carefully controlled and compacted on a prepared surface.

B. Surface Preparation: The surface on which fill is to be placed shall be free of all vegetation, debris, or other objectionable material, and all large roots shall be grubbed out to a depth of at least 2 feet below footing, slab, or pavement elevations and 5 feet beyond the limits of the proposed improvements. The surface shall be scarified to a depth of 12 inches, brought to a moisture content of optimum plus approximately 2 percent. It may be necessary to adjust the moisture content of the sub-grade soil by watering or aeration to bring the moisture content of the soil near optimum in order that the specified densities can be obtained.

C. Placement of Fill:

1. Fill materials shall be spread in a maximum of 8-inch lifts and shall have uniform moisture content that will provide the specified dry density after compaction. If necessary to obtain uniform distribution of moisture, water shall be added to each layer by sprinkling and the soil disced, harrowed, or otherwise manipulated after the water is added. If the material is too wet, the moisture content shall be reduced as necessary by spreading and aerating.

2. Field density tests shall be used to check the compaction of the fill materials. Sufficient tests shall be made on each layer by the Engineer to assure adequate compaction throughout the entire area. If the dry densities are not satisfactory, the contractor will be required to increase the weight of the roller or the number of passes as required to produce the specified densities.

3. Where trenches must be excavated in Engineered Fill these trenches shall be backfilled with the fill materials excavated. The backfill shall be placed in 6 inch layers and each layer compacted with pneumatic tampers to provide densities as specified above. Backfill placed adjacent to walls shall be placed in a similar manner to that specified for backfill in excavated trenches.

4. No fill shall be placed during weather conditions which will alter the moisture content of the fill materials sufficiently to make adequate compaction impossible. After placing operations have been stopped because of adverse weather conditions, no additional fill material shall be placed until the last layer compacted has been checked and found to be compacted to the specified densities.

3.04 BACKFILL AGAINST STRUCTURES

Material for filling and backfilling around structures shall meet the requirements for Engineered Fill. Should the material available from excavation be insufficient or unsuitable for the required use, the Contractor shall furnish and place suitable material. Do not place backfill against newly constructed concrete structures for a period of 14 days unless authorized by the Engineer. Hand operated compactors shall be used for backfilling against concrete walls within a horizontal distance of H/2 of the structure, where H is defined as the vertical height of the backfill above the foundation. Backfill shall be placed in even, uniform lifts around the structure.

3.05 TEMPORARY EXCAVATION SLOPES

Based on the conditions encountered in exploratory borings, including shallow groundwater and zones of granular soil type the site may be considered OSHA “Type C”. The Contractor shall have an OSHA-approved competent person onsite during excavation and pipe placement to evaluate trench/excavation conditions and to make appropriate recommendations where necessary.

Sloughing and caving should be anticipated, particularly in area with seepage zones of poorly grade, cohesionless sands. Flatter slopes, shoring, or safety shields may be

needed in areas where sloughing raveling or running is likely. The Contractor shall have equipment readily available to flatten slopes or install shoring if necessary. Loose or easily erodible soils may be present locally and should be removed from excavation faces before personnel begin work below the slopes. In addition, stockpiled materials, equipment and other surcharge loads should be kept back a minimum distance from the top of the trench equal to the depth of the excavation.

3.06 EXCAVATION BOTTOM CONDITIONS

Based on conditions encountered in our exploratory borings, materials exposed at the base of excavations are expected to be variable ranging from lean clay with sand and gravel to silty sand with gravel.

Generally, some form of excavation bottom stabilization will be necessary where wet, unstable soils are exposed. Since we do not know the extent of potential locally soft or unstable areas, our field representative shall provide mitigation recommendations in the field at the time of construction. Typical mitigation alternatives include overexcavation and replacement with a gravel mat wrapping in geosynthetic fabric to prove a stable bottom.

The weight of pipe, contents and compacted backfill above the pipe will not result in significant increased load over present overburden. Assuming soft and/or unsuitable subgrade areas are mitigated, pipeline settlement should be negligible.

END OF SECTION

SECTION 02400

SOIL Ddensification (HIGH DENSITY POLYURETHANE)

PART 1: GENERAL

1.1 SECTION INCLUDES

A. Specifications for soil densification with high density polyurethane material at locations shown and as directed by the Engineer.

1.2 DEFINITIONS

A. Soil Densification: A process where a two-part, hydro-insensitive, high density polyurethane material is injected under pressure through tubes into the ground at various elevations to displace and densify in-situ soils.

B. Injection point: Depths of the injection tubes for soil densification.

1.3 SUBMITTALS

A. At least 10 days before starting soil densification work at the job site, submit an electronic Soil Densification Operations Work Plan for review. Allow 5 days for the Engineer's review. The Engineer provides comments and specifies the date when the review stopped if revisions are required. Change and resubmit a revised Soil Densification Operations Work Plan within 5 days of receiving the Engineer's comments. The Engineer's review resumes when a complete Soil Densification Operations Work Plan has been resubmitted. When the Engineer authorizes the Soil Densification Operations Work Plan, submit an electronic copy of the authorized Soil Densification Operations Work Plan.

   Immediately upon completion of soil densification work at each individual injection point, submit a copy of recorded forms of injection point, polyurethane injection, and monitoring logs.

B. Submit a Soil Densification Operations Work Plan outlining the proposed work for soil densification. The work plan must include:

   1. Specific field location for soil densification.
   2. A certificate of compliance for high density polyurethane material.
   3. Manufacturer's material specifications and MSDS of high density polyurethane.
   4. Manufacturer's instructions for application of high density polyurethanes.
   5. Sample forms of injection point, high density polyurethane injection, and monitoring logs.
   6. A list of personnel to be used and their experience with soil densification using high density polyurethane.
   7. Resumes of key personnel, including soil densification supervisor, detailing past project experiences.
   8. Equipment and methods for measuring and recording high density polyurethane injection pumping rate and volume with calibration procedures and equipment certification.
   9. Complete description of the materials, equipment, including size and type,

and methods to be used in soil densification operation, including inclination and depth of injection tubes.

10. Detailed description of the proposed monitoring program for ground surface movement and distress to related freeway facilities such as pavement, storm drains, and utility conduits.

11. Injection program for high density polyurethane, including proposed rate and amount of material to be injected to obtain proper densification of the base and sub-base soils.

1.4 QUALITY CONTROL AND ASSURANCE

A. Perform soil densification with high density polyurethane material work under the direct supervision of soil densification supervisor. Soil densification supervisor and foreman must be present and supervise all soil densification shifts of each densification operation.

B. The soil densification supervisor must have a minimum of 5 years' experience in planning and directing work dealing with soil densification, in the actual placement of injection pipes, and in the mixing and injection of the polyurethane material. The supervisor must have minimum 3 years of actual on-the-job supervisory experience in similar applications.

C. Before and after completion of soil densification operation, test the base soil conditions with dynamic cone penetrometer.

D. Use continuous laser level or dial indicator micrometer readings during injection to monitor culvert movement.

PART 2: MATERIALS

2.1 GENERAL - NOT USED

2.2 HIGH DENSITY POLYURETHANE

A. Soil densification material shall be a closed cell, hydro-insensitive, high density polyurethane, EL003 or equivalent, as authorized by the Engineer. The material shall be a polyurethane-forming mixture having water insoluble diluents, which permits the formation of polyurethane in excess water. It shall have a minimum free rise density of 3.0 lbs/ft^3 with a minimum compressive strength of 38.0 psi. The maximum free rise density shall be less than 3.2 lbs/ft^3.

PART 3: EXECUTION

3.1 GENERAL

A. Determine the position in the culvert of each injection point and the elevation. Three injection points shall be made at each location along the culvert. Injection sites shall be located every four feet along the culvert. Adjust locations of polyurethane injection holes to fit the field conditions. Adjustment must be authorized by the Engineer.

B. Drill series of 5/8" to 3/4" holes (as required for injection tube placement) through the existing culvert. If necessary, first inject high density polyurethane material until all encountered voids are filled before starting soil densification operation. Inject high density polyurethane material through the injection tubes inserted into the drilled holes to the injection point depths shown in the Soil Densification

Operations Work Plan. Any adjustment or change to the tube size, location, spacing, or depth must be authorized by the Engineer. The rate and amount of high density polyurethane material injected at injection points must comply with the Injection Program of the Soil Densification Operations Work Plan.

C. Record data of high density polyurethane injection and monitoring at each individual injection point.

D. Stop injection when culvert movement is 0.10 inches to 0.20 inches or other monitoring methods are satisfied. Other monitoring methods may include visible outcropping or kickback on the installation gun.

E. If naturally acceptable soil conditions are encountered or unacceptable soil densification results are obtained, such as performance criteria not being satisfied, the Engineer may delete sections or locations of soil densification.

F. Protect and monitor the existing concrete pavement, barriers, storm drains, unpaved embankment soils, and other facilities for indications of movement or distress during soil densification operation. Monitor overhead poles, electroliers, and structures within 30 feet of injection points.

G. Record the interior of existing storm drains and other utilities for signs of distress such as deflection, heaving, or cracking. Stop soil densification operation immediately if the existing facility shows signs of distress.

H. The Contractor shall be responsible for any pavement blowouts, excessive pavement lifting, or pavement damage that may occur as result of the work. Damaged areas shall be repaired as authorized by the Engineer and at the Contractor’s expense.

I. Backfill tops of injection points with high strength mortar, or approved equal, toweled smooth to match the culvert surface. Backfill material shall be adequate to reseal culvert.

J. Contractor shall clean culvert upon completion of soil densification, including removing any debris that may impede flow. This shall include all debris that was in the culvert before the job began.

3.1 EQUIPMENT

A. In addition to any other equipment necessary for soil densification work, the Contractor shall provide the following equipment:

1. A truck-mounted pumping unit capable of injecting the high density polyurethane material through the culvert in tubes to the depths required. The pumping unit shall be capable of controlling the rate of flow of material as required to densify soils and prevent pavement or culvert blowouts.

2. The pumping unit shall be equipped with a manufacturer's certified flow meter to measure the amount of high density polyurethane injected at each location. The certified flow meter shall have a digital output in both pounds and gallons.

3. Pressure and temperature control devices capable of maintaining proper temperature and proportionate mixing of the polyurethane component materials.

4. Pneumatic or electric drills capable of efficiently drilling 5/8" diameter injection holes through the culvert without damaging the structural integrity of the metal around the injection sites.

5. Laser levels or dial indicator devices capable of monitoring movement at the surface of the culvert to verify that the injected high density polyurethane have been properly densified.

6. A portable dynamic cone penetrometer for on-site soils investigation to assist in location of weak sub-base soils and determination of injection pattern through tubes to densify weak soils.

7. All necessary equipment, such as electric generators, compressors, heaters, hoses, containers, valves and gauges, and light towers to efficiently conduct and control the work.

3.2 DISPOSAL OF RESIDUE AND SURPLUS MATERIAL

A. The Contractor shall contain, remove, and dispose of material from culvert drilling. Residue from soil densification work shall not flow into existing gutters, drainage facilities or left in the culvert or embankment. Remove and dispose of residue and surplus materials generated from the soil densification work.

END OF SECTION

SECTION 02510

PAVING AND ROAD SURFACING

PART 1: GENERAL

1.1 SECTION INCLUDES

A. Contractor furnished labor, materials, equipment, and incidentals necessary to construct paving shown on the Plans, and/or specified herein. The work shall include, but not necessarily be limited to, scarifying and preparing the subgrade, placing and compacting engineered fill materials, placing and compacting Class 2 aggregate base, applying paint binder, placing and compacting asphalt concrete, and all related works.

1.2 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 02200: Earthwork
2. Section 02223: Trenching, Backfilling, and Compacting
3. Section 02225: Structure Excavation and Backfill

1.3 SUBMITTALS

A. Contractor shall submit the following information:

1. Manufacturer's Data or Certificate of Compliance
   a. Aggregate base
   b. Prime coat and paint binder
   c. Asphalt concrete
   d. Independent test laboratory name
2. Certificate of compliance
   a. A certificate of compliance signed by the manufacturer shall be furnished prior to the use of any asphalt materials.
   b. The certificate shall state that the material complies with the requirements of these Specifications.
   c. A certificate shall be furnished with each lot of material delivered to the site; the material provided shall be clearly identified in the certificate.
   d. Certificates of compliance shall be provided for each type of asphalt product used.

1.4 REFERENCE PUBLICATIONS

Reference	Title
ASTM D2922	Density of Soil and Soil Aggregate in Place by Nuclear Methods
ASTM D3017	Moisture Content of Soil and Soil Aggregate Place by Nuclear Methods

PART 2: MATERIALS

2.1 ENGINEERING FILL

A. Engineered fill shall be per these Specifications.

2.2 CLASS 2 AGGREGATE BASE

A. Class 2 aggregate base shall meet all requirements of the most recent Caltrans Standard Specification Section 26-1.02 A for ¾-inch maximum grading.

2.3 PAINT BINDER (TACK COAT)

A. The paint binder (tack coat) shall meet all the requirements of the most recent Caltrans Standard Specification Section 94.

2.4 HOT MIX ASPHALT

A. Asphalt concrete shall meet the requirements of the most recent Caltrans Standard Specification for Type A Hot Mix Asphalt (1/2-inch maximum aggregate, medium grading).

B. The asphalt to be mixed with the aggregate shall meet the section of the most recent Caltrans Standard Specification Section 92 for PG 64-10 steam-refined paving asphalt.

2.5 HEADER BOARD

A. Composite of recycled wood and plastic fibers.

PART 3: EXECUTION

3.1 FINAL GRADING

A. The final grade of the hot mix asphalt shall vary not more than 0.05 foot from the elevations indicated on the Plans and shall conform to the requirements of the most recent Caltrans Standard Specification Section 39. All areas shall be graded to drain. All personnel pathways and areas shall conform to minimum slopes as required by ADA Standards.

3.2 SCARIFYING AND COMPACTING

A. All the subgrade material underlying asphalt concrete surfacing shall be overexcavated and filled per these specifications and compacted to a relative compaction of not less than ninety percent (95%).

3.3 IMPORTED FILL

A. Imported fill material under paved areas shall be placed and compacted to a relative compaction of not less than ninety-five percent (95%) to a depth of 24 inches in accordance with these specifications.

3.4 CLASS 2 AGGREGATE BASE

A. Class 2 aggregate base shall be placed to depth as shown. Placement, moisturizing, spreading, and compaction of Class 2 aggregate base shall meet all

requirements of State Standard Specification Section 26, State Standard Specification Section 17, and the details on the Plans.

3.5 PAINT BINDER (TACK COAT)

A. After the sub-base and aggregate base are placed, compacted, and tested, to the satisfaction of the Engineer, tack coat shall be applied in accordance with State Standard Specification Section 39.

3.6 HOT MIX ASPHALT

A. Asphalt concrete shall be placed where indicated on the Plans to a total thickness as shown on the plans. Storing, proportioning, mixing, equipment, spreading, compacting, and miscellaneous asphalt concrete shall conform to the requirements of the most recent Caltrans Standard Specification Section 39, and the most recent Caltrans Standard Specification Section 22.

3.7 HEADER BOARD

A. A header board shall be placed at all limits of paving not abutting a concrete structure. Attached to 12-inch plastic stakes at three feet on center with metal screws.

3.8 TESTING

A. The Construction Manager will perform laboratory and the initial field testing for density, moisture, and compaction of the asphalt base. The Contractor shall pay for re-testing of locations failing to meet the specified compaction in the initial test. Test laboratory shall provide written reports on the following test methods:

B. Moisture, density, and compaction per ASTM D2922 and D3017.

3.9 TRENCH RESTORATION WITHIN PAVED SECTION

A. Trench restoration within paved sections shall conform to City Standard Detail ST-31.

B. Roadway features such as brick sidewalks and crosswalks shall be replaced in kind during trench restoration.

END OF SECTION

SECTION 02964

COLD PLANING

PART 1: GENERAL

1.1 SECTION INCLUDES

A. Contractor furnished labor, materials, equipment, and incidentals necessary to construct paving shown on the Plans, and/or specified herein. The work shall include, but not necessarily be limited to, cold planing a continuous width of asphalt, placing and compacting asphalt concrete, and all related work.

1.2 SUBMITTALS

A. Contractor shall submit the following information:

1. Manufacturer's Data or Certificate of Compliance
   a. Asphalt concrete
2. Certificate of compliance
   a. A certificate of compliance signed by the manufacturer shall be furnished prior to the use of any asphalt materials.
   b. The certificate shall state that the material complies with the requirements of these Specifications.
   c. A certificate shall be furnished with each lot of material delivered to the site; the material provided shall be clearly identified in the certificate.
   d. Certificates of compliance shall be provided for each type of asphalt product used.

PART 2: MATERIALS

2.1 HOT MIX ASPHALT

A. Asphalt concrete shall meet the requirements of the most recent Caltrans Standard Specification for Type A Hot Mix Asphalt (1/2-inch maximum aggregate, medium grading).

B. The asphalt to be mixed with the aggregate shall meet the most recent Caltrans Standard Specification Section 92 for PG 64-10 steam-refined paving asphalt.

2.2 EQUIPMENT

A. Cold planing machines shall have a cutter head not less than thirty inches (30") in width and shall be operated so as not to produce fumes or smoke. The cold planing machine shall be capable of planing the pavement without requiring the use of a heating device to soften the pavement during or prior to the planing operation.

PART 3: EXECUTION

3.1 SURFACE PREPARATION

A. The depth, width and shape of the cut shall be as shown or specified in the Plans or as directed by the City. The final cut shall result in a uniform surface conforming to the details shown or specified in the Plans. The outside lines of the planed area shall be neat and uniform. Removal of Traffic Stripe or Pavement markings shall be included under Cold Plane Asphalt Concrete Pavement and no additional compensation will be allowed therefore.

B. The Contractor shall remove existing asphalt concrete from the top of the gutter pan and from the face of gutter lip as directed by the City. The Contractor shall not damage the surfacing to remain in place or the gutter lips during the planing operation. The Contractor shall replace damaged gutter lips with spalls in excess of one inch (1") deep by five inches (5") long at the Contractor's expense.

C. Streets being planed shall be swept with a mechanical type pickup machine throughout the course of planing operations and shall be left clean of all planing debris at the end of each Working Day. Planing debris shall not be spilled into drain inlets, and the Contractor shall clean up any spillage immediately. All vegetation shall be removed from the gutter lip and other street areas to be resurfaced.

3.2 COLD PLANING

A. Pavement planing shall include the removal of quarter crowns. The depth of planing below gutter lips shall equal the specified thickness of asphalt concrete overlay as shown or specified in the Plans minus ¼" inch to allow for overlay to be ¼" higher than lip of gutter. The depth of planing at the street centerline shall equal the specified thickness of asphalt concrete to be placed on the street and shall slope smoothly from the lip of gutter to the street centerline.

B. Planed widths of pavement shall be continuous except for special treatment at traffic signal detector loops (if applicable) and at manhole rims as shown or specified in the Plans or as directed by the City. In areas where full width planing is not possible because of traffic signal detector loops, separation shall be maintained from traffic signal detector saw cuts and loops. At cross streets with traffic signals, the planing shall be carried around the corner to the center crosswalk and limit line of the adjacent intersection, unless otherwise directed by the City.

C. At cross streets without traffic signals, the planing shall be carried around the corner to the mid-point of the curb radius of the adjacent side street, unless otherwise directed by the City.

D. At the end of each Working Day there shall not be any elevation difference between plane and un-plane pavement in the traveled vehicle lanes. Any differences that parallel the centerline of the street shall be sloped by either temporary asphalt concrete tapers or additional planing to produce a bevel within the planed pavement. The slope of either the temporary asphalt concrete tapers or the bevel shall not be greater than one inch (1") vertical in twelve inches (12") horizontal. When temporary asphalt concrete tapers are used, asphalt concrete for tapers shall be commercial quality and may be spread and compacted by any method that will produce a smooth riding surface. Temporary asphalt concrete tapers and all loose material from the underlying surface shall be completely removed before placing the permanent surfacing. Elevation differences between planed pavement and lips of gutters are not required to be sloped.

E. Elevation differences perpendicular to the centerline of the street or elevation differences between the planed street and cross-streets shall be lessened with temporary asphalt concrete tapers, as specified above. Temporary asphalt concrete tapers and all loose material from the underlying surface shall be completely removed before placing the permanent surfacing.

F. Contractor shall provide a means for temporary lane delineation where applicable, including centerline (yellow) and lane lines (white), between the time of planing operations and roadway paving, as agreed upon with the Engineer.

3.3 FINAL GRADING

A. The final grade of the hot mix asphalt shall vary not more than 0.05 foot from the elevations indicated on the Plans and shall conform to the requirements of the most recent Caltrans Standard Specification Section 39. If an elevation is not specified on the Plans, Contractor shall match existing grade. All areas shall be graded to drain. All personnel pathways and areas shall conform to minimum slopes as required by ADA Standards.

3.4 HOT MIX ASPHALT

A. Asphalt concrete shall be placed where indicated on the Plans to a total thickness as shown on the plans. Storing, proportioning, mixing, equipment, spreading, compacting, and miscellaneous asphalt concrete shall conform to the requirements of Sections 39 and 22 of the most recent Caltrans Standard Specification.

END OF SECTION

SECTION 03100

CONCRETE

PART 1: GENERAL

1.01 DESCRIPTION

A. This section describes the submittal, material, installation, and testing requirements for furnishing and placing formwork, reinforcement, waterstops, and concrete. It also describes finishing and curing requirements, placement tolerances, and testing and repair procedures.

B. Except as otherwise provided herein, the design and erection shall be in accordance with the applicable provisions of the ACI “Manual of Concrete Practice”.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02200: Earthwork

B. Section 02225: Structure Excavation & Backfill

1.03 GOVERNING COSTS AND STANDARDS

Furnish and installing concrete shall conform to the following:

A. ACI: American Concrete Institute, Manual of Concrete Practice (MCP), latest edition, Applicable Standards

B. CRSI: Concrete Reinforcing Steel Institute

C. SS90: State Standard Specification 90

D. ASTM: Applicable Standards

E. CCRL: Cement and Concrete Reference Laboratory

F. SEAOC: Structural Engineers Association of California

1.04 SUBMITTALS

A. Formwork Shop Drawings:

1. Before starting concrete work, submit shop drawings of formwork showing size and thickness of members, dimensions and locations of openings and blockouts, vertical limits of concrete placements, horizontal lifts, plywood form pattern, proposed construction joints, form tie elevations and details, and any architectural features to be cast into the concrete. Incorporate the work of all trades. This review is for the purpose of assessing the Contractor’s interpretation of the Contract Documents and will not include any considerations of the suitability, constructability, or safety of the concrete forming system.

2. Submit drawings and structural calculations for all concrete other than slabs on grade. Formwork drawings shall be signed and sealed by a Civil

or Structural Engineer registered in California. Where superplasticizers are used, design formwork to resist full liquid head.

3. The Contractor shall be solely responsible for the design, installation, use, and safe removal of all formwork. The formwork design shall comply with all governing codes, all Federal, State, and local ordinances; and generally accepted engineering principles.

4. Submit drawings showing the installation and removal sequence and procedures to be used. Include weight of formwork, assumed construction load, proposed minimum concrete strength for stripping of formwork, size and type of reshores, reshore spacing pattern, number of levels of reshores, and assumed load per reshore at each level.

B. Concrete:

1. Prepare and submit proposed mix designs along with test results from within the last year signed by a laboratory currently certified by CCRL and actively participating in their sample proficiency program verifying that the components and final products meet the requirements of ACI MCP and these specifications. Mix designs shall include fine, coarse, and combined aggregate gradations.

2. Provide certificates that the cement used complies with ASTM C150 and these specifications.

3. Provide delivery tickets for ready-mix concrete or weighmaster certificates per ASTM C94, including cement weights, aggregate size, the amount of water added at the plant and record of pours. Record the amount of water added on the job on the delivery ticket. Water added at the plant shall account for moisture in both the coarse and fine aggregates.

4. Provide certificate of compliance from the manufacturer of the concrete admixtures with these specifications.

5. Provide epoxy bonding compound manufacturer’s specific instructions for use. Provide manufacturer’s certifications as to suitability of product to meet job requirements with regard to surface preparation, pot life, set time, vertical or horizontal application, corrosive and/or submerged environments and forming restrictions.

6. Provide drying shrinkage test data.

C. Reinforcing Steel Shop Drawings:

1. Before starting concrete work, submit drawings complying with requirements of ACI MCP (latest edition), detailed in accordance with ACI SP66, and adapted to the proposed placement schedule, showing size, dimension, bending, placing, and construction joint details. Submit drawing showing locations of all construction joints. Submit type, size, and location of all slab and bar supports. Submit all reinforcement for a particular structure as a single complete submittal package. Shop fabrication shall not begin until corrected drawings bearing the Engineer's review stamp are returned.

2. The Contractor shall be wholly and completely responsible for the accuracy of the lists and for furnishing and placing reinforcing steel in accordance with the details shown on the plans and as specified.

3. Submit certified copies of mill test reports for each lot or heat of all reinforcing steel.

D. Shoring: If shoring the structure is required, submit drawings and structural calculations signed and sealed by a Civil or Structural Engineer registered in the State of California showing anticipated loads, members, connections, and anchorage of the proposed shoring system.

E. Concrete Joints and Waterstops:

1. Submit manufacturer's literature, catalog data, and statement of compliance with referenced standard and specifications for materials specified herein.

2. Submit material samples of PVC waterstops.

3. Provide technical data sheets for the Contractor's personnel and the Owner covering joint preparation, priming, and sealant materials application.

4. Submit layouts for construction and expansion joints and proposed pour sequence. Unless otherwise noted, maximum length or width of one pour is 30 feet and a maximum area of 900 sf. Where walls meet at a corner, the maximum length of wall from the corner to a construction or expansion joint is 20 feet.

PART 2: MATERIALS

2.01 CONCRETE

A. General: Materials shall conform to the most recent Caltrans Standard Specifications Section 90 and these specifications.

B. Portland Cement: Use domestic Portland cement that conforms to the most recent Caltrans Standard Specifications "Type II Modified". Use only one brand of cement in any individual structure. Do not use cement that is damaged, partially set, lumpy, or caked. Reject the entire contents of the sack or container that contains such cement. Do not use salvaged or reclaimed concrete.

C. Water: Water for washing aggregates and for mixing and curing concrete shall be clean, free from oil, acid, alkalis, vegetable matter, or other deleterious substances. No salt or sea water or water containing excessive amount of sodium sulphate, magnesium sulphate or magnesium chloride shall be used.

D. Coarse Aggregate: The coarse aggregate shall consist of clean, hard, dense, tough and durable natural gravel, crushed gravel, or crushed rock, conforming to State Specifications. It shall be free from oil, organic matter or other deleterious substances.

E. Fine Aggregate: Fine aggregate shall consist of hard, durable, uncoated natural sand or other approved material, conforming to State Specifications. It shall be free from oil or other deleterious substances.

F. Fly Ash: Fly ash shall conform to ASTM A618, Class F or N, except that the loss on ignition shall be limited to 1 percent.

G. Admixtures:

1. A water reducing agent such as Pozzolith, WRDA, or approved equal shall be used in all concrete. The admixture shall conform to ASTM C494. Proportioning and mixing shall be as recommended by the manufacturer.

2. Admixtures causing accelerated setting of cement in concrete shall not be used.

3. Air entraining admixtures with demonstrated compatibility with the concrete mix shall be used as required as a moderate addition to the water reducing agent to obtain the specified percent air in the resultant concrete. The Contractor shall submit data verifying that the admixtures are compatible with the mix. Air-entraining admixture shall conform to ASTM C260.

2.02 REINFORCING

A. Reinforcing Steel Bars: Deformed Bars shall be in accordance with ASTM A615, including Supplementary Requirement S1, Grade 60, and free from rust, scale, oil, or frost. No. 3 bars may be Grade 40.

B. Welded Wire Fabric: Shall be of gauge and mesh size shown and shall meet the requirements of ASTM A185 or ASTM A497 for smooth wire fabric. Wire fabric shall be free from rust, scale, oil, and frost.

C. Reinforcement supported from formwork shall rest on Class 1 (plastic protected) bar supports, as specified in "Manual of Standard Practice" by the Concrete Reinforcing Steel Institute (CRSI), Chapter 3.

Reinforcement supported from the ground shall rest on 3-inch high precast concrete blocks not less than 4 inches square and having a compressive strength equal to the specified compressive strength of the concrete being placed. The precast blocks shall have been cured as specified for concrete and shall contain soft steel wires embedded therein for fastening to the reinforcing.

D. Details of concrete reinforcement not shown on drawings shall be in accordance with CRSI Manual of Standard Practice.

2.03 REINFORCING BAR COUPLERS

Reinforcing bar couplers shall be internally threaded to receive future threaded reinforcing bars or couplers. The couplers shall be cold-forged to the reinforcing bars or shall be internally threaded to receive threaded reinforcing bars. The ends of the reinforcing bars shall be upset before threading. Reinforcing bars not upset before threading may be used provided the bar size is increased one bar size. The entire assembly shall be capable of developing, in tension and compression, at least 125 percent of the specified yield strength of the bar. Provide plastic screw-caps to protect internal coupler threads.

2.04 PATCHING GROUT (DRY PACK)

Patching grout shall consist of neat Portland cement, water, and sand passing a No. 8 sieve. The ratio of cement to sand shall be one part Portland cement to two parts sand. Add sufficient water to form a damp formable consistency.

2.05 FORM RELEASE

Form release shall be non-staining and in accordance with Corps of Engineers Specification CE 204 Section 3.03K. Burke Release #1 V.O.C. manufactured by Edoco, or approved equal.

2.06 NONSHRINK GROUT

Nonshrink grout shall conform to the Corps of Engineers Specification for Nonshrink Grout, CRD-C588, and to these specifications. Use a nongas-liberating type, cement base, premixed product requiring only the addition of water for the required consistency. Grout shall be Masterflow 713, as manufactured by Master Builders Company, Upcon by Upco Co., or approved equal.

2.07 EPOXY GROUT

The epoxy shall consist of a two component bonding compound. Epoxy shall be Gantrex K3, GER Grout, Custom Building Products 100 percent solids epoxy, or approved equal.

2.08 JOINT MORTAR BED

Mortar or grout placed on horizontal construction joints shall be a mixture of cement, sand, and water in the same proportions used in the concrete but with the coarse aggregate omitted.

2.09 JOINT SEALANT

A. Joint sealant shall be a multipart, gray, nonstaining, nonsagging, polyurethane sealant, which cures at ambient temperature to a firm, flexible, resilient, tear-resistant rubber. Sealant shall meet ASTM C920 for horizontal joints and for vertical joints and, in addition, is recommended by the manufacturer for continuous immersion in water. Sealant shall be RC 270 of Products Research and Chemical Corporation, Mamico International Vulkem 227, Multi-Chem MC287, or approved equal.

B. Technical Requirements:

Consistency	Gun grade
Tack free time	24 hours at 75 Degrees F and 50% R. H.
Pot life	1 to 3 hours
Hardness	35 shore A, +/- 5
Elongation	500%
Tensile strength ASTM D412	300 psi
Peel strength on concrete	No loss of bond after 24 hours at 150% elongation
Temperature service	-40 degrees F to 155 degrees F
Immersion in water	Continuous

2.10 BACKING ROD FOR EXPANSION JOINTS

Backing rod shall be an extruded closed-cell polyethylene foam rod, such as Minicel backer rod, manufactured by Industrial Systems Department, Plastic Products Group of Hercules, Inc.; Ethafoam SB, as manufactured by Dow Chemical Company; or approved equal.

The rod shall be ¼-inch larger in diameter than the joint width. Where possible, provide full length sections for the joint and minimize splices. Apply backing rod and bond breaker tape in expansion joints.

2.11 BOND BREAKER TAPE

Bond breaker tape shall be an adhesive-backed glazed butyl or polyethylene tape which will adhere to the premolded joint material or concrete surface. The tape shall be the same width as the joint. The tape shall be compatible with the sealant.

2.12 EXPANSION JOINT FILLERS (WALKWAYS AND SIDEWALKS)

Asphalt impregnated, premolded type, ASTM D1751, ½-inch by depth of slab minus ½-inch.

2.13 PREMOLDED JOINT FILLER

Joint filler shall be preformed, non-extruded type constructed of closed-cell neoprene conforming to ASTM D1752, Type I, as manufactured by W. R. Grace Company; W. R. Meadows, Inc.; or approved equal.

2.14 STEEL EXPANSION JOINT DOWELS

Steel expansion joint dowels shall conform to one of the following:

A. Epoxy coated steel bar dowels with a 12-mil coating thickness. Steel bar dowels shall conform to ASTM A36 or ASTM A615, plain rounds, Grade 60. Epoxy coating shall be in conformance with ASTM A775; or,

B. Stainless-steel bar dowels conforming to ASTM A276, Type 302.

2.15 EXPANDED POLYSTYRENE FILLER BLOCK

Expanded polystyrene filler blocks for future construction and expansion joints shall be Styrofoam SM brand as manufactured by Dow Chemical Company, or approved equal.

2.16 PREFORMED CONTROL JOINT

Preformed control joint shall be a one-piece, flexible, PVC joint former, such as Kold-Seal Zip-Per Strip KSF-150-50-50, manufactured by Vinylex, Corp., or a one-piece steel strip with preformed groove, such as Keyed Kold Retained Kap, manufactured by Burke Concrete Accessories, Inc., or approved equal. Provide the preformed control joint material in full length unspliced pieces.

2.17 PVC WATERSTOPS

Waterstops shall be extruded from a PVC compound and shall be lock-rib, center-bulb or flat-strip type as manufactured by Greenstreak, Specon, Inc., JPSpecialties, Inc., or approved equal. Waterstop shall comply with Corps of Engineers Specification CRD-C-572. Waterstops shall be of the dimensions and profile as shown in the drawings.

Waterstops shall be extruded from virgin elastomeric PVC compound, resistant to chemical action with Portland cement, alkalies, acids, and not affected by mildew or fungi. It shall show no effect when immersed for 10 days in a 10 percent solution of sulfuric or hydrochloric acid, saturated lime solution or salt water. Waterstops shall be such that any cross section will be dense, homogeneous, and free from porosity and other imperfections. Waterstops shall be symmetrical in shape. When tested in accordance

with Federal Standard No. 601, the material shall meet the following minimum requirements:

Minimum Requirement	ASTM Specification
Tensile Strength, 2000 psi	D638
Shore hardness A15, 60-80	D2240
Ultimate elongation, 300%	D638
Water absorption, 0.15	D570
Specific gravity, 1.3	D792
Stiffness in flexure, 1000 psi	D747
Low temperature brittleness, -35 degrees F	D746
Tear Resistance, 300 lb/in	D624

2.18 BENTONITE WATERSTOPS

Where identified on the drawings, or specifically approved by the Engineer, bentonite waterstops shall be bentonite strips, Volclay “Water Stop-RX”, or approved equal.

2.19 FLOOR HARDENER

Liqui-Hard by W.R. Meadows; Lapidolith by Sonneborn Building Products, Division of Contech, Inc., or approved equal. Hardener shall be compatible with curing method used.

2.20 ADHESIVE ANCHORS

Anchors called out on Drawings as epoxy anchor, adhesive anchor or chemical anchors shall be stainless steel threaded rods, nuts, and washers or Grade 60 rebar in two component resin adhesive. Adhesive shall be Hilti, Inc. "HIT-HY-150", or approved equal. Adhesive anchors shall be suitable for submerged and corrosive environments.

2.21 STRUCTURAL ANCHORS

A. Anchors called out on the Drawings as expansion anchors (EA), expansion bolt (EB), or wedge anchor (WA) shall be Type 303 or 304 stainless steel Red Head Multi-set or wedge anchors as manufactured by ITT Phillips Drill Division, U.S.E. Diamond, Inc., or approved equal.

B. Adhesive anchors may be substituted for structural anchors.

2.22 CURING MATERIALS

A. Sheet Materials: ASTM C171, 4 mil polyethylene film or waterproof paper.

B. Spray Applied Membrane Forming Liquids: Meet or exceed requirements of ASTM C309, Type 1-D, Class B, except that the loss of water, when tested, shall be not more than 0.15 kilograms per square meter in 24 hours, nor more than 0.45 kilograms per square meter in 72 hours. Shall be a water-base, resin cure with fugitive dye meeting California Air Regulation Board requirements. Products by Burke, W.R. Meadows, Inc., or approved equal.

C. Burlap Mats: Burlap mats shall conform to AASHTO M182.

2.23 FORM TIES

A. Locate form ties on exposed surfaces in a uniform pattern or as indicated on the drawings. Construct form ties so that the ties remain embedded in the concrete except for a removable portion at each end and do not leave an open hole through the concrete. Form ties shall have conical or spherical type inserts with a maximum diameter of 1 inch. Construct form ties so that no metal is within 1 inch of the concrete surface when the forms, inserts, and tie ends are removed. Do not use wire ties. Ties shall withstand all pressures and maintain forms within acceptable deflection limits.

B. Flat bar ties for panel forms shall have plastic or rubber inserts having a minimum depth of 1 inch and sufficient dimensions to permit patching of the tie hole.

C. Notify Engineer 48 hours prior to placement of concrete. Concrete shall not be placed until Engineer has reviewed and approved the placement of all reinforcing steel.

D. Ties for water-holding structures or dry structures with access, such as basements or pipe galleries that are below finish grade shall have an integral steel waterstop that is tightly and continuously welded to the tie. The waterstop shall be at least two times larger in the area than the tie cross-sectional area and shall be oriented perpendicular to the tie and symmetrical about the center of the tie. Construct the ties to provide a positive means of preventing rotation or disturbance of the center portion of the tie during removal of the ends.

E. Tapered form ties shall be tapered through-bolts at least 1 inch in diameter at the smallest end or through-bolts that utilize a removable tapered sleeve of the same minimum size.

2.24 BONDING AGENT

Concresive Liquid LPL, manufactured by Adhesive Engineering Company, No. 705 Bonding Adhesive, Upco Co., or approved equal.

2.25 CURB, GUTTER, AND SIDEWALK

Curb, gutter, and sidewalk shall be precast and have a 28-day minimum compressive strength of 3,000 psi and be in accordance with Caltrans Standard Specifications Section 73. Precast concrete curb, gutter, and sidewalk shall be Jensen Precast or approved equal.

PART 3: EXECUTION

3.01 CONCRETE MIX COMPOSITION

A. Concrete Composition: Concrete shall consist of portland cement, fine aggregate, coarse aggregate, an air entraining agent, and water which shall conform to the requirements of Section 90 of the Caltrans 2018 Standard Specifications, and as modified herein.

B. Submittal of Proposed Mix Design:

1. The proposed mix design, with samples of rock aggregate and any admixtures to be used, shall be submitted in accordance with Section 01300.

2. The grading or proportioning of the fine and coarse aggregates in the mix shall be changed whenever necessary or desirable, in the opinion of the Engineer, to secure the required economy, workability, density, impermeability or strength, and no additional compensation because of such changes shall be allowed.

C. Concrete Designations: Concrete will be designated as shown in the table below and subsequent sections.

Concrete Summary

Type of Use	Maximum Aggregate Size (inches)	Minimum Compression Strength at 28 Days (psi)	Slump (inches)	Max. Water Cement Ratio (by weight)	Entrained Air Required (%)
Liquid Containing Structures:					
Slabs and Footings on grade	1 ½	4,000	3 max	0.45	4-½ ± 1-½
Vertical Wall Sections and Columns	1	4,000	4 max	0.45	4-½ ± 1-½
Mass Concrete and Unformed Slopes	1	4,000	2 max	0.45	4-½ ± 1-½
Other Structural Concrete:					
Interior and Exterior Slabs, Footings, Caissons, and Pipe Encasements	1 ½	4,000	3 max	0.45	3 ± 1-½
Vertical Wall Sections and Columns	1	4,000	4 max	0.45	3 ±1-½
Curbs, Gutters, Sidewalks, Mowing Strips, Fence Posts	1	3,000	4 max	0.55	3 ±1-½
Thrust Blocks, Concrete Fill	1	2,000	4 max	0.60	-----

D. Concrete Compressive Strength:

1. Whenever the 28-day compressive strength identified is 3,500 pounds per square inch or greater, the concrete shall be considered to be designated by compressive strength.

2. When the concrete is designated by compressive strength the mix proportions shall be determined and concrete shall be furnished which contains not less than 564 pounds and not more than 800 pounds of cement per cubic yard of concrete and which conforms to the strengths shown on the plans or as specified.

3. Batch proportions shall be adjusted as necessary to produce concrete having the specified cement factor.

E. Fly Ash:

The Contractor may at his option substitute up to 15 percent by weight of fly ash for the Portland cement required herein.

F. Aggregate Sizing:

1. Coarse aggregate maximum grading shall be as specified in Table 1. Grading shall be as set forth in Section 90 of the most recent Caltrans Standard Specifications.

2. Where the spacing of reinforcing bars is such as to result in minimum clearances, or in other locations where in the opinion of the Engineer difficulties may be experienced in pouring concrete with 1½-inch maximum size aggregate, concrete with 1-inch maximum size aggregate shall be used. In this event the air content shall be increased by ½ percent.

3.02 MEASURING MATERIALS

Materials shall be measured by weighing except as otherwise specified or where other methods are specifically authorized by the Engineer. Scales shall be approved by the Engineer and have been certified by the local Sealer of Weights and Measures within one year of use. Each size of aggregate and the cement shall be weighed separately. The accuracy of all weighing devices shall be such that successive quantities can be measured to within one percent of the desired amount. Cement in standard packages (sacks) need not be weighed, but bulk cement and fractional packages shall be weighed.

3.03 CONCRETE MIXING & DELIVERY

A. All concrete shall be machine mixed at the site or delivered to the site by transit mixers under conditions approved by the Engineer.

B. No concrete shall be placed in the work after it has started to set. No concrete can be placed more than one hour after it has been mixed.

C. If transit mix is used, the rate of delivery, haul time, mixing time and hopper capacity shall be such that all mixed concrete delivered shall be placed in the forms within one hour from the time of introduction of cement and water to the mixer. All concrete shall be kept continuously agitated until discharged in the hopper at the job site.

D. Ready-mixed concrete shall be batched, mixed, and transported in accordance with ASTM C94 and Chapter 7 of ACI 301. Plant equipment and facilities shall conform to the "Check List for Certification of Ready Mixed Concrete Production Facilities" of the National Ready Mixed Concrete Association.

3.04 CONCRETE HANDLING & PLACEMENT

A. Excavations and Formwork:

1. Excavations shall be kept free from water while concrete is being placed, cured and finished therein. Fresh concrete shall be protected at all times from running water.

2. The order of placing concrete in all parts of the work shall be acceptable to the Engineer. In order to minimize the effects of shrinkage, the concrete shall be placed in units as bounded by construction joints shown. The placing of units shall be done by placing alternate units in a manner such that each unit placed shall have cured at least 5 days for hydraulic structures and 2 days for all other structures before the contiguous unit or units are placed, except that the corner sections of vertical walls shall not

be placed until the 2 adjacent wall panels have cured at least 10 days for hydraulic structures and 4 days for all other structures.

3. Before placing concrete, all form work shall be cleaned of dirt and construction debris, water-drained, reinforcement securely and properly fastened in its correct position, forms at construction joints re-tightened, all ducts, sleeves, hangers, pipes, conduits, bolts, wires, etc., installed. No concrete shall be placed before the forms and all work that is to be embedded have been set and observed by the Engineer.

B. Concrete Placement:

1. The working schedule and schedule of placement shall be as shown on the plans and worked out in conjunction with the Engineer. The schedule shall be worked out prior to commencement of work and shall be rigidly adhered to.

2. Concrete shall be conveyed from the mixer to the place of final deposit as rapidly as practicable by methods which will prevent the separation or loss of the materials. The concrete shall be deposited in the forms as nearly as practicable in its final position to avoid rehandling.

3. Concrete shall be placed and consolidated by methods that will not cause segregation of the aggregates and will result in a dense homogeneous concrete which is free of voids and rock pockets. All concrete shall be used while fresh and before it has taken an initial set. Retempering any partially hardened concrete with additional water will not be permitted.

4. Surfaces on which concrete is to be placed shall be dampened with water immediately before placing concrete, except where there is a moisture retarder at slabs on grade.

5. Concrete shall not be deposited on frozen or ice-coated ground nor on ice-coated forms, reinforcing steel, embedded items or construction joints.

6. Where pavement or surfacing is to be placed around or adjacent to manholes or drainage inlets which will be located within traffic lanes, such structures shall not be constructed to final grade until after the pavement or surfacing has been placed around these locations.

7. Where a schedule for placing concrete is shown on the plans no deviation will be permitted therefrom unless approved in writing by the Engineer.

8. Mixed concrete, after being deposited, shall be consolidated until all voids are filled and free mortar appears on the surface. The concrete shall be placed as nearly as possible in its final position and the use of vibrators for extensive shifting of the mass of fresh concrete will not be permitted.

   Except for concrete used in cast-in-place piles, fresh concrete shall not be permitted to fall from a height greater than 4 feet without the use of adjustable length pipes, tubes or double belting placed to prevent segregation of the concrete. Double belting shall not be used unless the thickness of the member is less than 16 inches.

9. In vertical sections, concrete shall be deposited continuously in horizontal layers of 24 inches maximum depth so as to maintain a horizontal plastic

surface until the completion of the unit. No concrete shall be deposited on concrete which has hardened sufficiently to cause the formation of seams and planes of weakness within the section.

10. Concrete for horizontal members or sections shall not be placed until the concrete in the supporting vertical members or sections is no longer plastic and has been in place at least two hours.

11. In all slabs, concrete shall be deposited in a continuous or monolithic operation to the full thickness of the slab. Each batch shall be dumped against previously placed concrete and not away from it and shall not be dumped in separate piles and then worked together.

12. The concrete in each integral part of the structure shall be placed continuously, and work will not be allowed to commence on any such part unless sufficiently inspected and approved material for the concrete is on hand, and forces and equipment are sufficient to complete the part without interruption in the placing of the concrete.

C. Concrete Vibrating:

1. Consolidate concrete by means of high frequency internal vibrators within 15 minutes after it is deposited in the forms. The vibrators shall not be attached to or held against the forms or the reinforcing steel. The vibrating shall be done with care and in such manner that displacement of reinforcement, ducts, and embedded items is avoided.

2. All concrete shall be consolidated by vibration so that the concrete is thoroughly worked around the reinforcement, around embedded items, and into corners of forms, eliminating all air or stone pockets which may cause honeycombing, pitting, or planes of weakness. Internal vibrators used shall be the largest size and the most powerful that can be properly used in the work, as described in Table 5.1.4 of ACI 309. They shall be operated by competent workmen. Use of vibrators to transport concrete within forms shall not be allowed. The vibrator shall be inserted vertically at uniform spacing over the entire area of the placement. The distance between insertions shall generally be about 1½ times the radius of action, or such that the area visibly affected by the vibrator overlaps the adjacent just-vibrated area by a few inches. In slabs, the vibrator shall be sloped toward the horizontal as necessary to operate in a fully embedded position.

3. The vibrator shall penetrate rapidly to the bottom of the layer, and at least 6 inches into the preceding layer if there is such. At each insertion, the vibrator shall be held stationary for a time sufficient to consolidate the concrete but not cause segregation, generally from 5 to 15 seconds. The vibrator shall then be withdrawn slowly, at the rate of approximately 3 inches per second.

4. A spare vibrator in good working condition shall be kept on the job site during all concrete placing operations. Where the concrete is to have an as-cast finish, a full surface of mortar shall be brought against the form by the vibration process, supplemented if necessary by spading to work the coarse aggregate back from the formed surface.

5. The use of external vibrators for consolidating concrete will be permitted when, in the opinion of the Engineer, the concrete is inaccessible for adequate consolidation provided the forms are constructed sufficiently rigid to resist displacement or damage from external vibration.

D. Cold Weather Requirements:

1. Provide adequate equipment for heating concrete materials and protecting concrete during freezing or near-freezing weather in accordance with ACI 306 and the following paragraphs.

2. When the temperature of the surrounding atmosphere is 40 degrees F or is likely to fall below this temperature, use heated mixing water not to exceed 140 degrees F. Do not allow the heated water to come in contact with the cement before the cement is added to the batch.

3. When placed in the forms during cold weather, maintain concrete temperature at not less than 55 degrees F for the first five days after placing, and above 35 degrees F for the remainder of the curing period. Provide thermometers to indicate the ambient temperature and the temperature 2 inches inside the concrete surface.

4. There will be no additional reimbursement made to the Contractor for costs incurred for placing concrete during cold weather.

E. Hot Weather Requirements:

1. During hot weather, give proper attention to ingredients, production methods, handling, placing, protection, and curing to prevent excessive concrete temperatures or water evaporation in accordance with ACI 305 and the following paragraphs.

2. When the weather is such that the temperature of the concrete as placed would exceed 90 degrees F, use ice or other means of cooling the concrete during mixing and transportation so that the temperature of the concrete as placed will not exceed 90 degrees F.

3. Take precautions when placing concrete during hot, dry weather to eliminate early setting of concrete. This includes protection of reinforcing from direct sunlight to prevent heating of reinforcing, placing concrete during cooler hours of the day, and the proper and timely application of specified curing methods.

4. There will be no additional reimbursement to the Contractor for costs incurred for placing concrete in hot weather.

3.05 BONDING TO EXISTING CONCRETE

Existing concrete is concrete placed prior to this contract or concrete placed during this contract which has cured at least 28 days. Coat the contact surface with epoxy bonding compound. The method of preparation and application of the bonding compound shall conform to the manufacturer’s printed instructions and recommendations for specific application of the product.

3.06 FORMWORK

A. Arrange formwork construction to allow for proper sequencing and removal without damage. Use orderly and symmetrical panel arrangement with minimum number of joints. Before proceeding, secure approval of formwork and procedures.

B. Lumber, prefabricated wood panels, metal, or plastic-lined panels shall be sound and free from any defects that will mar or detract from the surface of the finished concrete. Construct forms sufficiently tight to prevent loss of mortar. Design forms to withstand vibrator action. Treat forms with a nonstaining material to eliminate absorption of water and to act as a form release agent.

C. Thoroughly remove all dirt, mortar, and foreign matter before each use. Where the bottom of the form is inaccessible from within, provide access panels to permit thorough removal of extraneous material before placing concrete.

D. Kerf wood forms inserted for architectural treatment to accommodate swelling without pressure on the concrete.

E. Chamfer all exposed horizontal and vertical edges or other corners ¾-inch, both interior and exterior of structures.

F. Earth trench forms for walls and footings below existing and final grades may be used, if approved after inspection of the trenches, provided the sides are clean, even, vertical, true, and provided the bottoms are level, clean, and without fill, and the width is increased two (2) inches.

G. Where tolerances are not shown elsewhere, permissible deviations from established lines, grades, and dimensions are listed below:

1. Variation from the Plumb:

    a. In the lines and surfaces of columns, piers, walls and in arises: in 10 feet, ¼-inch; in any story or 20 feet maximum, 3/8-inch; in 40 feet or more, ¾-inch.

    b. For exposed corners and other conspicuous lines: in any bay or 20 feet maximum, ¼-inch; in 40 feet or more, ½-inch.

2. Variation from the Level or from the Grades Shown:

    a. In floors, ceilings, and beam soffits: in 10 feet, ¼-inch; in any bay or 20 feet maximum, 3/8-inch; in 40 feet or more, ¾-inch; in floors to receive tile, maximum of 1/8" in 10 feet.

    b. For exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines: in any bay or 20 feet maximum, ¼-inch; in 40 feet or more, ½-inch.

3. Variation of the linear building lines from established position in plan and related position of columns, walls and partitions: In any bay or 20 feet maximum, ½-inch; in 40 feet or more, 1 inch.

4. Variation in tank, channel or structural lines in 10 feet, ¼-inch; in 20 feet, 3/8 inch; in 40 feet or more, ½-inch.

5. Variation in the sizes and locations of sleeves, floor openings and wall openings: ¼-inch.

6. Variation in cross-sectional dimensions of columns, beams and piers, and in the thickness of slabs and walls: minus, ¼-inch; plus, 3/8-inch.

7. Footings:

   a. Variation in Dimensions in Plan: Minus, ½-inch; plus, 2-inch.

   b. Misplacement or Eccentricity: 2 percent of the footing width in the direction of misplacement but not more than 2 inches.

   c. Misplacement or Eccentricity of Footings Supporting Masonry Or Concrete: ½-inch.

   d. Reduction in Thickness: Minus 5 percent of specified thickness.

8. Variation in Steps:

   a. In a Flight of Stairs: rise, 1/8-inch; tread, ¼-inch.

   b. In Consecutive Steps: rise, 1/16-inch; tread, 1/8-inch.

9. Variation from established lines and grades in sidewalks, plazas, outdoor concrete slabs, curb and gutter sections: in 10 feet, ¼-inch; in 1 foot, 1/8-inch.

   Where tolerances are not met, the Owner's Representative may require removal and replacement at no cost to the Owner.

3.07 REINFORCEMENT

A. Design: The reinforcement design shown on drawings shows only the necessary information for detailing the reinforcement and preparing placing and bending details. Prior to starting concrete work, submitted detailed shop drawings shall be approved.

B. Bending: In accordance with CRSI Manual of Standard Practice, Chapter 7.

C. Placement: Place reinforcement accurately as shown. Adequately secure metal reinforcement in position by concrete or metal chairs and spacers, in accordance with CRSI Manual of Standard Practice, Chapter 8. Distance between the steel and the surface, as shown; otherwise, in accordance with Chapter 8. In walls, use bolsters between form and reinforcement to prevent lateral displacement of reinforcement and to insure proper concrete cover.

D. Splices: Locate splices of reinforcement as shown. For any splices not shown, assume Class B splice. Stagger splice in adjacent horizontal bars. Lap adjacent sheets of wire mesh a minimum of 6 inches and wire securely.

E. Inspection: After reinforcement has been placed, it shall be inspected and approved before placing concrete.

F. Conditions of Surfaces: At time concrete is placed, all metal reinforcement shall be free from rust, scale, frost, or other coatings that would destroy or reduce the bond.

G. Welding Reinforcement: Do not weld reinforcing steel unless specifically approved by the Engineer. Welding to be in accordance with ASTM A706.

3.08 JOINTS AND EMBEDDED ITEMS

A. Construction Joints:

1. Obtain approval for joints not shown and locate them where they least impair the strength of the structure. Unless otherwise shown on the drawings, joints in walls and columns shall be at the underside of floors, slabs or beams, and at the top of footings or floor slabs. Place beams at the same time as slabs. At least two hours shall elapse after depositing concrete in columns or walls before depositing concrete in supported beams or slabs. As the new concrete is placed, re-vibration in tops of columns and walls is desirable. Make joints perpendicular to the main reinforcement.

2. All horizontal construction joints in walls shall have a continuous wood screed strip at the outer face of joint to form a true line. Screeds shall be removed and the reglet thoroughly cleaned out before pouring the next portion of wall.

3. Continue all reinforcing steel and mesh across construction joints. Lap splices shall be located outside all construction joints.

4. Construction joints shall be made rough and all laitance removed from the surface by chipping the entire surface, sandblasting with coarse silica sand, or hosing the surface 4 to 6 hours after the pour with a fine spray, exposing solidly embedded clean aggregate.

   Forms and reinforcing shall likewise be cleaned of drippings, debris, etc., by means of compressed air. Surfaces of the hardened concrete shall be cleaned to the satisfaction of the Engineer and wet as required before placing of new concrete. Just before starting the new pour, all free water shall be removed and the horizontal surfaces shall be covered with at least a 4-inch thickness of concrete composed of cement and fine aggregate, omitting the coarse aggregate.

B. Expansion Joints:

1. Install expansion joint fillers to ½-inch below slab.

2. Where shown, load transfer dowels shall consist of plain bars with one half coated with an approved antibond coating. The coated half shall be sleeved. No other reinforcement or metal shall extend continuously through the joint.

C. Waterstops:

1. The design and location of waterstops shall be as shown on the drawings and in these specifications. Each piece of premolded waterstop shall be of maximum practicable length to minimize the number of end joints.

2. PVC waterstops shall be properly heat spliced at the ends and intersections to ensure continuity. Construct forms for construction joints in such a manner as to prevent injury to waterstops. Allow at least 10 minutes

before pulling or straining the new splice in any way. The finished splices shall provide a cross section that is dense and free of porosity with tensile strength of not less than 80 percent of the unspliced materials.

3. Install waterstops in strict conformance with manufacturer's recommendations.

4. Support waterstops securely against displacement using approved adhesives, or methods specifically recommended by the manufacturer. Hold PVC waterstops securely in position with continuous No. 3 rebar secured to waterstops with hog rings at 12" max on center. Secure continuous rebar to each mat of reinforcing with tie wire at 12" on center. Install waterstops in construction and expansion joints in hydraulic structures or where shown in the drawings.

5. If joint is not watertight after construction, one or both of the following shall be done to provide a watertight joint:

   a. Grouting of the joint by drilling grout holes to the center of the structure unit and forcing epoxy grout into the joint under pressure.

   b. Cutting of a bevel groove on the water side of the joint. The groove shall be ½ to ¾-inch in width and depth and shall be caulked with epoxy joint sealer in accordance with manufacturer's instructions.

D. Other Embedded Items:

1. Prior to concreting, place all required sleeves, inserts, anchor bolts and embedded items.

2. Give all trades whose work is related to the concrete ample notice and opportunity to introduce embedded items before concrete is placed.

3. Position expansion joint material, waterstops, and embedded items accurately and support them against displacement. Fill voids in sleeves, inserts, and anchor slots temporarily with readily removable material to prevent the entry of concrete.

E. Pipes and Wall Spools Cast in Concrete:

1. Install wall spools (i.e. bell ring inserts), wall flanges, and wall anchors before placing concrete. Do not weld, tie, or otherwise connect the wall spools or anchors to the reinforcing steel.

2. Support pipe and fabricated fittings to be encased in concrete on concrete piers or pedestals. Carry concrete supports to firm foundations so that no settlement will occur during construction.

3. Pipes or spools located below operating water level shall have waterstop ring collars and shall be cast in place. Do not block out such piping and grout after the concrete section is cast. Pipes fitted with thrust rings shall be cast in place.

F. Additional Reinforcement Around Openings:

Place additional reinforcement around pipe or openings as indicated in the drawings.

3.09 FORM REMOVAL

Carefully remove forms to insure the complete safety of the structure. Where the structure is supported by shoring, the beam sides, columns, or other vertical forms may be removed after 36 hours, providing the concrete will not be injured. All supporting forms shall remain in place for a minimum of 10 days. Do not remove supporting forms or shoring until members have acquired sufficient strength to support their weight and imposed loads safely.

3.10 CONSTRUCTION LOADS ON STRUCTURAL SLABS

If shoring is removed, no construction materials and equipment shall be allowed on structural slabs until the concrete has reached the 28-day compressive strength. All superimposed construction loads will then be limited to the design load of the slab.

3.11 REPAIRING AND PATCHING

A. Clean, thoroughly dampen and patch all tie holes and all repairable defects immediately after form removal.

B. All honeycombed and other defective concrete shall be removed to sound concrete with edges perpendicular to the surface. Surface imperfections greater than 3/8 inch in any dimension shall be removed and the affected areas neatly patched. Dampen the area to be patched and an area at least 6 inches wide surrounding it to prevent absorption of water from the patching mortar. Mix patching grout to the consistency of thick cream and brush it well into the surface.

C. Make the patching mortar of the same material and approximately the same proportions as used for the concrete, omitting the coarse aggregate. The resultant mortar shall consist of not more than 1 part cement to 2½ parts sand by damp loose volume.

D. Do not use more mixing water than necessary for handling and placing. Mix the patching mortar in advance and allow to stand with frequent manipulation with a trowel, without adding water, until it has reached the stiffest consistency that will permit placing.

E. After surface water has evaporated from the area to be patched, brush the patching grout well into the surface. When the patching grout begins to lose the water sheen, apply the premixed patching mortar. The mortar shall be thoroughly consolidated into place and struck off to leave the patch slightly higher than the surrounding surface. To permit initial shrinkage, leave the patch undisturbed for at least 1 hour before finishing it. Keep the patched area damp for 7 days. Do not use metal tools in finishing a patch in a formed wall which will be exposed.

F. Tie Holes: Clean thoroughly, dampen, then fill solid with patching mortar. Mortar shall match color of concrete. Fill tie holes prior to finishing.

3.12 FINISHES FOR SURFACES

A. Finish 1: Beams, columns, and exterior walls not exposed to water or view: Repair defective concrete, fill depressions deeper than ½ inch, and fill tie holes.

B. Finish 2: Exterior and interior walls, beams, and columns exposed to water, unless such items are to be coated: Repair defective concrete, remove fins, fill depressions ¼ inch or deeper, and fill tie holes.

C. Finish 3: Walls, beams, and columns of structures or buildings exposed to view and to 1 foot below water level or finished grade; underside of formed floors or slabs (Except - surfaces which are to be coated): In addition to Finish 2, fill depressions and airholes with mortar. Dampen surfaces and then spread a slurry consisting of one part cement and one and one-half parts sand by damp loose volume, over the surface with clean burlap pads or sponge rubber floats. Remove any surplus by scraping and then rubbing with clean burlap.

D. Finish 4: Exterior and interior surfaces to be coated: Repair defective concrete, remove fins, fill depressions 1/16 inch or deeper, fill tie holes, remove mortar spatter, and remove bulges higher than 1/16 inch. Surface shall be trowelled, sacked, and brush blasted.

E. Finish 5: Slabs and floors to be covered with concrete or grout: Screed to grade without special finish.

F. Finish 6: Slabs and floors not water bearing: Repair defective concrete, remove fins, fill depressions ¼ inch or deeper, and fill tie holes.

G. Finish 7: Slabs and floors which are water bearing; Slab surfaces on which mechanical equipment moves; Slab surfaces to receive hardener: Steel trowel finish, free from trowel marks and all irregularities.

H. Finish 8: Slabs and floors of structures or buildings exposed to view: Steel trowel finish without local depressions or high points and apply a light hair-broom finish. Do not use stiff bristle brooms or brushes. Leave hair-broom lines parallel to the direction of slab drainage.

I. Finish 9: Slabs and floors at slopes greater than 10 percent and stairs: Steel trowel finish without local depressions or high points. Apply a coarse broom finish. Leave broom lines parallel to the direction of slope drainage.

J. Finish 10: Exposed stairs and landings and slabs designated for non-slip finish: Areas to have non-slip finish shall incorporate 25 pounds per 100 square feet of aluminum oxide grains into the surface. Immediately before floating begins, sprinkle two-thirds of the abrasive evenly over the surface and float. After embedment, sprinkle the remaining one-third at right angles to the previous application. Apply more heavily in areas not sufficiently covered by the first application, and float again immediately. Complete finishing as specified under Trowelled Finish.

K. Finish 11: Exposed edges (EXCEPT – edges normally covered with earth): Provide chamfer or beveled edges per this Section.

L. Finish 12: Top of walls, beams, and similar unformed surfaces: Strike smooth and float in accordance with Finish 8.

M. Finish 13: Gutter and sidewalks: Broom finish in accordance with Caltrans Standard Specifications Section 73.

3.13 SLAB FINISHING

A. Screeding: After concrete has been thoroughly consolidated, screed slabs to the desired elevation and contours by means of accurately placed edge forms and intermediate screed strips.

B. Floated Finish:

1. Place, consolidate, strike off, and level concrete, but do not work it further until ready for floating. Begin floating when water sheen has disappeared and when the surface has stiffened sufficiently.

2. During or after the first floating, check planeness of surface with a 10-foot straightedge applied at not less than two different angles, and then cut down all high spots and fill all low spots to achieve a true plane within ¼-inch in 10 feet.

3. Refloat slab immediately to a uniform sandy texture.

C. Troweled Finish: Float finish slab as described above, then steel trowel by machine or by hand. Additional trowellings shall be done by hand after the surface has hardened sufficiently. Final trowelling shall produce a ringing sound from the trowel and the finished surface shall be free of trowel marks, uniform in texture, and appearance shall be planed to the tolerance specified under Floated Finish. Trowelled finish shall occur at tank floors (except where grout topping or fillets will follow), troughs, channels, clear wells, and all building floor slabs.

D. Coarse Broom Finish: Immediately after floating, give slabs for exterior walkways and exterior stoops a coarse transverse scored texture by drawing a broom across the surface.

3.14 FLOOR HARDENER

A. All building floors not scheduled for floor covering, Non-slip Floor Finish, or Broom finish shall receive hardener (Finish 7).

B. Apply hardener after floors have cured, in accordance with the manufacturer's recommendations.

C. Floors shall receive three applications of hardener, mixed and applied as specified for heavy duty floors.

3.15 CURING AND PROTECTION

A. General: Beginning immediately after placement, protect concrete from drying, excessively hot and cold temperatures and mechanical injury. Keep moisture loss to a minimum until cement has hydrated and concrete is hard. Keep concrete constantly moist during the curing period. Follow color admixture manufacturer's recommendations for integrally colored concrete.

B. Curing:

1. Formed Surfaces: Keep forms wet. Cool metal forms exposed to the sun with water. Forms shall remain in place for 7 days unless material specified for in Section 2.22 Curing Materials is applied. If curing compound is used, apply in accordance with manufacturer's instructions. Curing compound shall not be used on any wall/slab scheduled to be coated.

2. Slabs: Immediately after finishing, apply one of the materials specified in Section 2.22 entitled Curing Materials, but use membrane forming liquid only with Engineer's approval.

3. Duration of Curing: 7 days minimum.

C. Protection:

1. In cold weather, maintain the moisture conditions but also, by heating or covering, maintain the temperature of the concrete in accordance with Section 3.04.D.3.

2. In hot weather take immediate steps to protect newly finished concrete from drying effects of wind and sun and maintain temperature of the air surrounding the concrete uniform within 5 degrees F in any one hour or 50 degrees F in any 24 hour period.

3. During curing period, protect concrete from mechanical damage, loading, shock and vibration.

3.16 CONSTRUCTION OF CONCRETE FILLETS, TOPPING, AND EQUIPMENT PADS

A. Concrete fillets, topping and equipment pads shall be placed as soon as possible after completion of the curing period of the tank walls and structural floors. Contact surfaces shall be thoroughly cleaned to the degree recommended by the bonding agent manufacturer.

B. Bonding agent shall be accurately and thoroughly mixed and applied at the manufacturer's recommended coverage rate. Mix only the amount which can be used prior to expiration of the pot life. Concrete shall be immediately placed over the fresh surface before setting of the agent. Bonding agent which sets up prior to placing concrete shall be recoated with a fresh coat.

C. Concrete fillets, topping, and equipment pads shall be accurately screeded to the slopes and elevations shown and steel trowel finished. Cure concrete as specified for slabs above. Set equipment anchor bolts in pad to accommodate equipment furnished.

3.17 BACKFILL AGAINST STRUCTURES

A. Backfill against concrete structures shall not be allowed until the concrete has reached the specified 28-day compressive strength. Where backfill is to be placed on both sides of the wall, or against more than one wall of a structure, place the backfill uniformly on both sides of the wall or walls.

Do not backfill until structure has passed leakage testing.

B. Do not backfill the walls of structures that are laterally restrained or supported by suspended slabs or slabs on grade until the slab is poured and the concrete has reached the specified compressive strength.

3.18 NONSHRINK GROUT

Use nonshrink grout to fill sleeves and voids under equipment bases. Grout shall be mixed and used in accordance with manufacturer's recommendations. Exposed edges shall be smooth, straight and even.

3.19 ADHESIVE ANCHORS

Install in strict conformance to manufacturer's printed instructions. Do not cut or damage existing reinforcing bars. Where reinforcing bars are encountered, move anchor location or core hole as approved by the Engineer.

3.20 LEAKAGE TESTING OF HYDRAULIC STRUCTURES - NOT USED

A. General:

1. Prior to backfilling the structure and the application of water-proofing coatings, hydrostatically test reinforced concrete structures which will contain water or fluid to determine that they conform to Section B herein and are free of detectable leaks. Do not start leak testing or cleaning of surfaces until concrete is cured and joint sealants have set and cured a minimum of 14 days. Do not hydrostatically test walls which are to be restrained or laterally supported by slabs until slab concrete has obtained the specified compressive strength.

2. Prior to testing, clean exposed surfaces by thoroughly hosing and removing surface laitance and loose matter from walls and slabs. Remove wash water and debris from the structures by means other than washing through plant piping.

B. Leakage Test Procedure:

1. Fill hydraulic structures to be subjected to leakage tests with potable water to the normal operating liquid level line not less than 2 feet below top of walls. Filling shall be at a uniform rate over a 24-hour period with continuous monitoring. For structures with adjacent bays, fill all bays simultaneously. Empty adjacent bays alternately. Repair any running leaks which appear during filling before continuing.

2. After the structure has been kept full for 48 hours, it will be assumed for the purposes of the test that the absorption of moisture by the concrete in the structure is complete. Then close all valves and gates to the structure and measure the change in water surface each day for a five-day period.

3. During the test period, examine exposed portions of the structure, and mark visible leaks or damp spots. A damp spot is defined as an area which seeps sufficient moisture to dampen a paper towel when pressed against it. Repair visible leaks or damp spots after dewatering. Additionally, if the drop in water surface in the 24-hour period exceeds 1/10 of 1 percent of the normal volume of liquid contained in the structure, the leakage shall be considered excessive.

4. The determination of surface moisture evaporation shall be aided with a 24-inch deep, white colored, watertight container with not less than 10 square feet of surface area exposure. Position container to experience environmental conditions similar to the structure being tested. Subtract the water loss due to evaporation from the measured water loss in the structure to determine the water loss due to leakage.

5. If the leakage is excessive, drain the structure, repair leaks and damp spots, and refill the structure and again test for leakage. Continue this

process until the drop in water surface in a 24-hour period meets the test requirements.

6. If an underdrain system is present, inspect the manholes of the underdrain system for evidence of leaks in the floor slabs. If leaking is indicated, locate and repair.

7. Seed the floor slab of each hydraulic structure with one sack of cement per 1,000 square foot surface area. Seeding shall take place after the test filling has reached 18 inches in depth. Detect leaks in construction and expansion joints with the aid of a diver. Stir cementious deposits flowing toward leaks and repair where the defect is located.

8. Repair flowing leaks whether leakage exceeds the allowable leakage or not.

9. Repairs and additional filling and testing shall be made by the Contractor at no additional cost to the Owner.

C. Repair of Defects:

1. Do not repair defects until concrete has been reviewed by the Owner's Representative.

2. Surface Defects: Repair surface defects that are smaller than 1 foot across in any direction and are less than ½ inch in depth. Repair by removing the honeycombed and other defective concrete down to sound concrete, make the edges perpendicular to the surface and at least 3/8 inch deep, thoroughly dampen the surface, work into the surface a bonding grout, fill the hole with mortar, match the finish on the adjacent concrete, and cure as specified.

3. Severe Defects: Repair severe defects that are larger than surface defects but do not appear to affect the structural integrity of the structure. Repair by removing the honeycombed and other defective concrete down to sound concrete, make the edges perpendicular to the surface, sandblast the surface, coat the sandblasted surface with epoxy bonding compound, place nonshrink grout as specified herein, match the finish on the adjacent concrete, and cure as specified.

4. Major Defects: If the defects are serious or affect the structural integrity of the structure or if patching does not satisfactorily restore the quality and appearance to the surface, the Engineer may require the concrete to be removed and replaced, complete, in accordance with the provisions of this section at no additional cost to the Owner.

D. Repair of Cracks in Concrete:

1. Repair leaking concrete cracks that are 1/10 inch or less in width by epoxy pressure injection.

   a. Preparation: Insert and anchor a one-way polyethylene valve or pipe nipple in holes drilled into crack. Position them every 6- to 18-inches on center depending on the width of crack. Maintain a slow, steady pressure rather than a rapid buildup of pressure. When grouting

material reaches the next tube, stop off the present position and follow the same procedure on the next position.

b. Upon completion of the epoxy grouting, remove the epoxy gel used to hold the valve or nipple by applying a direct flame to the epoxy and scraping it off. Fill the holes with the same material as used for patching the surface.

c. While the valves or nipples are installed first, the grouting operation shall not commence until after the patch work has been completed and has sufficiently cured.

2. Repair cracks in concrete structures that are wider than 1/10 inch in width by cutting out a square edged and uniformly aligned joint 3/8 inch wide by ¾ inch deep, preparing exposed surfaces of the joint, priming the joint, and applying polyurethane joint sealant in accordance with this section.

3. If the cracks are serious or affect the structural integrity or function of the element, the Engineer may require the concrete to be removed and replaced, complete, in accordance with the provisions of this section at no additional cost to the Owner.

4. After repairing visible leaks, damp spots or leaking concrete cracks, retest the structure.

3.21 CONCRETE TESTING

A certified testing laboratory, at Owner's expense shall perform the following concrete testing:

A. One set of four concrete test cylinders shall be taken for every 50 cubic yards or fraction thereof of each concrete mix design placed each day. The Engineer has the option to direct the required test specimens to be taken as he deems necessary to insure the concrete meets the specification.

B. Specimens shall be taken, cured, and tested for compressive strength in accordance with ASTM C31, ASTM C39, and ASTM C172, respectively.

C. Determine the concrete slump by ASTM C143 with each set of cylinders taken and as required to establish consistency.

D. Determine air content of the concrete using ASTM C231 to verify the percentage of air in the concrete immediately prior to depositing in the forms with each set of cylinders taken and as required to establish consistency.

E. Determine drying shrinkage in accordance with ASTM C157, as modified by SEAOC, at 7, 14, 21, and 28 days of drying after the wet cure period. A minimum of three sets of three shrinkage bars shall be cast over the project duration. The Engineer has the option to increase or decrease the testing frequency as he deems necessary to insure the concrete meets the specification. Shrinkage of concrete at 28 days drying age shall not exceed 0.045 percent.

F. Test reports shall be sent to the Engineer with copies to the Contractor.

G. Concrete which fails to meet strength, slump, air, or shrinkage requirements may be rejected by the Engineer before, during, or after placement.

H. Test one cylinder at 7 days for information; test two cylinders at 28 days for acceptance; and hold one cylinder for verification. Strength acceptance will be based on the average of the strengths of the two cylinders tested at 28 days. If one cylinder of a 28-day test manifests evidence of improper sampling, molding, or testing, other than low strength, discard it and use the fourth cylinder for the test result.

I. The average value of the two cylinders tested at 28 days shall be equal to or greater than the specified 28-day strength. No test shall be less than 90 percent of the specified 28-day strength.

J. If the average 28-day strength fails to meet the specified minimum compressive strength, the concrete will be assumed to be defective and one set of three cores from areas selected by the Owner may be taken and tested in accordance with ASTM C42. If the average compressive strength of the set of three concrete cores fails to equal 90 percent of the specified minimum compressive strength or if any single core is less than 75 percent of the minimum specified compressive strength, the concrete will be considered defective. The Owner may require additional coring, nondestructive load testing, or repair of defective concrete. Costs of coring, testing of cores, load testing, and required repairing pertaining thereto shall be paid by the Contractor at no extra cost to the Owner.

3.22 DAMAGED OR DEFECTIVE CONCRETE

Remove damaged or defective concrete before completion and acceptance of the work and replace with acceptable concrete, at no additional cost to the Owner.

END OF SECTION

SECTION 15051

STEEL PIPE

PART 1: GENERAL

1.01 DESCRIPTION

This section consists of furnishing and installing steel pipe and fittings.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02223: Trenching, Backfilling, and Compacting

1.03 QUALITY ASSURANCE

A. References: This section contains references to some or all of the following documents, latest revision. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

References	Title
ANSI B1.1	Unified Inch Screw Threads (UN and UNR Thread Form)
ANSI B1.20.1	Pipe Threads, General Purpose (Inch)
ANSI B16.1	Cast Iron Pipe flanges and Flanged Fittings Class 25, 125, 250, and 800
ANSI B16.3	Malleable Iron Threaded Fittings
ANSI B16.5	Pipe Flanges and Flanged Fittings
ANSI B16.9	Factory-Made Wrought Steel Butt Welding Fittings
ANSI B16.11	Forged Steel Fittings, Socket-Welding and Threaded
ANSI B18.2.1	Square and Hex Bolts and Screws Inch Series including Hex Cap Screws and Lag Screws
ANSI B18.2.2	Square and Hex Nuts (1983)
ANSI B31.1	Power Piping
ANSI B31.3	Chemical Plant and Petroleum Refinery Piping
API STD 1104	Welding Pipelines and Related Facilities
ASME	Boiler and Pressure Vessel Code
ASTM A36/A36M	Structural Steel
ASTM A47	Ferritic Malleable Iron Castings
ASTM A53	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
ASTM A105/A105M	Forgings, Carbon Steel, for Piping Components
ASTM A106	Seamless Carbon Steel Pipe for High Temperature Service
ASTM A197	Cupola Malleable Iron
ASTM A234/A234M	Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures

References	Title
ASTM A283/A283M	Low and Intermediate Tensile Strength Carbon Steel Plates, Shapes and Bars
ASTM A536	Ductile Iron Castings
ASTM A570/A570	Steel, Sheet and Strip, Carbon, Hot Rolled, Structural Quality
ASTM A572/A572M	High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality
AWWA C200	Steel Water Pipe 6-Inches and Larger
AWWA C203	Coal-Tar Protective Coatings and Linings for Steel Water Pipelines - Enamel and Tape - Hot Applied
AWWA C205	Cement-Mortar Protective Lining and Coating for Steel Water Pipe - 4 in. and Larger - Shop Applied
AWWA C206	Field Welding of Steel Water Pipe
AWWA C207	Steel Pipe Flanges for Waterworks Services - Sizes 4 in. through 144 in.
AWWA C208	Dimensions for Fabricated Steel Water Pipe Fittings
AWWA C209	Cold-Applied Tape Coatings for the Exterior of Special Sections, Connections, and Fittings for Steel Water Pipelines
AWWA C210	Liquid Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines
AWWA C214	Tape Coating Systems for the Exterior of Steel Water Pipelines
AWWA C600	Installation of Ductile-Iron Water Mains and Their Appurtenances
AWWA M11	Steel Pipe - A Guide for Design and Installation
SSPC	Steel Structures Painting Council Specifications

B. Testing: Factory testing shall conform to the requirements of ASTM A53, ASTM A106, or AWWA C200 as applicable.

1.04 SUBMITTALS

A. Show materials of construction, with ASTM reference and grade. Submit manufacturer's certificates of compliance with referenced pipe standards, e.g., ASTM A 312, A 403, A774, A 778. Show wall thickness of steel cylinder and fittings.

B. Submit piping layout drawings showing the location and dimensions of the pipe and fittings larger than 3 inches nominal diameter. Submittal shall include proposed reconnections to existing storm drains. Include layout lengths of valves, meters, blowers, and other equipment determining piping dimensions. Label or number each fitting or piece of pipe.

C. Submit manufacturer's data for flange and coupling gaskets.

D. Submit certifications that welders are qualified in accordance with ANSI B31.1, Paragraph 127.5 for shop and project site welding of pipe work.

E. The Contractor shall submit a pipe lay diagram for all steel pipe installed in this project.

PART 2: MATERIALS

2.01 SCHEDULE 40 AND 80

A. Pipe

1. Galvanized if indicated, otherwise black with lining and/or coating as specified in this section.

2. 2½-inches and smaller: ASTM A53, threaded couplings. Grooved couplings are an acceptable alternative for 2 ½-inch pipe.

3. 3-inches and Larger: ASTM A53, butt-welded, grooved couplings, or flanges.

B. Fittings

1. Galvanized or lined and/or coated same as pipe.

2. 2½-inches and smaller: malleable iron, ASTM A197, ANSI B16.3, Class 150. Alternatively, 2-½-inch fittings may be as specified below for 3-inches and larger.

3. 3-inches and larger: Steel, ASTM A234, ANSI B16.9, Sch. 40, Sch. 80, or ductile iron; ends to match pipe.

C. Screwed Joint Seal: Teflon tape.

D. Flanges: per 2.04, this section.

2.02 AWWA C200 – FELCS (EXPOSED) - NOT USED

2.03 AWWA C200 – MLCS (BURIED) – NOT USED

2.04 FLANGE ASSEMBLIES

A. Flanges to be fitted onto steel pipe and fittings shall conform to AWWA C207, Class D, and may be ring or hub type. Blind flanges shall be flat faced. Nuts & bolts shall be stainless steel conforming to ASTM F593 for bolts and ASTM F594 for nuts. Bolts shall be threaded to conform to ANSI b 18.2.1, page C-1 for finished hex bolts. Nuts shall conform to ANSI B 18.2.2, Page D-1. Nuts shall be finished with TRIPAC 2000 or an approved equal fluoropolymer coating system to minimize galling and ensure proper torque. Anti-seize compound shall not be used with the blue nuts. All bolt heads and nuts shall be hexagonal. Identification on the head of the bolt shall be T-316, 316, F593G or F593H. Gaskets shall be rubber, flat-faced, 1/8” thick, suitable for water service and conforming to AWWA C207. Neoprene gaskets may be submitted for approval.

2.05 THREAD

Pipe thread dimensions and size limits shall conform to ANSI B2.1.

2.06 PIPE LINING

A. Liquid Epoxy: Unless otherwise specified or noted on the drawings, pipe and fittings shall be lined with liquid epoxy as specified in AWWA C210 to a minimum thickness of 16 mils in not less than two coats. Pipe and fittings for fuel oil return and supply shall be unlined.

B. Coal Tar Enamel: Where specified, pipe and fittings shall be lined with coal tar enamel as specified in AWWA C203.

C. Cement Mortar: Where specified, pipe and fittings shall be lined with cement mortar as specified in AWWA C205.

D. Fusion Epoxy: Where specified, steel pipe and fittings shall be fusion epoxy lined and coated in accordance with this section.

E. Pipe linings are to conform with NSF 61.

2.07 PIPE COATING

A. Liquid Epoxy: Unless otherwise specified, pipe and fittings for buried installation shall be coated with liquid epoxy, shop applied in accordance with AWWA C210 to a minimum thickness of 16 mils in not less than two coats.

B. Polyethylene Tape Wrap

1. Where specified, underground and encased steel pipe shall be given a corrosion protective wrapping as set forth herein. Pipe shall be spirally wrapped with Polyvinyl Chloride or Polyethylene pressure sensitive tape applied with a suitable primer. The wrap shall have a nominal thickness of 20 mils, consisting of either one layer of 20 mil tape or 2 separate layers of 10 mil tape.

2. Before the primer and wrap is applied, the piping shall be thoroughly cleaned so that all surfaces shall be dry and free of dirt, dust, rust, mill scale, oil, grease or other foreign matter. Any solvents used shall be totally volatile so as to leave no trace of oil. Weld spatter, burrs or sharp points and edges shall be removed by chiseling, ball peening, or filing. After thorough cleaning, the piping shall be coated with a primer applied in accordance with the tape manufacturer's recommendations. The primer shall be Minnesota Mining "Scotchwrap Pipe Primer", or equal.

3. After cleaning and priming, the piping shall be spirally wrapped with the pressure sensitive tape of the proper width for the pipe size on which it is being used, as recommended by the manufacturer. The tapes shall be tightly applied with a ½-inch minimum uniform lap, free from wrinkles and voids. Approved wrapping machines may be used. Tape shall be Minnesota Mining "Scotchwrap" No. 51, or equal.

4. The field joints and fittings shall be covered as specified for wrapping pipe, except that a nominal 10 mil thick tape having a maximum width of 2-inches shall be used for fittings. Two thicknesses of the tape shall be

applied to the fittings to provide a covering 20 mils thick over all surfaces. The tape shall be applied with adequate tension so that the tape will conform and adhere tightly to all surfaces of the fitting, without air pockets. "Scotchfil", or equal, shall be used to fill voids, flange faces around bolts, and other irregular surfaces, to provide a smooth even surface for the application of the tape wrap. Pipeline flanges and unions shall be completely wrapped. Where valves are in the pipelines, the pipe wrap shall cover the pipe flange and extend over the outer edge of the valve flange or the threaded portion of the valve body. The unwrapped surfaces of the valves shall be given two heavy coats of a coal tar enamel conforming to AWWA C204. Adequate drying time shall be allowed before backfilling or wax coating.

5. Tape wrapped pipe shall be handled and stored in a manner to protect the wrap from damage. It shall not be dropped, walked on, rolled, or handled in any manner that might damage the wrap. Any skids or supports for temporary storing or holding of wrapped pipe shall be wide and padded to prevent cutting of this wrap. Where it is necessary to handle wrapped pipe with slings or cradles, they shall be of wide rubber or canvas.

6. Tape-wrapped pipe and fittings shall be coated with a minimum one-inch thick cement mortar shield coating in accordance with AWWA C205. Use spiral wire reinforcement for pipe and wire mesh or fabric for fittings and specials.

C. Cement Mortar: Where specified, pipe and fittings shall be coated with cement mortar in accordance with AWWA C205. Use spiral wire reinforcement for pipe and wire mesh or fabric for fittings and specials.

2.08 FUSION EPOXY COATING AND LINING

A. In accordance with AWWA C213. Where specified or shown on the drawings, steel pipe and fittings shall be fusion epoxy coated and lined. The fusion epoxy coating shall be 3M Scotchkote 206N (fluidized bed grade), or equal. Surface preparation shall be in accordance with SSPC SP 10 Near White Blast Cleaning. The application method shall be by the fluidized bed method and shall attain 16 mils minimum dry film thickness.

B. Field welds, connections and otherwise damaged areas shall be coated and patched according to the manufacturer's instructions with 3M Scotchkote 312.

C. Pipe linings are to conform with NSF 61.

2.09 GROOVED JOINTS

A. In accordance with AWWA C606, except as modified herein.

B. Roll groove pipe if wall thickness is less than minimum recommended by manufacturer for cut grooving.

C. For non-submerged applications, bolts and nuts shall be ASTM A183, zinc electoplated to ASTM B633. Provide 316 stainless steel bolts and nuts for submerged applications.

D. Buried joints shall be flexible grooved unless otherwise shown or required for the installation.

E. Exposed joints shall be rigid grooved unless otherwise shown or required for the installation.

F. Unless otherwise noted or required, rigid grooved joints may be substituted where flanged joints are shown on the drawings.

2.10 CORRUGATED METAL PIPE

A. Pipe shall be in accordance with ASTM A760.

B. Pipe shall be spiral corrugated metal pipe with standard pitch and depth of corrugations. Manufacturer shall be Pacific Corrugated Pipe Company, Contech, or approved equal.

PART 3: EXECUTION

3.01 INSTALLATION

A. Pipe Cutting, Threading and Jointing: Pipe cutting, threading and jointing shall conform to the requirements of ANSI B31.1.

B. Pipe Welding

1. Pipe shall be welded by ASME certified welders using shielded metal arc, gas shielded arc or submerged arc welding methods. Welds shall be made in accordance with the requirements of AWWA C206 for all piping, except Sch. 80. Welds shall be made in accordance with the requirements of ANSI B31.3 for Sch. 80.

2. The Contractor shall provide for each welder, a welder qualification certificate indicating the welder is certified for pipe welding in accordance with ASME Boiler and Pressure Vessel, Section IX. Each welder's certificate shall be provided to the Engineer prior to that welder working on the job.

C. Restrained Joints: Where restrained joints are required on the Drawings, the restraint may be provided by welded butt joints, welded bell and spigot joints, or grooved joints.

D. Grooved joints shall be installed in accordance with manufacturer’s latest published recommendations.

E. Lining and Coating: Pipe lining and coating at field joints shall be applied as specified in Section 15051 2.06 and 2.07. Where cement mortar lining and/or

coating is required, field joints shall be lined and/or coated to match pipe in accordance with AWWA C205.

F. The Contractor shall submit a pipe lay diagram for all steel pipe and fittings installed in this project.

3.02 SUPPORT

A. Pipes shall be adequately supported to prevent sags, kinks, or other deficiencies in appearance of strength. Additional supports shall be installed to provide adequate support, whether or not indicated on the drawings. No pipe shall be left unsupported wherever a change in direction of line of flow takes place. Supports shall meet the requirements stated above.

END OF SECTION

APPENDIX A

CALTRANS ENCROACHMENT PERMIT

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

ENCROACHMENT PERMIT

TR-0120 (REV 6/2012)

Permit No.
0319-NTK1104

In compliance with (Check one):

☒	Your application of	October 16, 2019	
☐	Utility Notice No.	_____	of _____
☐	Agreement No.	_____	of _____
☐	R/W Contract No.	_____	of _____

Dist/Co/Rte/PM	
03-BUT-162 PM 18 to BUT-162 PM 18	
Date	
October 25, 2019	
Fee Paid	**Deposit**
$ Exempt	$ N/A
Performance Bond Amount (1)	**Payment Bond Amount (2)**
$ N/A	$ N/A
Bond Company	
Bond Number (1)	**Bond Number (2)**

TO: City of Oroville

1735 Montgomery Street
Oroville, CA 95965
Attn: Mike Massaro
916-549-6935

, **PERMITTEE**

and subject to the following, **PERMISSION IS HEREBY GRANTED** to:

Perform traffic control along State Route 162 to assist the Lower Wyandotte Culvert Rehabilitation Emergency Repair project in Oroville per the attached plans received on October 11, 2019. In addition to the General and Special Provisions, the following conditions apply:

1. Permittee must arrange the onsite pre-construction meeting with the Caltrans representative a minimum of two (2) weeks prior to the start of work to discuss scope of work, schedule, and traffic control plan.

2. Lane closures on State Route 162 are restricted to the hours between 10:00 PM and 6:00 AM.

----------CONTINUED ON PAGE 2----------

THIS PERMIT IS NOT A PROPERTY RIGHT AND DOES NOT TRANSFER WITH THE PROPERTY TO A NEW OWNER.

The following attachments are also included as part of this permit *(Check applicable)*:

☒ Yes	☐ No	General Provisions
☐ Yes	☒ No	Utility Maintenance Provisions
☒ Yes	☐ No	Special Provisions T-9, T-11
☐ Yes	☒ No	A Cal-OSHA permit, if required: Permit No. _____
☐ Yes	☒ No	As-Built Plans Submittal Route Slip for Locally Advertised Projects
☐ Yes	☒ No	Storm Water Pollution Protection Plan

In addition to fee, the permittee will be billed actual costs for:

☐ Yes	☒ No	Review
☐ Yes	☒ No	Inspection
☒ Yes		Field work

(If any Caltrans effort expended)

☐ Yes ☒ No The information in the environmental documentation has been reviewed and considered prior to approval of this permit.

This permit is void unless the work is completed before May 1, 2020

This permit is to be strictly construed and no other work other than specifically mentioned is hereby authorized.
No project work shall be commenced until all other necessary permits and environmental clearances have been obtained

Damion Farley, Permit Inspector

cc: Chris Seale, Nevada City Maint. Station

APPROVED:

AMARJEET BENIPAL, District Director

BY:

HIKMAT BSAIBESS, District Permit Engineer

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For information call (916) 654-6410 or TDD (916) 654-3880 or write Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

FM 91 1496

PERMISSIONS Conditions Continued:

3. Shoulder/Lane closure requests (including "Road Work Ahead" type signs in shoulder) must be submitted to the Caltrans representative via email (with the form filled out) by **NOON** on the Monday preceding the week of planned work, i.e. if you need a closure for a Friday, you must make that request on the Monday of the preceding week (11 days prior). Requests received after **NOON** on Monday will not be processed until the following Monday.

4. Lane or shoulder closures are not authorized unless approved by Caltrans' Traffic Management Center (TMC). **All closures and canceled closures** must be called in to TMC dispatch at 916-859-7900 at the beginning and end of each scheduled closure. Failure to do so could result in denial of future closure requests.

5. Permittee must keep a log of all closures called in to TMC (10-97 closure up, 10-98 closure down, and 10-22 canceled closure), and the name of the dispatch person at the TMC. A copy of the log must be provided via e-mail to the Caltrans representative at the end of each week, no later than close of business on Friday.

6. If construction disrupts pedestrian and/or bicyclist facilities, your attention is directed to General Provision #13: Pedestrian and Bicyclist Safety.

7. If the work for this permit is to be performed by other than the permittee's forces, the following requirement is in full force and effect: Notwithstanding General Provision #4, your contractor is required to apply for and obtain an encroachment permit (double permit) prior to starting work. A deposit of $492.00 is required at the time of application.

8. Work must not be performed in fog or inclement weather. If weather or adverse conditions cause a public hazard, work must be discontinued immediately.

9. Caltrans is not a member of USA (Underground Service Alert). It is the responsibility of the permittee to locate and protect all Caltrans' facilities, including, but not limited to, traffic loops within the project limits. Your attention is directed to Provision #31 for restoration and repair of any damages to Caltrans' facilities.

The Caltrans representative's contact information is:
Damion Farley - Cell: (530) 521-4959, Email: damion.farley@dot.ca.gov

STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION
ENCROACHMENT PERMIT GENERAL PROVISIONS
TR-0045 (REV. 11/2018)

1. **AUTHORITY:** The California Department of Transportation ("Department") has authority to issue encroachment permits under Division 1, Chapter 3, Article 1, Sections 660 through 734 of the Streets and Highways Code.

2. **REVOCATION:** Encroachment permits are revocable on five (5) business days' notice unless otherwise stated on the permit and except as provided by law for public corporations, franchise holders, and utilities. Notwithstanding the foregoing, in an emergency situation as determined by the Department, an encroachment permit may be revoked immediately. These General Provisions and any applicable Special Provisions are subject to modification or abrogation by the Department at any time. Permittees' joint use agreements, franchise rights, reserved rights or any other agreements for operating purposes in State of California ("State") highway right-of-way may be exceptions to this revocation.

3. **DENIAL FOR NONPAYMENT OF FEES:** Failure to pay encroachment permit fees when due may result in rejection of future applications and denial of encroachment permits.

4. **ASSIGNMENT:** This encroachment permit allows only the Permittee or Permittee's authorized agent to work within or encroach upon the State Highway right-of-way, and the Permittee may not assign this permit.

5. **ACCEPTANCE OF PROVISIONS:** Permittee understands and agrees to accept and comply with these General Provisions, the Special Provisions, any and all terms and/or conditions contained in or incorporated into the encroachment permit, and all attachments to the encroachment permit (collectively "the Permit Conditions"), for any encroachment, work, and/or activity to be performed under this encroachment permit and/or under color of authority of this encroachment permit. Permittee understands and agrees the Permit Conditions are applicable to and enforceable against Permittee as long as the encroachment remains in, under, or over any part of the State Highway right-of-way.

6. **BEGINNING OF WORK:** When traffic is not impacted (see General Provision Number 35), the Permittee must notify the Department's representative two (2) business days before starting permitted work. Permittee must notify the Department's representative if the work is to be interrupted for a period of five (5) business days or more, unless otherwise agreed upon. All work must be performed on weekdays during regular work hours, excluding holidays, unless otherwise specified in this encroachment permit.

7. **STANDARDS OF CONSTRUCTION:** All work performed within State Highway right-of-way must conform to all applicable Departmental construction standards including but not limited to: Standard Specifications, Standard Plans, Project Development Procedures Manual, Highway Design Manual and Special Provisions.

Other than as expressly provided by these General Provisions, the Special Provisions, the Standard Specifications, Standard Plans, and other applicable Departmental standards, nothing in these General Provisions is intended to give any third party any legal or equitable right, remedy, or claim with respect to these General Provisions or any provision herein. These General Provisions are for the sole and exclusive benefit of the Permittee and the Department.

Where reference is made in such standards to "Contractor" and "Engineer," these are amended to be read as "Permittee" and "Department's representative," respectively, for purposes of this encroachment permit.

8. **PLAN CHANGES:** Deviations from plans, specifications, and/or the Permit Conditions as defined in General Provision Number 5 are not allowed without prior approval from the Department's representative.

9. **INSPECTION AND APPROVAL:** All work is subject to monitoring and inspection. Upon completion of work, Permittee must request a final inspection for acceptance and approval by the Department. Permittee must not give final construction completion approval to its contractor, until final acceptance and approval is obtained from the Department.

10. **PERMIT AT WORKSITE:** Permittee must keep the permit package or a copy thereof at the work site at all times, and must show it upon request to any Department representative or law enforcement officer. If the permit package, or a copy thereof, is not kept and made available at the work site at all times, the work must be suspended.

11. **CONFLICTING ENCROACHMENTS:** Permittee must yield start of work to ongoing, prior authorized work adjacent to or within the limits of the Permittee's project site. When existing encroachments conflict with Permittee's work, the Permittee must bear all cost for rearrangements (e.g., relocation, alteration, removal, etc.).

12. **PERMITS FROM OTHER AGENCIES:** This encroachment permit is invalidated if the Permittee has not obtained all permits necessary and required by law, including but not limited to permits from the California Public Utilities Commission (CPUC), California Occupational Safety and Health Administration (Cal-OSHA), or any other public agency having jurisdiction. Permittee warrants all such permits have been obtained before beginning work under this encroachment permit.

13. **PEDESTRIAN AND BICYCLIST SAFETY:** A safe minimum continuous passageway of four (4) feet must be maintained through the work area at existing pedestrian or bicycle facilities. At no time must pedestrians be diverted onto a portion of the street used for vehicular traffic. At locations where safe alternate passageways cannot be provided, appropriate signs and barricades must be installed at the limits

© 2018 California Department of Transportation. All Rights Reserved.

of construction and in advance of the limits of construction at the nearest crosswalk or intersection to detour pedestrians to facilities across the street. Attention is directed to Section 7-1.04, *Public Safety*, of the Department's Standard Specifications.

14. **PUBLIC TRAFFIC CONTROL:** As required by law, the Permittee must provide traffic control protection, warning signs, lights, safety devices, etc., and take all other measures necessary for the traveling public's safety. While providing traffic control, the needs of all road users, including but not limited to motorists, bicyclists and pedestrians, including persons with disabilities in accordance with the Americans with Disabilities Act, must be an essential part of the work activity.

    Lane and/or shoulder closures must comply with the Department's Standard Specifications and Standard Plans for traffic control systems, and with the applicable Special Provisions. Where issues are not addressed in the Standard Specifications, Standard Plans, and/or Special Provisions, the California Manual on Uniform Traffic Control Devices (Part 6, *Temporary Traffic Control)* must be followed.

15. **MINIMUM INTERFERENCE WITH TRAFFIC:** Permittee must plan and conduct work so as to create the least possible inconvenience to the traveling public, such that traffic is not unreasonably delayed.

16. **STORAGE OF EQUIPMENT AND MATERIALS:** The storage of equipment or materials is not allowed within State highway right-of-way, unless specified within the Special Provisions of this encroachment permit. If encroachment permit Special Provisions allow for the storage of equipment or materials within the State highway right-of-way, the equipment and material storage must also comply with Section 7-1.04, *Public Safety,* of the Department's Standard Specifications.

17. **CARE OF DRAINAGE:** Permittee must provide alternate drainage for any work interfering with an existing drainage facility in compliance with the Department's Standard Specifications, Standard Plans, and/or as directed by the Department's representative.

18. **RESTORATION AND REPAIRS IN STATE HIGHWAY RIGHT-OF-WAY:** Permittee is responsible for restoration and repair of State highway right-of-way resulting from permitted work (Streets and Highways Code, section 670 et seq.).

19. **STATE HIGHWAY RIGHT-OF-WAY CLEAN UP:** Upon completion of work, Permittee must remove and dispose of all scraps, refuse, brush, timber, materials, etc. off the State highway right-of-way. The aesthetics of the highway must be as it was before work started or better.

20. **COST OF WORK:** Unless stated otherwise in the encroachment permit or a separate written agreement with the Department, the Permittee must bear all costs incurred for work within the State highway right-of-way and waives all claims for indemnification or contribution from the State, the Department, and from the Directors, officers, and employees of the State and/or the Department.

21. **ACTUAL COST BILLING:** When specified in the permit, the Department will bill the Permittee actual costs at the currently set Standard Hourly Rate for encroachment permits.

22. **AS-BUILT PLANS:** When required, Permittee must submit one (1) set of folded as-built plans within thirty (30) calendar days after completion and acceptance of work in compliance with requirements listed as follows:

    a) Upon completion of the work provided herein, the Permittee must submit a paper set of As-Built plans to the Department's representative.
    b) All changes in the work will be shown on the plans, as issued with the permit, including changes approved by Encroachment Permit Rider.
    c) The plans are to be prominently stamped or otherwise noted "AS-BUILT" by the Permittee's representative who was responsible for overseeing the work. Any original plan that was approved with a Department stamp, or by signature of the Department's representative, must be used for producing the As-Built plans.
    d) If construction plans include signing or striping, the dates of signing or striping removal, relocation, or installation must be shown on the As-Built plans when required as a condition of the encroachment permit. When the construction plans show signing and striping for staged construction on separate sheets, the sheet for each stage must show the removal, relocation, and installation dates of the appropriate staged striping and signing.
    e) As-Built plans must contain the Encroachment Permit Number, County, Route, and Post Mile on each sheet.
    f) The As-Built plans must not include a disclaimer statement of any kind that differs from the obligations and protections provided by sections 6735 through 6735.6 of the California Business and Professions Code. Such statements constitute non-compliance with Encroachment Permit requirements, and may result in the Department retaining Performance Bonds or deposits until proper plans are submitted. Failure to comply may also result in denial of future encroachment permits or a provision requiring a public agency to supply additional bonding.

23. **PERMITS FOR RECORD PURPOSES ONLY:** When work in the State highway right-of-way is within an area under a Joint Use Agreement (JUA) or a Consent to Common Use Agreement (CCUA), a fee exempt encroachment permit is issued to the Permittee for the purpose of providing a notice and record of work. The Permittee's prior rights must be preserved without the intention of creating new or different rights or obligations. "Notice and Record Purposes Only" must be stamped across the face of the encroachment permit.

24. **BONDING:** The Permittee must file bond(s), in advance, in the amount(s) set by the Department and using forms acceptable to the Department. The bonds must name the Department as obligee. Failure to maintain bond(s) in full force and effect will result in the Department stopping all work under this encroachment permit and possibly revoking other encroachment permit(s). Bonds are not required of public

© 2018 California Department of Transportation. All Rights Reserved.

corporations or privately owned utilities unless Permittee failed to comply with the provisions and/or conditions of a prior encroachment permit. The surety company is responsible for any latent defects as provided in California Code of Civil Procedure section 337.15. A local public agency Permittee also must comply with the following requirements:

a) In recognition that project construction work done on State property will not be directly funded and paid by State, for the purpose of protecting stop notice claimants and the interests of State relative to successful project completion, the local public agency Permittee agrees to require the construction contractor to furnish both a payment and performance bond in the local public agency's name with both bonds complying with the requirements set forth in Section 3-1.05 *Contract Bonds* of the Department's Standard Specifications before performing any project construction work.

b) The local public agency Permittee must defend, indemnify, and hold harmless the State and the Department, and the Directors, officers, and employees of the State and/or Department, from all project construction related claims by contractors, subcontractors, and suppliers, and from all stop notice and/or mechanic's lien claimants. The local public agency also agrees to remedy, in a timely manner and to the Department's satisfaction, any latent defects occurring as a result of the project construction work.

25. **FUTURE MOVING OF INSTALLATIONS:** Permittee understands and agrees to relocate a permitted installation upon notice by the Department. Unless under prior property right or agreement, the Permittee must comply with said notice at the Permittee's sole expense.

26. **ENVIRONMENTAL:**

a) ARCHAEOLOGICAL/HISTORICAL: If any archaeological or historical resources are identified or encountered in the work vicinity, the Permittee must immediately stop work, notify the Department's representative, retain a qualified archaeologist who must evaluate the site at Permittee's expense, and make recommendations to the Department's representative regarding the continuance of work.

b) HAZARDOUS MATERIALS: If any hazardous waste or materials (such as underground storage tanks, asbestos pipes, contaminated soil, etc.) are identified or encountered in the work vicinity, the Permittee must immediately stop work, notify the Department's representative, retain a qualified hazardous waste/material specialist who must evaluate the site at Permittee's expense, and make recommendations to the Department's representative regarding the continuance of work.

Attention is directed to potential aerially deposited lead (ADL) presence in unpaved areas along highways. It is the Permittee's responsibility to take all appropriate measures to protect workers in conformance with California Code of Regulations Title 8, Section 1532.1, "Lead," and with Cal-OSHA Construction Safety Orders, and to ensure roadway soil management is in compliance with Department of Toxic Substances Control (DTSC) requirements.

27. **PREVAILING WAGES:** Work performed by or under an encroachment permit may require Permittee's contractors and subcontractors to pay appropriate prevailing wages as set by the California Department of Industrial Relations. Inquiries or requests for interpretations relative to enforcement of prevailing wage requirements must be directed to the California Department of Industrial Relations.

28. **LIABILITY, DEFENSE, AND INDEMNITY:** The Permittee agrees to indemnify and save harmless the State, the Department, and the Directors, officers, employees, agents and/or contractors of the State and/or of the Department, including but not limited to the Director of Transportation and the Deputy Directors, from any and all claims, demands, damages, costs, liability, suits, or actions of every name, kind, and description, including but not limited to those brought for or on account of property damage, invasion of privacy, violation or deprivation of a right under a state or federal law, environmental damage or penalty, or injury to or death of any person including but not limited to members of the public, the Permittee, persons employed by the Permittee, and/or persons acting on behalf of the Permittee, arising out of or in connection with: (a) the issuance and/or use of this encroachment permit; and/or (b) the encroachment, work, and/or activity conducted pursuant to this encroachment permit, or under color of authority of this encroachment permit but not in full compliance with the Permit Conditions as defined in General Provision Number 5 ("Unauthorized Work or Activity"); and/or (c) the installation, placement, design, existence, operation, and/or maintenance of the encroachment, work, and/or activity; and/or (d) the failure by the Permittee or anyone acting on behalf of the Permittee to perform the Permittee's obligations under any part of the Permit Conditions as defined in General Provision Number 5, in respect to maintenance or any other obligation; and/or (e) any change to the Department's property or adjacent property, including but not limited to the features or conditions of either of them, made by the Permittee or anyone acting on behalf of the Permittee; and/or (f) a defect or obstruction related to or caused by the encroachment, work, and/or activity whether conducted in compliance with the Permit Conditions as defined in General Provision Number 5 or constituting Unauthorized Work or Activity, or from any cause whatsoever. The duty of the Permittee to indemnify and save harmless includes the duties to defend as set forth in Section 2778 of the Civil Code.

It is the intent of the parties that except as prohibited by law, the Permittee will defend, indemnify, and hold harmless as set forth in this General Provision Number 28 regardless of the existence or degree of fault or negligence, whether active or passive, primary or secondary, on the part of: the State; the Department; the Directors, officers, employees, agents and/or contractors of the State and/or of the Department, including but not limited to the Director of Transportation and the Deputy Directors; the Permittee; persons employed by the Permittee; and/or persons acting on behalf of the Permittee.

© 2018 California Department of Transportation. All Rights Reserved.

The Permittee waives any and all rights to any type of expressed or implied indemnity from or against the State, the Department, and the Directors, officers, employees, agents, and/or contractors of the State and/or of the Department, including but not limited to the Director of Transportation and the Deputy Directors.

The Permittee understands and agrees to comply with the obligations of Titles II and III of the Americans with Disabilities Act in the conduct of the encroachment, work, and/or activity whether conducted pursuant to this encroachment permit or constituting Unauthorized Work or Activity, and further agrees to defend, indemnify, and save harmless the State, the Department, and the Directors, officers, employees, agents, and/or contractors of the State and/or of the Department, including but not limited to the Director of Transportation and the Deputy Directors, from any and all claims, demands, damages, costs, penalties, liability, suits, or actions of every name, kind, and description arising out of or by virtue of the Americans with Disabilities Act.

The Permittee understands and agrees the Directors, officers, employees, agents, and/or contractors of the State and/or of the Department, including but not limited to the Director of Transportation and the Deputy Directors, are not personally responsible for any liability arising from or by virtue of this encroachment permit.

For the purpose of this General Provision Number 28 and all paragraphs herein, "contractors of the State and/or of the Department" includes contractors under contract to the State and/or the Department, and the subcontractors of such contractors.

This General Provision Number 28 and all paragraphs herein take effect immediately upon issuance of this encroachment permit, and apply before, during, and after the encroachment, work, and/or activity contemplated under this encroachment permit, whether such work is in compliance with the Permit Conditions as defined in General Provision Number 5 or constitutes Unauthorized Work or Activity, except as otherwise provided by California law. The Permittee's obligations to defend, indemnify, and save harmless under this General Provision Number 28 take effect immediately upon issuance of this encroachment permit and have no expiration date, including but not limited to situations in which this encroachment permit expires or is revoked, the work or activity performed under this encroachment permit is accepted or not accepted by the Department, the encroachment, work, and/or activity is conducted in compliance with the Permit Conditions as defined in General Provision Number 5 or constitutes Unauthorized Work or Activity, and/or no work or activity is undertaken by the Permittee or by others on the Permittee's behalf.

29. **NO PRECEDENT ESTABLISHED:** This encroachment permit is issued with the understanding that it does not establish a precedent.

30. **FEDERAL CIVIL RIGHTS REQUIREMENTS FOR PUBLIC ACCOMMODATION:**

a) As part of the consideration for being issued this encroachment permit, the Permittee, on behalf of Permittee and on behalf of Permittee's personal representatives, successors in interest, and assigns, does hereby covenant and agree that:

   i. No person on the grounds of race, color, or national origin may be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.
   ii. In connection with the construction of any improvements on said lands and the furnishings of services thereon, no discrimination must be practiced in the selection and retention of first-tier subcontractors in the selection of second-tier subcontractors.
   iii. Such discrimination must not be practiced against the public in their access to and use of the facilities and services provided for public accommodations (such as eating, sleeping, rest, recreation), and operation on, over, or under the space of the State highway right-of-way.
   iv. The Permittee must use the premises in compliance with all other requirements imposed pursuant to Title 15, Code of Federal Regulations, Commerce and Foreign Trade, Subtitle A. Office of the Secretary of Commerce, Part 8 (15 C.F.R. Part 8) and as said Regulations may be amended.

b) In the event of breach of any of the above nondiscrimination covenants, the State and the Department have the right to terminate this encroachment permit and to re-enter and repossess said land and the facilities thereon, and hold the same as if said permit had never been made or issued.

31. **MAINTENANCE OF HIGHWAYS:** By accepting this encroachment permit, the Permittee agrees to properly maintain any encroachment. This assurance requires the Permittee to provide inspection and repair any damage, at Permittee's expense, to State facilities resulting from the encroachment.

32. **SPECIAL EVENTS:** In accordance with subdivision (a) of Streets and Highways Code section 682.5, the Department is not responsible for the conduct or operation of the permitted activity, and the applicant agrees to defend, indemnify, and hold harmless the State, the Department, and the Directors, officers, employees, agents, and contractors of the State and/or of the Department, including but not limited to the Director of Transportation and the Deputy Directors, from any and all claims, demands, damages, costs, liability, suits, or actions of every name, kind and description arising out of any activity for which this encroachment permit is issued.

The Permittee understands and agrees to comply with the obligations of Titles II and III of the Americans with Disabilities Act in the conduct of the event, and further agrees to defend, indemnify, and save harmless the State and the Department, and the Directors, officers, and employees of the State and/or Department, including but not limited to the

© 2018 California Department of Transportation. All Rights Reserved.

Director of the Department and the Deputy Directors, from any and all claims, demands, damages, costs, liability, suits, or actions of every name, kind and description arising out of or by virtue of the Americans with Disabilities Act.

33. **PRIVATE USE OF STATE HIGHWAY RIGHT-OF-WAY:** State highway right-of-way must not be used for private purposes without compensation to the State. The gifting of public property use and therefore public funds is prohibited under the California Constitution, Article 16.

34. **FIELD WORK REIMBURSEMENT:** Permittee must reimburse the Department for field work performed on Permittee's behalf to correct or remedy hazards or damaged facilities, or to clear refuse, debris, etc. not attended to by the Permittee.

35. **NOTIFICATION OF CLOSURES TO DEPARTMENT AND TRAFFIC MANAGEMENT CENTER (TMC):** The Permittee must notify the Department's representative and the Traffic Management Center (TMC) at least seven (7) days before initiating a lane closure or conducting an activity that may cause a traffic impact. A confirmation notification should occur three (3) days before closure or other potential traffic impact. In emergency situations when the corrective work or the emergency itself may affect traffic, TMC and the Department's representative must be notified as soon as possible.

36. **SUSPENSION OF TRAFFIC CONTROL OPERATION:** The Permittee, upon notification by the Department's representative, must immediately suspend all lane closure operations and any operation that impedes the flow of traffic. All costs associated with this suspension must be borne by the Permittee.

37. **UNDERGROUND SERVICE ALERT (USA) NOTIFICATION:** Any excavation requires compliance with the provisions of Government Code section 4216 et. seq., including but not limited to notice to a regional notification center, such as Underground Service Alert (USA). The Permittee must provide notification to the regional notification center at least forty-eight (48) hours before performing any excavation work within the State highway right-of-way.

38. **COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA):** All work within the State highway right-of-way to construct and/or maintain any public facility must be designed, maintained, and constructed strictly in accordance with all applicable Federal Access laws and regulations (including but not limited to Section 504 of the Rehabilitation Act of 1973, codified at 29 U.S.C. § 794), California Access laws and regulations relating to ADA, along with its implementing regulations, Title 28 of the Code of Federal Regulations Parts 35 and 36 (28 C.F.R., Ch. 1, Part 35, § 35.101 et seq., and Part 36, § 36.101 et seq.), Title 36 of the Code of Federal Regulations Part 1191 (36 C.F.R., Ch. XI, Part 1191, § 1119.1 et seq.), Title 49 of the Code of Federal Regulations Part 37 (49 C.F.R., Ch. A, Part 37, § 37.1 et seq.), the United States Department of Justice Title II and Title III for the ADA, and California Government Code section 4450 et seq., which require public facilities be made accessible to persons with disabilities.

Notwithstanding the requirements of the previous paragraph, all construction, design, and maintenance of public facilities must also comply with the Department's Design Information Bulletin 82, "Pedestrian Accessibility Guidelines for Highway Projects."

39. **STORMWATER:** The Permittee is responsible for full compliance with the following:

- For all projects, the Department's Storm Water Program and the Department's National Pollutant Discharge Elimination System (NPDES) Permit requirements under *Order No. 2012-0011-DWQ, NPDES No CAS000003*; and
- In addition, for projects disturbing one acre or more of soil, with the California Construction General Permit *Order No. 2009-0009-DWQ, NPDES No CAS000002*; and
- In addition, for projects disturbing one acre or more of soil in the Lahontan Region with *Order No. R6T-2016-0010, NPDES No CAG616002.*

For all projects, it is the Permittee's responsibility to install, inspect, repair, and maintain all facilities and devices used for water pollution control practices (Best Management Practices/BMPs) before performing daily work activities.

© 2018 California Department of Transportation. All Rights Reserved.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

Atifa Farouz
C80402
Exp. 3-31-19
CIVIL

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TABLE 1

TAPER LENGTH CRITERIA AND CHANNELIZING DEVICE SPACING

SPEED (S)	MINIMUM TAPER LENGTH * FOR WIDTH OF OFFSET 12 FEET (W)				MAXIMUM CHANNELIZING DEVICE SPACING		
					X	Y	Z **
	TANGENT 2L	MERGING L	SHIFTING L/2	SHOULDER L/3	TAPER	TANGENT	CONFLICT
mph	ft	ft	ft	ft	ft	ft	ft
20	160	80	40	27	20	40	10
25	250	125	63	42	25	50	12
30	360	180	90	60	30	60	15
35	490	245	123	82	35	70	17
40	640	320	160	107	40	80	20
45	1080	540	270	180	45	90	22
50	1200	600	300	200	50	100	25
55	1320	660	330	220	50	100	25
60	1440	720	360	240	50	100	25
65	1560	780	390	260	50	100	25
70	1680	840	420	280	50	100	25
75	1800	900	450	300	50	100	25

* - For other offsets, use the following merging taper length formula for L:
For speed of 40 mph or less, $L = WS^2/60$
For speed of 45 mph or more, $L = WS$

Where: L = Taper length in feet
W = Width of offset in feet
S = Posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

** - Use for taper and tangent sections where there are no pavement markings or where there is a conflict between existing pavement markings and channelizers (CA).

TABLE 2

LONGITUDINAL BUFFER SPACE AND FLAGGER STATION SPACING

SPEED *	Min D **	DOWNGRADE Min D ***		
		-3%	-6%	-9%
mph	ft	ft	ft	ft
20	115	116	120	126
25	155	158	165	173
30	200	205	215	227
35	250	257	271	287
40	305	315	333	354
45	360	378	400	427
50	425	446	474	507
55	495	520	553	593
60	570	598	638	686
65	645	682	728	785
70	730	771	825	891
75	820	866	927	1003

* - Speed is posted speed limit, off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

** - Longitudinal buffer space or flagger station spacing

*** - Use on sustained downgrade steeper than -3 percent and longer than 1 mile.

TABLE 3

ADVANCE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS *		
	A	B	C
	ft	ft	ft
URBAN - 25 mph OR LESS	100	100	100
URBAN - MORE THAN 25 mph TO 40 mph	250	250	250
URBAN - MORE THAN 40 mph	350	350	350
RURAL	500	500	500
EXPRESSWAY / FREEWAY	1000	1500	2640

* - The distances are approximate, are intended for guidance purposes only, and should be applied with engineering judgment. These distances should be adjusted by the Engineer for field conditions, if necessary, by increasing or decreasing the recommended distances.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM TABLES FOR LANE AND RAMP CLOSURES

NO SCALE

2018 STANDARD PLAN T9

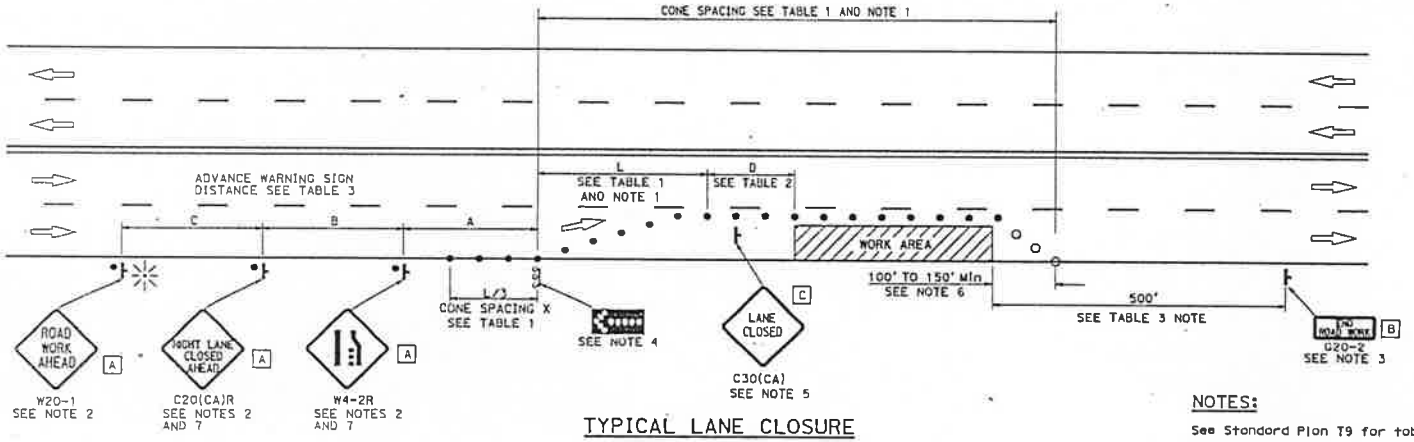
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

Arifa Feroz
REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

Arifa Feroz
C80402
Exp. 3-31-19
CIVIL
STATE OF CALIFORNIA



TYPICAL LANE CLOSURE

NOTES:

See Standard Plan T9 for tables.

Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as appropriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.

Provide at least one person to continuously maintain traffic control devices for lane closures.

LEGEND

- TRAFFIC CONE
- TRAFFIC CONE (OPTIONAL TAPER)
- TEMPORARY TRAFFIC CONTROL SIGN
- FLASHING ARROW SIGN (FAS)
- FAS SUPPORT OR TRAILER
- PORTABLE FLASHING BEACON

SIGN PANEL SIZE (Min)

- A 48" x 48"
- B 36" x 18"
- C 30" x 30"

NOTES:

1. Portable delineators placed at one-half the spacing indicated for traffic cones may be used instead of cones for daytime closures only.
2. Each advance warning sign shall be equipped with at least two flags for daytime closure. Each flag shall be at least 16" x 16" in size and shall be orange or fluorescent red-orange in color. Flashing beacons shall be placed at the locations indicated for lane closure during hours of darkness.
3. A G20-2 "END ROAD WORK" sign shall be placed at the end of the lane closure unless the end of work area is obvious or ends within the larger project's limits.
4. A minimum 1500' of sight distance shall be provided where possible for vehicles approaching the first flashing arrow sign. Lane closures shall not begin at the top of crest vertical curve or on a horizontal curve.
5. Place C30(CA) "LANE CLOSED" sign at 500' to 1000' intervals throughout extended work area.
6. Length may be reduced by the Engineer to address site conditions.
7. Median lane closures shall conform to the details shown except that C20(CA)L and W4-2L signs shall be used.
8. For approach speeds over 50 MPH, use the "Traffic Control System for Lane Closure on Freeways and Expressways" plan for lane closure details and requirements.

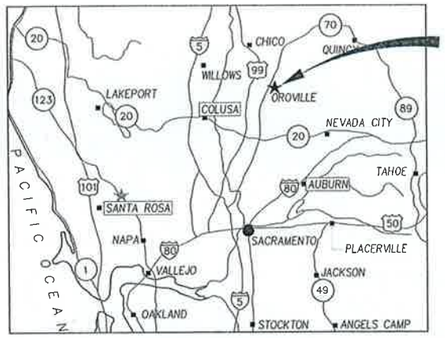
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE ON MULTILANE CONVENTIONAL HIGHWAYS

NO SCALE

T11

2018 STANDARD PLAN T11

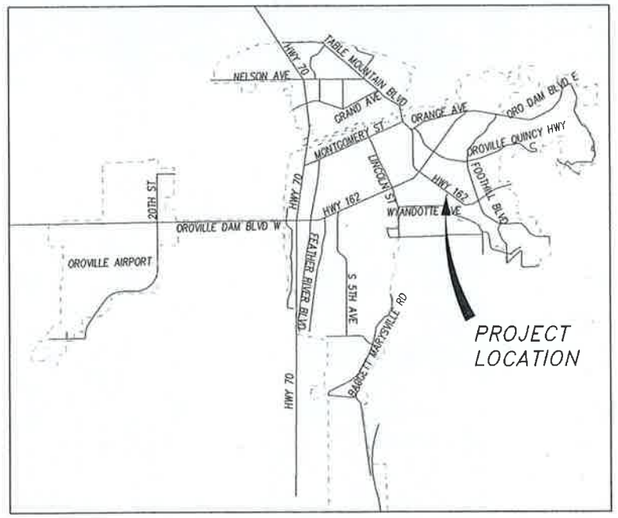


LOCATION MAP

SCALE: NTS

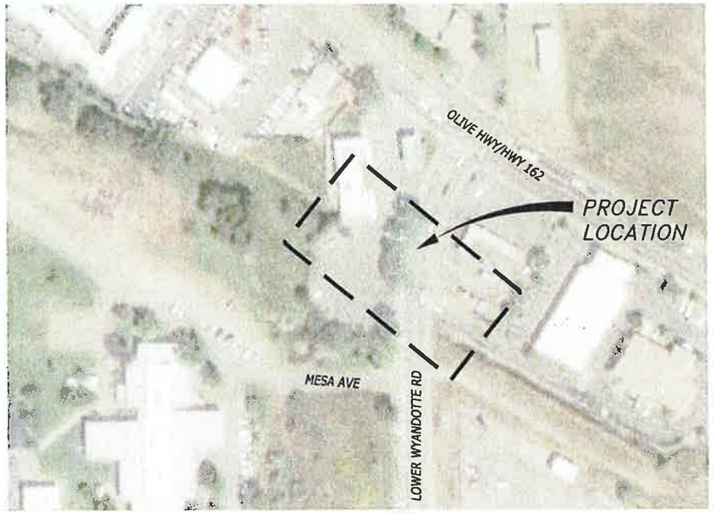
LOWER WYANDOTTE CULVERT REHABILITATION EMERGENCY REPAIR

ALONG LOWER WYANDOTTE ROAD NEAR HWY 162 WITHIN THE CITY OF OROVILLE, COUNTY OF BUTTE



VICINITY MAP

SCALE: NTS



PROJECT AREA

SCALE: 1" = 100'

RECEIVED
OCT 11 2019
CALTRANS DIST 3
PERMITS

INDEX OF PLAN SHEETS

GENERAL NOTES:

1. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THESE PLANS, ALL CONDITIONS OF APPROVAL RELATED TO THIS PROJECT, AND TO THE LATEST EDITION OF THE CITY OF OROVILLE IMPROVEMENT STANDARDS.
2. THE CONTRACTOR AGREES THAT, IN ACCORDANCE WITH THE GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE CITY OF OROVILLE HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT.
3. THE CONTRACTOR SHALL CONTACT THE CITY OF OROVILLE (MIKE MASSARO) 48 HOURS PRIOR TO THE START OF WORK TO ARRANGE A PRECONSTRUCTION FIELD MEETING. NO GRADING OR CONSTRUCTION MAY BE DONE PRIOR TO THE MEETING. CONTRACTOR SHALL OBTAIN AN ENCROACHMENT PERMIT FROM THE CITY OF OROVILLE PRIOR TO PERFORMING ANY WORK WITHIN PUBLIC RIGHT-OF-WAY OR EASEMENT.
4. THE CITY OF OROVILLE IS A MEMBER OF THE UNDERGROUND SERVICES ALERT (USA) ONE-CALL PROGRAM. THE CONTRACTOR OR ANY SUBCONTRACTOR FOR THIS CONTRACT SHALL NOTIFY USA TWO (2) WORKING DAYS PRIOR TO PERFORMING ANY EXCAVATION WORK BY CALLING THE TOLL-FREE NUMBER 811 OR 800-642-2444. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL EXISTING UNDERGROUND UTILITIES, WHETHER OR NOT THEY ARE SHOWN ON THESE PLANS.
5. IF ANY ARCHEOLOGICAL, CULTURAL, OR HISTORICAL RESOURCES, ARTIFACTS OR FEATURES ARE DISCOVERED DURING THE COURSE OF CONSTRUCTION ANYWHERE ON THE PROJECT SITE, WORK SHALL BE SUSPENDED WITHIN 150 FEET OF THAT LOCATION UNTIL A QUALIFIED PROFESSIONAL ARCHEOLOGIST ASSESSES THE SIGNIFICANCE OF THE DISCOVERY AND PROVIDES CONSULTATION WITH THE CITY OF OROVILLE COMMUNITY DEVELOPMENT AND THE BUTTE COUNTY HISTORICAL SOCIETY. THE CITY OF OROVILLE COMMUNITY DEVELOPMENT AND THE BUTTE COUNTY HISTORICAL SOCIETY SHALL BE NOTIFIED AND ANY APPROPRIATE MEASURES AGREED UPON PRIOR TO THE RECOMMECEMENT OF CONSTRUCTION IN THE AREA IN QUESTION.
6. COMPLIANCE WITH NOISE RESTRICTIONS SHALL BE REQUIRED. HOURS OF CONSTRUCTION OPERATION SHALL BE LIMITED TO THE PERIOD FROM 7:00 A.M. TO 6:00 P.M. ON WEEKDAYS. WEEKEND WORK IS NOT PERMITTED WITHOUT APPROVAL FROM CITY. CONSTRUCTION EQUIPMENT SHALL BE MUFFLED AND SHROUDED TO MINIMIZE NOISE LEVELS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. NO REFUELING, LUBRICATION, OR MAINTENANCE OF CONSTRUCTION VEHICLES SHALL BE DONE ANYWHERE ON THE SITE EXCEPT WITHIN APPROVED CONSTRUCTION STAGING AREAS. STAGING AREAS SHALL BE SET UP TO THE SATISFACTION OF THE CONSTRUCTION INSPECTOR AND THE FIRE DEPARTMENT.
8. EROSION AND SEDIMENTATION CONTROL SHALL BE PERFORMED PER SECTION 15.88.060 OF THE OROVILLE MUNICIPAL CODE. FIELD APPLICATION OF THE CONTROLS AND TIMING OF IMPLEMENTATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
9. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLAN TO PUBLIC WORKS FOR EACH STAGE OF CONSTRUCTION PRIOR TO ISSUANCE OF ENCROACHMENT PERMIT. TRAFFIC CONTROL PLANS SHALL BE SUBMITTED A MINIMUM OF TWO WEEKS PRIOR TO COMMENCEMENT OF WORK OR DETOURING OF TRAFFIC PATTERNS. ALL TRAFFIC CONTROL DEVICES SHALL BE INSTALLED AND CONFORM TO STATE OF CALIFORNIA MUTCD 2017.
10. THE CONTRACTOR SHALL PRACTICE SAFETY AT ALL TIMES AND SHALL FURNISH, ERECT, AND MAINTAIN SUCH FENCES, BARRICADES, LIGHTS AND SIGNS NECESSARY TO GIVE ADEQUATE PROTECTION TO THE PUBLIC AT ALL TIMES. TEMPORARY TRAFFIC CONTROL SHALL BE APPROVED BY ENGINEER.

ABBREVIATIONS:

AC	ASPHALT CONCRETE
BEG	BEGIN
BOW	BACK OF WALK
C&G	CURB & GUTTER
CG&S	CURB GUTTER & SIDEWALK
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
DI	DRAIN INLET
DTL	DETAIL
EX	EXISTING
FL	FLOW LINE
LF	LINEAR FEET
NTS	NOT TO SCALE
SCOR	SEWERAGE COMMISSION – OROVILLE REGION
SD	STORM DRAIN
SHT	SHEET
SS	SANITARY SEWER
SSMH	SANITARY SEWER MANHOLE
W	WATER

UTILITY REPRESENTATIVES

CONTACT	UTILITY	COMPANY	PHONE
CORT SCHREIBER	COMMUNICATIONS	AT&T	530-891-2392
BRANDON STOKES	COMMUNICATIONS	COMCAST	530-332-5993
LAIRD OELRICHS	GAS/ELECTRIC	PG&E	530-896-4258
JASON HAMMOND	WATER	CALIFORNIA WATER SERVICE CO.	530-893-6315
MATT COLWELL	WATER	SOUTH FEATHER WATER AND POWER	530-533-4578
SCOTT HOCH	SEWER	SCOR	530-538-7784
MIKE MASSARO	SEWER	CITY OF OROVILLE	916-783-4100
MIKE MASSARO	DRAINAGE	CITY OF OROVILLE	916-783-4100

811 Know what's below. Call before you dig.

APPROVED FOR CONSTRUCTION

APPROVAL RECOMMENDED BY:

MIKE MASSARO, PE — DATE
CONTRACT CITY ENGINEER
CITY OF OROVILLE

APPROVALS ARE GOOD FOR 12 MONTHS FROM DATE OF SIGNATURE

NO.	REVISIONS	BY	DATE
1			
2			
3			
4			
5			

BENCH MARK ELEV = XX DATUM = XX
DESCRIPTION:
X
X
X
X
X

DESIGN BY :	G.RODELL
DRAWN BY :	K.SETHARES
CHECKED BY :	M.MASSARO
SCALE :	AS SHOWN
DATE :	8/26/19
PROJ NO. :	17601-202

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

BEN|EN TRUSTED ENGINEERING ADVISORS

Bennett Engineering Services
1082 Sunrise Avenue, Suite 100
Roseville, California 95661
T 916.783.4100
F 916.783.4110

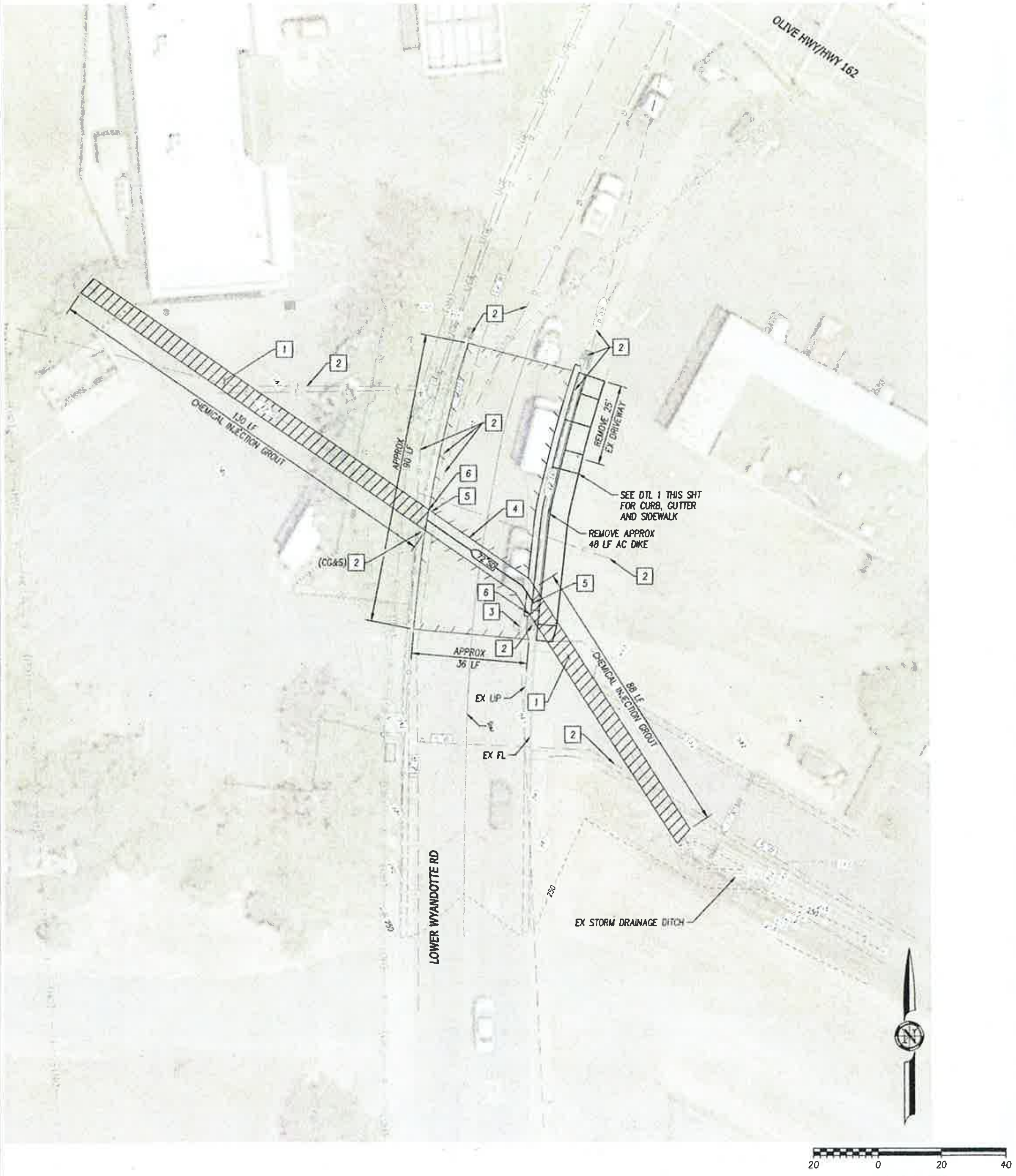
LOWER WYANDOTTE CULVERT REHABILITATION EMERGENCY REPAIR

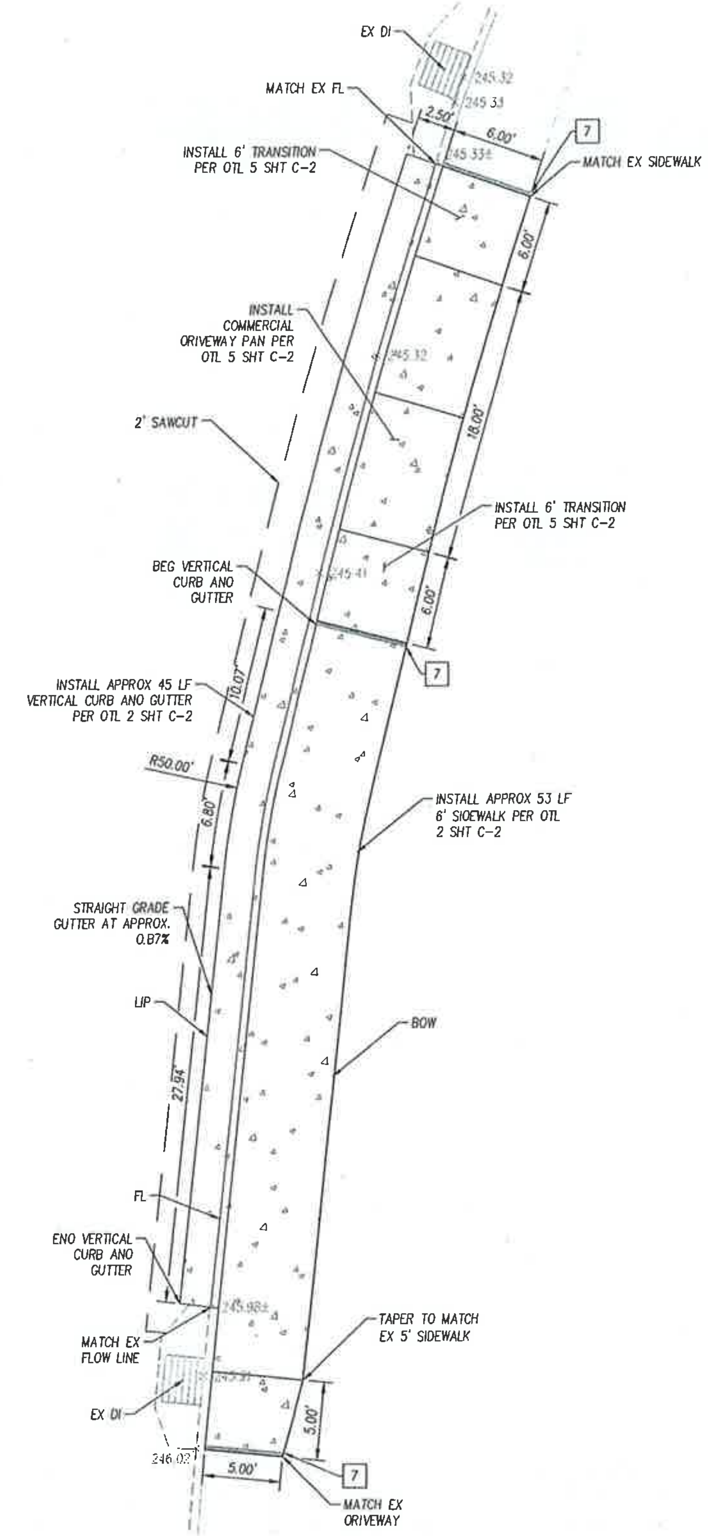
TITLE SHEET

CITY OF OROVILLE — CALIFORNIA

G-1
1 OF 3

Login Name: eashcraa
Plot Date: August 26, 2019 - 4:13 pm Plot Style: ###
Plot Name: K:\Projects\17601-202 - Lower Wyandotte Rd Culvert Rehabilitation\03-PLANS\MASTERS\SHEETS\17601-202_01-G1 - TITLE SHEET.dwg
XREFs: B08-17601-202_H_32x34





1 / C-1 **CURB, GUTTER AND SIDEWALK**
SCALE: 1" = 6'

CONSTRUCTION NOTES:

1. CHEMICAL INJECTION GROUT AROUND PIPE TO FILL VOIDS PER DTL 1 SHT C-2 AND PER SPECS
2. PROTECT EX UTILITY OR STRUCTURE IN PLACE
3. ADJUST SSMH TO GRADE
4. REMOVE AND REPLACE 43 LF 72" CMP CULVERT W/IN LIMITS OF ASPHALT PAVEMENT
5. RECONNECT EX STORM DRAIN TO NEW CULVERT
6. CONNECT NEW CULVERT TO EX CULVERT W/ METAL COUPLING BANDS
7. GROOVES PER DTL 5 SHT C-2

NOTES:

1. ASSUME 6'-8' COVER OVER 72" PIPE IN ROADWAY. TO BE VERIFIED BY CONTRACTOR.
2. CHEMICAL INJECTION GROUTING TO BE PERFORMED PER DTL 1, SHT C-2 AND MANUFACTURER'S RECOMMENDATIONS. GROUT SHALL BE INJECTED EVERY FOUR FEET ALONG THE CULVERT.
3. FINAL GRADE OF PAVEMENT SHALL MATCH EXISTING.
4. CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES PRIOR TO COMMENCING ANY WORK.

LEGEND:

- 2" GRIND AND OVERLAY
- CHEMICAL INJECTION GROUT
- CONCRETE

NO.	REVISIONS	BY	DATE
1			
2			
3			
4			
5			
6			

BENCH MARK ELEV: XX DATUM: XX
DESCRIPTION:
X
X
X
X
X
X

DESIGN BY:	G.RODELL
DRAWN BY:	K.SETHARES
CHECKED BY:	M.MASSARO
SCALE:	1" = 20'
DATE:	8/26/19
PROJ NO.:	17601-202

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

BEN|EN TRUSTED ENGINEERING ADVISORS

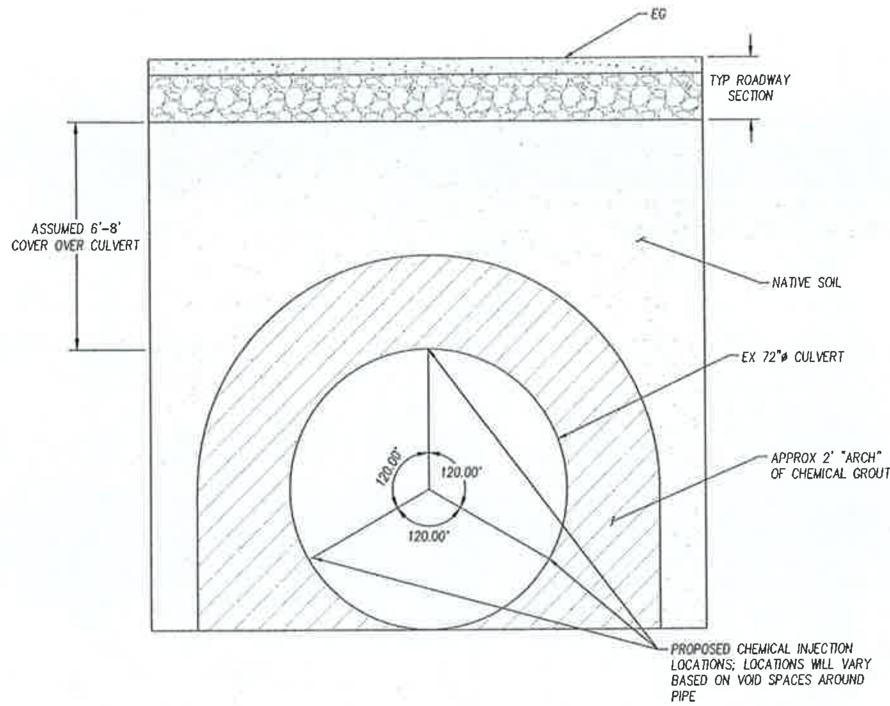
Bennett Engineering Services
1082 Sunrise Avenue, Suite 100
Roseville, California 95661
T 916.783.4100
F 916.783.4110

CITY OF OROVILLE — CALIFORNIA

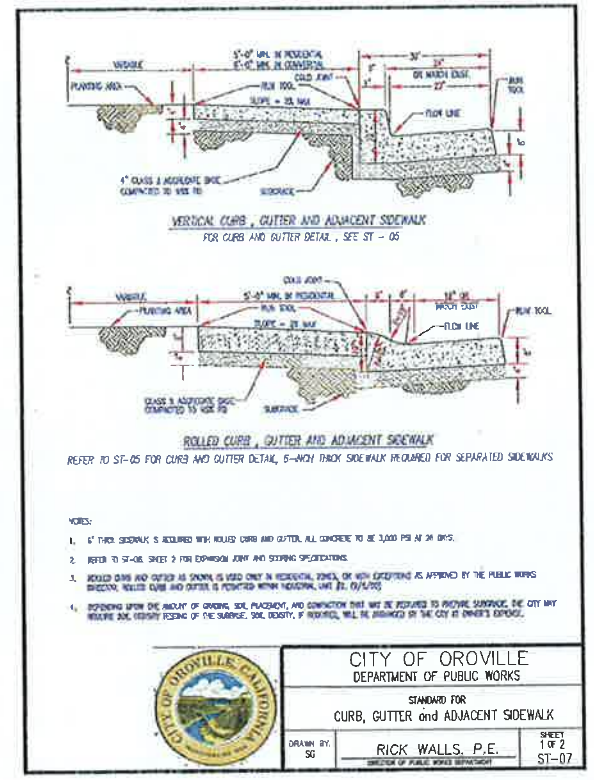
LOWER WYANDOTTE CULVERT REHABILITATION EMERGENCY REPAIR

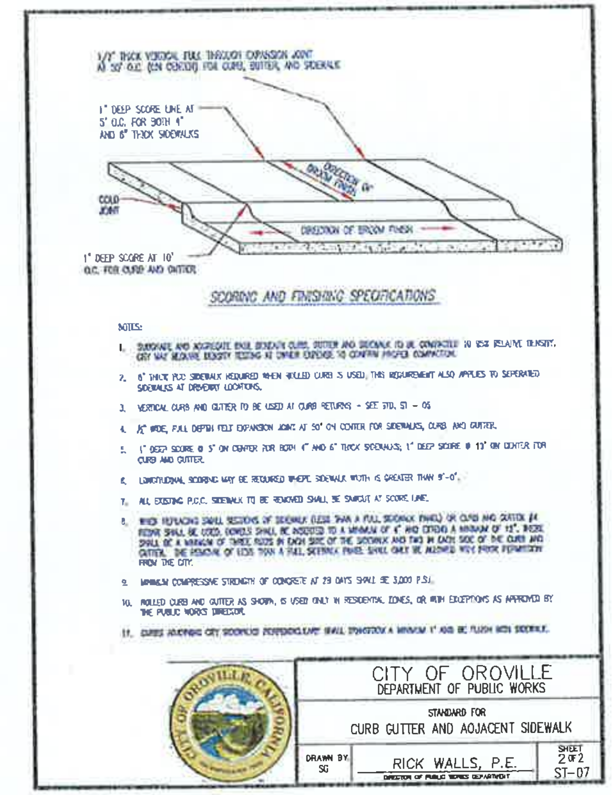
SITE PLAN

C-1

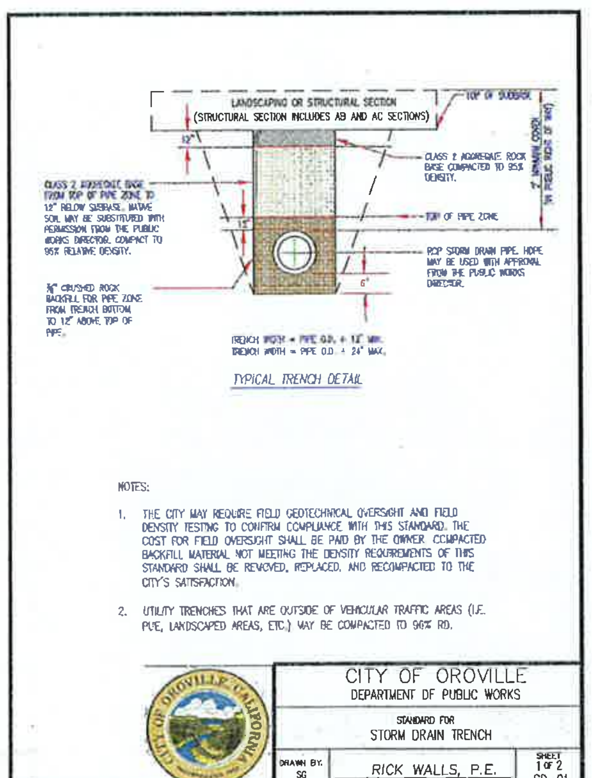


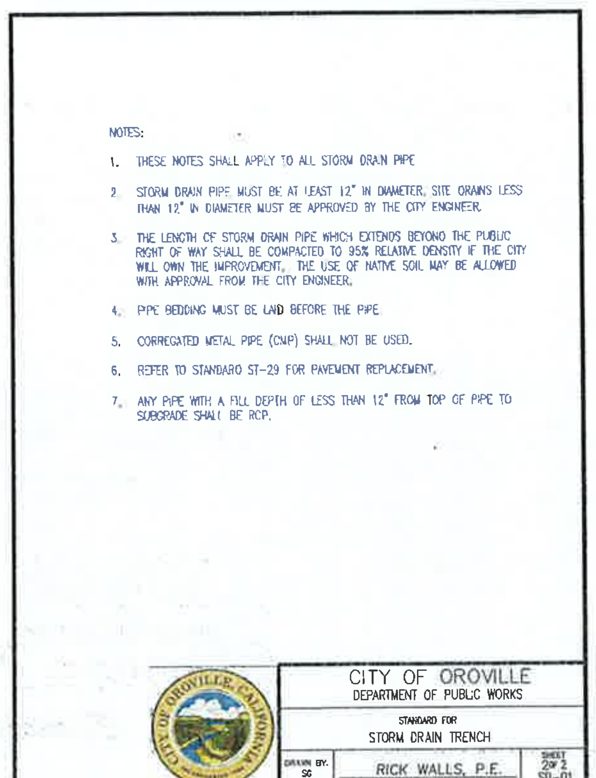
1 INJECTION GROUTING DETAIL
SCALE: NTS



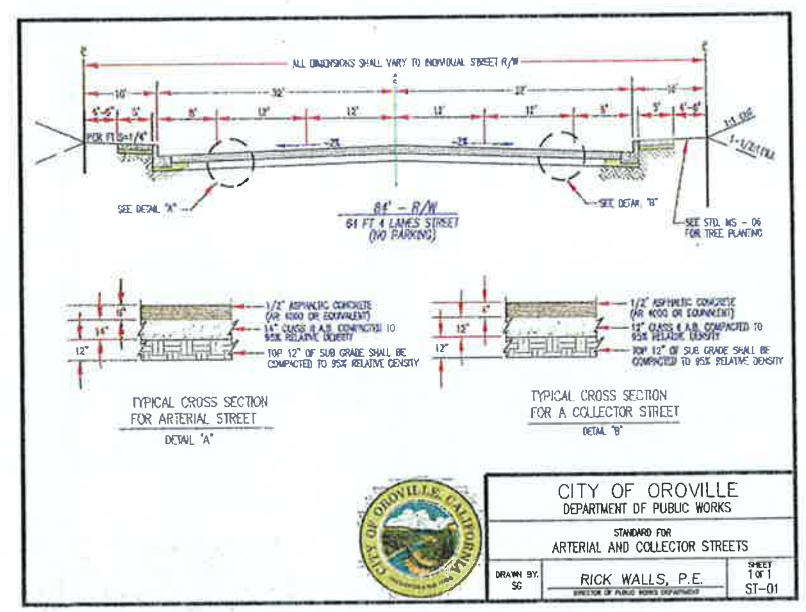


2 CURB, GUTTER AND ADJACENT SIDEWALK
SCALE: NTS

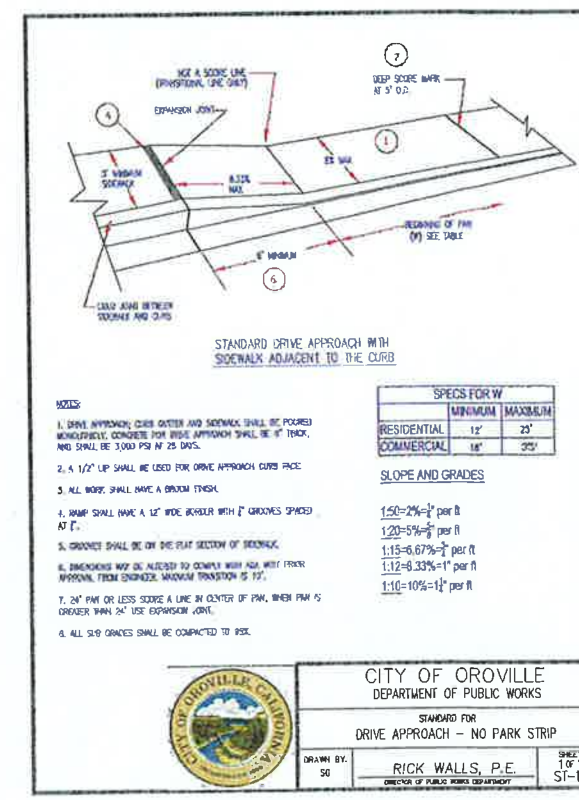




3 STORM DRAIN TRENCH
SCALE: NTS



4 ARTERIAL AND COLLECTOR STREETS
SCALE: NTS



5 DRIVE APPROACH - NO PARK STRIP
SCALE: NTS

NO.	REVISIONS	BY	DATE

BENCH MARK ELEV XX DATUM XX
DESCRIPTION: X X X X X X

DESIGN BY :	C.RODELL
DRAWN BY :	K.SETHARES
CHECKED BY :	M.MASSARO
SCALE :	AS SHOWN
DATE :	8/26/19
PROJ NO. :	17601-202

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

BEN|EN
TRUSTED ENGINEERING ADVISORS

Bennett Engineering Services
1082 Sunrise Avenue, Suite 100
Roseville, California 95661
T 916.783.4100
F 916.783.4110

CITY OF OROVILLE

LOWER WYANDOTTE CULVERT REHABILITATION EMERGENCY REPAIR

DETAILS

CALIFORNIA

C-2

3 OF 3

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

Atifa Feroz
REGISTERED CIVIL ENGINEER

May 31, 2018
PLANS APPROVAL DATE

Atifa Feroz
No. C60402
Exp. 3-31-19
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

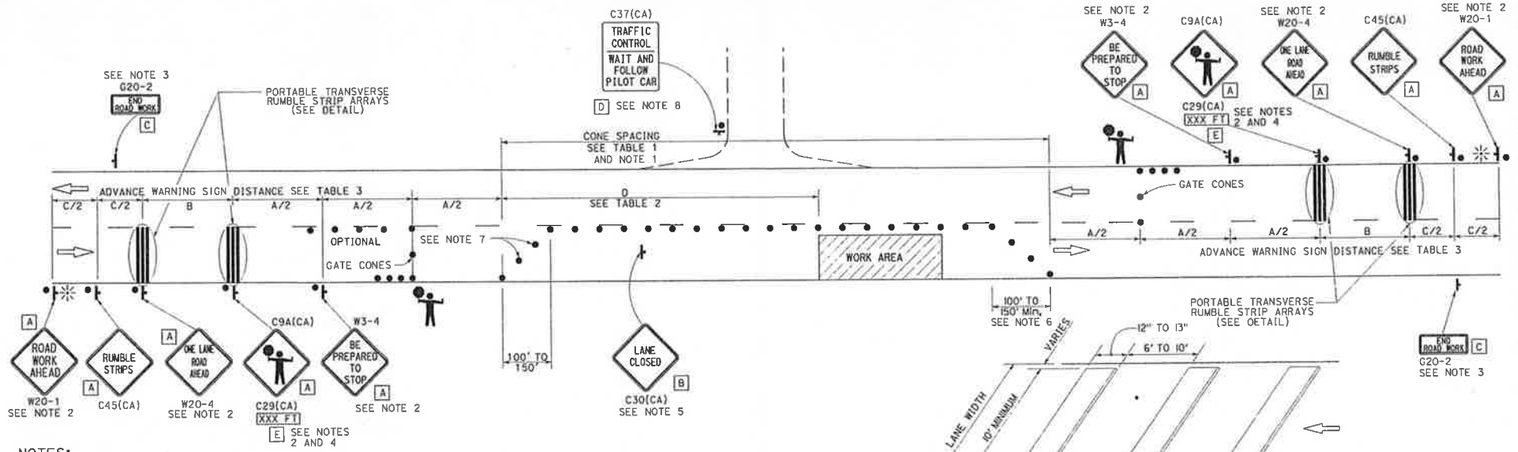
NOTES:

See Standard Plan T9 for tables.

Use cone spacing X for taper segment, Y for tangent segment or Z for conflict situations, as appropriate, per Table 1, unless X, Y, or Z cone spacing is shown on this sheet.

Provide at least one person to continuously maintain traffic control devices for lane closures.

TYPICAL LANE CLOSURE WITH REVERSIBLE CONTROL



NOTES:

1. Portable delineators placed at one-half the spacing indicated for traffic cones may be used instead of cones for daytime closures only.
2. Each advance warning sign shall be equipped with at least two flags for daytime closure. Each flag shall be at least 16" x 16" in size and shall be orange or fluorescent red-orange in color. Flashing beacons shall be placed at the locations indicated for lane closure during hours of darkness.
3. A G20-2 "END ROAD WORK" sign, shall be placed at the end of the lane closure unless the end of work area is obvious or ends within the larger project's limits.
4. An optional C29(CA) sign may be placed below the C9A(CA) sign.
5. Place C30(CA) "LANE CLOSED" sign at 500' to 1000' intervals throughout extended work area. They are optional if the work area is visible from nthe flagger station.
6. Length may be reduced by the Engineer to address site conditions.
7. Either traffic cones or barricades shall be placed on the taper. Barricades shall be Type I, II, or III.
8. When a pilot car is used, place a C37(CA) "TRAFFIC CONTROL-WAIT AND FOLLOW PILOT CAR" sign with black legend on white background at all intersections, driveways and alleys without a flagger within the traffic control area.

PORTABLE TRANSVERSE RUMBLE STRIP ARRAY DETAIL

SIGN PANEL SIZE (Min)

A	48" x 48"
B	30" x 30"
C	36" x 18"
D	36" x 42"
E	20" x 7"

LEGEND

- TRAFFIC CONE
- TEMPORARY TRAFFIC CONTROL SIGN
- PORTABLE FLASHING BEACON
- FLAGGER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE ON TWO LANE CONVENTIONAL HIGHWAYS

NO SCALE

T13

1-29-18

2018 STANDARD PLAN T13

Return to Table of Contents