

**CITY OF BURLINGAME**  
**DEPARTMENT OF PUBLIC WORKS**

NOTICE TO BIDDERS

INSTRUCTION TO BIDDERS

PROPOSAL AND AGREEMENT

SPECIAL PROVISIONS

FOR

**CAROLAN-ROLLINS EASEMENT  
SANITARY SEWER MAIN RELOCATION  
CITY PROJECT NO. 84850**

FOR USE IN CONNECTION WITH  
STANDARD SPECIFICATIONS DATED 2010  
AND STANDARD PLANS DATED 2010  
OF THE CALIFORNIA DEPARTMENT OF TRANSPORTATION

MAYOR: MICHAEL BROWNRIGG, MAYOR

CITY COUNCIL: DONNA COLSON, VICE MAYOR  
EMILY BEACH  
ANN KEIGHRAN  
RICARDO ORTIZ

CITY MANAGER: LISA GOLDMAN

CITY CLERK: MEAGHAN HASSEL-SHEARER



MAHESH YEDLURI, P.E.  
SR. CIVIL ENGINEER  
RCE 70777  
EXP. 6-30-19

BIDS WILL BE OPENED AT 2:00 P.M. ON NOVEMBER 15, 2018  
IN CONFERENCE ROOM "B" OF THE BURLINGAME CITY HALL  
TIME FOR COMPLETION: 45 WORKING DAYS

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<http://www.burlingame.org/index.aspx?page=161>  
 Burlingame.org/departments/engineering/city standard details.



## *The City of Burlingame*

PUBLIC WORKS DEPARTMENT  
(650) 558-7230

CITY HALL - 501 PRIMROSE ROAD  
BURLINGAME, CALIFORNIA 94010-3997

CORPORATION YARD  
(650) 558-7670

### **NOTICE TO BIDDERS**

For the **CAROLAN-ROLLINS EASEMENT SANITARY SEWER MAIN RELOCATION, CITY PROJECT NO. 84850**, sealed proposals will be received at the office of the City Clerk, City Hall, 501 Primrose Road, Burlingame, California, until 2:00 P.M., on Thursday, November 15, 2018. Sealed bids will be publicly opened and read at 2:00 P.M. on that date in City Hall Conference Room "B", in the City of Burlingame, San Mateo County, California.

Plans and Specifications covering the work may be obtained by prospective bidders upon application and a cash, check, or credit card non-refundable fee of \$45.00, or \$50 if contract documents are mailed (USPS only), at Public Works Engineering, 501 Primrose Road, Burlingame, CA 94010. Project documents (Read-Only) are available for viewing at [www.burlingame.org/departments/public\\_works](http://www.burlingame.org/departments/public_works) under Capital Improvement Projects.

The City of Burlingame intends to relocate an existing sanitary sewer main currently within an easement through properties along the west side of Toyon Drive, between Carolan Avenue and Rollins Road. The work shall consist of constructing 730 linear feet of new 12-inch sanitary sewer pipe using open cut along a proposed easement and connecting to existing main on Carolan Avenue and Rollins Road. Other related work included installation and replacement of manholes, cleanouts and laterals, temporary bypass pumping, connecting all laterals, abandon existing sanitary sewer main and manhole, and other related miscellaneous works.

Special Provisions, Specifications and Plans, including prevailing wage rates to be paid in compliance with Section 1773.2 of the California Labor Code and related provisions, may be inspected in the office of the City Engineer during normal working hours at City Hall, 501 Primrose Road, Burlingame, California, and are also available for review at the State of California Department of Industrial Relations' Web site.

A non-mandatory pre-bid meeting associated with this project will be held on Tuesday, October 30, 2018, at 10:00 A.M., on-site at northeast corner of Toyon Drive and Carolan Avenue, Burlingame, California.

The Contractor shall possess a Class A license prior to submitting a bid.

**No contractors and subcontractor may be listed on the bid proposal for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5** [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.5(a)].

**All contractors and subcontractors will be required to furnish electronic certified payroll records directly to the Labor Commissioner (aka Division of Labor Standards Enforcement).**

All work specified in this project, shall include the base bid and alternate bids (if shown in Proposal), and shall be completed within 45 of Working Days (forty-five working days) from date of the Notice to Proceed.

Mahesh Yedluri, P.E.  
Senior Civil Engineer

**INSTRUCTIONS TO BIDDERS**

**CAROLAN-ROLLINS EASEMENT SANITARY SEWER MAIN RELOCATION**  
**CITY PROJECT NO. 84850**

Proposals shall be submitted in accordance with the Special Provisions and these Instructions.

*General Instructions*

- A. Bids shall be made upon the form provided, properly executed and with all items completed. All signatures shall be in longhand.
- B. Bids shall not be unbalanced. Any apparent unbalancing of bids may be considered sufficient grounds for rejection of a proposal.
- C. A proposal shall cover all items of the bidding schedule. Blank spaces in the bid shall be properly filled in, and the wording thereof must not be changed. Additions shall not be made to the items mentioned therein. Any unauthorized conditions, limitations or provisions attached to a proposal may cause its rejection. Alterations by erasures or interlineation shall be explained or noted in the bid over the signature of the bidder.
- D. Late bids will be returned to the bidder unopened.
- E. Each bid shall be addressed to the City Clerk of the City of Burlingame, and shall be delivered to the office of the City Clerk of the City of Burlingame, 501 Primrose Road, Burlingame, California 94010, on or before the day and time set for the opening of bids. The bid shall be enclosed in a sealed envelope bearing the title of the project, the name of the bidder, and the date and time of the opening. It is the sole responsibility of the bidder to ensure that the bid is received in proper time at the office of the City Clerk.
- F. Cash deposits for Plans and Specifications will not be refunded.

*Licensure*

All bidders shall have the class of license(s) listed in the Notice Inviting Sealed Bids prior to submitting a bid.

*Bidder's Bond*

Each bid must be accompanied by cash, a certified or cashier's check, or a bidder's bond in the sum of not less than ten percent (10%) of the total aggregate of the bid, and such a check or bond shall be made payable to the City of Burlingame as set forth in Section 3 of the Special Provisions. If the successful bidder fails to file the bonds or to provide the insurance required by the Contract Documents, or refuses to enter into a contract within the specified time, it shall be liable for any difference by which the cost of procuring the work exceeds the amount of its bid and the bond or the amount of cash or check shall be available to offset such difference.

*Examination of Plans, Specifications and Site Work*

Before submitting a bid, each bidder shall carefully read the Specifications and all other Contract Documents. The bidder shall visit the site of the Project and shall fully inform itself as to all existing conditions and limitations under which the work is to be performed, and it shall include in its bid a sum to cover the cost of all items necessary to perform the work as set forth in the Contract Documents. No allowance of any kind whatsoever will be made to any bidder because of lack of such examination or knowledge. The submission of a bid shall be conclusive evidence that the bidder has made such an examination. *Bidders shall report any discrepancies in the field conditions or Contract Documents that they discover to the City before bids are opened.*

*Competency of Bidder*

Any bidder may be required to furnish evidence satisfactory to City that it and its proposed subcontractors have sufficient means and experience in the type of work called for to insure completion of the contract in a satisfactory manner.

*Withdrawal of Bid*

Any bidder may withdraw its bid, either personally or by a written request, at any time prior to the scheduled time for opening of bids.



*Award or Rejection of Bids*

The Contract, if awarded, will be awarded to the lowest responsible bidder subject to City's right to reject any or all bids and to waive informalities to the fullest extent provided by law in the bids.

*Withdrawal of Bids after Opening*

No bidder may withdraw its bid for a period of sixty (60) calendar days after the date set for the opening thereof, and the same shall be subject to acceptance by the City during this period.

*Execution of Agreement*

The successful bidder, as Contractor shall, within ten (10) calendar days after notice of award, execute and deliver to City one original and one counterpart of the Agreement, which is included in the Contract Documents.

*Performance Bond, Labor and Materialpersons Bond, Deposit of Securities*

At or prior to the delivery of the signed Agreement, Contractor shall deliver to the City a Faithful Performance Bond and a Contractor's Payment (Labor and Materials) Surety Bond, as are required by the Special Provisions. All bonds shall be in the general forms designated by City, and each shall be in an amount equal to one hundred percent (100%) of the contract price. All bonds shall be approved by the City Attorney before the successful bidder may proceed with the work. Failure or refusal to furnish bonds in the form satisfactory to the City Attorney shall subject the bidder to penalties for delay in commencement of the work or revocation of the award of contract.

Pursuant to Section 22300 of the California Public Contract Code, the Contractor will be permitted, at its request and sole expense, to substitute securities for any monies withheld by the City, as provided in the Special Provisions.

*Insurance*

At or prior to the delivery of the signed Contract Agreement, Contractor shall deliver to the City the policies of insurance and certificates and endorsements that are required by the Special Provisions. Failure or refusal to furnish insurance policies or certificates in the form satisfactory to the City Attorney shall subject the bidder to penalties for delay in commencement of the work or revocation of the Award of Contract. All policies,

endorsements, and certificates of insurance shall be approved by the City Attorney before the successful bidder may proceed with any work.

*Interpretation of Drawings and Documents Prior to Bidding*

If any potential bidder is in doubt as to the true meaning of any part of the Plans, Specifications, or other Contract Documents, or finds discrepancies in, or omissions from the Plans or Specifications, it may submit to the City Engineer a written request for an interpretation or correction thereof not later than five working days before the date bids will be opened. The person submitting the request will be responsible for its prompt delivery. Any interpretation or correction of the Contract Documents will be made only by addendum. Bidders shall confirm the existence of any and all addenda. The City will not be responsible for any other explanation or interpretation of the Contract Documents.

*Addenda*

Addenda issued during the time of bidding shall become a part of the documents furnished to bidders for the preparation of bids, shall be covered in the bids and shall be made a part of the Contract Documents. Each bid shall include specific acknowledgement in the space provided of receipt of all Addenda issued during the bidding period. Failure to do so may result in the bid being rejected and labeled as nonresponsive. Failure of any bidder to receive such Addenda shall not be grounds for non-compliance with the terms of the instructions. It is the responsibility of the Contractor to contact the City to determine the existence of any and all addenda.

*Bidders Interested in More than One Bid*

No person, firm or corporation shall be allowed to make or file or be interested in more than one bid for the same work, unless alternate bids are called for. A person, firm or corporation submitting a sub-proposal to a bidder, or who has quoted prices on materials to a bidder, is not thereby disqualified from submitting a sub-proposal or quoting prices to other bidders.

*Special Notice*

Bidders are required to inform themselves fully of the conditions relating to construction and labor under which the work will be or is now performed, and, so far as possible, the successful bidder must employ such methods and means in carrying out his/her work as will not cause any interruption or interference with any other Contractor.

*List of Subcontractors*

Bidders shall submit a list of their proposed subcontractors in compliance with Sections 4100-4113 of the Public Contract Code of the State of California. A form for this designation is furnished in the Contract Documents.

*Additional Sureties*

If at any time during the continuance of the contract the Sureties, or any of them, shall, in the opinion of City, be no longer responsible, the City shall have the right to require additional and sufficient Sureties which Contractor shall furnish to the satisfaction of City within ten (10) working days after notice.

*Definition of Contract Documents*

The term "Contract Documents" is defined in section 1.03 Definitions and Terms of the Special Provisions and in the AGREEMENT FOR PUBLIC IMPROVEMENT. The submission of any bid shall be deemed a thorough and complete understanding of all provisions of the Contract Documents.

*Business License*

All Contractors, whether they are general Contractors or subcontractors, who transact or carry on business in the City, shall acquire a Business License in conformance with the Burlingame Municipal Code.

*Wages*

Workers employed in the work must be paid at rates at least equal to the then current prevailing wage scale as determined by the State Director of the Department of Industrial Relations. A copy is on file in the City Department of Public Works, and is also available for review at the State of California Department of Industrial Relations' web site at [www.dir.ca.gov/DLSR/PWD](http://www.dir.ca.gov/DLSR/PWD).

Pursuant to Labor Code Section 1770 *et. seq*, any Contractor who is awarded a public works project and intends to use a craft or classification not shown on the general prevailing wage determinations, may be required to pay the wage rate of that craft or classification most closely related to it as shown in the general determinations effective at the time of the calls for bids.

*Unit Prices*

Because unit prices are key elements of bid award and contract administration, in case of discrepancy between the unit price and the total set for a unit basis item, the unit price shall prevail. If, however, the unit price is omitted, ambiguous, unintelligible, or uncertain for any reason, or if it is the same amount as set forth in the “Total” column, then the amount set forth in the “Total” column for the item shall prevail and shall be divided by the estimated quantity to determine the unit price.

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**GENERAL**

**CAROLAN-ROLLINS EASEMENT SANITARY SEWER MAIN RELOCATION**  
**CITY PROJECT NO. 84850**

TO THE CITY OF BURLINGAME, CALIFORNIA: \_\_\_\_\_, 20\_\_\_\_

Pursuant to the foregoing Notice to Contractors, the undersigned bidder herewith submits its proposal on the Bid Form, Designation of Subcontractors, and Statement of Experience Qualifications, Non-Collusion Declaration, and Statement under Public Contract Code Section 10285.1 attached hereto and made a part hereof, and binds itself on award by the City of Burlingame under this proposal to execute in accordance with such award, a contract, of which this Proposal and the Notice to Contractors, Instructions to Bidders, Special Provisions, Standard Specifications, and Plans and Specifications are hereby made a part of this Proposal and all provisions thereof are hereby accepted.

In submitting this proposal, the bidder has confirmed the existence of any and all addenda and accepts the changes to the contract included in all addenda.

The bidder further agrees that in case of its default in executing the Contract Documents, and providing the required bonds and insurance, the cash, check or Bidder's Bond, accompanying its proposal and the money payable thereon shall be and remain the property of the City of Burlingame, as provided in the Instructions to Bidders and the Special Provisions.

Company name: \_\_\_\_\_

\_\_\_\_\_  
(Corporate Seal)

Signature \_\_\_\_\_

Address \_\_\_\_\_

Contractor's license number: \_\_\_\_\_

Contractor's telephone no. \_\_\_\_\_

Contractor's facsimile no. \_\_\_\_\_

CAROLAN-ROLLINS EASEMENT SANITARY SEWER MAIN RELOCATION

If a corporation, organized under the laws of the state of: \_\_\_\_\_,

Nature of firm (corporation, partnership, etc.) and names of individual members of the firms, or names and titles of officers of the corporation:

Name _____	Title _____
Name _____	Title _____
Name _____	Title _____
Name _____	Title _____

**DESIGNATION OF SUBCONTRACTORS**

(Public Contract Code Sections 4100 *et seq.*)

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID PROPOSAL  
CAROLAN-ROLLINS EASEMENT SANITARY SEWER MAIN RELOCATION  
CITY PROJECT NO. 84850

As a bidder on the above-entitled project, the undersigned hereby designates the subcontractors that will perform work or labor or render services to the Contractor in or about the construction of the project in an amount in excess of one-half (1/2) of one percent (1%) of the Contractor's total bid or \$10,000 whichever is greater.

The undersigned understands and agrees that should it fail to specify a subcontractor for any portion of the work as above stated, it agrees that the undersigned is fully qualified to perform that portion of the work itself, and that it shall perform that portion itself. Penalties for failure to comply with this provision are provided in the Subletting and Subcontracting Fair Practices Act commencing with Section 4100 of the Public Contract Code.

Pursuant to Public Contract Code Section 6109, Contractor shall not allow or permit any subcontractor that is ineligible to perform work on a public works project pursuant to Labor Code Section 1777.1 or 1777.7, to perform any work on this Project.

The undersigned agrees that it shall not, without written consent of the City Council, make any substitution, assignment or sublet to or of the following list of subcontractors which is made a part of this proposal and then only after compliance with the provisions of the Subletting and Subcontracting Fair Practices Act. [ATTACH ADDITIONAL PAGES IF NECESSARY]



LIST OF SUBCONTRACTORS

NAME OF SUBCONTRACTOR	ADDRESS OF SUBCONTRACTOR	<u>STATE</u> <u>CONTRACTORS</u> <u>LICENSE #</u>	DIR REGISTRATION #	WORK TO BE DONE BY SUBCONTRACTOR

NAME OF BIDDER: \_\_\_\_\_

Signature: \_\_\_\_\_

**STATEMENT OF EXPERIENCE QUALIFICATIONS**  
**TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID PROPOSAL**  
**CAROLAN-ROLLINS EASEMENT SANITARY SEWER MAIN RELOCATION**  
**CITY PROJECT NO. 84850**

The following statement as to experience qualifications of the bidder is submitted in conjunction with the Proposal, as a part thereof, and the truthfulness and accuracy of the information is guaranteed by the Bidder.

The bidder has been engaged in the contracting business, under the present business name, for \_\_\_\_\_ years. Experience in work of a nature similar to that covered in the proposal extends over a period of \_\_\_\_\_ years.

The bidder, as a contractor, has never failed to satisfactorily complete a contract awarded to it, except as follows:

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The following contracts have been satisfactorily completed in the last three years for the persons, firm or authority indicated, and to whom reference is made:

YEAR	TYPE OF WORK PROJECT NAME	CONTRACT AMOUNT	LOCATION	FOR WHOM PERFORMED	CONTACT NAME AND PHONE NO.

The following is a list of plant and equipment owned by the bidder, which is definitely available for use on the proposed work as required:

QUANTITY	NAME, TYPE, CAPACITY	CONDITION	LOCATION

NAME OF BIDDER: \_\_\_\_\_

Signature: \_\_\_\_\_

**NON-COLLUSION DECLARATION**

(PUBLIC CONTRACT CODE SECTION 7106)

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID PROPOSAL  
CAROLAN-ROLLINS EASEMENT SANITARY SEWER MAIN RELOCATION  
CITY PROJECT NO. 84850

I, \_\_\_\_\_, declare under penalty of perjury that I am \_\_\_\_\_ (sole owner, partner, president, etc.) of \_\_\_\_\_, the party making the foregoing bid; that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly 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 or 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.

I declare under penalty of perjury that the foregoing is true and correct and this was executed on the date shown below at \_\_\_\_\_.  
(City, State)

Dated: \_\_\_\_\_

NAME OF BIDDER: \_\_\_\_\_

Signature \_\_\_\_\_

**PUBLIC CONTRACT CODE SECTION 10285.1 STATEMENT**

**TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID**  
**CAROLAN-ROLLINS EASEMENT SANITARY SEWER MAIN RELOCATION**  
**CITY PROJECT NO. 84850**

In accordance with Public Contract Code Section 10285.1 (Stats. 1985, Ch. 376), 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, member, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

[NOTE: THE BIDDER MUST PLACE A CHECK MARK AFTER "HAS" OR "HAS NOT" IN ONE OF THE BLANK SPACES ABOVE.]

The above Statement is part of the Proposal. Bidders are warned that making a false certification may subject the certifier to criminal prosecution.

I declare under penalty of perjury that the foregoing is true and correct and this was executed on the date shown below at \_\_\_\_\_.  
(City, State)

Dated: \_\_\_\_\_

NAME OF BIDDER: \_\_\_\_\_

Signature \_\_\_\_\_

**PUBLIC CONTRACT CODE SECTION 10162 QUESTIONNAIRE**

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID PROPOSAL

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 a safety regulation?

No \_\_\_\_\_ Yes \_\_\_\_\_

If the answer is yes, explain the circumstances below:

I declare under penalty of perjury that the foregoing is true and correct and this was executed on the date shown below at \_\_\_\_\_.  
(City, State)

Dated: \_\_\_\_\_

NAME OF BIDDER: \_\_\_\_\_

Signature \_\_\_\_\_

**Public Contract Code 10232 Statement**

In accordance with Public Contract Code Section 10232, the Contractor, hereby states under penalty of perjury, that no more than one final unappealable 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 and Questionnaire are part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Statement and Questionnaire. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

I declare under penalty of perjury that the foregoing is true and correct and this was executed on the date shown below at \_\_\_\_\_.  
(City, State)

Dated: \_\_\_\_\_

NAME OF BIDDER: \_\_\_\_\_

Signature \_\_\_\_\_

**BID SHEET**

**CAROLAN-ROLLINS EASEMENT SANITARY SEWER MAIN RELOCATION**  
**CITY PROJECT NO. 84850**

**BID SCHEDULE:**

ITEM NO.	ITEM DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	ITEM TOTAL
1	Construction Survey and Site Investigation	LS	LS		
2	Preconstruction Potholing	LS	LS		
3	Mobilization and Demobilization	LS	LS		
4	Traffic Control	LS	LS		
5	Storm Water Pollution Prevention	LS	LS		
6	Fence Demo and Restoration	84	LF		
7	Remove and Replace Sidewalk	50	SF		
8	Remove and Replace Curb and Gutter	10	LF		
9	Remove and Replace AC	263	SF		
10	12" PVC Pipe (6'-10' Deep)	200	LF		
11	12" PVC Pipe (10'-15' Deep)	530	LF		
12	4" Sewer Lateral	270	LF		
13	Sanitary Sewer Cleanout	14	EA		
14	Sanitary Sewer Manhole Installation	4	EA		
15	Abandon Existing Sanitary Sewer Manhole	2	EA		
16	Abandon Existing Sanitary Sewer	720	LF		
17	Connect to Existing Manhole	1	EA		
18	Post CCTV Inspection	730	SF		

**TOTAL BID** \_\_\_\_\_

**The contractor is responsible for identifying items and obtaining quantities. The lowest responsive and responsible bidder will be determined on the basis of the lowest Total Bid amount.**

BIDDING CONTRACTOR'S SIGNATURE: \_\_\_\_\_

BIDDING CONTRACTOR'S NAME: \_\_\_\_\_

\_\_\_\_\_  
 CONTRACTOR'S LICENSE NUMBER

\_\_\_\_\_  
 EXPIRATION DATE

\_\_\_\_\_  
 CONTRACTOR'S ADDRESS

\_\_\_\_\_  
 CONTRACTOR'S TELEPHONE NO.

\_\_\_\_\_  
 DATE



**AGREEMENT FOR PUBLIC IMPROVEMENT**

**CAROLAN-ROLLINS EASEMENT SANITARY SEWER MAIN RELOCATION**

**CITY PROJECT NO. 84850**

THIS AGREEMENT, made in duplicate and entered into in the City of Burlingame, County of San Mateo, State of California on \_\_\_\_\_, 2018 by and between the CITY OF BURLINGAME, a Municipal Corporation, hereinafter called "City", and \_\_\_\_\_, a [State of incorporation] [Corporation or other form of business], hereinafter called "Contractor."

**WITNESSETH:**

**WHEREAS**, City has taken appropriate proceedings to authorize construction of the public work and improvements herein provided for and to authorize execution of this Contract; and

**WHEREAS**, pursuant to State law and City requirements, a notice was duly published for bids for the contract for the improvement hereinafter described; and

**WHEREAS**, on \_\_\_\_\_, after notice duly given, the City Council of Burlingame awarded the contract for the construction of the improvements hereinafter described to Contractor, which the Council found to be the lowest responsive, responsible bidder for these improvements; and

**WHEREAS**, City and Contractor desire to enter into this Agreement for the construction of said improvements.

**NOW, THEREFORE, IT IS AGREED** by the parties hereto as follows:

1. Scope of work.

Contractor shall perform the work described in those Contract Documents entitled: CAROLAN-ROLLINS EASEMENT SANITARY SEWER MAIN RELOCATION, CITY PROJECT NO. 84850.

2. The Contract Documents.

The complete contract between City and Contractor consists of the following documents: this Agreement; Notice Inviting Sealed Bids, attached hereto as Exhibit A; the accepted Bid Proposal, attached hereto as Exhibit B; the specifications, provisions, addenda, complete plans, profiles, and detailed drawings contained in the bid documents titled "Carolan-Rollins Easement

Sanitary Sewer Main Relocation, City Project No. 84850” attached as Exhibit C; the State of California Standard Specifications 2010, as promulgated by the California Department of Transportation; prevailing wage rates of the State of California applicable to this project by State law; and all bonds; which are collectively hereinafter referred to as the Contract Documents. All rights and obligations of City and Contractor are fully set forth and described in the Contract Documents, which are hereby incorporated as if fully set forth herein. All of the above described 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.

3. Contract Price.

The City shall pay, and the Contractor shall accept, in full, payment of the work above agreed to be done, the sum of \_\_\_\_\_ dollars (\$\_\_\_\_\_), called the “Contract Price”. This price is determined by the lump sum and unit prices contained in Contractor's Bid. In the event authorized work is performed or materials furnished in addition to those set forth in Contractor's Bid and the Specifications, such work and materials will be paid for at the unit prices therein contained. Said amount shall be paid in progress payments as provided in the Contract Documents.

4. Termination

At any time and with or without cause, the City may suspend the work or any portion of the work for a period of not more than 90 consecutive calendar days by notice in writing to Contractor that will fix the date on which work will be resumed. Contractor will be granted an adjustment to the Contract Price or an extension of the Time for Completion, or both, directly attributable to any such suspension if Contractor makes a claim therefor was provided in the Contract Documents.

The occurrence of any one or more of the following events will justify termination of the contract by the City for cause: (1) Contractor’s persistent failure to perform the work in accordance with the Contract Documents; (2) Contractor’s disregard of Laws or Regulations of any public body having jurisdiction; (3) Contractor’s disregard of the authority of the Engineer; or (4) Contractor’s violation in any substantial way of any provision of the Contract Documents. In the case of any one or more of these events, the City, after giving Contractor and Contractor’s sureties seven calendar days written notice of the intent to terminate Contractor’s services, may initiate termination procedures under the provisions of the Performance Bond. Such termination will not affect any rights or remedies of City against Contractor then existing or that accrue thereafter. Any retention or payment of moneys due Contractor will not release Contractor from liability. At the

City's sole discretion, Contractor's services may not be terminated if Contractor begins, within seven calendar days of receipt of such notice of intent to terminate, to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 calendar days of such notice.

Upon seven calendar days written notice to Contractor, City may, without cause and without prejudice to any other right or remedy of City, terminate the Contract for City's convenience. In such case, Contractor will be paid for (1) work satisfactorily completed prior the effective date of such termination, (2) furnishing of labor, equipment, and materials in accordance with the Contract Documents in connection with uncompleted work, (3) reasonable expenses directly attributable to termination, and (4) fair and reasonable compensation for associated overhead and profit. No payment will be made on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

5. Provisions Cumulative.

The provisions of this Agreement are cumulative and in addition to and not in limitation of any other rights or remedies available to the City.

6. Notices.

All notices shall be in writing and delivered in person or transmitted by certified mail, postage prepaid.

Notices required to be given to the City shall be addressed as follows:

Mr. Mahesh Yedluri  
Senior Engineer  
City of Burlingame  
501 Primrose Road  
Burlingame, California 94010

Notices required to be given to Contractor shall be addressed as follows:

Name  
Company Name  
Address

7. Interpretation

As used herein, any gender includes the other gender and the singular includes the plural and vice versa.

8. Waiver or Amendment.

No modification, waiver, mutual termination, or amendment of this Agreement is effective unless made in writing and signed by the City and the Contractor. One or more waivers of any term, condition, or other provision of this Agreement by either party shall not be construed as a waiver of a subsequent breach of the same or any other provision.

9. Controlling Law.

This Agreement is to be governed by and interpreted in accordance with the laws of the State of California.

10. Successors and Assignees.

This Agreement is to be binding on the heirs, successors, and assigns of the parties hereto but may not be assigned by either party without first obtaining the written consent of the other party.

11. Severability.

If any term or provision of this Agreement is deemed invalid, void, or unenforceable by any court of lawful jurisdiction, the remaining terms and provisions of the Agreement shall not be affected thereby and shall remain in full force and effect.

12. Indemnification.

Contractor shall indemnify, defend, and hold the City, its directors, officers, employees, agents, and volunteers harmless from and against any and all liability, claims, suits, actions, damages, and causes of action arising out of, pertaining or relating to the actual or alleged negligence, recklessness or willful misconduct of Contractor, its employees, subcontractors, or agents, or on account of the performance or character of the services, except for any such claim arising out of the sole negligence or willful misconduct of the City, its officers, employees, agents, or volunteers. It is understood that the duty of Contractor to indemnify and hold harmless includes the duty to defend as set forth in section 2778 of the California Civil Code. Notwithstanding the foregoing, for any design professional services, the duty to defend and indemnify City shall be limited to that allowed by state law. Acceptance of insurance certificates and endorsements required under this Agreement does not relieve Contractor from liability under this indemnification and hold harmless clause. This indemnification and hold harmless clause shall apply whether or not such insurance policies shall have been determined to be applicable to any of such damages or claims for damages.

**IN WITNESS WHEREOF**, two identical counterparts of this Agreement, consisting of five pages, including this page, each of which counterparts shall for all purposes be deemed an original of this Agreement, have been duly executed by the parties hereinabove named on the day and year first hereinabove written.

CITY OF BURLINGAME,  
a Municipal Corporation

"CONTRACTOR"

By \_\_\_\_\_  
Lisa K. Goldman, City Manager

By \_\_\_\_\_  
Print Name:  
Company Name:

Approved as to form:

\_\_\_\_\_  
Kathleen Kane, City Attorney

ATTEST:

\_\_\_\_\_  
Meaghan Hassel-Shearer, City Clerk

CITY OF BURLINGAME

DEPARTMENT OF PUBLIC WORKS

SPECIAL PROVISIONS

FOR

**CAROLAN-ROLLINS EASEMENT SANITARY SEWER MAIN RELOCATION  
CITY PROJECT NO. 84850**

**GENERAL CONDITIONS**

**SECTION 1. DEFINITIONS AND TERMS**

**1.01 GENERAL**

The following shall be added to Standard Specifications Section 1-1.01:

The work contemplated herein shall be done in accordance with these Specifications as defined in the Special Provisions Section 1.03, and the Municipal Code of the City of Burlingame, insofar as the same may apply and in accordance with the following Special Provisions.

In the case of conflict between the Standard Specifications and these Special Provisions, the Special Provisions shall take precedence over and be used in lieu of such conflicting portions.

**1.02 ABBREVIATIONS**

Abbreviations of the Standard Specifications shall be amended to include the following:

- AIA American Institute of Architects
- APWA American Public Works Association
- ASA American Standard Association
- CSI Construction Specifications Institute
- IAMPO International Association of Mechanical & Plumbing Officials
- ICBO International Conference of Building Officials
- UBC Uniform Building Code
- UPC Uniform Plumbing Code

**1.03 DEFINITIONS AND TERMS**

The definitions in Standard Specifications Section 1-1.07B are amended as follows:

As used herein, unless the context otherwise requires, the following terms have the following meanings:

**Agency:** The legal entity for which the work is being performed.

**Authorized Laboratory:** The laboratory authorized by the Engineer to test materials and work involved in the contract.

**Contract Documents:** The Contract Documents shall include the complete contract between City and Contractor, which shall consist of the following documents: the Agreement and Notice Inviting Sealed Bids; the accepted Bid Proposal; the specifications, provisions, addenda, complete plans, profiles, and detailed drawings contained in the bid documents entitled "South Rollins Road Utility Improvements – Phase 1, City Project No. 83520"; the State of California Standard Specifications 2010, as promulgated by the California Department of Transportation; prevailing wage rates of the State of California applicable to this project by State law; and all bonds. All rights and obligations of City and Contractor are fully set forth and described in the Contract Documents, which are hereby incorporated as if fully set forth herein. All of the above described 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. In case of any inconsistencies among the various documents, the Agreement shall prevail.

**Contract Acceptance:** The formal written contract acceptance of an entire contract by the City Council at a regularly scheduled meeting, recorded in the County of San Mateo Recorder's Office, titled "Notice of Completion," signed by an authorized official of the City of Burlingame, which has been completed in all respects in accordance with the plans and specifications and any modification thereof previously approved.

**City:** The City of Burlingame, State of California.

**Department:** The Department of Public Works of the City of Burlingame.

**Director:** The Director of Public Works of the City of Burlingame, California.

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

**Inspector:** An inspector employed or retained by the City to perform inspection during construction of the work under the direction of the Director.

**Legal Holiday:** A holiday as specified in Section 5.04 of these Special Provisions.

**Owner:** The City of Burlingame, a political subdivision of the State of California.

**Plans:** Standard plans, revised standard plans and project plans.

1. **Project plans:** Drawings specific to the project, including authorized shop drawings.

2. **Standard plans:** 2010 California Department of Transportation Standard Plans, City of Burlingame Standard Details, and any other local agency or district standard plans or details referenced in project plans.

The California Department of Transportation standard plans are available at:

[http://www.dot.ca.gov/hq/esc/oe/construction\\_standards.html](http://www.dot.ca.gov/hq/esc/oe/construction_standards.html)

The City of Burlingame Standard Details are available at:

<http://www.burlingame.org/index.aspx?page=161>

[Burlingame.org/departments/engineering/city standard details.](http://www.burlingame.org/departments/engineering/city_standard_details)

**Specifications:** Standard specifications, and special provisions, as follows:

1. **Special Provisions:** Specifications specific to the project. These specifications are in a section titled *Special Provisions* of this bid book titled Notice to Bidders/Proposal and Agreement/Special Provisions.

2. **Standard Specifications:** Specifications standard to City construction projects. These specifications are in a book titled State of California Department of Transportation *Standard Specifications 2010* (Standard Specifications or SS). These standard specifications are available at:

[http://www.dot.ca.gov/hq/esc/oe/construction\\_standards.html](http://www.dot.ca.gov/hq/esc/oe/construction_standards.html)

Any reference therein to the State of California or a State agency, office or officer, acting under the Standard Specifications shall be interpreted to refer to the City or its corresponding agency, office or officer acting under this contract.

**State:** In references where context applies to "State" as the owner of the Project, the City of Burlingame.

**Supplementary General Conditions:** The part of the Contract Documents that makes additions, deletions, or revisions to these General Conditions.

**Technical Specifications:** Those portions of the Contract Documents consisting of the written technical descriptions of products and execution of the Work.

**Work:** The entire completed construction required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor, and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

\*\*\* END OF SECTION \*\*\*



## **SECTION 2. BIDDING**

### **2.01 GENERAL**

The bidder's attention is directed to the provisions in Section 2, "Bidding," of the Standard Specifications and these Special Provisions for the requirements and conditions which it shall observe in the preparation of the proposal form and the submission of the bid.

The following Sections in the Standard Specifications are deleted:

- 2-1.15, "Disabled Veterans Business Enterprises".
- 2-1.18, "Small Business and Non-small Business Subcontracting Preferences".
- 2-1.27, "California Companies"

### **2.02 SUBCONTRACTOR LIST**

Standard Specifications Section 2-1.10, "Subcontractor List," is replaced by the following:

#### **2-1.10 SUBCONTRACTOR LIST**

On the Subcontractor List form, list each subcontractor to perform work in an amount in excess of 1/2 of 1 percent of the total bid or \$10,000, whichever is greater (Pub Cont Code § 4100 et seq.).

For each subcontractor listed, the Subcontractor List form must show:

1. Business name and the location of its place of business.
2. California contractor license number for a non-federal-aid contract.
3. Public works contractor registration number
4. Portion of work it will perform.

### **2.03 PROPOSAL PAGES**

Standard Specifications Section 2-1.33, "Bid Document Completion" is amended to provide that the bid documents shall include the required proposal pages or copies thereof completed and signed, including Proposal to the City of Burlingame, Designation of Subcontractors, Experience Qualifications, Non-Collusion Declaration, Public Contract Code Compliance Statement and Questionnaire, and Bid Sheet in these Special Provisions.

### **2.04 COMPLIANCE STATEMENT**

The Contractor shall complete a statement indicating compliance with Public Works Contracts Code Section 10285.1 and Public Contract Code Section 10162 Questionnaire. These documents shall be completed and included in the Proposal.

### **2.05 BIDDER'S SECURITY**

Standard Specifications Section 2-1.34, "Bidder's Security" is replaced with the following:

CAROLAN-ROLLINS EASEMENT SANITARY SEWER MAIN RELOCATION

If Contractor's bid is greater than \$25,000, a Contractor shall submit bid with one of the following forms of bidder's security equal to at least 10 percent of the bid:

1. Cashier's check
2. Certified check
3. Signed bidder's bond by an admitted surety insurer

A sample bid bond is provided at the end of this Section.

Bidders shall submit a cashier's check, a certified check, or a bidder's bond to the City before the bid opening time. The bidder's security shall be made payable to the City of Burlingame.

\*\*\* END OF SECTION \*\*\*

**BIDDER'S BOND**

KNOW ALL PERSONS BY THESE PRESENTS:

That we, \_\_\_\_\_ as Principal, and \_\_\_\_\_ as Surety, are held and firmly bound unto the City of Burlingame, a municipal corporation of the State of California (hereinafter called "City") in the penal sum of ten percent (10%) of the total aggregate amount of the bid of the Principal above named, submitted by said Principal to the City for the work described below, for the payment of which sum in lawful money of the United State, well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents. In no case shall the liability of the Surety hereunder exceed the sum of \_\_\_\_\_ (\$\_\_\_\_\_) Dollars.

The condition of this obligation is such that a bid to the City for certain construction specifically described as follows, for which bids are to be opened on \_\_\_\_\_, \_\_\_\_\_, 20\_\_\_\_, at \_\_\_\_:\_\_\_\_\_, has been submitted by Principal to City:

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 the Principal for signature, enters into a written contract, in the prescribed form, in accordance with the bid, and files two bonds with the City, one to guarantee faithful performance of the Contract and the other to guarantee payment for labor and materials as provided by law as well as files insurance certificates and equal employment opportunity documentation required under the bid, then this obligation shall be null and void; otherwise, it shall remain in full force.

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

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this day of \_\_\_\_\_, 20 \_\_\_\_.

\_\_\_\_\_(Seal)

\_\_\_\_\_(Seal)

\_\_\_\_\_(Seal)

\_\_\_\_\_(Seal)

\_\_\_\_\_(Seal)

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

NOTE: Attach notary acknowledgment for signatures of those executing for Principal and Surety

## **SECTION 3. AWARD AND EXECUTION OF CONTRACT**

### **3.01 GENERAL**

The bidder's attention is directed to the provisions of Standard Specifications Section 2, "Bidding," and Section 3 "Contract Award and Execution," , and to "Proposal Requirements and Conditions," of these Special Provisions for the requirements and conditions concerning award and execution of the contract, with the following clarifications, changes and additions.

The second paragraph of Standard Specifications Section 3-1.02A, "General," is replaced with the following:

In the case of unit basis items, the amount set forth under the "Item Total" column shall be the product of the unit price bid and the estimated quantity for the item.

In case of discrepancy between the unit price and the total set forth for a unit basis item, the unit price shall prevail, except as provided in (a) or (b), as follows:

(a) If the amount set forth as a unit price is unreadable or otherwise unclear, or is omitted, or is the same as the amount as the entry in the item total column, then the amount set forth in the item total 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;

(b) (Decimal Errors) If the product of the entered unit price and the estimated quantity is exactly off by a factor of ten, one hundred, etc., or one-tenth, or one-hundredth, etc. from the entered total, the discrepancy will be resolved by using the entered unit price or item total, whichever most closely approximates percentagewise the unit price or item total in the Agency's Engineer Estimate of cost.

If both the unit price and the item total are unreadable or otherwise unclear, or are omitted, the bid may be deemed irregular. Likewise if the item total for a lump sum item is unreadable or otherwise unclear, or is omitted, the bid may be deemed irregular unless the project being bid has only a single item and a clear, readable total bid is provided.

Symbols such as commas and dollar signs will be ignored and have no mathematical significance in establishing any unit price or item total or lump sums. Cents symbols also have no significance in establishing any unit price or item total because all figures are assumed to be expressed in dollars and/or decimal fractions of a dollar. Written unit prices, item totals and lump sums will be interpreted according to the number of digits and, if applicable, decimal placement. Bids on lump sum items shall be item totals only; if any unit price for a lump sum item is included in a bid and it differs from the item total, the items total shall prevail.

Standard Specifications Section 3-1.02B, "Tied Bids," is replaced with:

### **3-1.02B Tied Bids**

The Department breaks a tied bid with a coin toss.

Standard Specifications Sections 3-1.08, "Small Business Participation Report," and 3-1.11, "Payee Data Record," are deleted.

## **3.02 AWARD OF CONTRACT**

To the fullest extent provided by law, the City reserves the right to waive any irregularities and/or informalities in any bid received.

The award of the contract, if it be awarded, will be to the lowest responsive and responsible bidder whose proposal complies with all the requirements prescribed. Such award, if made, will be made within forty-five (45) days after the opening of the proposals. If the lowest responsible bidder refuses or fails to execute the contract, the City may award the contract to the second lowest responsive and responsible bidder. Such award, if made, will be made within sixty (60) days after the opening of proposals. If the second lowest responsible bidder refuses or fails to execute the contract, the City may award the contract to the third lowest responsive and responsible bidder. Such award, if made, will be made within seventy-five (75) days after the opening of the proposals. The periods of time specified above within which the award of contract may be made shall be subject to extensions for such further periods as may be agreed upon in writing between the City and the bidder concerned.

All bids will be compared on the basis of the Engineer's Estimate of the quantities of work to be done.

## **3.03 CONTRACT BONDS**

Standard Specifications Section 3-1.05, "Contract Bonds (Pub Cont Code Sections 10221 and 10222)," is replaced with the following:

The surety or sureties on all bonds furnished must be approved by the City. Any modifications or alteration made in the plans or specifications shall not operate to release any surety from liability on any bond or bonds herein required to be given. All contract bonds shall be payable to the City of Burlingame and shall reference the project name and number.

All alterations, extensions of time, extra and additional work, and other changes authorized by these specifications or any part of the contract may be made without securing the consent of the surety or sureties on the contract bonds.

(a) Faithful Performance Bond

Contractor shall provide, at the time of the execution of the contract for the work, and at its own expense, a surety bond in an amount equal to at least one hundred percent (100%) of the contract price as security for the faithful performance of the contract.

(b) Contractor's Payment (Labor and Materials) Surety Bond

Contractor shall also provide, at the time of the execution of the contract for the work, and at its own expense, a separate surety bond in an amount equal to at least one hundred percent (100%) of the contract price as security for the payment of all persons performing labor and furnishing materials in connection with this contract; a sample is attached at the end of this section.

(c) Maintenance Bond

The Contractor shall furnish a Corporate Surety Maintenance Bond for faulty workmanship and materials in the amount of ten percent (10%) of the total contract cost. This bond shall be for the term of one year after completion and acceptance of the work and shall be delivered to the Engineer before acceptance of the contract.

### **3.04 AGREEMENT EXECUTION**

The Contractor shall sign and return the contract agreement and furnish required bonds and insurance certificates within ten (10) working days after the date of the letter of Notice of Contract Award. If the insurance and bonds are not provided within this time period, the City may proceed to declare the bid bond forfeited and award the bid to another bidder.

### **3.05 RETURN OF PROPOSAL GUARANTIES**

Bidders' attention is directed to Standard Specifications Section 3-1.19, "Bidders' Securities."

### **3.06 INSURANCE**

BIDDERS' ATTENTION IS DIRECTED TO THE INSURANCE REQUIREMENTS BELOW AND IN STANDARD SPECIFICATIONS SECTIONS 3-1.07, "INSURANCE POLICIES," and 7-1.06, "INSURANCE."

IT IS HIGHLY RECOMMENDED THAT BIDDERS CONFER WITH THEIR RESPECTIVE INSURANCE CARRIERS OR BROKERS TO DETERMINE IN ADVANCE OF BID SUBMISSION THE AVAILABILITY OF INSURANCE CERTIFICATES AND ENDORSEMENTS AS PRESCRIBED AND PROVIDED HEREIN. IF AN APPARENT LOW BIDDER FAILS TO COMPLY STRICTLY WITH THE INSURANCE REQUIREMENTS, THAT BIDDER MAY BE DISQUALIFIED FROM AWARD OF THE CONTRACT OR THE AWARD MAY BE REVOKED AND SUFFER LOSS OF BID BOND.

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, Contractor's agents, representatives, employees or subcontractors. The cost of such insurance shall be included in the Contractor's bid.

Standard Specifications Section 7-1.06, "Insurance," is amended to include the following:

(a) Minimum Scope of Insurance

Coverage shall be at least as broad as:

- (1) Insurance Services Office form number GL 0002 (Ed. 1/73) covering Comprehensive General Liability and Insurance Services Office form number GL 0404 covering Broad Form Comprehensive General Liability; or Insurance Services Office Commercial General Liability coverage ("occurrence" form GC 0001).
- (2) Insurance Services Office form number CA 0001 (Ed. 1/78) covering Automobile Liability, code 1 "any auto" and endorsement CA 0025.
- (3) Worker's Compensation insurance as required by the Labor Code of the State of California and Employers Liability insurance.

(b) Minimum Limits of Insurance

Contractor shall maintain limits no less than:

- (1) General Liability: \$2,000,000 combined single limit 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 combined single limit per accident for bodily injury and property damage.
- (3) Workers' Compensation and Employers Liability: Worker's compensation limits as required by the Labor Code of the State of California and Employers Liability limits of \$1,000,000 per accident.

(c) Deductibles and Self-insured Retentions

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



(d) Other Insurance Provision

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

(1) General Liability and Automobile Liability Coverages

- (A) The City of Burlingame, its officers, officials, employees and volunteers are to be covered as insureds as respects: liability arising out of activities performed by or on behalf of the Contractor, products and completed operations of the Contractor, premises owned, occupied or used by the Contractor, or automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to the City of Burlingame, its officers, officials, employees, or volunteers. The endorsement providing this additional insured coverage shall be equal to or broader than ISO Form CG 20 10 11 85 and must cover joint negligence, completed operations, and the acts of subcontractors.
- (B) The Contractor's insurance coverage shall be primary insurance as respects the City of Burlingame, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the City of Burlingame, its officers, officials, employees, or volunteers shall be excess of the Contractor's Insurance and shall not contribute with it.
- (C) Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the City of Burlingame, its officers, officials, employees, or volunteers.
- (D) The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

(2) Workers' Compensation and Employers Liability Coverage

The insurer shall agree to waive all rights of subrogation against the City of Burlingame, its officers, officials, employees, or volunteers for losses arising from work performed by the Contractor for the City of Burlingame.

(3) All Coverages

Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty days prior written notice by certified mail, return receipt required, has been given to the City of Burlingame.

(e) Acceptability of Insurers

Insurance is to be placed with insurers with a Best's rating of no less than A-:VII and be authorized to conduct business with regard to the preferred lines of insurance in the State of California.

(f) Verification of Coverage

Contractor shall furnish the City with certificates of insurance and with original endorsements effecting coverage required by this clause. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates and endorsements are to be on forms approved by the City. 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, at any time.

(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.

\*\*\* END OF SECTION \*\*\*

**CONTRACTOR’S PAYMENT (LABOR AND MATERIALS) SURETY BOND**

*Sample*

**WHEREAS**, the City Council of the City of Burlingame, State of California (“City”) and \_\_\_\_\_, (hereinafter designated as "Principal") have entered into an agreement dated \_\_\_\_\_, and identified as \_\_\_\_\_ (“Agreement”), which is hereby referred to and made a part here of, whereby Principal agrees to install and complete certain designated public improvements; and

**WHEREAS**, under the terms of said agreement, Principal is required before entering upon the performance of the work to file a good and sufficient payment surety bond with City to secure the claims to which reference is made in Titles 1 and 3 (commencing with Section 8000) of Part 6 of Division 4 of the Civil Code of the State of California.

**NOW, THEREFORE**, Principal and \_\_\_\_\_, as Surety, incorporated under the laws of the State of \_\_\_\_\_, and duly authorized to transact business as an admitted surety, under the Laws of the State of California, are held and firmly bound unto City in the penal sum of \_\_\_\_\_ dollars (\$\_\_\_\_\_), this amount being not less than one hundred percent of the total amount payable by the terms of the Agreement per Civil Code section 9554, for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such that if Principal, Principal’s subcontractors, heirs, executors, administrators, successors, or assigns shall fail to pay any of the persons, companies, or corporations, referred to in Section 9100 of the California Civil Code, as amended, with respect to any work of labor performed or materials supplied by any such persons, companies, or corporations, which work, labor, or materials are covered by the above-mentioned agreement and any amendments, changes, change order, additions, alterations, or modifications thereof, or any amounts due under the California Unemployment Insurance Code with respect to such work or labor, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the Principal and its subcontractors pursuant to Section 13020 of the Unemployment Insurance Code, as amended, with respect to such work and labor, the Surety will pay for the same, in an amount not exceeding the sum herein above specified, and also, in case suit is brought upon this bond, the Surety will pay reasonable attorney’s fees in an amount to be fixed by the court.

It is hereby expressly stipulated and agreed that this surety bond shall inure to the benefit of any and all persons, companies, and corporations entitled named in Section 9100 of the California Civil Code, as amended, so as to give a right of action to them or their assigns in any suit brought upon this surety bond.

The Surety hereby stipulates and agrees that no amendment, change, change order, addition, alteration, or modifications to the terms of the agreement of the work to be performed thereunder or the specifications accompanying the same, shall in any way affect its obligations on this surety bond, and it does hereby waive notice of any such amendment, change, change order, addition,

alteration, or modification to the terms of the agreement or to the work performed thereunder or to the specifications accompanying the same. Surety hereby waives the provisions of California Civil Code Sections 2845 and 2849.

IN WITNESS WHEREOF, this instrument has been duly executed by the Principal and Surety above named, on \_\_\_\_\_, 20\_\_.

PRINCIPAL SURETY

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

By:

Address \_\_\_\_\_

**NOTE: Attach notary acknowledgement for signatures of those executing for Principal and Surety**

**FAITHFUL PERFORMANCE BOND**

*Sample*

**WHEREAS**, the City Council of the City of Burlingame, State of California, and \_\_\_\_\_ (herein designated as “Principal”) have entered into an Agreement whereby Principal agrees to construct and complete certain designated public improvements, which said agreement, dated \_\_\_\_\_, 20\_\_\_\_, and identified as **PROJECT** # \_\_\_\_\_, is hereby referred to and made a part hereof: and

**WHEREAS**, said Principal is required under the terms of said Agreement to furnish a bond of the faithful performance of said Agreement.

**NOW, THEREFORE**, we, the Principal and \_\_\_\_\_, as Surety, are held and firmly bound unto the City of Burlingame (hereinafter called “City”), in the penal sum of \_\_\_\_\_ dollars (\$ \_\_\_\_\_) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, successors, executors and administrators, jointly and severally, formally by these presents.

The condition of this obligation is such that if the above bounded Principal, his/her or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and provisions in the said Agreement and any alteration thereof made as therein provided, on his or their part, to be kept and performed 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 City, its offices, agents and employees, as therein stipulated, and this obligation shall become null and avoid; otherwise it shall be and remain in full force and effect.

Principal and Surety further agree that upon City’s final acceptance of the work, ten percent (10 %) of this bond shall remain in effect to guarantees the repair and/or replacement of defective materials and/or workmanship, one years after City’s final acceptance of the work.

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

The Surety hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the agreement or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligations on this bond, and it

does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the agreement or to the work or to the specifications.

IN WITNESS WHEREOF, this instrument has been duly executed by the Principal and Surety above named, on \_\_\_\_\_ 20\_\_\_\_.

PRINCIPAL

SURETY

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

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

\_\_\_\_\_  
Address

\_\_\_\_\_  
Address

**NOTE: Attach notary acknowledgement for signatures of those executing for Principal and Surety.**

## **SECTION 4. SCOPE OF WORK**

### **4.01 GENERAL**

Attention is directed to Standard Specifications Section 4, "Scope of Work," and these Special Provisions.

### **4.02 VALUE ENGINEERING**

The last paragraph of Section Standard Specifications 4-1.07C, "Value Analysis Workshop." is replaced with:

The Contractor will be responsible for all workshop costs. The City will not reimburse Contractor for any associated costs with conducting a value analysis workshop.

Attention is directed to the provisions in Standard Specifications Sections 8-1.04, "Start of Job Site Activities," Section 8-1.05, "Time," and Section 8-1.10, "Liquidated Damages," and these Special Provisions.

### **4.03 INCREASES OF MORE THAN TWENTY-FIVE PERCENT (25%) OF ENGINEER'S ESTIMATE**

The last paragraph in Standard Specifications Section 9-1.06B, "Increases of More Than Twenty-Five Percent," is amended to read as follows:

"When the compensation payable for the number of units of an item of work performed in excess of 125 percent of the Engineer's Estimate, is less than \$5,000 at the applicable contract unit price, the Engineer reserves the right to make no adjustment in said price if the Engineer so elects, except that an adjustment may be made if requested in writing by the Contractor.

It is the Contractor's responsibility to continually analyze and apply the estimated quantities provided in the Contract and to use the knowledge gained from site visits, construction, and professional experience, to update the estimated quantities as the work progresses. If and when the Contractor reaches seventy-five percent (75%) of the estimated quantities of materials required for any portion of the work as specified in the Plans and Specifications and has any reasonable belief that the Contractor will be required to exceed those estimated quantities by more than ten percent (10%), the Contractor shall provide written notice to the Engineer of the possibility and the estimated quantities required to complete the work. If the Contractor fails to provide that written notice before delivering materials in excess of the originally estimated quantities, the Contractor shall not be entitled to any additional compensation or payment for the additional work or materials needed for the additional materials above one hundred and ten percent (110%), but nevertheless shall be required to complete the work."

#### **4.04 Changes Initiated by the City**

The City reserves the right to change the scope of this contract to accommodate budget constraints. The City shall have full authority and discretion to determine the decrease or increase in quantities required as well as the sub-projects that will be altered, added, or deleted. The Contractor shall not be entitled to any additional compensation or adjustment in the unit prices bid because of the above-stated rights.

\*\*\* END OF SECTION \*\*\*



## **SECTION 5. CONTROL OF WORK**

### **5.01 GENERAL**

The control of the work shall be in conformance with Standard Specifications Section 5, "Control of Work," , except as herein amended.

The following sections in the Standard Specifications are deleted:

- Section 5-1.09, "Partnering"
- Section 5-1.13C, "Disabled Veteran Business Enterprises"
- Section 5-1.13D, "Non-Small Businesses"
- Section 5-1.27E "Change Order Bills"
- Section 5-1.43E "Alternative Dispute Resolution"

### **5.02 COORDINATION AND INTERPRETATION OF PLANS, SPECIFICATIONS AND SPECIAL PROVISIONS**

Standard Specifications Section 5-1.02, "Contract Components," is replaced with the following:

#### **5-1.02 CONTRACT COMPONENTS**

A component in one Contract part applies as if appearing in each. The parts are complementary and describe and provide for a complete work.

If a discrepancy exists:

1. The governing ranking of Contract parts in descending order is:
  - 1.0 Proposal, and Agreement
  - 1.1 Supplementary General Conditions of the Special Provisions
  - 1.2 General Conditions of the Special Provisions
  - 1.3 Technical Specifications of the Special Provisions
  - 1.4 Project plans
  - 1.5 City of Burlingame Standard Details
  - 1.6. Standard Specifications
  - 1.7 (State) Standard Plans
  - 1.8 Supplemental project information
2. Written numbers and notes on a drawing govern over graphics
3. A detail drawing governs over a general drawing
4. A specification in a section governs over a specification referenced by that section

In the event of a discrepancy between units shown on plans, in the special provisions and in the proposal, the units shown in the proposal shall govern.

If a discrepancy is found or confusion arises, submit an RFI.

### 5.03 SUPERINTENDENCE

Standard Specifications Section 5-1.16, "Representative," is amended to include the following:

The Contractor's representative shall be available to personally talk to the Engineer within any eight (8) hour period when work is being performed on the project. A telephone number for such purpose shall be given to the Engineer at the start of the project.

The Contractor shall furnish to the Engineer the telephone number of a representative or answering service which will be responsible for responding to emergency calls (e.g., barricade replacement) from the Engineer during non-scheduled working hours.

If the Contractor fails to respond and correct the emergency condition within three (3) hours, and if, in the judgment of the Engineer, correction of the emergency condition should not be deferred until the next regularly scheduled working day, then the Engineer shall have the right to make appropriate arrangements to correct such emergency condition and charge the cost thereof to the Contractor.

### 5.04 INSPECTION

The following is added to Standard Specifications Section 5-1.01, "General:" :

The Contractor shall not perform any work during weekend days or City Holidays without the written permission of the Engineer. A fine of \$5000 per violation will be deducted from the next progress payment should the Contractor perform unauthorized weekend or Holiday work.

The Contractor shall pay for all inspections required to be performed by City employees due to the scheduling of work by the Contractor between 5:00 P.M. and 8 A.M. on weekdays, and anytime on Saturdays, Sundays and City Holidays, and shall include travel time of the inspector.

City holidays are as follows:

- \*New Year's Day
- \*Martin Luther King's Birthday
- \*President's day
- \*Memorial Day
- \*Independence Day
- \*Labor Day
- Columbus Day
- \*Veteran's Day
- \*Thanksgiving Day
- Day After Thanksgiving
- ½ Day Christmas Eve
- \*Christmas Day
- ½ Day New Year's Eve

\*Indicates holidays covered by "Construction Hours" restrictions of these Special Provisions Section 7.02.

Contact the City of Burlingame to determine the specific holiday dates for the current calendar year.

Holidays falling on Saturday or Sunday will be observed on Friday or Monday, respectively.

## **5.05 PAYMENTS TO SUBCONTRACTORS**

The following is added to Standard Specifications Section 5-1.13A, "General," :

The Contractor shall comply with the provisions in Business and Professions Code Section 7108.5 concerning prompt payment to subcontractors.

The Contractor shall furnish a written statement showing all work to be subcontracted, giving the names and addresses of all subcontractors and a description of each portion of the work to be subcontracted. The Designation of Subcontractors statement shall be on the form furnished by the City as part of the Bid documents and shall be considered an integral part of those documents.

Pursuant to Public Contract Code Section 6109, no contractor or subcontractor that is ineligible under Labor Code Section 1777.1 or 1777.7 may bid or work on this project. Any contract entered into between the Contractor and such an ineligible subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on this project, and any public money that may have been paid to a debarred subcontractor by the Contractor on the project shall be returned to the City. The Contractor shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the project.

## **5.06 PERMITS**

The Contractor shall obtain all permits, licenses, bonds, pay all charges and fees (including inspection fees); and other authorization required by all affected jurisdictions involved in this job, at its own expense, unless otherwise specified in Supplementary General Conditions of these Special Provisions. The City's issuance of permits shall not relieve the Contractor of its responsibility as described in this section.

City permits, if required, shall have all fees waived, except for City business licenses. All subcontractors performing work within the limits of the City of Burlingame shall also obtain a City Business License in accordance with these Special Provisions Section 5.07, "City Business License."

**COMPLIANCE WITH NPDES PERMIT. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE PERMIT AND SHALL NOT, DIRECTLY OR INDIRECTLY, CAUSE A SANITARY SEWER OVERFLOW OR PREVENT THE CITY FROM COMPLYING WITH THE REQUIREMENTS OF THE PERMIT. PENALTIES IMPOSED ON THE CITY AS A RESULT OF ANY DISCHARGE VIOLATION CAUSED BY THE ACTIONS OF THE CONTRACTOR, OR ITS EMPLOYEES, OR**

**SUBCONTRACTORS SHALL BE BORNE IN FULL BY THE CONTRACTOR, INCLUDING FINES, LEGAL FEES, AND OTHER EXPENSES TO THE CITY RESULTING DIRECTLY OR INDIRECTLY FROM SUCH DISCHARGE VIOLATIONS. THE CITY MAY RECOVER SUCH SUMS BY DEDUCTION FROM THE CONSTRUCTION PROGRESS PAYMENTS.**

#### **5.07 CITY BUSINESS LICENSE**

The Contractor and all Subcontractors are required to have City business licenses in accordance with the Burlingame Municipal Code. Business license information is available at <https://www.burlingame.org/index.aspx?page=3307>

#### **5.08 ENGINEERING SUBMITTALS**

The following shall be added to Standard Specifications Section 5-1.23A, "General:"

Contractor's failure to make submittals in a timely manner will not be a basis for any time extensions and shall count against the Contractor's work days.

#### **5.09 PROJECT APPEARANCE**

The following shall be added to Standard Specifications Section 5-1.31, "Job Site Appearance:"

"PROJECT APPEARANCE. The Contractor shall maintain a neat appearance at the job site.

In any area visible to the public, the following shall apply: when practical, broken concrete and debris developed during the clearing and grubbing shall be disposed of concurrently with its removal. If stockpiling is necessary, the material shall be removed or disposed of weekly, unless otherwise granted by the City.

The Contractor shall furnish portable toilets for workmen and trash bins for all debris from structure construction. All debris shall be placed in trash bins daily. Forms or false work that are to be reused shall be stacked neatly concurrently with their removal. Forms and false work that are not to be reused shall be recycled concurrently with their removal.

#### **5.10 LINES AND GRADES**

Standard Specifications Section 5-1.26, "Construction Surveys," is replaced with the following:

Contractor shall perform all necessary construction surveys. Construction surveys shall be done in accordance with Chapter 12, "Construction Surveys," of the California Department of Transportation's *Survey Manual*.

All work shall be constructed to the lines and grades shown on the contract drawings. Unless authorized by the Engineer, any work done without construction survey line and grade will be done at the Contractor's risk.

## **5.11 PROJECT PLANS**

Four (4) full-size sets of the project plans will be supplied to the successful bidder without charge. Additional sets will be supplied at the cost of reproduction.

## **5.12 CONSTRUCTION AREA LIGHTING**

The Contractor shall ensure that all working areas utilized during darkness are lighted to conform to the minimum illumination intensities established by California Division of Occupational Safety and Health Construction Safety Orders. In addition, the Contractor shall ensure that the lighting provides adequate safety to pedestrians in permitted portions of the construction area.

All lighting fixtures shall be mounted and directed in a manner precluding glare to approaching traffic.

## **5.13 AREAS FOR CONTRACTOR'S USE**

The second and third paragraphs of Standard Specifications Section 5-1.32, "Areas of Use," are replaced with the following:

If no City-owned or City-secured area is designated on the plans for the Contractor's use, the Contractor will be responsible to secure additional staging/stockpiling areas at Contractor's own expense in order to perform the work.

The Contractor shall defend, indemnify, and hold the City harmless for any damage to or loss of materials or equipment in conformance with the indemnification requirements in the City's construction agreement.

## **5.14 Nonhighway Facilities**

Standard Specifications Section 5-1.36D, "Nonhighway Facilities." is amended to include the following:

Unless otherwise permitted by the Engineer, the Contractor shall conduct its operations in a manner which will permit continuous operation of all utility facilities. The Contractor shall contact Underground Services Alert (USA) at 811 or 800-642-2444 at least forty-eight (48) hours before excavation so that underground facilities may be marked in the field. Locations of existing utility mains and utility connections, if shown on the plans, are only approximate. The Engineer assumes no responsibility for accuracy or completeness of said data, which is offered solely for the convenience of the Contractor. If the Contractor finds that a known utility has not marked the job site with either locations or no facilities, Contractor shall be responsible for contacting the utility, or USA regarding the discrepancy before proceeding with work.

Attention is directed to the possible existence of underground main or trunk line facilities not indicated on the plans or in the special provisions. The Contractor shall ascertain the exact

location of underground main or trunk lines whose presence is indicated on the plans or in the special provisions, the location of their service laterals or other appurtenances and of existing service lateral or appurtenances of any other underground facilities which can be inferred from the presence of visible facilities such as buildings, meters and junction boxes prior to doing work that may damage any of such facilities or interfere with their service.

If the Contractor discovers underground main or trunk lines not indicated on the Plans or in the special provisions, it shall immediately give the Engineer and the Utility Company written notification of the existence of such facilities. Such mains or trunk lines shall be located and protected from damage as directed by the Engineer and the cost of such work will be paid for as extra work as provided in Section 4-1.05. Damage due to the Contractor's failure to exercise reasonable care shall be repaired at its cost and expense.

### **5.15 ACCEPTANCE OF CONTRACT**

Standard Specifications Section 5-1.46, "Inspection and Contract Acceptance," is amended to include the following:

However, nothing in this Section 5-1.46 shall be construed to relieve the Contractor of full responsibility for correcting or replacing defective work or materials found at any time before the expiration of the one-year maintenance bond required under Section 3.03 of these Special Provisions.

### **5.16 AVAILABILITY OF PLANS**

Contractor shall maintain on the job site at a specific location an official set of Contract Documents, readily available at all times to the Engineer or Inspector.

\*\*\* END OF SECTION \*\*\*

## **SECTION 6. CONTROL OF MATERIALS**

### **6.01 GENERAL**

Attention is directed to Standard Specifications Section 6, "Control of Materials," and these Special Provisions.

### **6.02 CITY-FURNISHED MATERIALS**

City-furnished materials shall be furnished in conformance to Standard Specifications Section 6-1.02 and as described herein.

The City-furnished materials on this project, if any, are listed in Section 2, "Supplementary General Conditions," of these Special Provisions.

The Contractor shall submit a written request to the Engineer for materials at least forty-eight (48) hours in advance of the date and time of their intended use. The request shall state the quantity and type of each material. Unless otherwise specifically provided in the Special Provisions, City-furnished materials will be stored at the City Corporation Yard at 1361 North Carolan Avenue, Burlingame. Materials will be available for pickup on weekdays, holidays excepted, from 8:00 a.m. to 9:00 a.m. and from 3:30 p.m. to 4:30 p.m.

All City-furnished materials that are not used on the project shall remain the property of the City and shall be returned to the City in as-furnished condition at the locations designated by the Engineer.

Any water use from fire hydrants shall be metered. A cash deposit shall be posted at the City Water Department Office at 501 Primrose Road, Burlingame, California, as assurance that the meter is returned in good condition. Meters shall be obtained from and returned to the Water Department Repair Shop at the City Corporation Yard at 1361 North Carolan Avenue, Burlingame, California,. If the meter is returned in good condition, a refund shall be mailed to the Contractor. Contractor shall also pay for the amount of water used. Water drawn from the City-furnished meter shall only be used for this project.

Any damage to the meters while in the Contractor's possession shall be its responsibility and deductions will be made from the deposit for repairs to the meters. Meters must be returned to the City within 10 working days after work is completed and payment made for water used prior to final payment.

### **6.03 LOCAL MATERIALS**

The second paragraph of Standard Specifications Section 6-2.04, "Local Materials," is replaced with the following:

Testing of local materials to be used in the work for compliance with the specifications will be at the Contractor's expense.

#### **6.04 BUY AMERICA**

Standard Specifications Section 6-2.05, “Buy America,” is deleted, unless this is a federally-funded contract.

#### **6.05 SPECIFIC BRAND OR TRADE NAME AND SUBSTITUTION**

Standard Specifications Section 6-3.02, “Specific Brand or Trade Name and Substitution,” is amended to include the following:

The City Engineer’s decision to accept substitution is final.

\*\*\* END OF SECTION \*\*\*



## **SECTION 7. LEGAL RELATIONS AND RESPONSIBILITY**

### **7.01 GENERAL**

This section shall conform to Standard Specifications Section 7, "Legal Relations and Responsibility to the Public," with the following clarifications and amendments. The Contractor is responsible for protecting both its work and the public.

### **7.02 CONSTRUCTION HOURS**

Contractor shall not (including excavation and grading) work other than between the hours of 8:00 A.M. and 5:00 P.M. on weekdays (see Section 5.04 of these specifications), except in the case of urgent necessity in the interest of public health and safety, and then only with express permission of the Engineer. In the vicinity of any schools, the contractor shall not begin any operation until after 9:00 A.M. when school is in session.

### **7.03 EXCAVATION SAFETY**

Standard Specifications Section 7-1.02K(6)(b), "Excavation Safety," is amended to include the following:

If required the Contractor shall submit a trenching and shoring plan signed and stamped by a license civil engineer or licensed geotechnical engineer for approval by the City. The plan shall include trenching and shoring support calculations.

Designate a competent person to be on-site at all times while trench excavation work is being performed. The competent person shall be certified and make daily inspection in accordance with all OSHA requirements. A competent person means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them.

Additionally, the Contractor shall provide upon request by the Engineer calculations and details proving the adequacy of any proposed steel plate trench or excavation bridging to carry traffic loads.

The Contractor shall comply with Public Contract Code § 7104 while excavating.

### **7.04 ASSIGNMENT OF ANTITRUST ACTIONS**

The Contractor's attention is directed to Standard Specifications Section 7-1.02L(2), "Antitrust Claims."

### **7.05 HIGHWAY CONSTRUCTION EQUIPMENT**

Attention is directed to Standard Specifications Section 7-1.02O, "Vehicle Code."

## **7.06 SOUND CONTROL REQUIREMENTS**

Sound control shall conform to the provisions of Standard Specifications Section 14-8, "Noise and Vibration," and these special provisions.

The Contractor shall keep noise pollution due to construction activities as low as possible. In no case shall noise levels produced by the Contractor exceed either of the following maximums:

- A. No individual piece of equipment shall produce a noise level exceeding 85dBA at a distance of 25 feet.
- B. The noise level at any point outside of the property line or temporary construction area shall not exceed 85dBA. No equipment violating these standards will be allowed to operate.

In no case shall the Contractor's operations violate the noise ordinance (Municipal Code Chapter 10.40).

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

## **7.07 RELATIONS WITH PROPERTY OWNERS**

The Contractor shall notify, in writing, property owners or residents at least forty eight (48) hours in advance of all work affecting access into and out of their property or place of business.

Forms for such notices will be provided to the Contractor at start of construction and shall be distributed to the property owners by the Contractor throughout the length of the Contract, whenever appropriate.

Concrete pouring shall be scheduled to re-open new and replace concrete driveways within seventy-two (72) hours after being closed.

Access to any place of business shall be maintained at all times and shall be coordinated with the business owner. Complete closure of any business access shall be only as approved in writing by the Engineer.

## **7.08 PUBLIC CONVENIENCE**

Section 7-1.03 "Public Convenience" shall be amended by adding the following:

Attention is directed to Section 7 of the Standard Specifications regarding the fact that the Contractor is responsible for protecting both its work and the public.

The Contractor shall conduct his operations in a manner to minimize inconvenience to the homeowners, residents and the traveling public.

Closed driveways shall be re-opened for safe passage of vehicle and pedestrians by end of the each work shift.

Closed driveways during working hours shall be reopened temporarily as requested by property owners or residents to allow access to their driveways. The Contractor shall re-open the closed driveway within ten minutes (10) of such request.

Access to any place of business shall be maintained at all times and shall be coordinated with the business owner. Complete closure of any business access shall be only as approved in writing by the Engineer.

The Contractor shall conduct his operations in a manner to minimize inconveniences to property owners and residents and to avoid damage on private property. The Contractor shall maintain property owner and resident access to the homes at all times. The Contractor shall keep the work site on the private property in a tidy and neat manner. The Contractor shall remove all tools, equipment and material from the property at the end of each workday.

## **7.09 INDEMNIFICATION**

Contractor shall indemnify, defend, and hold the City, its directors, officers, employees, agents, and volunteers harmless from and against any and all liability, claims, suits, actions, damages, and causes of action arising out of, pertaining or relating to the actual or alleged negligence, recklessness or willful misconduct of Contractor, its employees, subcontractors, or agents, or on account of the performance or character of the services, except for any such claim arising out of the sole negligence or willful misconduct of the City, its officers, employees, agents, or volunteers. It is understood that the duty of Contractor to indemnify and hold harmless includes the duty to defend as set forth in section 2778 of the California Civil Code. Notwithstanding the foregoing, for any design professional services, the duty to defend and indemnify City shall be limited to that allowed by state law. Acceptance of insurance certificates and endorsements required under this Agreement does not relieve Contractor from liability under this indemnification and hold harmless clause. This indemnification and hold harmless clause shall apply whether or not such insurance policies shall have been determined to be applicable to any of such damages or claims for damages.

\*\*\* END OF SECTION \*\*\*

## **SECTION 8. PROSECUTION AND PROGRESS**

### **8.01 GENERAL**

Prosecution and progress shall conform to Standard Specifications Section 8, "Prosecution and Progress," and these Special Provisions.

### **8.02 PROGRESS SCHEDULE**

The work to be done shall be performed in stages to minimize the inconvenience to the public.

The Contractor shall develop and maintain the appropriate level critical path method schedule for this project in compliance with Standard Specifications Section 8-1.02, "Schedule." In addition to the required schedule reports to be submitted to the City in accordance with Standard Specifications Section 8-1.02, "Schedule," the Contractor shall maintain and furnish to the Engineer on a weekly basis a "three week look ahead" report detailing planned work for the following three weeks, highlighting critical path items of work.

### **8.03 START OF JOB SITE ACTIVITIES**

The Contractor shall sign and return the Contract Documents and furnish required bonds and insurance certificates within ten (10) working days after the date of the Notice of Contract Award. If the insurance and bonds are not provided within this time period, the City may declare the bid bond forfeited and award the bid to another bidder. Alternatively, the City may begin to count the elapsed time as "working days" under the Agreement.

The Contractor shall be able to begin work within fifteen (15) calendar days after receiving notice that the Contract has been approved by the City of Burlingame and shall diligently prosecute the same to completion before the expiration of the number of working days as set forth in the "Notice to Bidders." The "Notice to Proceed" shall indicate the "Beginning of Work" date to be used to determine the date of completion.

The "Notice to Proceed" will be given at the preconstruction meeting and will indicate the "Beginning of Work" date to be used to calculate the date of completion.

Even though the counting of working days may have begun, the Contractor shall not begin work before the preconstruction conference. The Contractor shall furnish all specified submittals to the Engineer at, or prior to, the preconstruction conference and shall obtain all specified approvals contained in the Standard Specifications and these Special Provisions prior to the beginning of job site activities.

### **8.04 LIQUIDATED DAMAGES**

The Contractor's attention is directed to the Supplementary General Conditions for Liquidated Damages.

## **8.05 CONTRACTOR'S CONTROL TERMINATION**

The Contractor's attention is directed to Standard Specifications Section 8-1.13, "Contractor's Control Termination" and these Special Provisions.

If the Contractor's control of the work is terminated or it abandons the work and the contract work is completed in conformance with the provisions of Section 10255 of the Public Contract Code, any dispute concerning the amount to be paid to the City by the Contractor or its surety, under the provisions of Section 10258 of said Act, shall be subject to arbitration in accordance with the section of these special provisions entitled "Arbitration." The surety shall be bound by the arbitration award and is entitled to participate in such arbitration proceedings.

## **8.06 AS-BUILT DATA**

The Contractor shall submit all information to the Engineer before project acceptance, including legible marked up plans of what was constructed, as required by the Engineer to verify as-built drawings for all permanent project work.

\*\*\* END OF SECTION \*\*\*

## **SECTION 9. MEASUREMENT AND PAYMENT**

### **9.01 GENERAL**

Measurement and payment shall be in conformance with these specifications in Section 9, "Payment," of the Standard Specifications and these Special Provisions.

Contractors' attention is directed to Standard Specifications Section 9-1.03, "Payment Scope," and as amended herein.

The fourth paragraph in Standard Specifications Section 9-1.03, "Payment Scope," is as follows:

Full compensation for work specified in divisions I, II and X of the Standard Specifications, and in Sections 1 and 2 of these special provisions is included in the payment for the bid items unless:

1. Bid item for the work is shown on the Bid Item List.
2. Work is specified as change order work.

When an (F) is included after a bid item name on the Bid List, that bid item quantity is a final pay item.

The Contractor shall agree that the approximate quantities shown in the Bid Item List are solely for the purpose of comparing bids. The Contractor's compensation will be computed upon the basis of the actual quantities of work marked by the Engineer and completed, whether they be more or less than those shown in the Bid Item List.

Linear measurement shall be determined from measurements of bid items complete and in place. Unit counts will be made of the unit items complete and in place. Weight measurements will be based on weight receipts issued by a qualified weight master. Any other method of establishing the quantities not listed specifically herein, or defined in other portions of the contract provisions, shall be determined by referring to the applicable section of the Standard Specifications.

### **9.02 PAYMENT ADJUSTMENTS FOR PRICE INDEX FLUCTUATIONS**

Standard specifications Section 9-1.07, "Payment for Adjustments for Price Index Fluctuations," is deleted, unless otherwise specified in the Supplementary Conditions.

### **9.03 LUMP SUM BID ITEM PROGRESS PAYMENTS**

The first paragraph of Standard Specification Section 9-1.16B, "Schedule of Values," is amended to include the following:

If a schedule of values is not specified to be submitted or a payment breakdown is not provided in the payment clause of the applicable Standard Specifications or these Special Provisions, progress payments for lump sum bid items will be a percentage of the lump sum bid item price based on the Engineer's determination of the amount of lump sum work already performed.

At Contractors option, submit a lump sum breakdown that provides sufficient detail for the Engineer to determine the value of work performed. The Engineer may consider but not exclusively base the determination of progress payments on Contractors lump sum breakdown. The Engineer's determination of progress payments for lump sum bid items under the Contract will be final in accordance with Standard Specifications Section 5-1.03.

#### **9.04 MATERIALS ON-HAND**

Standard Specifications Section 9-1.16C, "Materials on Hand," is replaced by the following:

No partial payment will be made for any materials on hand which are furnished but not incorporated in the work.

#### **9.05 MOBILIZATION**

Standard Specifications Section 9-1.16D, "Mobilization," is replaced with the following:

##### **9-1.16D Mobilization**

Public Contract Code Section 10104 defines "mobilization." The Contractor is eligible for partial payments for mobilization if the Contract includes a bid item for mobilization. The Department will make partial payments no less often than as specified under Public Contract Code Section 10264. If the Contract does not include a mobilization bid item, mobilization is included in the payment for the various bid items.

#### **9.06 RETENTIONS**

Standard Specifications Section 9-1.16F, "Retentions," is replaced with the following:

##### **9-1.16F Retentions**

The City shall retain 5 percent of the estimated value of the work done and 5 percent of the value of materials so estimated to have been furnished and delivered and unused or furnished and stored as aforesaid as part security for Contractors fulfillment of the contract.

Pursuant to Public Contract Code Section 22300, the Contractor will be permitted, at its request and sole expense, to substitute securities for any monies withheld by the City to ensure performance under the contract. Said securities will be deposited either with the City or with the state or federally chartered bank as escrow agent. Securities eligible for this substitution are those listed in Government Code Section 16430 or bank or savings and loan certificate of deposit, interest-bearing demand deposit accounts, standby letters of credit, or any other mutually agreed to by Contractor and the City. The Contractor shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.

## **9.07 PROGRESS PAYMENTS**

On or before the first day of every month the Contractor and Engineer shall meet and prepare a written estimate of progress payments. From this amount, five percent (5%) will be deducted and, from the remaining ninety five percent (95%), there will be deducted any amounts due City from Contractor for supplies, materials, services, damages or otherwise deductible under the terms of the contract and the amount of all payments previously made to Contractor. The remainder will be paid by the City to the Contractor as a progress payment by the 20th day of the month. The remaining five percent (5%) thereof shall be paid to Contractor thirty-five (35) days after the recording of the Notice of Completion.

Pursuant to Public Contract Code Section 20104.50, the City will promptly process all requests for progress payments pursuant to this contract. As to any undisputed payments that are made more than thirty (30) days after receipt of an undisputed and properly submitted payment request from the Contractor, the City will pay interest equivalent to the legal rate set forth in Code of Civil Procedure Section 685.10.

## **9.08 FINAL PAYMENT AFTER CONTRACT ACCEPTANCE**

Standard Specifications Section 9-1.17D (1), "General" is amended to include the following:

Upon satisfactory completion of the entire work, the Engineer will recommend the acceptance of the work to the City Council. If the City Council accepts the completed work, it will cause a Notice of Completion to be recorded with the County Recorder.

Thirty-five days after the filing of the Notice of Completion, the Contractor will be entitled to the balance due for the completion and acceptance of the work, if certification is made by sworn written statement that all claims have been filed with the City based upon acts or omissions of the Contractor and that no liens or withhold notices have been filed against said work or the property on which the work was done.

## **9.09 CLAIM RESOLUTION**

Any claim by the contractor in connection with this project shall be resolved pursuant to Section 9204 of the Public Contract Code; the full text of which is as follows:

SECTION 1. Section 9204 is added to the Public Contract Code, to read:

- (a) The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.
- (b) Notwithstanding any other law, including, but not limited to, Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2, Chapter 10 (commencing with Section 19100) of Part 2, and Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, this section shall apply to any claim by a contractor in connection with a public works project.
- (c) For purposes of this section:



- (1) “Claim” means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:
  - (A) A time extension, including, without limitation, for relief from damages or penalties for delay assessed by a public entity under a contract for a public works project.
  - (B) Payment by the public entity of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.
  - (C) Payment of an amount that is disputed by the public entity.
- (2) “Contractor” means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who has entered into a direct contract with a public entity for a public works project.
- (3)
  - (A) “Public entity” means, without limitation, except as provided in subparagraph (B), a state agency, department, office, division, bureau, board, or commission, the California State University, the University of California, a city, including a charter city, county, including a charter county, city and county, including a charter city and county, district, special district, public authority, political subdivision, public corporation, or nonprofit transit corporation wholly owned by a public agency and formed to carry out the purposes of the public agency.
  - (B) “Public entity” shall not include the following:
    - (i) The Department of Water Resources as to any project under the jurisdiction of that department.
    - (ii) The Department of Transportation as to any project under the jurisdiction of that department.
    - (iii) The Department of Parks and Recreation as to any project under the jurisdiction of that department.
    - (iv) The Department of Corrections and Rehabilitation with respect to any project under its jurisdiction pursuant to Chapter 11 (commencing with Section 7000) of Title 7 of Part 3 of the Penal Code.
    - (v) The Military Department as to any project under the jurisdiction of that department.
    - (vi) The Department of General Services as to all other projects.
    - (vii) The High-Speed Rail Authority.
- (4) “Public works project” means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.
- (5) “Subcontractor” means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with a contractor or is a lower tier subcontractor.

(d)

(1)

(A) Upon receipt of a claim pursuant to this section, the public entity to which the claim applies shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, a public entity and a contractor may, by mutual agreement, extend the time period provided in this subdivision.

(B) The claimant shall furnish reasonable documentation to support the claim.

(C) If the public entity needs approval from its governing body to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the public entity shall have up to three days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.

(D) Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. If the public entity fails to issue a written statement, paragraph (3) shall apply.

(2)

(A) If the claimant disputes the public entity's written response, or if the public entity fails to respond to a claim issued pursuant to this section within the time prescribed, the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the public entity shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(B) Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the public entity shall provide the claimant a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. Any disputed portion of the claim, as identified by the contractor in writing, shall be submitted to nonbinding mediation, with the public entity and the claimant sharing the associated costs equally. The public entity and claimant shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation

is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.

- (C) For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.
  - (D) Unless otherwise agreed to by the public entity and the contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.
  - (E) This section does not preclude a public entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this section does not resolve the parties' dispute.
- (3) Failure by the public entity to respond to a claim from a contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this section shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the public entity's failure to have responded to a claim, or its failure to otherwise meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.
  - (4) Amounts not paid in a timely manner as required by this section shall bear interest at 7 percent per annum.
  - (5) If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, the contractor may present to the public entity a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the public entity shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the contractor shall notify the subcontractor in writing as to whether the contractor presented the claim to the public entity and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.
- (e) The text of this section or a summary of it shall be set forth in the plans or specifications for any public works project that may give rise to a claim under this section.
  - (f) A waiver of the rights granted by this section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) a public entity may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this section, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in this section.

- (g) This section applies to contracts entered into on or after January 1, 2017.
- (h) Nothing in this section shall impose liability upon a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.
- (i) This section shall remain in effect only until January 1, 2020, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2020, deletes or extends that date.

## **9.10 ADJUSTMENT OF OVERHEAD COSTS**

Irrespective of the final payment to be made to the Contractor under this contract, there will be no adjustment of overhead costs.

## **9.11 DAMAGES**

Any provision in the Contract which limits the City's liability to an extension of time for delay for which the City is responsible and which delay is unreasonable under contemplation of the circumstances involved, and not within the parties', shall not be construed to preclude the recovery of damages by the Contractor or subcontractor. This section shall not be construed to void any provision in this Contract which requires notice of delays, provides for arbitration or other procedure for settlement, or provides for liquidated damages.

## **9.12 COMPENSATION FOR GENERAL CONDITIONS AND SUPPLEMENTARY GENERAL CONDITIONS**

Compensation for doing any work under the General and Supplementary General Conditions shall be included in the various items of work, and no additional payment shall be made.

## **9.13 SPECIFIC BID ITEMS**

Below are specific bid item which apply to the overall scope of the project and are not specific to any of the technical specification sections. Any items not listed herein are to be found in their respective technical specification section. Additional items identified by the Contractor to be necessary for this project not included herein shall be added to the bid schedule prior to submission.

- (a) Payment for "Preconstruction Potholing" shall be paid per each utility identified as requiring field verification via preconstruction potholing, as listed on the Preconstruction Pothole Locations table as shown on the Contract Drawings. The work includes furnishing all equipment, materials, and personnel associated with the following in accordance with the Contract Documents. Vacuum extraction is an acceptable alternative to hand digging of potholes.
  - (1) This item includes excavation of potholes to locate utilities in critical areas as close as possible as to where excavation is to be done prior to submittal of precast manhole shop drawings and the start of construction of the sanitary sewer improvements. The work includes all excavation, dewatering, backfilling and

compaction required to located existing utilities and AC repair of the road surface in a satisfactory condition. The work includes hand excavation around existing utilities to prevent damage.

- (2) Location and protection of utilities not designated for preconstruction potholing is the responsibility of the Contractor and no separate payment for such work will be made under the Contract.
  
- (b) Payment for “Construction Survey and Site Investigation” shall be made at the lump sum price bid, which shall be full compensation for furnishing all the labor, materials and equipment to perform surveys, pre-TV inspection and preconstruction photographic documentation, pre-CCTV inspection of sewers to be rehabilitated, and other pre-construction site inspection and preparation. This item will be paid based on the percent of the total construction finished at each progress payment.

\*\*\* END OF SECTION \*\*\*

## **SECTION 10. MAINTAINING TRAFFIC**

### **10.01 General**

Attention is directed to Section 7-1.03, "Public Convenience," 7-1.04, "Public Safety," and Section 12, "Temporary Traffic Control," of the Standard Specifications. Nothing in these General Conditions shall be construed as relieving the Contractor from its responsibility as provided in said Section 7-1.09.

The Contractor is responsible for posting "No Parking" signs which will be furnished by the City, including "Hooding" or otherwise posting on all parking meters in the areas of work.

The Contractor shall clean all construction area sign panels at the time of installation.

To properly provide for changing traffic conditions and damage caused by public traffic or otherwise, the Contractor shall be prepared to furnish on short notice additional portable signs and sign mounting devices. The Contractor shall maintain an inventory of the commonly required items at the jobsite or shall make arrangements with a supplier who is able, on a daily basis, to furnish such items on short notice.

### **10.02 Portable Delineators**

When work is in progress in a trench or other excavation adjacent to the traveled way, portable delineators, conforming to Section 12-3.04, "Portable Delineators," of the Standard Specifications, shall be placed on the edge of pavement. At other times, the portable delineators shall be placed off of and adjacent to the edge of pavement. The portable delineators shall be spaced as necessary for proper delineation. The spacing between delineators shall not exceed one hundred feet (100') on tangents or fifty feet (50') on curves

### **10.03 Lane Closures**

A traffic control system shall consist of closing traffic lanes in accordance with the details shown on the Traffic Control Plan, the provisions in Section 12, "Temporary Traffic Control," of the Standard Specifications and the following requirements.

No work shall be allowed to begin before closing any intersection or street. A "Road Closed Ahead" sign, mounted on a sturdy mounting device, shall be placed at the far end of every block converging on that intersection or street.

If any component in the traffic control system is displaced, or ceases to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately repair said component and shall restore the component to its original location.

When lane closures are made for work periods only, at the end of each work period, all components of the traffic control system, except portable delineators placed along open trenches or excavation adjacent to the traveled way, shall be removed from the traveled way and shoulder.

#### **10.04 Parked Vehicles**

Personal vehicles of the Contractor's employees shall not be parked on the traveled way or shoulders, including any section closed to public traffic.

The Contractor shall notify the Engineer of its intent to begin work at least five (5) days before work is begun. The Contractor shall cooperate with the Engineer relative to handling traffic through the area and shall make its own arrangements relative to keeping the working area clear of parked vehicles.

Whenever vehicles or equipment are parked on the shoulder within 6 feet of a traffic lane, the shoulder area shall be closed with fluorescent traffic cones or portable delineators placed on a taper in advance of the parked vehicles or equipment and along the edge of the pavement at twenty-five-foot (25') intervals to a point not less than twenty-five feet (25') past the last vehicle or piece of equipment. A minimum of nine (9) cones or portable delineators shall be used for the taper. Contractor's warning signage and markings shall conform to the requirements of the Caltrans Traffic Manual, and in any event, a C23 (Road Work Ahead) or C24 (Shoulder Work Ahead) sign shall be mounted on a telescoping flag tree with flags prior to the taper.

#### **10.05 Traffic Control**

The Contractor shall provide and erect such warning lights, directional signs and barriers as are necessary to prevent accidents and avoid damage or injury to passing traffic. The Contractor shall comply with Section 12 of the Standard Specifications.

Full compensation for all traffic control, including any flagging costs, shall be considered as included in the bid schedule.

Minor deviations from the requirements of this section concerning hours of work which do not significantly change the cost of the work may be permitted upon the written request of the Contractor if, in the opinion of the Engineer, public traffic will be better served and the work expedited. Such deviations shall not be adopted until the Engineer has indicated written approval. All other modifications will be made by contract change order.

The Contractor shall prosecute the work in such a manner as not to damage any private property. All equipment and material shall be stored by the Contractor off the traveled way during non-working hours. Should any such structures or property be damaged during the operations of the Contractor, it shall immediately notify the proper owners or authorities and shall arrange for the immediate repair of same at its expense.

##### **(A) Driveway Entrance Road Access**

The Contractor's attention is directed to the fact that access to all driveways and entrance roads shall be maintained at all times, except during the time such driveways or entrance roads are being resurfaced as part of this contract. The Contractor shall provide the Engineer and the affected property occupants with written notice five (5) days in advance of beginning such driveway or entrance road resurfacing work, and shall complete such resurfacing work and restore vehicular

access to each driveway or entrance road within six (6) hours after commencement of such resurfacing work. Forms of such notice of driveway closure will be provided to the Contractor at start of construction and shall be distributed to the property owner by the Contractor through the length of the contract, whenever appropriate.

Compensation for distributing such written notice shall be considered as included in the appropriate contract bid item necessitating the closure, and no additional compensation will be allowed therefor.

(B) Pedestrian Facilities

Existing pedestrian facilities shall be maintained in a safe condition through construction areas within the Project right of way at all times. In local residential areas the requirement for paved walkway area may be waived if other suitable and safe surface is available and is approved by the Engineer. However, all pedestrian facilities provided through or around construction areas shall be accessible for persons with disabilities in conformance with the requirements of the Americans with Disabilities Act and implementing laws and regulations.

(C) Temporary Steel Plate Bridging with Non-Skid Surface

When backfilling operations of an excavation in the traveled way, whether transverse or longitudinal, cannot be properly completed within a work day, steel plate bridging with a nonskid surface and shoring may be required to preserve unobstructed traffic flow. In such cases, the following conditions shall apply:

2. Steel plates used for bridging must extend a minimum of 12" (305 mm) beyond the edges of the trench.
3. Steel plate bridging shall be installed to operate with minimum noise.
4. The trench shall be adequately shored to support the bridging and traffic loads.
5. Temporary paving with cold asphalt concrete shall be used to feather the edges of the plates, if plate installation by Method (2) described below, is used.
6. Bridging shall be secured against displacement by using adjustable cleats, shims, or other devices.

Steel plate bridging and shoring shall be installed using either Method (1) or (2):

- 1) Method 1 [For speeds greater than 45 mph (70 Km /hr)]: The pavement shall be cold planed to a depth equal to the thickness of the plate and to a width and length equal to the dimensions of the plate.
- 2) Method 2 [For speeds less than 45 mph (70 Km/hr)]: Approach plate(s) and ending plate (if longitudinal placement) shall be attached to the roadway by a minimum of 2 dowels pre-drilled into the corners of the plate and drilled 2" (50 mm) into the pavement. Subsequent plates are butted to each other. Fine graded asphalt concrete shall be compacted to form ramps, maximum slope 8.5 % with a minimum 12" (305 mm) taper to cover all edges of the steel plates. When steel plates are removed, the



dowel holes in the pavement shall be backfilled with either graded fines of asphalt concrete mix, concrete slurry or an equivalent slurry that is satisfactory to the Caltrans' representative.

Contractor is responsible for maintenance of the steel plates, shoring, and asphalt concrete ramps.

Unless specifically approved by the Engineer, use of steel plate bridging over the width of the open pipe trench should not exceed four (4) consecutive working days in any given week.

Backfilling of excavations shall be covered with a minimum 3" (75 mm) temporary layer of cold asphalt concrete.

The following table shows the advisory minimal thickness of steel plate bridging required for a given trench width (A-36 grade steel, designed for HS20-44 truck loading per Caltrans Bridge Design Specifications Manual).

#### Trench Width Minimum Plate Thickness

- 1) Span < 10" the minimum plate thickness is (0.25 m) 1/2" (13 mm)
- 2) Span > 10" < 1'-11" the minimum plate thickness is (0.58 m) 3/4" (19 mm)
- 3) Span > 1'-11" < 2'-7" the minimum plate thickness is (0.80 m) 7/8" (22 mm)
- 4) Span > 2'-7" < 3'-5" the minimum plate thickness is (1.04 m) 1" (25 mm)
- 5) Span > 3'-5" < 5'-3" the minimum plate thickness is (1.60 m) 1 1/4" (32 mm)

NOTE: For spans greater than 5'-3" (1.6 meters), a structural design shall be prepared by a California registered civil engineer.

All steel plates within the right-of-way whether used in or out of the traveled way shall be without deformation. Inspectors can determine the trueness of steel plates by using a straight edge and any plate that is permanently deformed shall be rejected.

Steel plates used in the traveled portion of the highway shall have a surface that was manufactured with a nominal Coefficient Of Friction (COF) of 0.35 as determined by California Test Method 342 (See Appendix H). If a different test method is used, Contractor may utilize standard test plates with known coefficients of friction available from each Caltrans District Materials Engineer to correlate skid resistance results to California Test Method 342. Based on the test data, Contractor shall determine what amount of surface wear is acceptable, and independently ascertain when to remove, test, or resurface an individual plate.

A Rough Road sign (W33) with black lettering on an orange background may be used in advance of steel plate bridging. This sign is used along with any other required construction signing.

Surfacing requirements are not necessary for steel plates used in parking strips, on shoulders not used for turning movements, or on connecting driveways, etc., not open to the public.

## **10.06 Contractor Representative**

As specified here and in Section 5.03 of these specifications, the Contractor shall be represented at all times during working operations.

One person at the work site shall be designated as having responsibility for carrying out directions from the Engineer.

## **10.07 Portable Flashing Beacons**

Portable flashing beacons conforming to the provisions in Section 12, "Temporary Traffic Control," of the Standard Specifications shall be furnished, placed and maintained at the locations as directed by the Engineer.

If flashing beacons are displaced or are not in an upright position, from any cause, during the progress of the work, the Contractor shall immediately repair and repaint or replace the flashing beacons in their original locations.

At the end of each work shift, all portable flashing beacon units shall be removed from the traveled way. Full compensation for placing, removing and storing flashing beacon units daily as the work progresses shall be considered as included in the contract unit price paid for the various items of work and no additional compensation will be allowed therefor.

## **10.08 Portable Barricades**

Type III barricades conforming to the provisions in Section 12-3, "Traffic-Handling Equipment and Devices," of the Standard Specifications shall be furnished, placed, and maintained in sturdy working manner at the locations designated by the Engineer and in accordance with the provisions in Section 7-1.03, "Public Convenience," of the Standard Specifications and these General Conditions.

The barricades shall conform to the details shown on Caltrans Standard Plan A73 and as specified in Section 12-3.02, "Barricades," of the Standard Specifications, except that minor variations in dimensions may be accepted if approved by the Engineer.

Barricades damaged from any cause during the progress of the work shall be replaced or repaired (including painting and reflectorized material) by the Contractor at its expense.

## **10.09 Temporary Delineation**

If permanent or temporary traffic delineation operations are not properly performed by the working day completion time(s) specified, the City may elect to perform such operations; cost for all such City-performed operations will be at the Contractor's expense, with all costs therefor deducted from Contractor's progress payments.

## **10.10 Procedures and Posting of "No Parking" Signs on City Streets**

The City's policy is to post effectively and prior to towing, attempt to contact all those in violation of the properly posted restrictions. Advanced coordination with the Police Department is required to make sure that the officers have sufficient notice and accurate construction time schedules for this activity. The Contractor is responsible for contacting the Police Department and effecting this notification procedure. Time must also be allowed for towing equipment to be notified and tow any vehicles.

The Police Traffic Sergeant's office hours are 8:00 a.m. to 9:00 a.m. and 2:30 p.m. to 4:00 p.m. The Traffic Sergeant may be reached by phone at 777-4100. If you need to contact the Sergeant immediately - when the sergeant is not in the office, contact Police Dispatch at the above number and ask them to contact the Sergeant. Prior to start of any work under this Contract, Contractor shall arrange a meeting with the Traffic Sergeant to go over the specific job needs.

Requirements for "No Parking" Posting and Any Required Towing Are As Follows:

- 1) Signs shall have date(s) of the "No Parking" (the actual day[s] of work – for example: 5/24/03 to 5/25/03) and hours (for example: 6:00 a.m. to 4:30 p.m.) indicated.
- 2) The No Parking areas shall be posted at least forty-eight (48) hours ahead of effective time. If the No Parking area is to take effect on a Monday, then the No Parking Area shall be posted pursuant to this section no later than the preceding Thursday evening. If the No Parking area is to take effect on the day following a holiday, then the No Parking area shall be posted pursuant to this section no later than the evening of the second preceding business day. For example, if the holiday falls on a Monday, the area shall be posed by Thursday evening; if the holiday falls on a Thursday, the area shall be posted by Tuesday evening. At the time of posting, the Contractor shall notify Police Dispatch with the following information: a) name and phone number of the person doing the posting; b) time and date posted; c) times and dates when the No Parking will be in effect; and d) location of the posting by street addresses.
- 3) Post on all trees and poles between barricades facing in the direction that drivers in traffic can read. Signs shall be mounted such that the words, "No Parking" are at an elevation at least 3 feet and not more than 7 feet above the adjacent flow line. Signs placed on trees shall be attached by string only. Signs placed on existing poles shall be attached by either string or tape only so as not to cause any damage to existing poles.
- 4) Barricades or temporary poles containing the no parking information shall be placed every twenty-five feet (25') on center or less.
- 5) Lighted barricades shall be installed on centers of no more than 150' if placed in the street.
- 6) The Contractor shall promptly reset or replace all damaged or defective signs.
- 7) Upon completion of work in each area, all signs, mounting materials, stakes, and barricades shall be promptly and completely removed by the Contractor.
- 8) Contractor shall notify Police Department of the work location and start time on the day before. Also, Contractor shall notify the Police Department at starting time for each street or area of work during the day. In addition, the Contractor shall update time schedule, if

any changes, by phone: Call Police Department at (650) 777-4100 and have them notify the Traffic Sergeant and Parking Enforcement Officers.

THE POLICE DEPARTMENT HAS THE AUTHORITY TO REFUSE TOWING IF CONTRACTOR HAS NOT PLACE SIGNAGE APPROPRIATELY IN ACCORDANCE WITH THESE GENERAL CONDITIONS.

\*\*\* END OF SECTION \*\*\*

## SUPPLEMENTARY GENERAL CONDITIONS

The General Conditions and Standard Conditions are hereby amended as follows:

1. Section 6.02 of the General Conditions is amended by adding the following:

“The City-furnished materials for this project are:

- NONE”

2. Section 8.04 of the General Conditions is amended by adding the following:

*“Contractor’s failure to achieve substantial completion of the work described in the Contract Documents will cause the City to incur losses of types and in amounts which are impossible to compute and ascertain with certainty. The Contractor shall pay to the City of Burlingame liquidated damages in the amount of one thousand dollars (\$1000) per day for each day and every calendar days’ delay in finishing the work in excess of the number of 45 working days referred to in these specifications. The amount may be assessed and recovered by the City as against Contractor and its Surety. Such liquidated damages are intended to represent estimated actual damages and are not intended as a penalty, and Contractor shall pay them to the City, without limiting City’s any of the City’s rights as provided in the Contract Documents.”*

\*\*\* END OF SECTION \*\*\*

## **SECTION 11. SELECTIVE DEMOLITION**

### **PART 1 GENERAL**

#### **11.1.01 SUMMARY**

- A. Removing above-grade site improvements within limits indicated.
- B. Disconnecting, capping or sealing, and abandoning site utilities in place.
- C. Disconnecting, capping or sealing, and removing site utilities.
- D. Dust Alleviation and Control.
- E. Disposing of objectionable material.

#### **11.1.02 RELATED SECTIONS**

- A. Section 12 – Clearing and Grubbing
- B. Section 14 – Excavation and Fill.
- C. Section 15 – Trenching and Backfill.

#### **11.1.03 RELATED DOCUMENTS**

- A. California Building Code: Chapter 33 – Site Work, Demolition and Construction.
- B. California Building Code: Section 1806A.11 – Pipes and Trenches.

#### **11.1.04 DEFINITIONS**

- A. ANSI: American National Standards Institute.
- B. CAL-OSHA: California Occupational Safety and Health Administration.

#### **11.1.05 ACTION SUBMITTALS**

- A. Follow submittal procedures outlined in the Division 1 Specifications.

#### **11.1.06 PROJECT CONDITIONS**

- A. Except for materials indicated to be stockpiled or to remain the Owner's property, cleared materials are the Contractor's property. Remove cleared materials from site and dispose of in lawful manner.
- B. Protect open excavations, trenches, and the like with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.

- C. Salvable Improvements: Carefully remove items indicated to be salvaged and store where indicated on plans or where designated by the Owner. Avoid damaging materials designated for salvage.
- D. Unidentified and Objectionable Materials: If unidentified materials are discovered, including hazardous materials (asbestos concrete pipe) that will require additional removal other than is required by the Contract Documents, immediately report the discovery to the Owner. If necessary, the Owner will arrange for any testing or analysis of the discovered materials and will provide instructions regarding the removal and disposal of the unidentified materials.
- E. Submit dewatering plan for approval before commencing demolition.

## **PART 2 PRODUCTS**

### **11.2.01 SOIL MATERIALS**

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from on-site excavations.
- B. Obtain approval of on-site soil materials and borrow materials to be used for structural fill or structural backfill from the Geotechnical Consultant.
- C. On-Site Structural Fill and Structural Backfill: Soil or soil-rock mixture from on-site excavations, free from organic matter or other deleterious substances. On-site structural fill and backfill shall not contain rocks or rock fragments over 6 inches in greatest dimension and not more than 15 percent shall be over 2-1/2 inches in greatest dimension and with an organic content less than 3.0 percent by weight.
- D. Imported Structural Fill and Structural Backfill: Conform to the requirements of on-site structural fill. Material shall also be a non-expansive and predominantly granular soil or soil-rock mixture with plasticity index of 15 or less in accordance with ASTM D 4318 and an R-Value of 25 or greater.

## **PART 3 EXECUTION**

### **11.3.01 PREPARATION**

- A. Protect and maintain benchmarks and survey control points during construction.
- B. Protect existing site improvements to remain during construction.

### **11.3.02 RESTORATION**

- A. Restore damaged improvements to their original condition, as acceptable to the Owner.

### **11.3.03 BRACING AND SHORING**

- A. Conform to California and Federal OSHA requirements.

- B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the facility being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.
- C. Be solely responsible for all bracing and shoring and, if requested by the Owner, submit details and calculations to the Owner. The Owner may forward the submittal to the Geotechnical Consultant, the Consulting Engineer and/or the California Division of Industrial Safety for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations related to the proposed facility shall precede a response to the submittal by the Owner.
- D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the position or operation of the facility being constructed or adjacent utilities and facilities.

#### **11.3.04 UTILITIES**

- A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed or abandoned. Prior to demolition, contact Underground Service Alert.
- B. Arrange to shut off indicated utilities with utility companies or verify that utilities have been shut off.
- C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless authorized in writing by the Owner, and then only after arranging to provide temporary utility services according to requirements indicated.
- D. Coordinate utility interruptions with utility company affected.
- E. Do not proceed with utility interruptions without the permission of the Owner and utility company affected. Notify Owner and utility company affected two working days prior to utility interruptions.
- F. Excavate and remove underground utilities that are indicated to be removed.
- G. Securely close ends of abandoned piping with tight fitting plug or wall of concrete minimum 6-inches thick.

#### **11.3.05 SITE IMPROVEMENTS**

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction, including fencing and other barriers preserving posts, where possible. Any fencing removed or damaged during construction must be restored to original condition.



- B. Remove slabs, paving, curbs, and gutters, as indicated. Where concrete slabs, curb, gutter and asphalt pavements are designated to be removed, remove bases and subbase to surface of underlying, undisturbed soil.
- C. Unless the existing full-depth joints coincide with line of pavement demolition, neatly saw-cut to full depth the length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.
- D. Remove driveways, curbs, gutters and sidewalks by saw cutting to full depth. If saw cut falls within 30-inches of a construction joint, expansions joint, score mark or edge, remove material to joint, mark or edge.

**11.3.06 BACKFILL**

- A. Place and compact material in excavations and depressions remaining after site clearing in conformance with Section 15 – Trenching and Backfilling.

**11.3.07 DUST ALLEVIATION AND CONTROL**

- A. Contractor shall be responsible for and shall provide pollution and dust abatement and control measures satisfactorily during the course of the work.
- B. The Contractor shall utilize reclaimed water, or dust palliatives, if necessary for compliance with the City's Water Conservation Ordinance.

**11.3.08 FINISH OPERATIONS AND DISPOSAL**

- A. Remove surplus obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off the Owner's property.
- B. Surplus materials and construction debris remaining upon completion of the work shall become the property of the Contractor unless otherwise specified herein or noted on the plans, and shall be removed from the work site by the Contractor and disposed of off-site in a lawful manner.

**PART 4 PAYMENT**

**11.4.01 BID ITEMS**

- A. Controlled Density Fill shall be considered as included in the contract prices paid for the various items of work involved and as specified in these specifications and no separate payment will be made.
- B. Payment for sidewalk removal/replacement shall be made at the unit price bid per square foot of sidewalk repaired under "Remove and Replace Sidewalk" and shall be considered full compensation for furnishing all labor, materials, tools and equipment to provide a sidewalk complete in place, including removal of existing sidewalk and restoration of pavement disturbed during sidewalk removal/replacement.

- C. Payment for curb and gutter removal/replacement shall be made at the unit price bid per linear foot of curb and gutter repaired under “Remove and Replace Curb and Gutter” and shall be considered full compensation for furnishing all labor, materials, tools and equipment to provide a curb and gutter complete in place, including removal of existing curb and gutter and restoration of pavement disturbed during curb and gutter removal/replacement.

\*\*\*END OF SECTION\*\*\*

**SECTION 12. CLEARING, GRUBBING, AND STRIPPING**

**PART 1 GENERAL**

**12.1.01 SUMMARY**

- A. Clearing Vegetation, debris, trash and other materials within limits indicated.
- B. Grubbing of vegetation within limits indicated.
- C. Stripping of topsoil within limits indicated.
- D. Dust alleviation and control.
- E. The work shall include the provision of all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

**12.1.02 SECTION INCLUDES**

- A. Work within the City’s right-of-way. All work within the City’s right-of-way shall conform to the plans and specifications issued for this project and shall be in accordance with the City of Burlingame Standard Details and Conditions.

**12.1.03 SUBMITTALS**

- A. Caltrans Standard Specifications.
- B. Final Geotechnical Investigation “Proposed Residential Development 1008, 1016, and 1028 Carolan Avenue/ 935 Rollins Road Burlingame, CA”, dated February 28, 2014 by Rockridge Geotechnical.

**12.1.04 DEFINITIONS**

- A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2-inches in diameter; and free of weeds, roots, and other deleterious materials.

**12.1.05 ACTION SUBMITTALS**

- A. Follow submittal procedure outline in the Division 1 specifications.

**12.1.06 PROJECT CONDITIONS**

- A. The contractor shall be familiar with the existing conditions and responsible for the removal of all rubbish, debris, and other unsuitable materials on the surface of the site.

- B. The contractor shall provide adequate dust alleviation and control measures at all times during the course of work.
- C. Salvageable Improvements: Carefully remove items indicated to be salvaged and store where indicated on plans or where designated by the Owner's Representative. Avoid damaging materials designated for salvage.
- D. Unidentified Materials
  - 1. If unidentified materials are discovered, including hazardous materials that will require additional removal other than is required by the Contract Documents, immediately report the discovery to the Owner's Representative.
  - 2. If necessary, the Owner's Representative will arrange for any testing or analysis of the discovered materials and will provide instructions regarding the removal and disposal of the unidentified materials.

## **PART 2 PRODUCTS**

NOT USED

## **PART 3 EXECUTION**

### **12.3.01 PREPARATION**

- A. Locate and clearly flag vegetation to remain or be relocated.
- B. Protect existing site improvements to remain during construction.

### **12.3.02 RESTORATION**

- A. Repair or replace vegetation indicated to remain that is damaged by construction operations, as directed by the Owner.
- B. Employ a qualified arborist, licensed in jurisdiction where the Project is located, to submit details of proposed repairs and to repair damage to shrubs.

### **12.3.03 CLEARING AND GRUBBING**

- A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots. Do not remove trees without first obtaining City's arborist approval.
- B. Remove trash, debris, logs, concrete, masonry and other waste materials.
- C. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
- D. Completely remove stumps, roots, obstructions, and debris extending to a depth of 18-inches below subgrade.

- E. Use only hand methods for grubbing within drip line of remaining trees.

**12.3.04 TOPSOIL STRIPPING**

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
- C. Remove trash, debris, weeds, roots, and other waste materials.
- D. Remove excess excavated material from site immediately.
- E. Do not stockpile topsoil within drip line of remaining trees.

**12.3.05 DUST ALLEVIATION AND CONTROL**

- A. Contractor shall be responsible for providing pollution and dust abatement and control measures continuously during the course of the work.
- B. Water used should be the minimum necessary for dust control. Contractor is responsible for supplying all water for construction and dust control.

**12.3.06 DISPOSAL AND CLEANUP**

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris shall become the property of the Contractor unless otherwise specified herein or noted on the plans, and shall be removed from the work site by the Contractor and disposed of off-site in a lawful manner.

**PART 4 PAYMENT**

**12.4.01 BID ITEMS**

- A. Payment for this section shall be considered as part of the cost under various items of work involved and will not be paid separately and shall include furnishing all labor materials, tools and equipment to accomplish said work.

\*\*\*END OF SECTION\*\*\*

## **SECTION 13. EARTHMOVING**

### **PART 1 GENERAL**

#### **13.1.01 RELATED DOCUMENTS**

- A. Final Geotechnical Investigation “Proposed Residential Development 1008, 1016, and 1028 Carolan Avenue/ 935 Rollins Road Burlingame, CA”, dated February 28, 2014 by Rockridge Geotechnical.
- B. Caltrans Standard Specifications (current edition).
- C. ASTM Standards.
- D. Standard Details of the City Burlingame, Engineering Department, also referred to as “City Standard Details.”

#### **13.1.02 SUMMARY**

- A. Geotechnical
  - 1. Preparing and grading subgrades for ramps, slabs-on-grade, walks, pavements, and landscaping.
  - 2. Excavation and backfilling for new foundations and structures.
  - 3. Subbase course for walks and pavements.

#### **13.1.03 DEFINITIONS**

- A. Excavation: removal of material encountered to subgrade elevations and the reuse or disposal of materials removed.
- B. Backfill: Material used in refilling a cut, trench, holes, or other excavations.
- C. Compaction: The process of mechanically stabilizing a material by increasing its density at a controlled moisture condition. “Degree of Compaction” or “Relative Compaction” is expressed as a percentage of the maximum density obtained by the test procedure described in ASTM D1557 abbreviated in this Specification, for example, as “90 percent relative compaction.”
- D. Fill: Material placed at a specified degree of compaction to obtain an indicated grade or elevation.
- E. Lift: Horizontal layer or course of soil placed on top of previously prepared, compacted or placed soil, or subgrade.
- F. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

- G. Borrow: Soil material approved by the Geotechnical Engineer and Environmental Engineer, and obtained off-site when sufficient approved soil materials not available from excavations.
- H. Subbase Course: The layer placed between the subgrade and base course in a paving system or the layer placed between the subgrade and surface of a pavement or walk.
- I. Base Course: The layer placed between the subbase and surface pavement in a paving system. Base Course shall conform with Caltrans Standard Specifications for Class II aggregate base.
- J. Capillary Break: clean, washed, free-draining, open-graded gravel, crushed rock, or crushed concrete meeting the following gradation requirements:
 

Sieve Size	Percentage Passing Sieve
1-inch	90-100
¾-inch	30-100
½-inch	5-25
3/8-inch	0-6
- K. Unauthorized excavation consists of removing materials beyond indicated subgrade elevations or dimensions without direction by the Geotechnical Engineer and Environmental Engineer.
- L. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other human-made stationary features constructed above or below the ground surface.
- M. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services with building lines.

**13.1.04 SUBMITTALS**

- A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Test Reports: the Contractor shall submit the following:
- C. Laboratory analysis of each soil material proposed for fill and backfill from on-site and borrow sources.
- D. One optimum moisture-maximum density curve for each soil material.

**13.1.05 QUALITY ASSURANCE**

- A. Codes and Standards: Perform earthwork complying with requirements of Geotechnical Report and Site Mitigation Plan authorities having jurisdiction

- B. Testing and Inspection Service: The owner will employ a qualified independent geotechnical engineering testing agency to classify proposed on-site and borrow soils to verify that soils comply with specified requirements and to perform required field and laboratory testing. Notify the City Engineer two working days advance notice for inspection services.

### **13.1.06 PROJECT CONDITIONS**

- A. Existing Utilities: Do not interrupt existing utilities serving facilities occupied by the Owner or others except when permitted in writing by the Owner and then only after acceptable temporary utility services have been provided.
- B. Provide a minimum 72-hours' notice to the Owner and receive written notice to proceed before interrupting any utility.

## **PART 2 PRODUCTS**

### **13.2.01 SOIL MATERIALS**

- A. General: Provide approved borrow soil materials from off-site when sufficient approved soil materials are not available from excavations.
- B. Satisfactory Soil Materials: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP and SM; free of rock or gravel larger than 4 inches in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter.
- C. Unsatisfactory Soil Materials: ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT.
- D. Backfill and Fill Materials: Satisfactory soil materials.
- E. Aggregate Base Material: Shall conform to Section 26-1.02B of the Caltrans Standard Specification.
- F. Aggregate Base Material: Shall conform to Section 26-1.02B of the Caltrans Standard Specification.
- G. Engineered Fill: Satisfactory soil material, subbase or base material.
- H. Crushed Rock: Washed, evenly graded mixture of crushed stone, crushed concrete, or crushed or uncrushed gravel, ASTM D 448, coarse aggregate grading size 57, with 100 percent passing a ¾-inch sieve and not more than 5 percent passing a No. 4 sieve.
- I. Drain Rock: See Crushed Rock

### **13.2.02 GEOTEXTILES**

- A. Stabilization/Reinforcement Fabric: Mirafi 500X or equivalent.



- B. Filter Fabric: Mirafi 140NC or equivalent.

### **13.2.03 ACCESSORIES**

- A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility.
  - 1. Tape Colors: Provide tape colors to utilities as follows:
    - a. Red: Electric
    - b. Yellow: Gas, oil, steam, and dangerous materials
    - c. Orange: Telephone and other communications
    - d. Blue: Water systems
    - e. Green: Sewer systems

## **PART 3 EXECUTION**

### **13.3.01 PREPARATION**

- A. Locate existing utilities with U.S.A., private utility locator, and potholing as needed.
- B. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- C. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

### **13.3.02 DEWATERING**

- A. Prevent surface water and subsurface or groundwater from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

### **13.3.03 EXCAVATION**

- A. Explosives: Do not use explosives.
- B. Unclassified Excavation: Excavation is unclassified and includes excavation to required subgrade elevations regardless of the character of materials and obstructions encountered.

**13.3.04 STABILITY OF EXCAVATIONS**

- A. Comply with local codes, ordinances, and requirements of authorities having jurisdiction to maintain stable excavations.
- B. Excavations shall be supported and braced to prevent significant movement of the adjacent soil. Shoring and bracing systems shall be designed by a Civil Engineer registered in the State of California. Drawings and Calculations for shoring shall be submitted for approval by the Engineer, the City of Burlingame, and the Owner's Geotechnical Engineer.

**13.3.05 EXCAVATION OF STRUCTURES**

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.10 foot. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, installing services and other construction, and for inspections.
- B. The elevation of the bottoms of excavations shall be the elevation indicated on the drawings
- C. Prior to placement of any concrete (either lean concrete or structural concrete), the soil at the exposed subgrade shall be rolled to produce a smooth, non-yielding surface.

**13.3.06 EXCAVATION FOR WALKS AND PAVEMENTS**

- A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.

**13.3.07 APPROVAL OF SUBGRADE**

- A. Notify the Engineer when excavations have reached required subgrade.
- B. When the Owner's Representative determines that unforeseen unsatisfactory soil is present, continue excavation and replace with compacted backfill or lean concrete as directed.
- C. Subgrade at or below groundwater should be overexcavated a minimum of 6 inches. Crushed rock wrapped in geotextile fabric (Mirafi 500X or equivalent) should be placed at the bottom of the overexcavation, as directed by Geotechnical Engineer.
- D. Subgrade in Bay Mud should be overexcavated 12 inches. A geotextile and crushed rock should be placed, as directed by Geotechnical Engineer.
- E. Unforeseen additional excavation and replacement material will be paid according to the Contract provisions for changes in Work.
- F. Reconstruct subgrades damaged by rain, accumulated water, or construction activities, as directed by the Engineer and Geotechnical Engineer.

**13.3.08 UNAUTHORIZED EXCAVATION**

- A. Fill unauthorized excavation under foundations or wall footings by extending indicated bottom elevation of concrete foundation or footing to excavation bottom, without altering required top elevation. Lean concrete fill shall be used to bring elevations to proper position when acceptable to the Engineer and Geotechnical Engineer.
- B. Fill unauthorized excavations under other construction as directed by the Engineer and Geotechnical Engineer.

**13.3.09 STORAGE OF SOIL MATERIALS**

- A. Remove excess excavated material from site immediately.

**13.3.10 BACKFILL**

- A. Backfill excavations promptly, but not before completing the following:
  - 1. Acceptance of construction below finish grade.
  - 2. Concrete formwork removal.
  - 3. Removal of trash and debris from excavation.
  - 4. Removal of temporary shoring and bracing, and sheeting.

**13.3.11 FILL**

- A. Preparation: Remove vegetation, topsoil, debris, wet, and unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placing fills.
- B. When subgrade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface to depth required to reach suitable material, pulverize, moisture-condition or aerate soil and recompact to required density.
- C. Place fill material in layers to required elevations for each location listed below.
  - 1. Under walks and pavements, use subbase or base material, or satisfactory excavated or borrow soil material.
  - 2. Under steps and ramps, use subbase material.
  - 3. Under footings and foundations, use engineered fill.

**13.3.12 COMPACTION**

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

- B. Place backfill and fill materials on all sides of structures to required elevations. Place backfill and fill uniformly along the full length of each structure.
- C. Percentage of Maximum Dry Density Requirements: Compact soil to not less than the following percentages of maximum dry density according to ASTM D 1557:
  - 1. Under structures, building slabs, steps, and concrete driveways, scarify and recompact 6 inches below subgrade to 95 percent maximum dry density; each layer of backfill or fill material within 24-inches of the bottom of the concrete slab and base should be compacted to 95 percent maximum dry density.
  - 2. Under sidewalks and walkways scarify and recompact 6 inches below subgrade; compact each layer of backfill or fill material to 90 percent maximum dry density.
  - 3. Below the specified depths (items 1 and 2 above) compact backfill or fill material at least 90% of maximum dry density, except where backfill or fill will be deeper than 5 feet. Backfill or fill deeper than 5 feet below subgrade should be compacted to a minimum of 95 percent maximum dry density.

#### **13.3.13 SUBBASE AND BASE COURSES**

- A. Under pavements and walks, place subbase course material on prepared subgrades. Place base course material over subbases to pavements. Both the subbase and base materials shall be placed at a minimum 95% of maximum dry density.

#### **13.3.14 FIELD QUALITY CONTROL**

- A. Testing Agency Services: A Geotechnical Engineer shall test each subgrade and each fill or backfill layer. Contractor shall not proceed until test results for previously completed work verify compliance with requirements.
- B. Whenever acceptance of the Geotechnical Engineer is required by these Specifications, the Contractor shall notify the Geotechnical Engineer at least 24 hours prior to commencing any phase of earthwork.
  - 1. No phase of the work shall proceed until the prior phase of work has been accepted by the Geotechnical Engineer.
  - 2. Work shall not be covered up or continued until acceptance of the Geotechnical Engineer has been obtained.
  - 3. The Geotechnical Engineer shall give written notice of conformance with the Specifications upon completion of grading.
- C. The Geotechnical Engineer will observe performance of work under this section.

1. If in the opinion of the Geotechnical Engineer, the work performed does not meet the technical or design requirements stipulated, the Contractor shall make the necessary readjustments as required by the Geotechnical Engineer.
  2. No deviations from the contract documents shall be made without specific and written acceptance of the City of Burlingame.
  3. In the event of conflict between the Specifications and the recommendations contained in the Geotechnical Report, the Engineer and the City of Burlingame shall be notified.
  4. If clarification or interpretation memoranda should result in a change in the scope of work, an adjustment in the contract price will be mutually agreed upon by the Contractor and the Owner.
- D. The Geotechnical Engineer's review of the Contractor's performance does not include review of the Contractor's safety measures.

#### **13.3.15 PROTECTION**

- A. Protecting Excavated Areas: Protect newly excavated areas from traffic, and erosion. Keep free of trash and debris.
- B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions.
- C. Scarify or remove and replace material to depth directed by the Engineer, reshape and recompact optimum moisture content to the required density.
- D. Settling: Where settling occurs during the Project correction period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.

#### **13.3.16 DISPOSAL OF SURPLUS AND WASTE MATERIALS**

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

### **PART 4 PAYMENT**

#### **13.4.01 BID ITEMS**

- A. Payment for this section shall be considered as part of the cost under various items of work involved and will not be paid separately and shall include furnishing all labor materials, tools and equipment to accomplish said work."

\*\*\*END OF SECTION\*\*\*

## **SECTION 14. EXCAVATION AND FILL**

### **PART 1 GENERAL**

#### **14.1.01 SECTION INCLUDES**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to the Work of this Section.
- B. Excavation and/or embankment from existing ground to subgrade, including soil sterilant, for roadways, driveways, parking areas, walks, paths, or trails and any other site improvements called for on the Plans.
- C. Requirements for excavation and for compaction of succeeding layers after backfill that has been placed around pipe.
- D. Dust Alleviation and Control.
- E. Supplying all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.
- F. Work within the City's right-of-way. All work within the City's right-of-way shall conform to the plans and specifications issued for this project and shall be in accordance with the City of Burlingame Standard Details and Conditions.

#### **14.1.02 SECTION EXCLUDES**

- A. Earthwork related to underground utility installation, see Section 15 – Trenching and Backfilling.

#### **14.1.03 RELATED SECTIONS**

- A. Section 12 – Clearing, Grubbing, and Stripping
- B. Section 15– Trenching and Backfilling.

#### **14.1.04 RELATED DOCUMENTS**

- A. Final Geotechnical Investigation “Proposed Residential Development 1008, 1016, and 1028 Carolan Avenue/ 935 Rollins Road Burlingame, CA”, dated February 28, 2014 by Rockridge Geotechnical.
- B. American Society for Testing and Materials (ASTM) Standards
  - 1. D 424, Test Method for Plastic Limit and Plasticity Index of Soils.
  - 2. D 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.

3. D 1586, Method for Penetration Tests and Split-Barrel Sampling of Soils.
4. D 2419, Sand Equivalent Value of Soils and Fine Aggregate.
5. D 2487, Classification of Soils for Engineering Purposes.
6. D 3740, Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
7. D 4318. Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
8. E 329, Specification for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.
9. E 548, Guide for General Criteria Used for Evaluating Laboratory Competence.

C. Caltrans Standard Specifications:

1. Section 17, Watering.
2. Section 19, Earthwork.

D. California Occupational Safety and Health Administration (CAL/OSHA), Title 8.

**14.1.05 DEFINITIONS**

- A. Borrow: Approved soil material imported from off-site for use as Structural Fill or Backfill.
- B. Excavation: Removal of material encountered above subgrade elevations.
1. Authorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions as shown on plans or authorized by the Geotechnical Consultant.
  2. Unauthorized Over-Excavation: Excavation below subgrade elevations or beyond indicated horizontal dimensions without authorization by the Geotechnical Consultant. Unauthorized excavation shall be without additional compensation.
- C. Geotechnical Testing Agency: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock definition testing, as documented according to ASTM D 3740 and ASTM E 548.
- D. On-site Material: Material obtained from the required site excavations.
- E. Import Material: Material borrowed from off-site borrow areas.
- F. Structural Backfill: Soil materials approved by the Geotechnical Consultant and used to fill excavations resulting from removal of existing below grade facilities, including trees. See Section 15 – Trenching and Backfilling.

- G. Structural Fill: Soil materials approved by the Geotechnical Consultant and used to raise existing grades.
- H. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material  $\frac{3}{4}$ -cubic yards or more in volume that, according to ASTM D 1586, exceeds a standard penetration resistance of 100 blows/2-inches.
- I. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other human made stationary features constructed above or below grade.
- J. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, base or topsoil materials.
- K. Unsuitable Material: Any soil material that is not suitable for a specific use on the Project.
- L. Utilities: onsite underground pipes, conduits, ducts and cables.

#### **14.1.06 ACTION SUBMITTALS**

- A. Follow submittal procedures outlined in the Division 1 Specifications.
- B. Submit material certificates signed by the material producer and the Contractor, certifying that that each material item complies with, or exceeds the specified requirements.

#### **14.1.07 QUALITY ASSURANCE**

- A. Conform all work and materials to the recommendations or requirements of the Geotechnical Report and meet the approval of the Geotechnical Consultant.
- B. Conform all work to the appropriate portion(s) of the California Code of Regulations, Title 24 and Caltrans Standard Specifications, Sections 17 and 19.
- C. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D 1557.
- D. Perform excavation, filling, compaction and related earthwork under the observation of the Geotechnical Consultant. Materials placed without approval of the Geotechnical Consultant will be presumed to be defective and, at the discretion of the Geotechnical Consultant, shall be removed and replaced at no cost to the Owner. Notify the Geotechnical Consultant at least 24-hours prior to commencement of earthwork and at least 48 hours prior to testing.
- E. The Geotechnical Consultant will perform observations and tests required to enable him to form an opinion of the acceptability of the Project earthwork. Correct earthwork that, in the opinion of the Geotechnical Consultant, does not meet the requirements of these Technical Specifications and the Geotechnical Report.



- F. Upon completion of the construction work, certify that all compacted fills and foundations are in place at the correct locations, and have been constructed in accordance with sound construction practice. In addition, certify that the materials used are of the types, quality and quantity required by these Technical Specifications. The Contractor shall be responsible for the stability of all fills and backfills constructed by his forces.

**14.1.08 PROJECT CONDITIONS**

- A. Promptly notify the Owner of surface or subsurface conditions differing from those disclosed in the Geotechnical Report. First notify the Owner verbally to permit verification and extent of condition and then in writing. No claim for conditions differing from those anticipated in the Contract Documents and disclosed in the Geotechnical Report will be allowed unless the Contractor has notified the Owner in writing of differing conditions prior to the Contractor starting work on affected items.
- B. Protect open excavations, trenches, and the like with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.
- C. Prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.
- D. Temporarily stockpile fill material in an orderly and safe manner and in a location approved by the Owner and if required, the City of Burlingame.
- E. Provide dust and noise control in conformance with Division 1 General Requirements continuously throughout the course of work.
- F. Environmental Requirements: When unfavorable weather conditions necessitate interrupting earthwork operation, areas shall be prepared by compaction of surface and grading to avoid collection of water. Provide adequate temporary drainage to prevent erosion. After interruption, compaction specified in last layer shall be re-established before resuming work.

**PART 2 PRODUCTS**

**14.2.01 SOIL MATERIALS**

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from on-site excavations.
- B. Obtain approval of on-site soil materials and borrow materials to be used for structural fill or structural backfill from the Geotechnical Consultant.
- C. On-Site Structural Fill and Structural Backfill: Soil or soil-rock mixture from on-site excavations, free from organic matter or other deleterious substances. On-site structural fill and backfill shall not contain rocks or rock fragments over 6 inches in greatest dimension and not more than 15 percent shall be over 2-1/2 inches in greatest dimension and with an organic content less than 3.0 percent by weight.

- D. Imported Structural Fill and Structural Backfill: Conform to the requirements of on-site structural fill. Material shall also be a non-expansive and predominantly granular soil or soil-rock mixture with plasticity index of 15 or less in accordance with ASTM D 4318 and an R-Value of 25 or greater.

**14.2.02 SOIL STERILANT**

- A. Commercial chemical for weed control, registered by EPA. Provide granular, liquid or wettable powder form.

**PART 3 EXECUTION**

**14.3.01 GENERAL**

- A. Conform to Section 19, Earthwork, Caltrans Standard Specifications as modified by the Contract Documents.
- B. Placement and compaction of material by flooding, ponding, or jetting will not be permitted.
- C. The use of explosives will not be permitted.

**14.3.02 CONTROL OF WATERING AND DEWATERING**

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding the site and surrounding area. Provide dewatering equipment necessary to drain and keep excavations and site free from water.
- B. Dewater during backfilling operation so that groundwater is maintained a least one foot below level of compaction effort.
- C. Obtain the Geotechnical Consultant's approval for proposed control of water and dewatering methods.
- D. Protect subgrades from softening, undermining, washout and damage by rain or water accumulation.
- E. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations.
- F. Maintain dewatering system in place until dewatering is no longer required.

**14.3.03 WET WEATHER CONDITIONS**

- A. Do not prepare subgrade, place or compact soil materials if above optimum moisture content.
- B. If the Geotechnical Consultant allows work to continue during wet weather conditions, conform to supplemental recommendations provided by the Geotechnical Consultant.

**14.3.04 BRACING AND SHORING**

- A. Conform to California and Federal OSHA requirements.
- B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the facility being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.
- C. Be solely responsible for all bracing and shoring and, if requested by the Owner, submit details and calculations to the Owner. The Owner may forward the submittal to the Geotechnical Consultant, the Consulting Engineer and/or the California Division of Industrial Safety for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations related to the proposed facility shall precede a response to the submittal by the Owner.
- D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the position or operation of the facility being constructed or adjacent utilities and facilities.

**14.3.05 EXCAVATION**

- A. Excavate earth and rock to lines and grades shown on drawings and to the neat dimensions indicated on the Plans, required herein or as required to satisfactorily compact backfill.
- B. Remove and dispose of large rocks, pieces of concrete and other obstructions encountered during excavation.
- C. Where forming is required, excavate only as much material as necessary to permit placing and removing forms.
- D. Provide supports, shoring and sheet piles required to support the sides of excavations or for protection of adjacent existing improvements.

**14.3.06 REMOVAL OF EXISTING FILLS AND UNSUITABLE MATERIAL**

- A. Over-excavate areas of existing fills and other unsuitable material encountered during mass grading as directed by the Geotechnical Consultant.
- B. Compensation for increased removal widths and depths that are not required by the Geotechnical Consultant will not be considered, except when such increase is necessary for protection of life and property as determined by and approved by the Owner.
- C. The Geotechnical Consultant will provide written approval for each excavation prior to placement of fill. Allow adequate time after excavation and before filling for the Geotechnical Consultant's review and written approval and, if necessary, time for the

Owner to conduct as built survey prior to placing fill. Basis for calculating the quantity of material excavated or placed may be the difference between the grading shown on the Plan and an as built survey of the grading.

**14.3.07 GRADING**

- A. Uniformly grade the Project to the elevations shown on plans.
- B. Finish ditches, gutters and swales to the sections, lines and grades indicated and to permit proper surface drainage.
- C. Round tops and bottoms of slopes as indicated or to blend with existing contours.

**14.3.08 SUBGRADE PREPARATION**

- A. Install underground utilities and service connections prior to final preparation of subgrade and placement of base materials for final surface facilities. Extend services so that final surface facilities are not disturbed when service connections are made. Trenching and backfilling of utilities shall conform to Section 15 of these specifications.
- B. Prepare subgrades under paved areas, curbs, gutters, walks, structures, other surface facilities and areas to receive structural fill.
- C. Prepare subgrades for paved areas, curbs and gutters by plowing or scarifying surface at least 6 inches below final subgrade elevations and 5-feet beyond edge of pavement unless specified otherwise by the Geotechnical Consultant. Uniformly moisture condition to obtain optimum moisture contents. Break clods and condition surface by harrowing or dry rolling. Remove boulders, hard ribs and solid rock. Prepare earth uniform for full depth and width of subgrade.
- D. Protect utilities from damage during compaction of subgrades and until placement of final pavements or other surface facilities.
- E. Obtain the Geotechnical Consultant's approval of subgrades prior to placing pavement and other improvements thereon.
- F. The Contractor shall at all times maintain the subgrade surface in such condition as to readily drain effectively. Vehicular and equipment traffic shall be distributed across the prepared surface in such a manner as to prevent continual operation in one path. The Contractor shall repair any damage to the prepared subgrade.
- G. Storage or stockpiling of heavy loads on the roadway subgrade will not be permitted. Use only approved storage areas.
- H. The Contractor shall be responsible for any failure of the underlying soils during the course of the work and shall repair any damage.

**14.3.09 COMPACTION AND TESTING**

- A. Do not compact by ponding, flooding or jetting.
- B. Compact native soils and structural fill at 1% above optimum water content. Aerate material if it is too wet. Add water to material if it is too dry. Thoroughly mix lifts before compaction to ensure uniform moisture distribution.
- C. Compact native expansive clays at 3% percent above the optimum water content
- D. Perform compaction using rollers, pneumatic or vibratory compactors or other equipment and mechanical methods approved by the Geotechnical Consultant.
- E. Compaction requirements:
  - 1. Compact structural fills less than 5-feet thick to 90 percent compaction.
  - 2. Compact structural fill 5-feet thick or greater to 95 percent compaction.
  - 3. Compact the upper 6 inches of subgrade soils beneath pavements, curbs and gutters to 95 percent compaction. Extend compaction 5-feet beyond pavement edges unless specified otherwise by the Geotechnical Consultant.
  - 4. Compact the upper 6-inches of subgrade soils under walks, structures and areas to receive structural fill to 90 percent compaction.
  - 5. Compact native expansive clays at 87 to 92 percent compaction.

**14.3.10 SOIL STERILIZATION**

- A. Apply soil sterilant to areas indicated, such as beneath asphalt concrete pavement, brick pavement, concrete pavement and at-grade concrete slabs, including sidewalks, curbs and gutters. Also, where indicated apply soil sterilant below expansion and control joints and at areas where pipes, ducts, or other features penetrate slabs.
- B. Apply soil sterilant at rates recommended by the manufacturer.
- C. Apply soil sterilant to prepared subgrade, or after installation of aggregate base as recommended by the manufacturer.

**14.3.11 FIELD QUALITY CONTROL**

- A. The Engineer will inspect, test and approve subgrades and fill layers before further construction is permitted thereon; and will conduct a sufficient number of tests chosen at Engineer's discretion to enable said Engineer to approve fill as it is placed. Areas to receive structural fills and all structural excavations shall be approved before covering or filling.
- B. If in the Engineer's opinion, based on the results of testing for subgrade or fills which have been placed and compacted below the specified density, the Contractor shall provide

additional compaction, with subsequent retesting by the owner until the affected subgrade or fill is approved.

C. Finish soil grade tolerance at completion of grading:

1. Building and paved areas: +0.05
2. Other areas:  $\pm 0.10$  feet.

**14.3.12 DUST ALLEVIATION AND CONTROL**

- A. Contractor shall be responsible for and shall provide pollution and dust abatement and control measures satisfactorily during the course of the work.
- B. The Contractor shall utilize reclaimed water, or dust palliatives, if necessary for compliance with the City's Water Conservation Ordinance.

**14.3.13 FINISH OPERATIONS AND CLEANUP**

- A. Satisfactorily restore any existing improvements, paving, landscaping, and other utilities disturbed during the course of constructing the improvements.
- B. Surplus materials and construction debris remaining upon completion of the work shall become the property of the Contractor unless otherwise specified herein or noted on the plans, and shall be removed from the work site by the Contractor and disposed of off-site in a lawful manner.

**PART 4 PAYMENT**

**14.4.01 BID ITEMS**

- A. Payment for this section shall be considered as part of the cost under various items of work involved and will not be paid separately and shall include furnishing all labor materials, tools and equipment to accomplish said work.

\*\*\*END OF SECTION\*\*\*

## **SECTION 15. TRENCHING AND BACKFILLING**

### **PART 1 GENERAL**

#### **15.1.01 SECTION INCLUDES**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to the Work of this Section.
- B. Excavation, bedding, and backfill for underground piping systems specified in Utility Structures – Section 20 and Sanitary Sewerage Utilities – Section 21.
- C. Requirements for excavation and for compaction of succeeding layers after backfill has been placed around pipe.
- D. Dust Alleviation and Control.
- E. Work within the City’s right-of-way. All work within the City’s right-of-way shall conform to the plans and specifications issued for this project and shall be in accordance with the City of Burlingame Standard Details and Conditions.

#### **15.1.02 RELATED SECTIONS**

- A. Section 14 – Excavation and Fill.
- B. Section 22 through Section 25 and Section 27.

#### **15.1.03 RELATED DOCUMENTS**

- A. Final Geotechnical Investigation “Proposed Residential Development 1008, 1016, and 1028 Carolan Avenue/ 935 Rollins Road Burlingame, CA”, dated February 28, 2014 by Rockridge Geotechnical.
- B. American Society for Testing and Materials (ASTM) Standards
  - 1. C 33, Specification for Concrete Aggregates.
  - 2. C 136, Sieve Analysis of Fine and Coarse Aggregates
  - 3. C 150, Specification for Portland Cement.
  - 4. C 260, Specification for Air-Entraining Admixtures for Concrete.
  - 5. C 618, Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
  - 6. D 424, Plastic Limit and Plasticity Index of Soils

7. D 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.
  8. D 2321, Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.
  9. D 2419, Sand equivalent Value of Soils and Fine Aggregate.
  10. D 2487, Classification of Soils for Engineering Purposes.
  11. D 3740, Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
  12. E 329, Specification for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.
  13. E 548, Guide for General Criteria Used for Evaluating Laboratory Competence.
- C. California Code of Regulation Title 24, Part 2, California Building Code:
1. Chapter 11B – Accessibility to Public Buildings.
  2. Chapter 33 – Site Work, Demolition and Construction.
- D. Caltrans Standard Specifications:
1. Section 19, Earthwork.
  2. Section 26, Aggregate Bases.
  3. Section 68, Subsurface Drains.
  4. Section 88, Engineering Fabrics.

#### **15.1.04 DEFINITIONS**

- A. AC: Asphalt Concrete.
- B. Bedding: Material from bottom of trench to bottom of pipe.
- C. CDF: Controlled Density Fill.
- D. DIP: Ductile Iron Pipe.
- E. Initial Backfill: Material from bottom of pipe to 12-inches above top of pipe.
- F. PCC: Portland Cement Concrete.
- G. RCP: Reinforced Concrete Pipe.



1. Springline of Pipe: Imaginary line on surface of pipe at a vertical distance of ½ the outside diameter measured from the top or bottom of the pipe.
2. Subsequent Backfill: Material from 12-inches above top of pipe to subgrade of surface material or subgrade of surface facility or to finish grade.
3. Trench Excavation: Removal of material encountered above subgrade elevations and within horizontal trench dimensions.
4. Authorized Trench Over-Excavation: Excavation below trench subgrade elevations or beyond indicated horizontal trench dimensions as shown on plans or authorized by the Geotechnical Consultant.
5. Unauthorized Trench Over-Excavation: Excavation below trench subgrade elevations or beyond indicated horizontal trench dimensions without authorization by the Geotechnical Consultant. Unauthorized excavation shall be without additional compensation.

H. Utility Structures:

1. Sanitary sewer manholes, vaults, etc.

**15.1.05 ACTION SUBMITTALS**

A. Follow submittal procedures outlined in the Division 1 Specifications.

B. Product Data:

1. Grading and quality characteristics showing compliance with requirements for the Work.
2. Certify that material meets requirements of the Project.

C. Samples:

1. If required by the Geotechnical Consultant, provide 40-pound samples of all imported trench bedding and backfill material sealed in airtight containers, tagged with source locations and suppliers of each proposed material. Do not import materials to Project without written approval of the Geotechnical Consultant.
2. Provide materials from same source throughout work. Change of source requires approval of the Geotechnical Consultant and the Owner.

D. Material Test Reports: Provide, from a qualified testing agency, the following test results showing compliance with the project requirements:

1. Classification according to ASTM D 2487 of each imported trench bedding and backfill material.

2. Laboratory compaction curve in conformance with ASTM D 1557 for each imported trench bedding and backfill material.
- E. Shoring and Sheet piling Plan: Before starting work submit a CAL-OSHA permit for the shoring and sheet piling plan when trench excavation is five feet deep or more.
- F. Dewatering Plan: If required in the Special Conditions, before starting work submit a dewatering plan describing the basic components of the dewatering including silt control, etc.
- G. Traffic Plan: Where lane closures are anticipated, submit a Traffic Control Plan per City of Burlingame requirements in advance for approval prior to starting work.

#### **15.1.06 QUALITY ASSURANCE**

- A. Conform all work and materials to the recommendations or requirements of the Geotechnical Report and meet the approval of the Geotechnical Consultant.
- B. Conform all work to the appropriate portion(s) of the Caltrans Standard Specifications, Section 19.
- C. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D 1557.
- D. The Geotechnical Consultant will perform observations and tests required to enable him to form an opinion of the acceptability of the trench backfill. Correct the trench backfill that, in the opinion of the Geotechnical Consultant, does not meet the requirements of these Technical Specifications and the Geotechnical Report.
- E. Conform work to the requirements of the California Building Code.
  1. Section 1806A.11 – Pipe and Trenches.

#### **15.1.07 PROJECT CONDITIONS**

- A. Existing Utilities:
  1. Unless shown to be removed, protect active utility lines shown on the Plans or otherwise made known to the Contractor prior to excavating. If damaged, repair or replace at the Contractor's expense. Pothole as required to verify utility location.
  2. If active utility lines are encountered and are not shown on the Plans or otherwise made known to the Contractor, promptly take necessary steps to assure that service is not interrupted.
  3. If a known service is interrupted as a result of work under this section, immediately restore service by repairing the damaged utility at Contractor's expense.

4. If foreseen or unforeseen existing utilities are newly found to interfere with the permanent facilities being constructed under this Contract, immediately notify the Engineer and secure his instructions.
  5. Do not proceed with permanent repair or relocation of utilities until written instructions are received from the Engineer.
- B. Promptly notify the Owner of surface or subsurface conditions differing from those disclosed in the Geotechnical Report. First notify the Owner verbally to permit verification and extent of condition and then in writing. No claim for conditions differing from those anticipated in the Contract Documents and disclosed in the Geotechnical Report will be allowed unless Contractor has notified the Owner in writing of differing conditions prior to contractor starting work on affected items.
- C. Protection of Persons and Property:
1. Protect open, trenches, and utility structure excavations with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.
  2. Install all necessary underpinning, shoring, lagging, cribbing, and bracing of ample strength to support adjoining soils, paving and structures. All such items shall be so constructed that they will not interfere with the building of any structural elements, and shall be removed upon completion of the shoring operation.
  3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by operations of Contractor.
  4. All open trenches shall be protected during non-working hours.
- D. Shoring
1. The Contractor is solely responsible for all bracing and shoring. The Contractor shall forward their application for shoring to the California Division of Industrial Safety for their review. Contractor's application shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a Civil Engineer registered in California.
  2. If an application for a shoring permit is required, no excavation in trench section or around structures shall proceed until the approved shoring plan has been received by the Engineer.
- E. Dewatering
1. Remove all water, including rain water, encountered during trench and sub-structure work to an approved location by pumps, drains, and other approved methods.

2. Keep excavations and site construction area free from water.
- F. Stockpile on-site and imported backfill material temporarily in an orderly and safe manner.
- G. Provide dust and noise control in conformance with local requirements and project storm water pollution prevention plan.
- H. Maintain and/or replace all bench marks, monuments, construction stakes, and other reference points needed to complete the work described in this section at the contractor or owner's expense.
- I. Repair or restore damage to any portion of the work resulting from movement of the sides or bottom of trenches or other excavation which is attributable to the Contractor's acts or omissions, whether sides are braced or not.

## **PART 2 PRODUCTS**

### **15.2.01 GENERAL SOIL MATERIALS**

- A. In general, soils used for backfill shall be select material free of debris, roots, wood, scrap material, vegetation, refuse, soft unsound particles, frozen, deleterious, or objectionable materials, satisfactory to the Geotechnical Consultant, free of stones or lumps exceeding 3 inches in greatest dimension.
- B. Beddings and pipe embedment materials to be used around underground utility pipes should be well graded-sand or gravel in accordance with the project Geotechnical Report and the manufacturer's recommendations.

### **15.2.02 PIPE BEDDING AND INITIAL BACKFILL**

- A. ASTM D 2321, Class IA, IB or II.
  1. Clean and free of clay, silt or organic matter.
- B. Permeable Material: Conform to Section 68-2.02F of Caltrans Standard Specifications, Class 1, Type A or Class 2.
- C. Class 2 Aggregate Base: Conform to Section 26 of Caltrans Standard Specifications, ¾-inch maximum.
- D. Bedding and backfill material shall be subject to the approval of the Geotechnical Consultant, or designated Inspection/Testing Firm.

### **15.2.03 WARNING TAPE**

- A. General: Non-detectable 3-inch warning tape made of solid blue film with continuously printed black-letter message reading "CAUTION—SEWER LINE BURIED BELOW."

**15.2.04 SUBSEQUENT BACKFILL**

- A. Conform to on-site or imported structural backfill in Section 14 – Excavation and Fill.
- B. Backfill material shall be in conformance with the Geotechnical Report and subject to the approval of the Geotechnical Consultant prior to installation.

**15.2.05 CONTROLLED DENSITY FILL (CDF) (IN TRENCHES)**

- A. Controlled density fill will be accepted, if approved by the Engineer, in lieu of the standard backfill specifications. CDF shall conform to the following requirements:
  - 1. Provide non-structural CDF, from bottom of trench to finish subgrade of subbase or base material, that can be excavated by hand and produce unconfined compressive 28-day strengths from 50-psi to a maximum of 150-psi. Provide aggregate no larger than 3/8-inch top size. The 3/8-inch aggregate shall not comprise more than 30% of the total aggregate content.
  - 2. Cement: Conform to the standards as set forth in ASTM C-150, Type II Cement.
  - 3. Fly Ash: Conform to the standards as set forth in ASTM C-618, for Class F pozzolan. Do not inhibit the entrainment of air with the fly ash.
  - 4. Air Entraining Agent: Conform to the standards as set forth in ASTM C-260.
  - 5. Aggregates need not meet the standards as set forth in ASTM C-33. Any aggregate, producing performances characteristics described herein will be accepted for consideration. The amount of material passing a #200 sieve shall not exceed 12% and no plastic fines shall be present.
  - 6. Provide CDF that is a mixture of cement, Class F pozzolan, aggregate, air entraining agent and water. CDF shall be batched by a ready mixed concrete plant and delivered to the job site by means of transit mixing trucks.
  - 7. The Contractor shall determine the actual mix proportions of the controlled density fill to meet job site conditions, minimum and maximum strengths, and unit weight. Entrained air content shall be a minimum of 4.0%. The actual entrained air content shall be established for each job with the materials and aggregates to be used to meet the placing and unit weight requirements. Entrained air content may be as high as 20% for fluidity requirements.
  - 8. Mix design shall meet the Geotechnical Consultant's approval.

**15.2.06 CONCRETE STRUCTURE BEDDING AND BACKFILL**

- A. Precast Structures: Same materials to the same heights as specified for pipe bedding and backfill, or other material approved by the Geotechnical Consultant.

B. Poured-in-Place Structures:

1. Bedding: Bedding shall meet the approval of the Geotechnical Consultant. In general, bedding is not required, pour bases against undisturbed native earth in cut areas and against engineered fill compacted to 90% relative compaction in embankment areas.
2. Side Backfill: On-site or imported structural fill meeting the requirements given in Section 14 – Excavation and Fill.

**15.2.07 FILTER FABRIC**

A. Filter Fabric:

1. Filter Fabric: Section 96-1.02B of Caltrans Standard Specifications.
2. Mirafi 140N (Mirafi Inc., Charlotte, NC) (Tel. 800-438-1855) or equal.

**PART 3 EXECUTION**

**15.3.01 TRENCHING AND EXCAVATION**

- A. Existing PCC or AC Areas: Cut PCC or AC to full depth at a minimum distance of 6-inches beyond the edge of the trench.
- B. Excavate by hand or machine. For gravity systems begin excavation at the outlet end and proceed upstream. Excavate sides of the trench parallel and equal distant from the centerline of the pipe. Hand trim excavation. Remove loose matter.
- C. Excavation Depth for Bedding: Minimum of 4-inches below bottom of pipe or as otherwise allowed or required by the Geotechnical Consultant, except that bedding is not required for nominal pipe diameters of 2-inches or less.
- D. Excavation Width at Springline of Pipe:
- E. Up to a nominal pipe diameter of 24-inches: Minimum of the outside pipe diameter plus the greater of 4” or one-quarter of the pipe diameter on both edges of the trench, or as otherwise allowed or required by the Geotechnical Consultant.
- F. Nominal pipe diameter of 30-inches through 36-inches: Minimum of the outside pipe diameter plus the greater of 4” or one-quarter of the pipe diameter on both edges of the trench, or as otherwise allowed or required by the Geotechnical Consultant.
- G. Over-Excavations: Backfill trenches that have been excavated below bedding design subgrade, with approved bedding material.
- H. Comply with the Owner’s and the City of Burlingame’s limitations on the amount of trench that is opened or partially opened at any one time. Do not leave trenches open overnight without the approval of the Owner or the City of Burlingame.

- I. Where forming is required, excavate only as much material as necessary to permit placing and removal of forms.
- J. Excavation for thrust blocks shall be neat to the line and dimensions shown or called for on the plans.
- K. Bottoms of trenches will be subject to testing by Geotechnical Consultant. Correct deficiencies as directed by the Geotechnical Consultant.
- L. Grade bottom of trench to provide uniform thickness of bedding material and to provide uniform bearing and support for pipe along entire length. Remove stones to avoid point bearing.

### **15.3.02 CONTROL OF WATER AND DEWATERING**

- A. Be solely responsible for dewatering trenches and excavations and subsequent control of ground and surface water. Provide and maintain such pumps or other equipment as may be necessary to control ground water and seepage to the satisfaction of the Geotechnical Consultant and the Owner until backfilling is completed.
- B. Dewater during backfilling operation so that groundwater is maintained a least three foot below level of compaction effort.
- C. Obtain the Geotechnical Consultant's approval for proposed control of water and dewatering methods.
- D. Reroute surface water runoff away from open trenches and excavations. Do not allow water to accumulate in trenches and excavations.
- E. Maintain dewatering system in place until dewatering is no longer required.

### **15.3.03 BRACING AND SHORING**

- A. Conform to California and Federal OSHA requirements.
- B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage to the pipes and appurtenances being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.
- C. Be solely responsible for all bracing and shoring and, if requested by the Owner, submit details and calculations to the Owner. The Owner may forward the submittal to the Geotechnical Consultant, the Consulting Engineer and/or the California Division of Industrial Safety for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations in trench section or around structures shall precede a response to the submittal by the Owner.

- D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the line, grade, or backfill compaction or operation of the utility being installed or adjacent utilities and facilities.

**15.3.04 PIPE BEDDING**

- A. Obtain approval of bedding material from the Geotechnical Consultant.
- B. Accurately shape bedding material to the line and grade called for on the Plans. Carefully place and compact bedding material to the elevation of the bottom of the pipe in layers not exceeding 8-inches in loose thickness. Compact bedding material at optimum water content to 90% relative compaction unless specified otherwise on the Plans or by the Geotechnical Consultant. Compact by pneumatic tampers or other mechanical means approved by the Geotechnical Consultant. Jetting or ponding of bedding material will not be permitted.
- C. Where utility trenches extended below a depth of about 5 to 7 feet below the existing site grades and groundwater is encountered, crushed rock may be used as pipe bedding, if approved by the local jurisdiction, in conformance with the recommendations contained in the project Geotechnical Report.
- D. Upon completion of bedding operations, and prior to the installation of pipe, notify the Geotechnical Consultant, who will inspect the bedding layer. Do not commence pipe laying until the Geotechnical Consultant has approved the bedding. Notify the City Engineer two working days advance for inspection services.

**15.3.05 WARNING TAPE**

**15.3.06 BACKFILLING**

- A. Obtain approval of backfill material from Geotechnical Consultant.
- B. Bring initial backfill up simultaneously on both sides of the pipe, so as to prevent any displacement of the pipe from its true alignment. Carefully place and compact initial backfill material to an elevation of 12-inches above the top of the pipe in layers not exceeding 8-inches in loose thickness. Compact bedding material at optimum water content to 90% relative compaction unless specified otherwise on the Plans or by the Geotechnical Consultant. Compact by pneumatic tampers or other mechanical means approved by the Geotechnical Consultant. Jetting or ponding of initial backfill material will not be permitted.
- C. Bring subsequent backfill to subgrade or finish grade as indicated. Carefully place and compact subsequent backfill material to the proper elevation in layers not exceeding 8-inches in loose thickness. Compact bedding material at optimum water content to 90% relative compaction, except that the upper 36-inches in areas subject to vehicular traffic shall be compacted to at least 95% relative compaction, unless specified otherwise on the Plans or by the Geotechnical Consultant. Compact by pneumatic tampers or other mechanical means approved by the Geotechnical Consultant. Jetting or ponding of subsequent backfill material will not be permitted.



- D. Do not use compaction equipment or methods that produce horizontal or vertical earth pressures that may cause excessive pipe displacement or damage the pipe.
- E. Utility backfill shall be inspected and tested by the Geotechnical Consultant during placement. Cooperate with the Geotechnical Consultant and provide working space for such tests in operations. Backfill not compacted in accordance with these specifications shall be re-compacted or removed as necessary and replaced to meet the specified requirements, to the satisfaction of the Geotechnical Consultant and the Owner prior to proceeding with the Project.

**15.3.07 SPECIAL REQUIREMENTS FOR CONTROLLED DENSITY FILL (CDF)**

- A. Applications of CDF include, but are not limited to: backfills, structural fills, insulating fills, road base, slab base, trench bedding, void and abandoned tank fills caisson and pile fills, abandoned pipes and culverts.
- B. CDF shall be discharged from the mixer by any reasonable means into the area to be filled. CDF shall be brought uniformly to the elevation as shown on the plans. Trench sections to be filled with CDF shall be contained at either end by bulkheads of earth fill.
- C. Permanent pavement may be placed directly upon the CDF as soon as it has sufficiently self-consolidated so that the surface will withstand the process of paving without displacement or disruption. If the placement of the CDF is not completed early enough to allow for permanent paving to be completed the same day, the contractor shall provide steel plates to span the trench and prevent traffic contact with the CDF overnight or until permanent paving can be placed.
- D. Compaction is not necessary when placing CDF.

**15.3.08 FIELD QUALITY CONTROL**

- A. The Geotechnical Consultant, or designated Inspection/Testing Firm, will inspect, test and approve trench backfill layers before further construction is permitted thereon. Number of tests required will be determined by the Geotechnical Consultant, or designated Inspection/Testing Firm. Notify the City Engineer two working days advance for inspection services.
- B. If backfill has been placed, that is below the specified density, provide additional compaction with subsequent retesting until successful compaction is achieved and approval is received from the Geotechnical Consultant.

**15.3.09 DUST ALLEVIATION AND CONTROL**

- A. Contractor shall be responsible for and shall provide pollution and dust abatement and control measures satisfactorily during the course of the work.
- B. The Contractor shall utilize reclaimed water, or dust palliatives, if necessary for compliance with the City's Water Conservation Ordinance.

**15.3.10 FINISH OPERATIONS AND CLEANUP**

- A. Pipes shall be laid to finished grades indicated on the plans.
- B. Satisfactorily restore any existing improvements, paving, landscaping, and other utilities disturbed during the course of constructing the improvements.
- C. Surplus materials and construction debris remaining upon completion of the work shall become the property of the Contractor unless otherwise specified herein or noted on the plans, and shall be removed from the work site by the Contractor and disposed of off-site in a lawful manner.
- D. Upon completion of utility earthwork all lines, manholes catch basins, inlets, water meter boxes and other structures shall be thoroughly cleaned of dirt, rubbish, debris and obstructions of any kind to the satisfaction of the Owner.

**PART 4 PAYMENT**

**15.4.01 BID ITEMS**

- A. The work shall include all necessary labor and material for shoring, bracing, sloping, dewatering, and other incidentals thereto for trenches covered by the State Division of Industrial Safety. Payment for trench, shoring and bracing, and furnishing and placing compacted imported backfill shall be considered as part of the cost under various items of work involved and will not be paid separately.
- B. The City may ask the Contractor to restore some pavement surfaces in the vicinity of the project areas under bid item "Remove and Replace AC" and such paving shall conform to this specification. Payment for "Remove and Replace AC" shall be by square foot of asphalt concrete removed/installed including all labor, sawcutting concrete base and/or asphalt, pavement removed and disposal, materials, equipment and incidental costs. The work which pertains to pavement surface restoration due to damage by the Contractor associated with sewer rehabilitation work shall be done with no additional cost to the City.
- C. AC pavement removal and restoration within the limits shown on the City Standard Trench Detail shall be considered as included in the contract prices paid for the various items of work involved and as specified in these specification and no separate payment will be made.

\*\*\*END OF SECTION\*\*\*

## **SECTION 16. CEMENT AND CONCRETE FOR EXTERIOR IMPROVEMENTS**

### **PART 1 GENERAL**

#### **16.1.01 SECTION INCLUDES**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to the Work of this Section.
- B. Materials for portland cement concrete.
- C. Aggregate and aggregate grading for portland cement concrete.
- D. Water for portland cement concrete.
- E. Admixtures for portland cement concrete.
- F. Proportioning for portland cement concrete.
- G. Mixing and transporting portland cement concrete.
- H. Formwork for cast in place portland cement concrete.
- I. Embedded materials for portland cement concrete.
- J. Steel reinforcement for portland cement concrete.
- K. Placing and finishing portland cement concrete.
- L. Curing portland cement concrete.
- M. Protecting portland cement concrete.
- N. The work shall include the provision of all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.
- O. Work within the City's right-of-way. All work within the City's right-of-way shall conform to the plans and specifications issued for this project and shall be in accordance with the City of Burlingame Standard Details and Conditions.

#### **16.1.02 RELATED SECTIONS**

- A. Section 14, Excavation and Fill.
- B. Section 18, Rigid Paving.
- C. Section 19, Concrete Curbs and Gutters.

D. Section 24, Manhole Installation/Replacement.

E. Section 25, Lateral and cleanout replacement.

### **16.1.03 RELATED DOCUMENTS**

A. American Society for Testing and Materials (ASTM) Standards

1. A 82, Cold Drawn Steel Wire for Concrete Reinforcement.
2. A 185, Steel Welded Wire Fabric, Plain for Concrete Reinforcement.
3. A 615, Deformed and Plain Billet Steel Bars, for Concrete Reinforcement.
4. C 94, Specification for Ready-mixed Concrete.
5. C 114, Method for Chemical Analysis of Hydraulic Cement.
6. C 150. Portland Cement.
7. C 452: Test Methods for potential Expansion of Portland Cement Mortars exposed to Sulfate.
8. C 618, Fly Ash and Raw or Calcined Natural Pozzolan for use as Natural Admixture in Portland Cement.
9. C 1751, Preformed Expansion Joint Fillers for Concrete. Paving and Structural Construction (Non-extruded and Resilient Bituminous Types).

B. Caltrans Standard Specifications:

1. Section 51: Concrete Structures.
2. Section 73: Concrete Curbs and Sidewalks.
3. Section 90: Portland Cement Concrete.

C. California Building Code:

1. Chapter 11B – Accessibility To Public Buildings.
2. Chapter 19A – Concrete.
3. Chapter 33 – Site Work, Demolition and Construction.

### **16.1.04 DEFINITIONS**

A. PCC: Portland Cement Concrete

### **16.1.05 ACTION SUBMITTALS**

- A. Follow submittal procedures outlined in the Division 1 Specifications.
- B. Design Mixes: Have all concrete mixes designed by a testing laboratory and approved by the Consulting Engineer. Conform all mixes to the applicable building code requirement, regardless of other minimum requirements listed herein or on the drawings. Submit mix designs for review before use. Show proportions and specific gravities of cement, fine and coarse aggregate, and water and gradation of combined aggregates.
- C. Reinforcing Steel Shop-Drawings
- D. LEED Submittals:
  - 1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
  - 2. Design Mixtures for Credit MR 4: For each concrete mixture containing fly ash as a replacement for portland cement or other portland cement replacements, and for equivalent concrete mixtures that do not contain portland cement replacements.
  - 3. Product Data for Credit MR 5: Product data for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.

### **16.1.06 INFORMATIONAL SUBMITTALS**

- A. Sustainable Design Submittals: For projects requiring LEED Submittal based on LEED-NC version
  - 1. Submit documentation substantiating that concrete contains a minimum of 20% recycle content.
  - 2. Submit documentation substantiating that products and materials are regionally extracted, harvest or recovered for each raw material.

### **16.1.07 QUALITY ASSURANCE**

- A. Concrete shall be subject to quality assurance in accordance with Section 90 of the Standard Specifications.
  - 1. Slump tests: Have available, at job site, equipment required to perform slump tests. Make one slump test for each cylinder sample, from same concrete batch. Allowable maximum slump shall be 4 inches for walls and 3 inches for slabs on grade and other work.

B. Certifications:

1. Provide Owner's Representative at the time of delivery with certificates of compliance signed by both Contractor and Supplier containing the following statements:
2. Materials contained comply with the requirements of the Contract Documents in all respects.
3. Proportions and mixing comply with the design mix approved by the Consulting Engineer. Design mix shall have been field tested in accordance with the herein requirements of the Caltrans Standard Specifications and produces the required compressive strength under like conditions.
4. Statement of type and amount of any admixtures.
5. Provide Owner's Representative, at time of delivery, with certified delivery ticket stating volume of concrete delivered and time of mixing, or time of load-out in case of transit mixers.

C. Conform to the applicable provisions of Section 51, 73 and 90 of the Caltrans Standard Specification and these Technical Specifications.

1. Conform construction of Portland cement concrete surface improvements (including curbs, gutters, medians, valley gutters, walks) to the requirements of Section 73 of the Caltrans Standard Specifications unless otherwise required in these Technical Specifications or shown on the Plans.
2. Construct "V" ditches in accordance with Section 72-4 of the Standard Specifications; except that finishing shall be in accordance with Standard Specification Section 73 instead of 53, or as otherwise required in these Technical Specifications or shown on the Plans.
3. Conform other construction of Portland cement concrete items to the requirements of Section 51 of the Caltrans Standard Specifications unless otherwise required in these Technical Specifications or shown on the Plans.

D. Conform to the requirements of the California Building Code section 1929A.2 for testing of reinforcing bars.

**16.1.08 DESIGNATION**

A. General: Minimum 28-day compressive strength shall be as follows:

1.  $f'c = 3,600$  psi for footing and foundation
2.  $f'c = 4,000$  psi for precast seat
3.  $f'c = 5,000$  psi for concrete paving

- B. Unless specified otherwise herein or on the Plans, Portland Cement Concrete for this Project shall be Class "2" as specified in Section 90-1.01 of the Caltrans Standard Specifications.
- C. Whenever the concrete is designated by class or as minor concrete herein or on the plans, the concrete shall contain the cement per cubic meter shown in section 90-2 of the Caltrans Standard Specifications.

## **PART 2 PRODUCTS**

### **16.2.01 PORTLAND CEMENT**

- A. General: Type V or type II (modified) cement conforming to the requirements of ASTM C 150, with the following modifications:
- B. Cement shall not contain more than 0.60% by weight of alkalis, calculated as the percentage of Na<sub>2</sub>O plus 0.658 times the percentage of K<sub>2</sub>O when determined by either intensity flame photometry or by the atomic absorption method. The instrument and procedure used shall be qualified as to precision and accuracy in accordance with the requirements of ASTM C 114.
- C. The autoclave expansion shall not exceed 0.50%.
- D. Mortar containing the Portland cement to be used and the sand, when tested in accordance with Test Method No. Calif. 527, shall not expand in water more than 0.010% and shall have an air content less than .048%.
- E. Allowable tri-calcium Aluminate (C<sub>3</sub>A) by weight shall not exceed 5%. Allowable tetracalcium aluminato ferrite plus twice the tricalcium aluminate (C<sub>4</sub>AF+2C<sub>3</sub>A) by weight shall not exceed 25%. The sulfate expansion test (ASTM C 452) may be used in lieu of the above chemical requirements, provided the sulfate expansion does not exceed 0.040% at 14 days (max.).
- F. Prepare design mixtures for each type of precast concrete required.
  - 1. Minimum use of fly ash to 20 percent of Portland cement by weight (unless high early strength concrete is specified). Pozzolan shall consist of Class F Fly Ash meeting the requirements of ASTM C 618.

### **16.2.02 AGGREGATED AND AGGREGATE GRADING**

- A. General: Conform to the requirements of Section 90-1.02C of the Caltrans Standard Specifications.
- B. Aggregate Size and Gradation: Conform to the requirements of section 90-1.02C(4)(d) of the Caltrans Standard Specifications for 25-mm (1-inch) maximum combined aggregate.

- C. Harvest and process materials for construction from fabricators and sources within 500 miles of site.

**16.2.03 WATER**

- A. General: Conform to the requirements of section 90-1.02D of the Caltrans Standard Specifications, for mixing and curing Portland cement concrete and for washing aggregates.

**16.2.04 CLASSIFICATION OF PORTLAND CEMENT CONCRETE**

- A. Concrete for the following items shall be designated by the following classes per Section 90-1.01 of the Caltrans Standard Specifications:
  - 1. Vehicular Pavement: Class 2.
  - 2. Curbs, Gutters, and Sidewalks: Minor Concrete.
  - 3. Cast in place Concrete Pipe: The concrete shall consist of a minimum of 564 pounds of Portland cement per cubic yard of concrete.
  - 4. Thrust Blocks: The concrete shall have a minimum compressive strength of 3,000 psi. If City of Burlingame Standard Specifications for Concrete Thrust Blocks exceeds the minimum compressive strength indicated here, the City of Burlingame Standard Specifications supersedes the specification listed here.
  - 5. Sign and Fence Footings: The concrete shall consist of a minimum of 376 pounds of Portland cement per cubic yard of concrete.
  - 6. Water, Storm, and Sanitary Structures: The concrete shall consist of a minimum of 564 pounds of Portland cement per cubic yard of concrete.

**16.2.05 EXPANSION JOINT MATERIAL**

- A. Material for expansion joints in Portland cement concrete improvements shall be premolded expansion joint fillers conforming to the requirements of ASTM Designation D 1751. Expansion joint material shall be shaped to fit the cross section of the concrete prior to being placed. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site. Unless noted otherwise herein or on the Plans expansion joint thickness shall be as follows:
  - 1. Curbs, Curb Ramps, Island Paving, Sidewalks, Driveways and Gutter Depressions: ¼-inch.
  - 2. Concrete Slope Protection, Gutter Lining, Ditch Lining and Channel Lining: ½-inch.
  - 3. Structures: As indicated.



**16.2.06 REINFORCEMENT AND DOWELS**

- A. Bar reinforcement for concrete improvements shall be deformed steel bars of the size or sizes called for on the plans conforming to the requirements of ASTM Designation A 615 for Grade 60 bars. Size and shape for bar reinforcement shall conform to the details shown or called for on the Plans. Substitution of wire mesh reinforcement for reinforcing bars will not be allowed.
- B. Slip dowels, where noted or called for on the plans or detail drawings shall be smooth billet-steel bars as designated and conforming to the requirements of ASTM Designation A 615 for Grade 60 bars. Ends of bars inserted in new work shall be covered with a cardboard tube sealed with cork; no grease or oil shall be used.
- C. Mesh for reinforcement for concrete improvements shall be cold drawn steel wire mesh of the size and spacing called for on the plans conforming to the requirements of ASTM Designation A 82 for the material and ASTM Designation A 185 for the mesh. Size and extent of mesh reinforcement shall conform to the details shown or called for on the plans.
- D. Tie wire for reinforcement shall be eighteen (18) gauge or heavier, black, annealed conforming to the requirements of ASTM Designation A 82.
- E. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site.
- F. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

**16.2.07 COLOR AND PATTERN FOR DECORATIVE SURFACES**

- A. Colors for decorative pavement and surfacing shall be in accordance with the plans and specifications..
- B. Curing compound for color conditioned decorative pavement shall be in accordance with the plans and specifications.
- C. Patterns for decorative pavement or surfacing shall be in accordance with the plans. The specific pattern shall be as designated or called for on the plans.

**16.2.08 ACCESSORY MATERIALS**

- A. Conform water stops and other items required to be embedded in of Portland Cement Concrete structures to the applicable requirements of Section 51 of the Caltrans Standard Specifications unless otherwise specifically noted or called for on the Plans or detail drawings.

B. Curing Compounds:

1. Regular Portland Cement Concrete: "Non-Pigmented Curing Compound - chlorinated Rubber Base-Clear" conforming to the requirements contained in Section 90-1.03B(3), of the Caltrans Standard Specifications.
2. Color Conditioned Decorative Portland Cement Concrete: Curing Compound shall be in accordance with the plans and specifications.

**16.2.09 FORMS**

- A. Conform to the requirements of Section 51-1.05 of the Caltrans Standard Specifications.

**16.2.10 PRECAST CONCRETE STRUCTURES**

- A. Conform to the following Sections of Caltrans Standard Specifications:

1. 51-1.02, Minor Structures.
2. 70-1.02C, Flared End Sections.
3. 70-1.02H, Precast Concrete Structures.

**16.2.11 PORTLAND CEMENT CONCRETE VEHICULAR PAVEMENT**

- A. General: See Section 18 – Rigid Paving.

**PART 3 EXECUTION**

**16.3.01 STRUCTURAL EXCAVATION**

- A. Structural excavation may be either by hand, or by machine and shall be neat to the line and dimension shown or called for on the plans. Excavation shall be sufficient width to provide adequate space for working therein, and comply with CAL-OSHA requirements.
- B. Where an excavation has been constructed below the design grade, refill the excavation to the bottom of the excavation grade with approved material and compact in place to 95% of the maximum dry density.
- C. Remove surplus excavation material remaining upon completion of the work from the job site, or condition it to optimum moisture content and compact it as fill or backfill on the site, if the material is approved by the Geotechnical Consultant.

**16.3.02 BRACING AND SHORING**

- A. Conform to California and Federal OSHA requirements.
- B. Place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection of workmen; to facilitate the work; to prevent damage

to the facility being constructed; and to prevent damage to adjacent structures or facilities. Remove all bracing and shoring upon completion of the work.

- C. Be solely responsible for all bracing and shoring and, if requested by the Owner's Representative, submit details and calculations to the Owner's Representative. The Owner's Representative may forward the submittal to the Geotechnical Consultant, the Consulting Engineer and/or the California Division of Industrial Safety for their review. The Contractor's submittal shall include the basic design, assumed soils conditions and estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used, and shall be prepared by a civil engineer or structural engineer registered in California. No excavations related to the proposed facility shall precede a response to the submittal by the Owner's Representative.
- D. Be solely responsible for installing and extracting the sheathing in a manner which will not disturb the position or operation of the facility being constructed or adjacent utilities and facilities.

### **16.3.03 PLACING CONCRETE FORMS**

- A. Form concrete improvements with a smooth and true upper edge. Side of the form with a smooth finish shall be placed next to concrete. Construct forms rigid enough to withstand the pressure of the fresh concrete to be placed without any distortion.
- B. Thoroughly clean all forms prior to placement and coat forms with an approved form oil in sufficient quantity to prevent adherence of concrete prior to placing concrete.
- C. Carefully set forms to the alignment and grade established and conform to the required dimensions. Rigidly hold forms in place by stakes set at satisfactory intervals. Provide sufficient clamps, spreaders and braces to insure the rigidity of the forms.
- D. Provide forms for back and face of curbs, lip of gutters and edge of walks, valley gutters or other surface slabs that are equal to the full depth of the concrete as shown, noted or called for on the Plans. On curves and curb returns provide composite forms made from benders or thin planks of sufficient ply to ensure rigidity of the form.

### **16.3.04 PLACING STEEL REINFORCEMENT**

- A. Bars shall be free of mortar, oil, dirt, excessive mill scale and scabby rust and other coatings of any character that would destroy or reduce the bond. All bending shall be done cold, to the shapes shown on the plans. The length of lapped splices shall be as follows:
  - 1. Reinforcing bars No. 8, or smaller, shall be lapped at least 45 bar diameters of the smaller bar joined, and reinforced bars Nos. 9, 10, and 11 shall be lapped at least 60 bar diameters of the smaller bars joined, except when otherwise shown on the plans.
  - 2. Splice locations shall be made as indicated on the plans.

- B. Accurately place reinforcement as shown on the plans and hold firmly and securely in position by wiring at intersections and splices, and by providing precast mortar blocks or ferrous metal chairs, spacers, metal hangers, supporting wires, and other approved devices of sufficient strength to resist crushing under applied loads. Provide supports and ties of such strength and density to permit walking on reinforcing without undue displacement.
- C. Place reinforcing to provide the following minimum concrete cover:
  - 1. Surfaces exposed to water: 4-inches.
  - 2. Surfaces poured against earth: 3-inches.
  - 3. Formed surfaces exposed to earth or weather: 3-inches.
  - 4. Slabs, walls, not exposed to weather or earth: 1-inch.
- D. Minimum spacing, center of parallel bars shall be two and one half (2-1/2) times the diameter of the larger sized bar. Accurately tie reinforcing securely in place prior to pouring concrete. Placing of dowels or other reinforcing in the wet concrete is not permitted.

**16.3.05 MIXING AND TRANSPORTING PORTLAND CEMENT CONCRETE**

- A. Transit mix concrete in accordance with the requirements of ASTM Designation C 94. Transit mix for not less than ten (10) minutes total, not less than three (3) minutes of which shall be on the site just prior to pouring. Mix continuous with no interruptions from the time the truck is filled until the time it is emptied. Place concrete within one hour of the time water is first added unless authorized otherwise by the Owner's Representative.
- B. Do not hand mix concrete for use in concrete structures.

**16.3.06 PLACING PORTLAND CEMENT CONCRETE**

- A. Thoroughly wet subgrade when concrete is placed directly on soil. Remove all standing water prior to placing concrete.
- B. Do not place concrete until the subgrade and the forms have been approved.
- C. Convey concrete from mixer to final location as rapidly as possible by methods that prevent separation of the ingredients. Deposit concrete as nearly as possible in final position to avoid re-handling.
- D. Place and solidify concrete in forms without segregation by means of mechanical vibration or by other means as approved by the Owner's Representative. Continue vibration until the material is sufficiently consolidated and absent of all voids without causing segregation of material. The use of vibrators for extensive shifting of fresh concrete will not be permitted.

- E. Concrete in certain locations may be pumped into place upon prior approval by the Owner's Representative. When this procedure requires redesign of the mix, such redesign shall be submitted for approval in the same manner as herein specified for approval of design mixes.

**16.3.07 PLACING ACCESSORY MATERIALS**

- A. Place water stops and other items required to be embedded in of Portland cement concrete structures at locations shown or required in accordance with Section 51 of the Caltrans Standard Specifications unless otherwise specifically noted or called for on the Plans.
- B. Curing Compounds:
  - 1. Regular Portland Cement Concrete: Apply "Non-Pigmented Curing Compound - chlorinated Rubber Base-Clear" in accordance with Section 90-1.03B(3) of the Caltrans Standard Specifications.
  - 2. Color Conditioned Decorative Portland Cement Concrete: Apply Curing Compound in accordance with the plans and specifications.

**16.3.08 EXPANSION JOINTS**

- A. Construct expansion joints incorporating premolded joint fillers at twenty (20) foot intervals in all concrete curbs, gutters, sidewalks, median/island paving, valley gutters, driveway approaches and at the ends of all returns. At each expansion joint install one-half inch by twelve inch (1/2" x 12") smooth slip dowels in the positions shown or noted on the detail drawings.
- B. Orient slip dowels at right angles to the expansion joint and hold firmly in place during the construction process by means of appropriate chairs.

**16.3.09 WEAKENED PLANE JOINTS**

- A. Construct weakened plane joints in concrete curbs, gutters, sidewalks, median/island paving and valley gutters between expansion joints at ten (10) foot intervals throughout, or as otherwise indicated. Depth of joint score depth to be one-fourth (25%) the thickness of the concrete.
  - 1. Grooved Joints: Form weakened plane joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8-inch. Repeat grooving of weakened plane joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

**16.3.10 FINISHING CONCRETE**

- A. Finish curb and gutter in conformance with the applicable requirements of Section 73-1.03C and 73-2.03 of the Caltrans Standard Specifications as modified herein.

- B. Where monolithic curb, gutter and sidewalk is specified, separate concrete pours will not be allowed.
- C. Provide a medium broom finish to all horizontal surfaces.
- D. Additional jointing for concrete surfaces.

**16.3.11 FORM REMOVAL**

- A. Remove forms without damage to the concrete. Remove all shores and braces below the ground surface, before backfilling.
- B. Do not backfill against concrete until the concrete has developed sufficient strength to prevent damage.
- C. Leave forms for cast-in-place walls in place at least 72 hours after pouring.
- D. Leave edge forms in place at least 24 hours after pouring.

**16.3.12 CONSTRUCTION**

- A. Form, place and finish concrete walkways, island paving, valley gutters and driveway approaches in conformance with the applicable requirements of Section 73-2.03 and 73-3.03 of the Caltrans Standard Specifications as modified herein.
- B. Construct new concrete curb, curb and gutter and valley gutters against existing asphalt concrete by removing a minimum of 12-inches of the asphalt concrete to allow placement of curb or gutter forms. Patch pavement with a 6-inch deep lift of asphalt concrete after gutter form is removed.

**16.3.13 CONNECTING TO EXISTING CONCRETE IMPROVEMENTS**

- A. New curb, gutter, or sidewalk is to connect to existing improvements to remain by saw cutting to existing sound concrete at the nearest score line, expansion joint or control joint. Drill and insert ½-inch diameter by 12-inch long dowels at 24-inches on center into existing improvements. Install pre-molded expansion joint filler at the matching joint.
- B. A cold joint to the existing curb is not acceptable.

**16.3.14 DECORATIVE SURFACING CONSTRUCTION**

- A. Decorative surfacing concrete walks, concrete median islands or other installations shall be formed and placed as a concrete slab conforming to the details shown.

**16.3.15 FIELD QUALITY CONTROL**

- A. Finish subgrade for concrete improvements shall be subject to approval prior to placement of forms.

- B. No concrete shall be placed prior to approval of forms.
- C. Concrete improvements constructed shall not contain "bird baths" or pond water and shall be smooth and ridge free.
- D. Conform the finish grade at top of curb, flow line of gutter, and the finish cross section of concrete improvements to the design grades and cross sections.
- E. Variation of concrete improvements from design grade and cross section as shown or called for on the plans shall not exceed the tolerances established in Sections 73-2.03 and/or 73-3.03 of the Caltrans Standard Specifications.

**16.3.16 RESTORATION OF EXISTING IMPROVEMENTS**

- A. Replace in kind all pavement or other improvements removed or damaged due to the installation of concrete improvements.
- B. Remove, landscaping or plantings damaged or disturbed due to the installation of concrete improvements. Replace in kind.

**PART 4 PAYMENT**

**16.4.01 BID ITEMS**

- A. Payment for sidewalk removal/replacement shall be made at the unit price bid per square foot of sidewalk repaired under "Remove and Replace Sidewalk" and shall be considered full compensation for furnishing all labor, materials, tools and equipment to provide a sidewalk complete in place, including removal of existing sidewalk and restoration of pavement disturbed during sidewalk removal/replacement.
- B. Payment for curb and gutter removal/replacement shall be made at the unit price bid per linear foot of curb and gutter repaired under "Remove and Replace Curb and Gutter" and shall be considered full compensation for furnishing all labor, materials, tools and equipment to provide a curb and gutter complete in place, including removal of existing curb and gutter and restoration of pavement disturbed during curb and gutter removal/replacement.

\*\*\*END OF SECTION\*\*\*

**SECTION 17. BASE COURSES**

**PART 1 GENERAL**

**17.1.01 SECTION INCLUDES**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to the Work of this Section.
- B. Aggregate subbase.
- C. Aggregate base.
- D. Cement treated base.
- E. Work within the City's right-of-way. All work within the City's right-of-way shall conform to the plans and specifications issued for this project and shall be in accordance with the City of Burlingame Standard Details and Conditions.

**17.1.02 RELATED SECTIONS**

- A. Section 14 – Excavation and Fill.
- B. Section 18– Rigid Paving.

**17.1.03 RELATED DOCUMENTS**

- A. Final Geotechnical Investigation “Proposed Residential Development 1008, 106, and 1028 Carolan Avenue/ 935 Rollins Road Burlingame, CA”, dated February 28, 2014 by Rockridge Geotechnical.
- B. American Society for Testing and Materials (ASTM) Standards
  - 1. D 3740, Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
  - 2. E 329, Specification for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.
  - 3. E 548, Guide for General Criteria Used for Evaluating Laboratory Competence.
- C. Caltrans Standard Specifications:
  - 1. Section 25, Aggregate Subbases.
  - 2. Section 26, Aggregate Bases.
  - 3. Section 27, Cement Treated Bases.



4. Chapter 33 – Site Work, Demolition and Construction.

**17.1.04 DEFINITIONS**

- A. Geotechnical Testing Agency: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock definition testing, as documented according to ASTM D 3740 and ASTM E 548.

**17.1.05 ACTION SUBMITTALS**

- A. Follow submittal procedures outlined in the Division 1 Specifications.
- B. Submit material certificates signed by the material producer and the Contractor, certifying that that each material item complies with, or exceeds the specified requirements.
- C. LEED Submittals:
  - 1. Product Data for Credit MR 5: Product data for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.

**17.1.06 INFORMATIONAL SUBMITTALS**

- A. Sustainable Design Submittals: For projects requiring LEED Submittal based on LEED-NC version
  - 1. Submit documentation substantiating that products and materials are regionally extracted, harvest and recovered for each raw material.

**17.1.07 QUALITY ASSURANCE**

- A. Conform all work and materials to the recommendations or requirements of the Geotechnical Report and meet the approval of the Geotechnical Consultant.
- B. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material to the maximum dry density of the material as determined by the procedure set forth in ASTM D 1557.
- C. Perform installation of base materials under the observation of the Geotechnical Consultant. Materials placed without approval of the Geotechnical Consultant will be presumed to be defective and, at the discretion of the Geotechnical Consultant, shall be removed and replaced at no cost to the Owner. Notify the Geotechnical Consultant at least 24-hours prior to commencement of base material installation and at least 48 hours prior to testing.
- D. Do not mix or place cement treated base when the temperature is below 36 degrees F or when the ground is frozen.

- E. Finish surface of cement treated base shall be as specified in Section 27 of Caltrans Standard Specifications.
- F. Do not project the finish surface of aggregate subbase above the design subgrade.
- G. Finish grade tolerance at completion of base installation: +/-0.05

**17.1.08 PROJECT CONDITIONS**

- A. Protect open excavations, trenches, and the like with fences, covers and railings to maintain safe pedestrian and vehicular traffic passage.
- B. Temporarily stockpile material in an orderly and safe manner and in a location approved by the Owner.
- C. Provide dust and noise control in conformance with Division 1 General Requirements.

**PART 2 PRODUCTS**

**17.2.01 AGGREGATE SUBBASE**

- A. Material: Caltrans Standard Specification Section 25.
  - 1. Class 1, 2, or 3: Section 25-1.02A.
- B. Harvest and process materials for construction from fabricators and sources within 500 miles of site.

**17.2.02 AGGREGATE BASE**

- A. Material: Caltrans Standard Specification Section 26.
  - 1. Class 2, 1-1/2-inch Maximum: Section 26-1.02B.
  - 2. Class 2, 3/4-inch Maximum: Section 26-1.02B.
- B. Harvest and process materials for construction from fabricators and sources within 500 miles of site.

**17.2.03 CEMENT TREATED BASE**

- A. Materials: Caltrans Standard Specification Section 27-1.02.
- B. Harvest and process materials for construction from fabricators and sources within 500 miles of site.

**PART 3 EXECUTION**

**17.3.01 GENERAL**

- A. Placement and compaction of material by flooding, ponding, or jetting will not be permitted.

**17.3.02 WET WEATHER CONDITIONS**

- A. Do not place or compact subgrade if above optimum moisture content.
- B. If the Geotechnical Consultant allows work to continue during wet weather conditions, conform to supplemental recommendations provided by the Geotechnical Consultant.

**17.3.03 AGGREGATE SUBBASE**

- A. Spreading and Compacting: Sections 25-1.03D and 25-1.03E of Caltrans Standard Specifications.

**17.3.04 AGGREGATE BASE**

- A. Spreading and Compacting: Section 26-1.03D and 26-1.03E of Caltrans Standard Specifications.

**17.3.05 CEMENT TREATED BASE**

- A. Cement treated base shall be as follows: Proportioning and Mixing Plant-Mixed: Section 27-1.03D of Caltrans Standard Specifications.

**17.3.06 DISPOSAL**

- A. Lawfully dispose of all unsuitable and excess or surplus material off-site at no cost to the Owner.

**PART 4 PAYMENT**

**17.4.01 BID ITEMS**

- A. Payment for this section shall made be per cubic foot of aggregate and shall be included with any activities that require the work described in the above section and shall include furnishing all labor materials, tools and equipment to accomplish said work, and shall not be paid separately. Estimates for quantities should be based on the plans and these specifications.

\*\*\*END OF SECTION\*\*\*

## **SECTION 18. RIGID PAVING**

### **PART 1 GENERAL**

#### **18.1.01 SECTION INCLUDES**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to the Work of this Section.
- B. Furnishing, placing, spreading, compacting and shaping portland cement concrete pavement with undoweled transverse weakened plane joints, for vehicular traffic.
- C. Form construction and use in placing portland cement concrete pavement.
- D. Joints for portland cement concrete pavement.
- E. Finishing portland cement concrete pavement.
- F. Curing and protecting portland cement concrete pavement.
- G. Steel Reinforcing
- H. Dust alleviation and control.
- I. The work shall include the provision of all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.
- J. Work within the City's right-of-way. All work within the City's right-of-way shall conform to the plans and specifications issued for this project and shall be in accordance with the City of Burlingame Standard Details and Conditions.

#### **18.1.02 RELATED SECTIONS**

- A. Section 16 – Cement and Concrete for Exterior Improvements.
- B. Section 17 – Base Courses.

#### **18.1.03 RELATED DOCUMENTS**

- A. Final Geotechnical Investigation "Proposed Residential Development 1008, 1016, and 1028 Carolan Avenue/ 935 Rollins Road Burlingame, CA", dated February 28, 2014 by Rockridge Geotechnical.
- B. American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications
  - 1. T 53: Softening Point of Bitumen (Ring-and-Ball Apparatus).

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

1. A 615: Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
2. A 775: Epoxy Coated Reinforcing Steel Bars.
3. A 934: Epoxy-Coated Prefabricated Steel Reinforcing Bars.
4. C 881: Epoxy-Resin-Base Bonding Systems for Concrete.
5. D 2628: Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements.
6. D 2835: Lubricant for Installation of Preformed Compression Seals in Concrete Pavements.
7. D 3405: Joint Sealants, Hot Poured, for Concrete and Asphalt Pavements.
8. D 3963: Fabrication and Jobsite Handling of Epoxy-Coated Reinforcing Steel.

D. Caltrans Standard Specifications:

1. Section 40, Portland Cement Concrete Pavement.
2. Section 52, Reinforcement.
3. Section 90, Portland Cement Concrete.
4. Section 95, Epoxy.

E. Caltrans Standard Plans:

1. Plan A35A: Portland Cement Concrete Pavement (Undoweled Transverse Joints).
2. Plan A35C: Portland Cement Concrete Pavement Joint and End Anchor Details.

**18.1.04 QUALITY ASSURANCE**

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

1. Manufacturer must be certified according to the National Ready Mix Concrete Plant Certification Program.

B. Installer Qualification: An experienced installer who has completed pavement work similar in material, design and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant and each aggregate from one source.

**18.1.05 ACTION SUBMITTALS**

- A. Follow submittal procedures outlined in the Division 1 Specifications.
- B. Design Mixes: For each concrete pavement mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results or other circumstances warrant adjustments.
- C. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements.
  - 1. Cementitious materials and aggregates.
  - 2. Steel reinforcement and reinforcement accessories.
  - 3. Admixtures.
  - 4. Curing compound.
  - 5. Applied finish material.
  - 6. Bonding agent of adhesive.
  - 7. Joint filler.
  - 8. Joint Sealant.
  - 9. Tie Bars.
  - 10. Epoxy.
  - 11. Backer Rods.
- D. LEED Submittals:
  - 1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
  - 2. Design Mixtures for Credit MR 4: For each concrete mixture containing fly ash as a replacement for portland cement or other portland cement replacements, and for equivalent concrete mixtures that do not contain portland cement replacements.
  - 3. Product Data for Credit MR 5: Product data for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.

### **18.1.06 INFORMATIONAL SUBMITTALS**

- A. Sustainable Design Submittals: For projects requiring LEED Submittal based on LEED-NC version
  - 1. Submit documentation substantiating that concrete contains a minimum of 20% recycle content.
  - 2. Submit documentation substantiating that products and materials are regionally extracted, harvest or recovered for each raw material.

## **PART 2 PRODUCTS**

### **18.2.01 PORTLAND CEMENT CONCRETE**

- A. General: Conform to Caltrans Standard Specifications, Section 90. Use Class 2 Concrete.
- B. Prepare design mixtures for each type of precast concrete required.
  - 1. Minimum use of fly ash to 20 percent of Portland cement by weight.

### **18.2.02 TIE BARS**

- A. Deformed reinforcing steel bars conforming to the requirements of ASTM Designation A 615/A (615M), Grade 40 or 60 (Grade 300 or 420).
- B. Epoxy-coat in conformance with the provisions in Section 52-2.02 of Caltrans Standard Specifications, except that references made to ASTM Designation D 3963/D 3963M shall be deemed to mean ASTM Designation A 934/A 934M or A 775/775M.
- C. Do not bend tie bars.
- D. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

### **18.2.03 EPOXY**

- A. Bond tie bars to existing concrete with epoxy resin conforming to Section 95-1.02H, "Epoxy Resin Adhesive for Pressure Injection Grouting of Concrete Pavement," of the Caltrans Standard Specifications.

### **18.2.04 SILICONE JOINT SEALANT**

- A. Furnish low modulus silicone joint sealant in a one-part silicone formulation. Do not use acid cure sealants. Compound to be compatible with the surface to which it is applied and conform to the following requirements:

CAROLAN-ROLLINS EASEMENT SANITARY SEWER MAIN RELOCATION

Specification	Test Method	Requirement
Tensile stress, 150% elongation, 7-day cure at 25° ± 1°C and 45% to 55% R.H. <sup>e</sup>	ASTM D412 (Die C)	310 kPa max.
Flow at 25° ± 1°C	ASTM C 639 <sup>a</sup>	Shall not flow from channel
Extrusion Rate at 25° ± 1°C	ASTM C 603 <sup>b</sup>	75-250 g/min.
Specific Gravity	ASTM D 792 Method A	1.01 to 1.51
Durometer Hardness, at -18°C, Shore A, cured 7 days at 25° ± 1°C	ASTM C 661	10 to 25
Ozone and Ultraviolet Resistance, after 5000 hours	ASTM C 793	No chalking, cracking or bond loss
Tack free at 25° ± 1°C and 45% to 55% R.H. <sup>e</sup>	ASTM C 679	Less than 75 minutes
Elongation, 7 day cure at 25° ± 1°C and 45% to 55% R.H. <sup>e</sup>	ASTM D 412 (Die C)	500 percent min.
Set to Touch, at 25° ± 1°C and 45% to 55% R.H. <sup>e</sup>	ASTM D 1640	Less than 75 minutes
Shelf Life, from date of shipment	--	6 months min.
Bond, to concrete mortar-concrete briquets, air cured 7 days at 25° ± 1°C	AASHTO T 132 <sup>c</sup>	345 kPa min.
Movement Capability and Adhesion, 100% extension at -18°C after, air cured 7 days at 25° ± 1°C, and followed by 7 days in water at 25° ± 1°C	ASTM C 719 <sup>d</sup>	No adhesive or cohesive failure after 5 cycles
<p>ASTM Designation: C 639 Modified (15 percent slope channel A).                      ASTM Designation: C 603, through 3-mm opening at 345 kPa.                      Mold briquets in conformance with the requirements in AASHTO Designation: T 132, sawed in half and bonded with a 1.5 mm maximum thickness of sealant and tested in conformance with the requirements in AASHTO Designation: T 132. Briquets shall be dried to constant mass at 100 ± 5° C.                      Movement Capability and Adhesion: Prepare 305 mm x 25 mm x 75 mm concrete blocks in conformance with the requirements in ASTM Designation: C 719. A sawed face shall be used for bond surface. Seal 50 mm of block leaving 12.5 mm on each end of specimen unsealed. The depth of sealant shall be 9.5 mm and the width 12.5 mm.</p> <p>e. R.H. equals relative humidity.</p>		



- B. Formulate the silicon joint sealant to cure rapidly enough to prevent flow after application on grades of up to 15 percent.
- C. Furnish to the Owner a Certificate of Compliance. Accompany certificate with a certified test report of the results of the required tests performed on the sealant material within the previous 12 months prior to proposed use. Provide the certificate and accompanying test report for each lot of silicone joint sealant prior to use on the project.

#### **18.2.05 ASPHALT RUBBER JOINT SEALANT**

- A. Conform to the requirements of ASTM Designation: D 3405 as modified herein or to the following:
  - 1. Provide a mixture of paving asphalt and ground rubber. Ground rubber to be vulcanized or a combination of vulcanized and de-vulcanized materials ground so that 100 percent will pass a 2.36-mm sieve and contain not less than 22 percent ground rubber, by mass. Modifiers may be used to facilitate blending.
  - 2. The Ring and Ball softening point shall be 57°C minimum, when tested in conformance with the requirements in AASHTO Designation: T 53.
  - 3. Provide asphalt rubber sealant material capable of being melted and applied to cracks and joints at temperatures below 204°C.
- B. The penetration requirement of Section 4.2 of ASTM Designation: D 3405 do not apply. The required penetration at 25°C, 150g, 5s, shall not exceed 120.
- C. The resilience requirement of Section 4.5 of ASTM Designation: D 3405 do not apply. The required resilience, when tested at 25°C, shall have a minimum of 50 percent recovery.
- D. Accompany each lot of asphalt rubber joint sealant shipped to the job site, whether as specified herein or conforming to the requirements of ASTM Designation D 3405, as modified herein, by a Certificate of Compliance, storage and heating instructions and precautionary instructions for use.
- E. Heat and place in conformance with the manufacturer's written instructions and the details shown on the plans. Provide manufacturer's instructions to the Owner. Do not place when the pavement surface temperature is below 10°C.

#### **18.2.06 PREFORMED COMPRESSION JOINT SEALANT**

- A. Material: ASTM Designation: D 2628.
  - 1. Number of cells: 5 or 6.
  - 2. Lubricant Adhesive: ASTM Designation D 2835.

3. Install compression seals along with lubricant adhesive according to the manufacturer's recommendations. Submit manufacture's recommendations to the Owner's Representative.
- B. Accompany each lot of compression seal and lubricant adhesive by a Certificate of Compliance, storage instructions and precautionary instructions for use. Also submit the manufacturer's data sheet with installation instructions and recommended model or type of preformed compression seal for the joint size and depth as shown on the plans. Show evidence that the selected seal is being compressed at level between 20 and 50 percent at all times for the joint width and depth shown on the plans.

#### **18.2.07 BACKER RODS**

- A. Provide backer rods that have a diameter prior to placement at least 25 percent greater than the width of the saw cut after sawing and are expanded, cross-linked, closed-cell polyethylene foam that is compatible with the joint sealant so that no bond, adverse reaction occurs between the rod and sealant. In no case use a hot pour sealant that will melt the backer rod. Submit a manufacturer's data sheet verifying that the backer rod is compatible with the sealant to be used.

#### **18.2.08 COLOR AND PATTERN FOR DECORATIVE PAVEMENT**

- A. Colors for decorative pavement and surfacing shall be in accordance with the plans and specifications. The specific color shall be as designated or called for on the plans.
- B. Curing compound for color conditioned decorative pavement shall be in accordance with the plans and specifications.
- C. Patterns for decorative pavements or surfacing shall be in accordance with the plans and specifications. The specific pattern shall be as designated or called for on the plans.

### **PART 3 EXECUTION**

#### **18.3.01 SUBGRADE**

- A. Conform to Section 40-1.04 of Caltrans Standard Specifications.

#### **18.3.02 PLACING**

- A. Conform to Section 40-1.06 of Caltrans Standard Specifications.

#### **18.3.03 SPREADING COMPACTING AND SHAPING**

- A. Conform to Section 40-1.07 of Caltrans Standard Specifications.
1. Stationary Side Form Construction: Section 40-1.07A of Caltrans Standard Specifications.
  2. Slip Form Construction: Section 40-1.07B of Caltrans Standard Specifications.

**18.3.04 INSTALLING TIE BARS**

A. Install at longitudinal contact joints, longitudinal weakened plane joints, and transverse contact joints as shown on the plans. In no case, shall any consecutive width of new portland cement concrete pavement tied together with tie bars exceed 15 meters. In no case shall tie bars be used at a joint where portland cement concrete and asphalt concrete pavements abut.

B. Tie bars shall be installed at longitudinal joints by one of the 3 following methods:

1. Drilling and bonding in conformance with the details shown on the plans. Provide a two-component, epoxy-resin, conforming to the requirements of ASTM Designation: C 881, Type V. Grade 3 (Non-Sagging), Class shall be as follows:

Temperature of Concrete	Required Class of Epoxy Resin
Lower than 40° F (4.5 °C)	A
40° F (4.5° C) through 60° F (15.5° C)	B
Above 60° F (15.5° C)	C

2. Provide, at least 7 days prior to start of work, a Certificate of compliance and a copy of the manufacturer's recommended installation procedure. The drilled holes shall be cleaned in accordance with the epoxy manufacturer's instructions and shall be dry at the time of placing the epoxy and tie bars. Immediately after inserting the tie bars into the epoxy, the tie bars shall be supported as necessary to prevent movement during the curing and shall remain undisturbed until the epoxy has cured a minimum time as specified by the manufacturer. Tie bars that are improperly bonded, as determined by the Owner, will be rejected. If rejected, adjacent new holes shall be drilled, as directed by the Owner, and new tie bars shall be placed and securely bonded to the concrete. All work necessary to correct improperly bonded tie bars shall be performed at the Contractor's expense.
3. Insert the tie bars into the plastic slip-formed concrete before finishing the concrete. Inserted tie bars shall have full contact between the bar and the concrete. When tie bars are inserted through the pavement surface, the concrete over the tie bars shall be reworked and refinished to such an extent that there is no evidence on the surface of the completed pavement that there has been any insertion performed. Any loose tie bars shall be replaced by drilling and grouting into place with epoxy as described in method 1 above at the Contractor's expense.
4. By using threaded dowel splice couplers fabricated from deformed bar reinforcement material, free of external welding or machining. Threaded dowel splice couplers shall be accompanied by a Certificate of Compliance and installation instructions. Installation of threaded dowel splice couplers shall conform to the requirements of the manufacturer's recommendations.

### **18.3.05 JOINTS**

- A. Conform to Section 40-1.03B of Caltrans Standard Specifications, Except that tie bars shall be as specified under Part 2, Products.
  - 1. Transverse Contact Joints: Section 40-1.03B(2) of Caltrans Standard Specifications.
    - a. Construct a transverse contact (construction) joint at the end of each day's work, or where concrete placement is interrupted for more than 30 minutes, to coincide with the next weakened plane joint location.
    - b. If sufficient concrete has not been mixed to form a slab to match the next weakened plane joint, when an interruption occurs, the excess concrete shall be removed and disposed of back to the last preceding joint. The cost of removing and disposing of any excess concrete shall be at the Contractor's expense. Any excess material shall be become the property of the Contractor and shall be properly disposed of.
    - c. A metal or wooden bulkhead (header) shall be used to form the joint. The bulkhead shall be designed to accommodate the installation of tie bars.
  - 2. Weakened Plane Joints: Section 40-1.03B(3), except that the insert method of forming joints in pavement shall not be used.

### **18.3.06 FINISHING**

- A. Conform to Sections 40-1.03H(2) and 40-1.03H(3) of Caltrans Standard Specifications and the plans and specification, which will supersede the Caltrans Specifications where conflicts exist.

### **18.3.07 CURING**

- A. Conform to Section 40-1.03I of Caltrans Standard Specifications and the plans and specification, which will supersede the Caltrans Specifications where conflicts exist.

### **18.3.08 SEALING JOINTS**

- A. Liquid Joint Sealant Installation:
  - 1. The joint sealant detail for transverse and longitudinal joints, as shown on the plans, shall apply only to weakened plane joints. Construct weakened plane joints by the sawing method. Should grinding or grooving be required over or adjacent to any joint after sealant has been placed, completely remove the joint material and disposed of, and replace at the Contractor's expense. Recess sealant below the final finished surface as shown on the plans.

2. At the Contractor's option, transverse weakened plane joints shall be either Type DSC or Type SSC as shown on the plans. Longitudinal weakened plane joints shall be Type SSC only as shown on the plans.
3. Seven days after the concrete pavement placement and not more than 4 hours before placing backer rods and joint sealant materials, clean the joint walls by the dry sand blast method and other means as necessary to completely remove from the joint all objectionable material such as soil, asphalt, curing compound, paint and rust. After cleaning the joint, remove all traces of sand, dust and loose material from and near the joint for a distance along the pavement surfaces of at least 50 mm on each side of the joint by the use of a vacuum device. Remove surface moisture at the joints by means of compressed air or moderate hot compressed air or other means approved means. Do not use drying procedures that leave a residue or film on the joint wall. Sandblasting equipment shall have a maximum nozzle diameter size of  $6 \pm 1$  mm and a minimum pressure of 0.62-MPa.
4. Install backer rod as shown on the plans. Provide an expanded, closed-cell polyethylene foam backer rod that is compatible with the joint sealant so that no bond or adverse reaction occurs between the rod and sealant. Install backer rod when the temperature of the Portland cement concrete pavement is above the dew point of the air and when the air temperature is 4°C or above. Install backer rod when the joints to be sealed have been properly patched, cleaned and dried. Do not use a method of placing backer rod that leave a residue or film on the joint walls.
5. Immediately after placement of the backer rod, place the joint sealant in the clean, dry, prepared joints as shown on the plans. Apply the joint sealant by a mechanical device with a nozzle shaped to fit inside the joint to introduce the sealant from inside the joint. Apply adequate pressure to the sealant to ensure that the sealant material is extruded evenly and that full continuous contact is made with the joint walls. After application of the sealant recess the surface of the sealant as shown on the plans.
6. Any failure of the joint material in either adhesion or cohesion of the material will be cause for rejection of the joint. Conform the finished surface of joint sealant to the dimensions and allowable tolerances shown on the plans. Rejected joint materials or joint material whose finished surface does not conform to the dimensions shown on the plans shall be repaired or replaced, at the Contractor's expense, with joint material that conforms to the requirements.
7. After each joint is sealed, remove all surplus joint sealer on the pavement surface. Traffic shall not be permitted over the sealed joints until the sealant is tack free and set sufficiently to prevent embedment of roadway debris into the sealant.

#### B. Preformed Compression Joint Seal Installation

1. The compression seal alternative joint detail for transverse and longitudinal joints, as shown on the plans, shall apply only to weakened plane joints. Construct weakened plane joints by the sawing method. Should grinding or grooving be required over or

adjacent to any joint after the compression seal has been placed, completely remove the joint materials and disposed of, and replace at the Contractor's expense. Compression seal shall be recessed below the final finished surface as shown on the plans.

2. At the Contractor's option, transverse weakened plane joints shall be either Type DSC or Type SSC as shown on the plans. Longitudinal weakened plane joints shall be Type SSC only as shown on the plans.
3. Seven days after the concrete pavement placement and not more than 4 hours before placing preformed compression joint seals, clean the joint walls by the dry sand blast method and other means as necessary to completely remove from the joint all objectionable material such as soil, asphalt, curing compound, paint and rust. After cleaning the joint, remove all traces of sand, dust and loose material from and near the joint for a distance along the pavement surfaces of at least 50 mm on each side of the joint by the use of a vacuum device. Remove surface moisture at the joints by means of compressed air or moderate hot compressed air or other means. Do not use drying procedures that leave a residue or film on the joint wall. Sandblasting equipment shall have a maximum nozzle diameter size of  $6 \pm 1$  mm and a minimum pressure of 0.62-MPa.

#### **18.3.09 PROTECTING CONCRETE PAVEMENT**

- A. Conform to Section 40-1.03J of Caltrans Standard Specifications.

### **PART 4 PAYMENT**

#### **18.4.01 BID ITEMS**

- A. Payment for sidewalk removal/replacement shall be made at the unit price bid per square foot of sidewalk repaired under "Remove and Replace Sidewalk" and shall be considered full compensation for furnishing all labor, materials, tools and equipment to provide a sidewalk complete in place, including removal of existing sidewalk and restoration of pavement disturbed during sidewalk removal/replacement.
- B. Payment for curb and gutter removal/replacement shall be made at the unit price bid per linear foot of curb and gutter repaired under "Remove and Replace Curb and Gutter" and shall be considered full compensation for furnishing all labor, materials, tools and equipment to provide a curb and gutter complete in place, including removal of existing curb and gutter and restoration of pavement disturbed during curb and gutter removal/replacement.

\*\*\*END OF SECTION\*\*\*

## **SECTION 19. CONCRETE CURBS AND GUTTERS**

### **PART 1 GENERAL**

#### **19.1.01 SECTION INCLUDES**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to the Work of this Section.
- B. Furnishing, placing, spreading, compacting shaping and finishing portland cement concrete for curbs and gutters, including form construction and use, joints, and curing and protecting concrete.
- C. Providing dust and noise control measures continuously during the course of the work.
- D. The work shall include the provision of all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.
- E. Work within the City's right-of-way. All work within the City's right-of-way shall conform to the plans and specifications issued for this project and shall be in accordance with the City of Burlingame Standard Details and Conditions.

#### **19.1.02 RELATED SECTIONS**

- A. Section 14 – Excavation and Fill.
- B. Section 16 – Cement and Concrete for Exterior Improvements.
- C. Section 17 – Base Courses.
- D. Section 18– Rigid Paving.

#### **19.1.03 RELATED DOCUMENTS**

- A. American Concrete Institute (ACI):
  - 1. ACI 301 - Specifications for Structural Concrete for Buildings.
  - 2. ACI 308 - Standard Practice for Curing Concrete.
- B. American Society for Testing and Materials (ASTM) Standards
  - 1. ASTM A 185 - Specification for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement.
  - 2. ASTM A 615 - Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

3. ASTM D 1751 - Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

C. Caltrans Standard Specifications:

1. Section 73: Concrete Curbs and Sidewalks.
2. Section 90: Portland Cement Concrete.

**19.1.04 ACTION SUBMITTALS**

- A. Submittal procedures shall be as outlined in the Division 1 Specifications.
- B. Concrete Mix Design: Have all concrete mixes designed by a testing laboratory and approved by the Owner's Representative. Conform all mixes to the applicable building code requirement, regardless of other minimum requirements listed herein or on the drawings. Submit mix designs for review before use. Show proportions and specific gravities of cement, fine and coarse aggregate, and water and gradation of combined aggregates.
- C. Material Certificates: Certificates signed by manufacturers certifying that each of the following materials complies with requirements.
  1. Cementitious materials and aggregates.
  2. Steel reinforcement and reinforcement accessories.
  3. Admixtures.
  4. Curing compound.
  5. Applied finish material.
  6. Bonding agent of adhesive.
  7. Joint filler.
  8. Joint Sealant.

**19.1.05 QUALITY ASSURANCE**

- A. Concrete shall be subject to quality assurance in accordance with Section 90 of the Standard Specifications.
- B. Certifications:
  1. Provide Owner at the time of delivery with certificates of compliance signed by both Contractor and Supplier containing the following statements:



- a. Materials contained comply with the requirements of the Contract Documents in all respects.
  - b. Proportions and mixing comply with the design mix approved by the Consulting Engineer. Design mix shall have been field tested in accordance with the herein requirements of the Caltrans Standard Specifications and produces the required compressive strength under like conditions.
  - c. Statement of type and amount of any admixtures.
2. Provide Owner, at time of delivery, with certified delivery ticket stating volume of concrete delivered and time of mixing, or time of load-out in case of transit mixers.
- C. Conform to the applicable provisions of Section 51, 73 and 90 of the Caltrans Standard Specification and these Technical Specifications.
1. Conform construction of Portland cement concrete surface improvements (including curbs, gutters, medians, valley gutters, walks) to the requirements of Section 73 of the Caltrans Standard Specifications unless otherwise required in these Technical Specifications or shown on the Plans.
  2. Construct "V" ditches in accordance with Section 72-4 of the Standard Specifications; except that finishing shall be in accordance with Standard Specification Section 73 instead of 53, or as otherwise required in these Technical Specifications or shown on the Plans.
- D. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
1. Manufacturer must be certified according to the National Ready Mix Concrete Plant Certification Program.
- E. Installer Qualification: An experienced installer who has completed pavement work similar in material, design and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- F. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant and each aggregate from one source.

#### **19.1.06 DESIGNATION**

- A. General: Whenever the 28-day compressive strength is designated herein or on the Plans is 3,000 psi or greater, the concrete shall considered to be designated by compressive strength. The 28-day compressive strength shown herein or on the plans which are less than 3,000 psi are shown for design information only and are not considered a requirement for acceptance of the concrete. Whenever the concrete is designated by class or as minor concrete herein or on the Plans, the concrete shall contain the cement per cubic yard shown in Section 90-1.01 of the Caltrans Standard Specifications.

## **PART 2 PRODUCTS**

### **19.2.01 GENERAL**

- A. Comply with requirements of Section 32 05 23 – Cement and Concrete for Exterior Improvements.

### **19.2.02 PORTLAND CEMENT CONCRETE**

- A. Unless specified otherwise herein or on the Plans, Portland Cement Concrete for items in this section shall be Minor Concrete as specified in Section 90-1.01 of the Caltrans Standard Specifications.

### **19.2.03 CURBS AND GUTTERS FORMS**

- A. Use flexible spring-steel forms or laminated boards to form radius bends. Tolerance: Not to deviate more than 1/4 inch in 10 feet in grade and alignment.

### **19.2.04 EXPANSION JOINT MATERIAL**

- A. Material for expansion joints in portland cement concrete improvements shall be premolded expansion joint fillers conforming to the requirements of ASTM Designation D 1751. Expansion joint material shall be shaped to fit the cross section of the concrete prior to being placed. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site.
- B. Unless noted otherwise herein or on the Plans expansion joint thickness shall be as follows:
  - 1. Curbs, Curb Ramps, Island Paving, Driveways and Gutter Depressions: ¼-inch.

## **PART 3 EXECUTION**

### **19.3.01 GENERAL**

- A. Comply with requirements of Section 32 05 23 – Cement and Concrete for Exterior Improvements.
- B. Form, place and finish concrete walkways, island paving, valley gutters and driveway approaches in conformance with the applicable requirements of Section 73-1.03C and 73-3 of the Caltrans Standard Specifications as modified herein.
- C. Construct new concrete curb, curb and gutter and valley gutters against existing asphalt concrete by removing a minimum of 12-inches of the asphalt concrete to allow placement of curb or gutter forms. Patch pavement with a 6-inch deep lift of asphalt concrete after gutter form is removed.

### **19.3.02 SUBGRADE**

- A. Conform to Section 73-1.03B of Caltrans Standard Specifications.

**19.3.03 PLACING CONCRETE FORMS**

- A. Form concrete improvements with a smooth and true upper edge. Side of the form with a smooth finish shall be placed next to concrete. Construct forms rigid enough to withstand the pressure of the fresh concrete to be placed without any distortion.
- B. Thoroughly clean all forms prior to placement and coat forms with an approved form oil in sufficient quantity to prevent adherence of concrete prior to placing concrete.
- C. Carefully set forms to the alignment and grade established and conform to the required dimensions. Rigidly hold forms in place by stakes set at satisfactory intervals. Provide sufficient clamps, spreaders and braces to insure the rigidity of the forms.
- D. Provide forms for back and face of curbs, lip of gutters and edge of walks, valley gutters or other surface slabs that are equal to the full depth of the concrete as shown, noted or called for on the Plans. On curves and curb returns provide composite forms made from benders or thin planks of sufficient ply to ensure rigidity of the form.

**19.3.04 PLACING STEEL REINFORCEMENT**

- A. Bars shall be free of mortar, oil, dirt, excessive mill scale and scabby rust and other coatings of any character that would destroy or reduce the bond.
- B. Accurately place reinforcement as shown on the plans and hold firmly and securely in position by wiring at intersections and splices, and by providing precast mortar blocks or ferrous metal chairs, spacers, metal hangers, supporting wires, and other approved devices of sufficient strength to resist crushing under applied loads. Provide supports and ties of such strength and density to permit walking on reinforcing without undue displacement.
- C. Place reinforcing to provide the following minimum concrete cover:
  - 1. Surfaces exposed to water: 4-inches.
  - 2. Surfaces poured against earth: 3-inches.
  - 3. Formed surfaces exposed to earth or weather: 2-inches.
  - 4. Slabs, walls, not exposed to weather or earth: 1-inch.
- D. Minimum spacing, center of parallel bars shall be two and one half (2-1/2) times the diameter of the larger sized bar. Accurately tie reinforcing securely in place prior to pouring concrete. Placing of dowels or other reinforcing in the wet concrete is not permitted.

**19.3.05 PLACING PORTLAND CEMENT CONCRETE**

- A. Thoroughly wet subgrade when concrete is placed directly on soil. Remove all standing water prior to placing concrete.
- B. Do not place concrete until the subgrade and the forms have been approved.

- C. Convey concrete from mixer to final location as rapidly as possible by methods that prevent separation of the ingredients. Deposit concrete as nearly as possible in final position to avoid re-handling.
- D. Place and solidify concrete in forms without segregation by means of mechanical vibration or by other means as approved by the Owner. Continue vibration until the material is sufficiently consolidated and absent of all voids without causing segregation of material. The use of vibrators for extensive shifting of fresh concrete will not be permitted.
- E. Concrete in certain locations may be pumped into place upon prior approval by the Owner. When this procedure requires redesign of the mix, such redesign shall be submitted for approval in the same manner as herein specified for approval of design mixes.

#### **19.3.06 EXPANSION JOINTS**

- A. Construct expansion joints incorporating premolded joint fillers at twenty (20) foot intervals in all concrete curbs, gutters, median/island paving, valley gutters, driveway approaches and at the ends of all returns. At each expansion joint install one-half inch by twelve inch (1/2" x 12") smooth slip dowels in the positions shown or noted on the detail drawings.

#### **19.3.07 WEAKENED PLANE JOINTS**

- A. Construct weakened plane joints in concrete curbs, gutters, median/island paving and valley gutters between expansion joints at ten (10) foot intervals throughout, or as otherwise indicated. Depth of joint score depth to be one-fourth (25%) the thickness of the concrete.
- B. Grooved Joints: Form weakened plane joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8-inch. Repeat grooving of weakened plane joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

#### **19.3.08 FINISHING CONCRETE**

- A. Finish curb and gutter in conformance with the applicable requirements of Section 73-1.03C and 73-2.03B of the Caltrans Standard Specifications as modified herein.
- B. Where monolithic curb, gutter and sidewalk is specified, separate concrete pours will not be allowed.
- C. Provide a medium broom finish to all horizontal surfaces unless otherwise shown.

#### **19.3.09 FORM REMOVAL**

- A. Remove forms without damage to the concrete. Remove all shores and braces below the ground surface, before backfilling.

- B. Do not backfill against concrete until the concrete has developed sufficient strength to prevent damage.
- C. Leave edge forms in place at least 24 hours after pouring.

**19.3.10 CONNECTING TO EXISTING CONCRETE IMPROVEMENTS**

- A. New curb or gutter is to connect to existing improvements to remain by saw cutting to existing sound concrete at the nearest score line, expansion joint or control joint. Drill and insert ½-inch diameter by 12-inch long dowels at 24-inches on center into existing improvements. Install pre-molded expansion joint filler at the matching joint.
- B. A cold joint to the existing curb is not acceptable.

**19.3.11 FIELD QUALITY CONTROL**

- A. Conform the finish grade at top of curb, flow line of gutter, and the finish cross section of concrete improvements to the design grades and cross sections.
- B. Variation of concrete improvements from design grade and cross section as shown or called for on the plans shall not exceed the tolerances established in Sections 73-1.03 and/or 73-3 of the Caltrans Standard Specifications.

**19.3.12 RESTORATION OF EXISTING IMPROVEMENTS**

- A. Replace in kind all pavement or other improvements removed or damaged due to the installation of concrete improvements.
- B. Remove, landscaping or plantings damaged or disturbed due to the installation of concrete improvements. Replace in kind.

**PART 4 PAYMENT**

**19.4.01 BID ITEMS**

- A. Payment for sidewalk removal/replacement shall be made at the unit price bid per square foot of sidewalk repaired under “Remove and Replace Sidewalk” and shall be considered full compensation for furnishing all labor, materials, tools and equipment to provide a sidewalk complete in place, including removal of existing sidewalk and restoration of pavement disturbed during sidewalk removal/replacement.
- B. Payment for curb and gutter removal/replacement shall be made at the unit price bid per linear foot of curb and gutter repaired under “Remove and Replace Curb and Gutter” and shall be considered full compensation for furnishing all labor, materials, tools and equipment to provide a curb and gutter complete in place, including removal of existing curb and gutter and restoration of pavement disturbed during curb and gutter removal/replacement.

\*\*\*END OF SECTION\*\*\*

## **SECTION 20. PAVEMENT MARKINGS**

### **PART 1 GENERAL**

#### **20.1.01 SECTION INCLUDES**

- A. Removal of existing traffic stripes and pavement markers.
- B. Cleaning and sweeping of streets before application of traffic stripes and pavement markings.
- C. Materials and application for traffic stripes and pavement markings.
- D. Materials and application for pavement markers.
- E. Object markers.

#### **20.1.02 RELATED SECTIONS**

- A. Section 16 – Cement and Concrete for Exterior Improvements.

#### **20.1.03 RELATED DOCUMENTS**

- A. Caltrans Standard Specifications:
  - 1. Section 82, Markers and Delineators.
  - 2. Section 84, Traffic Stripes and Pavement Markings.
  - 3. Section 85, Pavement Markers.
- B. Caltrans Standard Plans:
  - 1. Plan A20A through A20D: Pavement Markers and Traffic Lines, Typical Details.
  - 2. Plan A24A and A24B: Pavement Markings Arrows.
  - 3. Plan A24C: Pavement Markings, Symbols and Numerals.
  - 4. Plan A24D: Pavement Markings, Words.
  - 5. Plan A24E: Pavement Markings, Words and Crosswalks.
  - 6. Plan A73A: Object Markers.
  - 7. Plan A73B: Markers.
- C. The Manual of Uniform Traffic Control Devices (MUTCD), and the California Supplement to the MUTCD, the editions in effect at time of date on plans.

- D. The regulations, standards, and tests of the State of California Department of Transportation Materials and Research Division, edition in effect at time of date on plans.

**20.1.04 QUALITY ASSURANCE**

- A. Deliver certificates showing conformance with this specification to the Owner with each shipment of materials and equipment to the Project site.

**20.1.05 PROJECT CONDITIONS**

- A. Do not apply traffic striping or pavement markings to the pavement until after approval to proceed has been given by the Owner.
  - 1. Thoroughly cure new asphalt concrete and Portland cement concrete before application of stripes, markings or markers.

**PART 2 PRODUCTS**

**20.2.01 THERMOPLASTIC STRIPES AND MARKING**

- A. Conform thermoplastic striping and marking materials to Section 84-2.02B of Caltrans Standard Specifications, unless noted otherwise herein or on the Plans.

**20.2.02 PAINTED STRIPES AND MARKINGS**

- A. Conform painted striping and marking materials to Section 84-2.02C of Caltrans Standard Specifications, unless noted otherwise herein or on the Plans.

**20.2.03 PAVEMENT MARKERS**

- A. Types: Section 84-2.03C(3) of Caltrans Standard Specifications and as indicated.
- B. Material
  - 1. Non-reflective: Section 82-2.02D of Caltrans Standard Specifications.
  - 2. Retroreflective: Section 85-2.02 of Caltrans Standard Specifications.

**20.2.04 REFLECTORIZED OBJECT MARKERS**

- A. ReflectORIZED Metal Object Markers: Conform to the applicable requirements of Section 82 of Caltrans Standard Specifications for target plates and reflectors, and Caltrans Standard Plan A73A for type L-1 or L-2 object markers.
- B. Posts: Metal posts conforming to the applicable requirements of Section 82-3.02B of Caltrans Standard Specifications and Caltrans Standard Plan A73B.
- C. Mounting Hardware: Conform to the applicable requirements of Section 82-3.02E of Caltrans Standard Specifications.

**PART 3 EXECUTION**

**20.3.01 REMOVAL OF TRAFFIC STRIPES, PAVEMENT MARKINGS AND PAVEMENT MARKERS**

- A. Where blast cleaning is used for the removal of painted traffic stripes and pavement markings, or for removal of objectionable material, remove the residue, including dust and water, immediately after contact with the surface being treated. Remove by a vacuum attachment operating concurrently with the blast cleaning operation.
- B. Where grinding is used for the removal of thermoplastic traffic stripes and pavement markings; remove the residue by means of a vacuum attachment to the grinding machine. Do not allow the residue to flow across or be left on, the pavement.
- C. Where markings are to be removed by blast cleaning or by grinding, the removed area shall be approximately rectangular so that no imprint of the removed marking remains on the pavement.
- D. Contractor will be responsible for repairing any damage to the pavement during removal of pavement markers. Damage to the pavement, resulting from removal of pavement markers, shall be considered as any depression more than 1/4-inch deep.

**20.3.02 TEMPORARY PAVEMENT MARKERS**

- A. If permanent pavement markers cannot be installed immediately, and the street or road is to be placed in service, install short term, temporary pavement markers on the new pavement prior to opening the street or road to traffic.
- B. Place markers, at a minimum, of 24 feet on centers or as required by the governmental agency having jurisdiction, in the appropriate colors to delineate centerlines and travel lanes on multi-lane roadways.

**20.3.03 THERMOPLASTIC TRAFFIC STRIPES AND PAVEMENT MARKINGS**

- A. Apply in conformance with the manufacturer's instructions and the applicable requirements of Section 84-2.02B of Caltrans Standard Specifications and Caltrans Standard Plans A20A through A20D, and A24A through A24E.

**20.3.04 PAINTED TRAFFIC STRIPES AND PAVEMENT MARKINGS**

- A. Apply in conformance with the manufacturer's instructions and the applicable requirements of Section 84-2.02C of Caltrans Standard Specifications and Caltrans Standard Plans A20A through A20D, and A24A through A24E.

**20.3.05 PAVEMENT MARKERS**

- A. Place in conformance with the requirements of Section 84-2.03C of the Caltrans Standard Specifications.



- B. Pavement recesses are not required. Markers shall be installed accurately to the line established by the Engineer. No markers shall be installed until the surface has been approved by the Owner.

**20.3.06 REFLECTORIZED OBJECT MARKERS**

- A. Install in conformance with the requirements of Section 82 of Caltrans Standard Specifications, except that the metal marker posts shall not be driven in place without prior approval of the Owner.
- B. Install at locations shown on the Plans.

**20.3.07 PROTECTION**

- A. Protect the newly installed and traffic stripes and pavement markings from damage until the material has cured.
- B. Replace any traffic stripes or pavement markings or markers broken, misaligned or otherwise disturbed prior to opening roadway to traffic.

**20.3.08 RESTORATION OF EXISTING IMPROVEMENTS**

- A. Existing striping or other markings removed or damaged due to the installation of new facilities shall be replaced in kind.
- B. Existing landscaping or planting removed, damaged or disturbed due to the installation of traffic control signs or street name signs shall be replaced in kind.

**PART 4 PAYMENT**

**20.4.01 BID ITEMS**

- A. Payment for this section shall be considered as part of the cost under various items of work involved and will not be paid separately and shall include furnishing all labor materials, tools and equipment to accomplish said work.

\*\*\*END OF SECTION\*\*\*

## **SECTION 21. MOBILIZATION AND DEMOBILIZATION**

### **PART 1 GENERAL**

#### **21.1.01 SECTION INCLUDES**

This section pertains to mobilization and demobilization of labor, equipment and materials necessary to construct the sewer project.

Mobilization shall conform to Section 11, Mobilization, of these specifications.

The City will pay the Contractor forty percent (40%) of the price bid under this Item at the first Progress Payment following the completion of the items listed below except for Item E. The next thirty percent (30%) will be paid after the project is fifty percent (50%) completed. The remaining 30% will be paid with the final payment after demobilization and acceptance of the job.

- A. Establishment of an operational field capability with all required equipment such as sanitary facilities, etc.
- B. Mobilization to the job site of sewer pipe replacement equipment and materials.
- C. Establishment of an area for receiving and storing materials.
- D. Assignment and locating the job site, job superintendent, office engineer and job foreman.
- E. Demobilizing and removing temporary facilities.
- F. A traffic control plan must be submitted to the Engineer for approval one week prior to actual construction. The traffic control plan shall be submitted on 11 x 17-inch paper format and shall include the following:
  - 1. Scale drawing showing all street names, existing traffic marking, stop signs, curb lines and lane widths.
  - 2. All traffic control methods shall be according to Section 12 of these special provisions and the most recent Caltrans Standard Plans and Specifications.
  - 3. Location and storage (temporary for duration of project) of all equipment and material to be used on this project.

### **PART 2 PAYMENT**

#### **21.2.01 BID ITEMS**

- A. Payment for "Mobilization and Demobilization" shall be made at the lump sum price bid, which shall be full compensation for furnishing all the labor, materials, equipment, City permits, location of existing utilities, and establishment of any required temporary utilities, etc. as described herein. A maximum of 40% of the "Mobilization and Demobilization" bid price, not to exceed a maximum of three and a half percent (3.5%) of the Total Base Bid for the Contract, will be paid at the end of the project as described above, and total

three (3) payments for the entire project. Any portion of the bid price that is beyond 3.5% of the total project bid will be paid after the project is signed off by the Engineer and accepted by the City.

\*\*\*END OF SECTION \*\*\*

**SECTION 22 REPLACEMENT OF EXISTING SEWER PIPE BY PIPE BURSTING METHOD**

22.01 GENERAL

This section pertains to replacement of existing sewer main or sewer lateral with new sewer main. Sizes of existing and new pipes are as indicated on the Contract Drawings.

The Contractor shall use best practices on pipe bursting.

22.02 SUBMITTALS

A. The Contractor shall submit for approval by the Engineer the following information:

1. Manufacturer's literature on the materials identified below:
  - a. DR 17 High Density Polyethylene Pipe (DR 17 HDPE)
2. Certification by the manufacturer that all pipe and fittings, including fusion couplings and adapters, furnished under this section comply with the specifications mentioned below.
3. Certification of operators by pipe manufacturer. Operators shall have at a minimum of two (2) years of experience in the pipe bursting business and a record of at least four (4) miles of pipe bursting using the pneumatic method. The operators shall be trained by the pipe bursting equipment manufacturer in the use of the equipment used for pipe bursting and shall be trained by the thermal fusion equipment manufacturer in the use of equipment for thermal butt-fusion of high density polyethylene (HDPE) pipe.
4. Plan of work, method, equipment layout and dimensions of the bursting tool, access pit locations and layout, and pipe-string layout details.

22.03 PIPE MATERIAL CHARACTERISTICS AND SPECIFICATIONS

Pipe material for pipe replacement by pipe bursting shall be HDPE as indicated herein or on the Contract Drawings.

A. High Density Polyethylene Pipe (HDPE)

1. Physical Properties
  - a. Pipe and Fittings - Extra High Molecular Weight, High Density Polyethylene PE 3408/3608, Cell Class PE345444C /Cell Class PE345464C per ASTM D3350. Pipe shall be co-extruded using a melt homogenizing/plasticating extruders and

appropriate die (inside of pipe must be light grey or light in color). Pipe shall meet the requirements of AWWA C901 and C906.

- b. Pipe and fittings for pipe bursting shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions or other injurious defects. They shall be uniform in color (inside of pipe must be light grey or light in color), opacity, density, and other physical properties. Any pipe and fittings not meeting these criteria shall be rejected.

2. Pipe Markings

- a. Pipe shall be marked at five-foot (5’) intervals or less with the manufacturer’s name (or trade mark), the designation ASTM D3350 and ASTM 714, including the year of issue, the letters “PE” followed by the cell classification number of the raw material compound used, the nominal pipe size in inches, the dimensional ratio, and the manufacturer’s code identifying the resin manufacturer, lot number, and date of manufacture.
- b. Fittings shall be marked with the manufacturer’s name (or trade mark), the designation ASTM D3350 and ASTM 714, and the manufacturer’s code identifying the resin manufacturer, lot number, and date of manufacture.

3. Pipe Sizes

The average outside diameter and wall thickness of pipe and fittings shall conform to the table below when measured in accordance with ASTM D2122.

4. Wall Thickness

Schedule	Nominal Pipe Size (inches)	Outside Diameter (inches)	Min. Wall Thickness (inches)	Average Inside Diameter (inches)
DR 17	4	4.50	0.26	3.94
DR 17	6	6.63	0.39	5.80
DR 17	8	8.63	0.51	7.55
DR 17	10	10.75	0.63	9.41
DR 17	12	12.75	0.75	11.16

For pipe size larger than 12” will require Engineer’s approval. The minimum requirement will be DR 17.

22.04 ON-SITE UNLOADING AND CONDITION OF PIPE

A. On-Site Unloading

All pipes shall be carefully unloaded and stored on level ground to prevent damage to the pipe. If the pipe is damaged before installation, the Contractor shall replace such pipe at the discretion of the Engineer.

B. Condition of Pipe

Pipe and Fittings shall be homogeneous throughout and free of:

1. Serious abrasion, cutting, or gouging of the outside surface extending to more than 10 percent of the wall thickness in depth.
2. Cracks
3. Kinking (generally due to excessive or abrupt bending)
4. Flattening
5. Holes
6. Blisters
7. Other injurious defects

22.05 PIPE JOINING

A. High Density Polyethylene Pipe (HDPE)

1. Equipment

Butt Fusion Machine - McElroy Manufacturing Inc. or approved equal.

Pulling or Pushing Head (preferably with pneumatic pipe bursting head) – Driscoplex, or approved equal. Pipe bursting head should be able to cut roots and other obstructions found on the existing line.

2. Joining

The pipe shall be butt welded in accordance with ASTM F2620. The joints shall be leaking proof, thermal, butt joints. All fusing shall be done using tools recommended by the pipe supplier and approved by the Engineer. Operators shall be certified by the pipe manufacturer. The fusing machine shall have hydraulic pressure control for fusing two pipe ends together. The ends of pipe shall be trimmed to form perpendicular faces prior to fusing. The heating plate on the fusing machine shall be electrically heated and thermostatically controlled and shall contain a temperature gauge for monitoring temperature. The heating plate shall be subject to periodic inspection, using a temperature stick, to assure even heating.

The tensile strength of yield of the butt fusion joints shall not be less than the pipe. A specimen of pipe cut across the butt fusion joints shall be tested in accordance with ASTM D 638.

Joints between pipe sections shall be smooth on the inside and internal projection beads shall not be greater than three sixteenths of an inch (3/16”).

HDPE electrofusion couplings shall be Tega or approved equal, and shall meet the requirements of ASTM F714, F1055, D2513, D3035, and D3350. Electrofusion couplings shall be fusible to a minimum of DR 17 pipe.

### 3. Sewer Lateral Connections

Sewer lateral connections to the HDPE main shall be made by one of the following materials:

- a. Plastic Saddles with stainless steel straps by GPK or approved equal or Rubber Saddles with stainless steel straps and stainless steel shear bands by Fernco Company, DFW, or approved equal.
- b. Electrofusion saddles by Central Plastics, Friatec, or approved equal.
- c. Inserta Tees by Fowler Manufacturing.

## 22.06 PIPE INSTALLATION

- A. There are trees along the easement areas and public right of ways which may affect the pipe bursting operation. During pipe bursting operation, clearing of tree roots may be required in these areas. In the narrow easement areas, the Contractor has an option, with the approval of the City, to use open cut method between short pipe runs.
- B. The Contractor shall submit the number, location, and size of pits to Engineer for approval. Access pit locations shall be chosen and recommended by the Contractor with the intent of minimizing excavation and traffic disruption. Recommended locations shall be at service connections, manhole construction, or at points where spot repairs need to be performed. Alternative access pit locations, proposed by the Contractor, must be approved in writing by the Engineer prior to start of the work.
- C. The top of the existing pipe shall be exposed to spring line for the full length of the insertion pit prior to removal of the crown portion. All sharp edges shall be removed from the exposed pipe opening.
- D. The Contractor shall modify the existing walls and channels in manholes to allow free movement of the pipe bursting head through the manhole located between the insertion area and the machine pit(s). These manhole modifications shall be considered as incidental work to the contract.

- E. The pipe bursting tool shall make a tunnel along the path formerly occupied by the old sewer and shall install the new pipe by pulling, pushing, or a combination of both. The tool shall be of dimensions such that the design maximum diameter of the tunnel shall not exceed the maximum outside diameter of the new pipe plus dimension approved by the Engineer.
- F. When the tool is pulled along the existing pipe, the pipe shall be broken up into small fragments and these fragments driven into the surrounding pipe zone. The tool shall then install the new pipe by pulling it into place. When pipe bursting existing PVC pipe, Contractor shall use a tool to slice the pipe as needed to allow for pipe bursting operations and installation of new pipe.
- G. The new sewer pipe shall be installed in a straight horizontal and vertical line with the invert of the new sewer pipe matching the invert of the existing sewer at the exit of the upstream manhole and the entrance into the downstream manhole regardless of the size and alignment of the existing pipe.
- H. The Contractor shall allow the new pipe to return to its original length and shape in the unstressed state and then trim the excess pipe in the manholes. The new HDPE pipe manufacturer's recommendations shall be followed regarding the required time interval for relief and normalization of stress and strain relief shall not be less than twenty-four 24 hours.
- I. The upsizing method shall not cause disruption to the above ground terrain or improvements as described below except at the launching and receiving pits.
- J. Pipe bursting existing pipe and replacing with new pipe shall cause no more than a maximum of one half inch (1/2") heave from the existing pavement surface. The Contractor shall employ all necessary procedures to prevent damage to the pavement surface because of heave (ex. Surcharging or running a heavy equipment on top of the pipe bursting head while replacing the existing line, digging out the material between the existing pipe and utility lines, etc.). Any damage done to the pavement due to pipe bursting shall be repaired by the Contractor at no cost to the City.
- K. New HDPE pipe shall extend a minimum of six inches (6") into each manhole. The annular space at each manhole shall be sealed with oakum saturated with Avanti 202, a water stop gasket by Fernco Company, or approved equal and covered with a quick setting grout to provide a leak-free, properly graded flow into or out of the manhole or structure.

## 22.07 INSPECTION AND TESTING

### A. Cleaning and Video Inspection

#### 1. Initial Cleaning and Video Inspection



- a. A maximum of thirty (30) minutes prior to pipe bursting, the existing sewer shall be cleaned and video inspected in accordance with Project Specifications. Payment for initial cleaning of the pipe is included with the contract price per linear foot of sewer pipe installed and no additional compensation will be allowed. Payment for pre-CCTV inspection shall be included in the price paid for "Construction Survey and Site Investigation."
- b. The Contractor shall verify location of active lateral connections at this time.
- c. The Contractor shall provide experienced personnel trained in locating breaks, obstacles and service connections by closed circuit color television. The interior of the pipelines shall be carefully inspected to determine the location of any condition which may prevent the proper installation of the new sewer main. Any and all defects or conditions that may prevent proper installation of the new pipe shall be verified in writing to the Owner so that these conditions can be corrected. A DVD color video and suitable legible log shall be kept for later reference by the City.

2. Final Cleaning and Video Inspection

After pipe bursting installation, the pipes and laterals shall be cleaned by the Contractor. The Contractor shall video inspect the pipes and laterals installed and repair all defects at no additional cost to the City. The payment for final cleaning shall be included with the contract price per linear foot of sewer pipe installed. The payment for post TV shall be at the contract price per linear foot of sewer main televised.

3. Spot Repairs after Installation

The Contractor shall repair all defects on the new sewer main or lateral after installation based on the Final Cleaning and Video Inspection. The Engineer shall approve all work done. No additional compensation will be allowed for any repair work.

B. Air Test

The pipe shall be tested with low pressure air in accordance with the most current Installation Test Standard IS-16 issued by the International Association of Plumbing and Mechanical Officials or in accordance with the most current Uni-B-6 pamphlet, "Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe" issued by the Uni-Bell PVC Pipe Association (refer to Specification Section 19.07B) or as per the pipe manufacturer's specifications. Tests shall be made in the presence of the Contractor and the Engineer.

If the pipe fails the air test, the Contractor shall locate the source(s) of the leak and repair the defect(s). The pipe shall then be retested until a satisfactory result is obtained.

Despite any previous testing, any leaks developed before the end of the 1-year guarantee period shall be expeditiously repaired by the Contractor at no expense to the City.

22.08 PAYMENT

The work related to pipe bursting shall include, but is not limited to, equipment, material, excavation, sheeting, shoring, bracing, installation, air-gapping for crossing utilities, tree root clearing, temporary bypass pumping, reconnection, manhole adapter, connection to manhole, backfill and compaction of the access/exit pit, repair due to heaving, and AC pavement or other surface restoration. Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid per linear foot for each size of pipe installed.

Payment for pre-CCTV inspection shall be included in the price paid for “Construction Survey and Site Investigation”, and no additional payment beyond the price bid for that item will be made.

Payment for post-CCTV inspection shall be made at the unit price bid per linear foot of sewer main televised under “Post Television Inspection”.

**END OF SECTION**

**SECTION 23 NEW AND REPLACEMENT OF EXISTING SEWER MAIN BY OPEN-CUT METHOD WITH SDR 26 PVC**

23.01 GENERAL

This section pertains to installation of new SDR 26 PVC pipe by Open-Cut method

23.02 SUBMITTALS

The Contractor shall submit for approval by the Engineer the following information:

1. Manufacturer's literature on the materials identified below:
  - a. SDR 26 Polyvinyl Chloride Pipe (SDR 26 PVC)
2. Certification by the manufacturer that all pipe and fittings furnished under the specifications mentioned below.

23.03 PIPE MATERIAL CHARACTERISTICS AND SPECIFICATIONS

Pipe material for open-cut method shall be SDR 26 PVC except as otherwise specified herein and shown on the Contract Drawings.

A. Sewer Main

1. Certification by the manufacturer that pipe and fittings furnished under this specification were manufactured, sampled, tested, and inspected in accordance with ASTM D3034 and ASTM F679.
2. Certification shall be signed by an authorized agent of the manufacturer. A report of test results shall be furnished if requested by the Engineer. The date the pipe was manufactured shall be included in the Certification.
3. Pipe and fittings shall meet extra strength minimum for SDR 26 of the requirements of ASTM D3034 and ASTM F679.
4. Watertight manhole adapter shall be provided on each connection at a manhole or other structure. Manhole adapter shall be a sanded PVC manhole adapter as manufactured by GPK Products Inc. or approved equal.
5. Minimum "pipe stiffness" at five percent (5%) deflection shall be forty-six (46) psi for all sizes when tested in accordance with ASTM Method of Test D2412, External Loading Properties of Plastic Pipe by Parallel-Plate Loading.

B. Temporary Bypass Sewers

Temporary bypass sewers to be installed within the trench of the permanent replacement sewer for the purpose of maintaining existing services shall be of Schedule 40 PVC or SDR 35 PVC.

C. Lateral Connections

Lateral Connections shall be PVC WYE SDR 26 installed on the sewer main.

D. Pipe Sizes

The average outside diameter and wall thickness of pipe and fittings shall conform to the table below when measured in accordance with ASTM D3034 for four inches (4”) to fifteen inches (15”) diameter PVC pipe, ASTM F679 for eighteen inches (18”) diameter and larger PVC pipe.

E. Wall Thickness

Schedule	Nominal Pipe Size (inches)	Outside Diameter (inches)	Min. Wall Thickness (inches)	Average Inside Diameter (inches)
SDR 26	4	4.22	0.16	3.89
SDR 26	6	6.28	0.24	5.79
SDR 26	8	8.40	0.32	7.75
SDR 26	10	10.50	0.40	9.69
SDR 26	12	12.50	0.48	11.54
SDR 26	15	15.30	0.59	14.12

23.04 ON-SITE UNLOADING AND CONDITION OF PIPE

See Section 18.04A “Replacement of Existing Sewer Main by Pipe Bursting”

23.05 PIPE JOINING

A. Fittings

PVC pipe, fittings, and couplings shall meet the requirements of ASTM D3033, ASTM D3034 or ASTM F679.

B. Joining Systems

All pipes shall have a home mark on the spigot end to indicate proper penetration when the joint is made. **The Contractor shall not over-insert PVC pipe beyond the home mark on each length of pipe.**

The socket and spigot configurations for the fittings and couplings shall be compatible to those used for the pipe.

23.06 PIPE INSTALLATION

- A. When working with “live” sewers, the Contractor shall furnish and install pumps and piping of adequate capacity to divert all intercepted sewage from upstream of the work to the next manhole downstream of the work. The Contractor shall immediately clean up any accidental spills. The sewer bypass system shall be installed to prevent any sewer backups while working on the area.

Where called for on the Contract Drawings, or required to maintain service to connections between the time of replacement sewer pipe installation and the time at which the manhole to manhole section of replacement pipe has successfully passed the required mandrel deflection test and low pressure air test and has been approved for activation, the Contractor shall install a temporary PVC bypass line within the backfill of the replacement sewer at the same grade as the existing sewer being replaced. Existing services shall be reconnected to the temporary sewer each as the trench is backfilled. Temporary bypass piping shall be of the pipe class specified herein.

- B. Inspect all pipe and fittings prior to lowering into trench to ensure no cracked, broken, or otherwise defective materials are being used. Clean ends of pipe thoroughly. Remove foreign matter and dirt from inside of pipe and keep clean during and after laying.

Use proper implements, tools, and facilities for the safe and proper protection of the work. Lower pipe into the trench in such a manner as to avoid any physical damage to the pipe. Remove all damaged pipe from the job site. Do not drop or dump pipe into trenches under any circumstances.

- C. The Contractor must utilize survey leveling equipment to verify the grade and alignment of the new sewer. The Contractor shall complete and supply a form to the Engineer for each pipe segment following the connection to adjoining pipes but prior to backfilling of the trench. The Contractor must submit the survey forms to the engineer for final approval of grade and alignment. Final grade for each pipe segment installation shall not deviate from those shown on plans by more than 0.02 ft. The Contractor must ensure that the reinforce material underneath the new sewer main to prevent sag along the line.

- D. Use PVC manhole adapters in break-out holes in manholes for connecting new PVC pipe and grout all around with non-shrink grout as shown on the Contract Drawings. Pipes shall be cut off flush with the inside surface of the manhole. A two-foot (2') nominal length of

pipe shall be used when entering and leaving all manholes and structure.

- E. Where CDF must be removed to connect new sewer to existing manhole, the Contractor shall use a pneumatic, hand operated, hammer to remove sufficient CDF to allow for connection of the new sewer pipe. Following pipe installation and acceptance by the Engineer, the Contractor shall furnish and install replacement CDF to the original grades around the manhole.
- F. Support of existing utilities and method of backfill around large utilities to maintain support after construction shall be in accordance with the Contract Drawings.

19.07 INSPECTION AND TESTING

A. Cleaning and Video Inspection

1. Final Cleaning and Video Inspection

After pipe installation, the pipes and laterals shall be cleaned by the Contractor. The Contractor shall video inspect the pipes and laterals installed and repair all defects at no additional cost to the City. The payment for final cleaning shall be included with the contract price per linear foot of sewer pipe installed. The payment for post TV shall be at the contract price per linear foot of sewer main televised.

2. Spot Repairs after Installation

The Contractor shall repair all defects on the new sewer main or lateral after installation based on the Final Cleaning and Video Inspection. The Engineer shall approve all work done. No additional compensation will be allowed for any repair work.

B. Air Test

The pipe shall be tested with low pressure air in accordance with the most current Uni-B-6 pamphlet, "Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe" issued by the Uni-Bell PVC Pipe Association or as per the pipe manufacturer's specifications. Tests shall be made in the presence of the Contractor and the Engineer.

The minimum specified time required for a 1.0 psig pressure drop for size and length of pipe indicated for  $Q=0.0015$  cubic feet per minute per square feet of internal surface is as shown in Table 1 below:

Table 1: MINIMUM SPECIFIED TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q=0.0015

Pipe Diameter (in)	Min. Time (min:sec)	Length for Min. Time (ft)	Time for Longer Length (sec)	Specification Time for Length (L) Shown (min:sec)							
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft
6	5:40	398	.854L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	298	1.520L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	9:26	239	2.374L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	199	3.418L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	14:10	159	5.342L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
18	17:00	133	7.692L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41

Note: If there has been no leakage (zero psig drop) after one hour of testing, the test section shall be accepted and the test complete.

If the pipe fails the air test, the Contractor shall locate the source(s) of the leak and repair the defect(s). The pipe shall then be retested until a satisfactory result is obtained.

Despite any previous testing, any leaks developed before the end of the 1-year guarantee period shall be expeditiously repaired by the Contractor at no expense to the City.

C. Vertical Deflection Limitations

The Contractor shall also furnish all equipment and personnel to conduct deflection testing on all PVC pipe installed. The total vertical wall deflection of the PVC sewer pipe shall not exceed seven and one-half percent (7 1/2%) of the inside pipe diameter. Deflection testing shall not be conducted earlier than seven (7) days after placement and compaction of the backfill. In addition, the groundwater level shall be kept below the invert of the pipe during the deflection testing.

The vertical deflection shall be checked by manually pulling a go, no-go deflection testing mandrel through the pipe. The mandrel shall be specifically designed for this purpose, and the Contractor shall submit shop drawings to the Engineer detailing the type of mandrel to be used. The mandrel shall be as manufactured by Armco, Inc. or approved equal, and shall have the specified accuracy in all positions of rotation.

The Contractor shall conduct all deflection testing in the presence of the Engineer. Should any pipe section exceed the maximum deflection specified, the Contractor shall undertake any remedial action as required to reduce the deflection to within that limit.

19.08 PAYMENT

- A. Payment for “12” PVC Pipe (6’-10’ Deep)” or “12” PVC Pipe (10’-15’ Deep)” shall be paid at the price bid per linear foot for each size of pipe installed. The linear feet of pipe shall be measured from the inside wall of one manhole to the inside wall of the next manhole. The section of pipe that runs through the manholes will not be considered as pipe installed, and payment will not be made. The price per foot of Open-Cut construction shall include, but is not limited to, equipment, material, excavation, sheeting, shoring, bracing, dewatering, installation, removal of existing pipe, base rock, , temporary and final asphalt concrete, pipe bedding, filter fabric, reducer, reconnection, manhole adapter, connection to manhole, backfill and compaction of the trenches and pavement restoration. New manholes, where required, shall be paid for under Section 24, “Manhole Installation/Replacement”.

**END OF SECTION**



## **SECTION 24 MANHOLE INSTALLATION/REPLACEMENT**

### **24.01 GENERAL**

- A. All manholes shall be installed in accordance with the standard plan details, the Contract Drawings and these specifications.
- B. Manhole modification shall be in accordance with the Contract Drawings.
- C. The size and location of the pipe stubs connecting to new manhole shall be as indicated in the Contract Drawings.
- D. Submittals: Shop drawings for all manholes furnished under this Contract shall be submitted in accordance with the requirements of Section 4.07. Manhole submittals shall include manhole construction worksheets with plan view detailing angles and sizes of all pipe penetrations and sections calling out pipe penetration elevations and dimensions of the precast base, barrel, and cone sections, as well as required riser sections and manhole frame and cover depth. Shop drawings shall also detail pipe penetration gasketing, manhole joint gasketing, exterior coating, exterior manhole joint tape, manhole reinforcement, and certification of compliance with ASTM C478.

### **24.02 MANHOLE FRAME AND COVER**

- A. Twenty four-inch (24") manhole covers in the public right of way shall be custom made according to City Standards with markings according to Contract Drawings. Since these manhole covers are custom made, the Contractor shall order them ahead of time to prevent any delays in construction. The size and type shall be as follows and as detailed in the Contract Drawings.
- B. Twenty four inch (24") manhole frames and covers in the easement areas and where called for in the Contract Drawings shall be hinged Pamrex or equal. Frame and cover shall be manufactured from ductile iron. All components shall be black coated. Cover shall be hinged and incorporate a ninety (90) degree blocking system to prevent accidental closure and shall be one man operable using standard tools. Frame shall be circular and shall incorporate a seating gasket. The flange shall incorporate bedding slots and bolt holes. The City will provide the 24" hinged manhole frame and cover.
- C. Manhole frames and covers shall be constructed of ASTM A-48, Class 35B cast iron with covers embossed to match the City's standard manhole cover pattern. Manhole frames and covers shall be D&L Foundry & Supply Model A-1018 or approved equal.
- D. All covers from manholes to be replaced shall be salvaged and delivered to the City corporation yard or as directed by the Engineer. All manhole frames from the existing manholes are to be removed and delivered offsite at the Contractor's expense.

24.03 MANHOLE BASES

- A. Foundation: After excavation is completed and approved, the Contractor shall place a minimum of eight-inches (8") or twelve-inches (12") of compacted Class 1 permeable material, aggregate, conforming to Section 68-1.025, "Permeable Material" of the Caltrans State Specifications as shown on the Contract Drawings. A precast manhole base shall be used for manholes in the public right-of-way. The excavation for the foundation shall be level and of sufficient width and depth to accommodate the foundation dimensions.
- B. The foundation specified shall be of such width that the outside edges shall extend a minimum of six inches (6") beyond the outside wall of the manhole wall at all points.
- C. For a cast-in-place manhole base, the concrete for the foundation shall be placed continuous and deposited in such a manner that segregation of material does not occur. Concrete shall be installed in accordance with the requirements specified in Section 26 of these specifications. Once deposited, the concrete shall be consolidated mechanically so as to secure a dense watertight mass. Before final set of the concrete, a keyway shall be made in the top of the foundation block by use of a metal form ring. The keyway in the foundation block shall be required for manholes to be constructed using cast-in-place bases in conjunction with precast manhole barrels and cones.
- D. For cast-in-place manhole bases, whenever possible, the foundation shall be formed around the pipe running continuously through the manhole. When the pipe cannot be run continuously through the manhole base, foundation invert channels shall be shaped and trowelled smooth, with transitions of line and grade, from one pipe to another. The channels shall conform to and be of such width equal to the inside diameter of the pipes.
- E. The top of the foundation, from inside face of manhole, shall be shaped to slope toward the channels at the rate of two percent (2%) to four percent (4%).

24.04 PRECAST CONCRETE MANHOLES

- A. Manholes in the easement areas and private backyards shall be thirty-six-inch (36") diameter precast concrete manhole unless otherwise noted in the Contract Drawings. Manholes in the public rights-of-way shall be standard forty-eight-inch (48") diameter precast manholes unless otherwise noted on the Contract Drawings. RUB'R-NEK external joint wrap, twelve-inch (12") wide, or approved equal, shall be installed around all exterior manhole joints. Any precast manhole in public rights-of-way, easements, or private backyards less than four feet (4') deep shall be a Type 2 manhole, conforming to the Standard Details included in the Contract Drawings.
- B. Standard (Type 1) precast concrete manholes shall consist of cylindrical barrel sections, concentric tapered cones, and grade ring sections. The various shaft sections shall fit together readily and all jointing and connections shall be joined with "Ram-Nek" flexible mastic joint filler. All mortar joints shall be trowel smooth on the inside face and shall be watertight. RUB'R-NEK external joint wrap, twelve-inch (12") wide, or approved equal

shall be installed around all exterior manhole joints. Concrete sealant and waterproofing shall be applied to the interior and exterior of the manhole barrel prior to backfill. Sealant shall be Tegaproof, Xypex, bituminous material or approved equal.

- C. External joint wrap shall provide a permanent, flexible and watertight seal and have an effective application and workability over a temperature range of 30°F to 140°F and a service performance and resistance over a temperature range of -40°F to 180°F. The product shall have self-healing properties if punctured.
  - 1. External joint wrap shall be applied to a surface cleaned with a wire or stiff bristled brush such that no loose dust particles of dirt are present. The siliconized release paper shall be peeled back to expose approximately 6 to 12 inches of the adhesive compound and the compound shall be applied to the surface, centered over the joint, such that there are no wrinkles, buckles, or entrapped air bubbles. The tape shall remain centered over the joint and in good contact with the substrate. If one roll does not cover the entire circumference of the joint, splice with a new roll by overlapping the ends approximately 4 inches. The product shall be carefully cut with scissors or a knife.
- D. The “Ram-Nek” mastic joint filler shall be installed in the tongue and groove joint between each manhole section so as to form a flexible watertight seal. The mastic joint filler shall be applied in accordance with the manufacturer’s recommendations, overlapping on itself a minimum of three (3) inches so as to form a watertight seal.
- E. The shaft sections and cone shall be combined in such a manner that a maximum height of the grade adjustment rings, including the manhole frame casting, is no more than eighteen inches (18”).
- F. Precast manhole sections shall be manufactured in accordance with ASTM Designation C478. The minimum compressive strength of the concrete for all sections shall be 4,000 psi. The maximum allowable absorption of the concrete shall not exceed eight (8) percent of the dry weight. Tests, if required, shall be similar to those described in ASTM C76. The circumferential steel reinforcement for riser pipe, cone sections and base walls shall be a minimum of 0.12 square inches per lineal foot. Reinforcing in both layers of steel of the flat slab top sections and in the layer of steel in the bottoms of bases shall be a minimum of 0.12 square inches per lineal foot in both directions.

Concrete sealant and waterproofing compound shall be applied to the interior and exterior of the manhole barrel prior to backfill. Sealant material shall be Tegaproof, Xypex, bituminous material, or approved equal.

#### 24.05 CAST-IN-PLACE CONCRETE MANHOLES

- A. In the areas where accessibility is difficult or at the locations shown on the Contract Drawings, cast-in-place concrete manholes are acceptable. Method of construction needs to be approved by the Engineer.

24.06 DROP MANHOLES

- A. Drop manholes shall have an inside drop system consisting of drop bowl, drop pipe, fitting, and stainless adjustable pipe brackets as manufactured by Reliner/Duran Inc. or approved equal as shown on the standard detail included in the Contract Drawings. Bowls and drop pipes shall match the inlet pipe size unless approved otherwise by the Engineer.

24.07 SETTING MANHOLE FRAMES CASTING

- A. The manhole frame casting shall be permanently set when so authorized by the Engineer. The frame casting shall be centered on the manhole neck and set on a layer of mortar. The mortar shall be neatly struck. In flexible pavement areas, a circular concrete collar shall be formed and poured around the manhole neck from the top of the cone section so as to securely anchor the frame to the manhole neck. The collar shall be uniform width at least 4 inches wider than the flange of the casting and have a rounded toe. The concrete mixture for the collar shall contain lamp black coloring.
- B. Forms shall be circular in shape, smooth on the side placed next to the concrete and shall have a true smooth upper edge and shall be rigid enough to withstand the pressure of fresh concrete without distortion. All forms shall be thoroughly cleaned and coated with form oil to prevent the concrete from adhering to them. The depth of forms shall be equal to the full depth of the concrete section being poured. The Contractor shall exercise care not to injure any part of the adjacent trees in placing his forms.
- C. Manhole casting on easements shall be raised four inches (4") while manhole casting on streets shall be raised eight inches (8") as shown on the Standard Detail.
- D. The Contractor shall ensure that all manhole cone and manhole frame surfaces are entirely free of debris prior to placement of concrete required on the Standard Details for encasing the frame.
- E. The entire work of constructing manholes must be carried on in a manner to ensure watertight work, and any leaks in manholes shall be corrected using injection epoxy grouting, or the entire work shall be removed and rebuilt.

24.08 MANHOLE BACKFILL

A. Manholes in Public Rights-of-Way

All pre-cast manholes in the public rights-of-way shall be backfilled with Controlled Density Fill (CDF) conforming to the requirements of the standard detail included in the Contract Drawings. Contractor must provide a clean interface between the CDF and manhole wall prior to backfilling against the manhole with CDF.

B. Manholes in Easement Areas and in Private Backyards

With the approval of the Engineer, backfill for precast concrete manhole in the easements and backyards can consist of manhole excavated material free of debris, roots more than two inches (2") diameter, brush, junk, and boulders larger than six inches (6") diameter or imported backfill material conforming with the Contract Drawings and Specifications for the work. Backfill around manhole material shall be consolidated by mechanical compactors, vibrating compactors, or any combination as approved by Engineer. Compaction shall be not less than ninety percent (90%) of relative density of ASTM D-1557. Fiberglass manholes may be accepted in specific applications, and only following the Engineer's approval. When fiberglass manhole is used, CDF backfill will be required. CDF backfill will NOT be required for HDPE temporary manholes.

24.09 PAYMENT

- A. Payment for "Sanitary Sewer Manhole Installation" shall be based on a field count of each type of manholes installed and shall include, but not be limited to, all labor; materials; excavation, removal of existing lamphole, cleanout, or manhole base rock; sheeting; shoring; bracing; compaction; backfill; frame and cover; manhole adaptor; external concrete joint wrap; coating; backfill; compaction; equipment; incidental costs and surface restoration, including AC pavement or other surface restoration; and delivery of existing manhole over to City corporation yard and disposal of existing frames. If new or existing manholes are damaged during construction, the Contractor shall repair the manhole to its original state in a method approved by the Engineer at no additional cost to the City. Repair to correct leakage into the manhole must include treatment to the outside manhole wall at no additional cost to the City. Any leaks in manholes shall be corrected using injection epoxy grouting or acrylamide grout.

Despite any previous testing, any leaks developed before the end of the 1-year guarantee period shall be expeditiously repaired by the Contractor at no expense to the City.

- B. Payment for "Connect to Existing Manhole" shall be made at the unit price bid for each connection installed at the existing manhole including, but not limited to, excavation, sheeting, shoring, bracing, backfill, compaction, coring the existing manhole, and grout or concrete work.

**END OF SECTION**

## **SECTION 25 LATERAL AND CLEANOUT REPLACEMENT**

### **25.01 GENERAL**

Section Includes: Furnish and install all piping, including fittings, caps, and accessories as shown on the Contract Drawings, as shown on City's Standard Drawings and as described in the Specifications and as required to perform the replacement sewer laterals using the pipe bursting or open-cut method. In public street areas, open-cut construction may also be required. All service laterals and cleanouts that connect to the existing sewer main which are to be rehabilitated shall be replaced, and shortened or lengthened as required. The Contractor must install lateral and cleanouts as per Contract Drawings.

### **25.02 SUBMITTALS**

A. The Contractor shall submit the following information for the Engineer's review:

1. Method for fusion of HDPE laterals to main.
2. Butt Fusion Machine to be used for fusion of HDPE laterals to main.
3. HDPE and/or PVC pipe materials, including fusion couplings and adapters.
4. Cleanout.

### **25.03 MATERIAL**

A. Material for laterals shall be as follows:

Pipes for laterals shall be DR 17 HDPE with light grey or light color on interior of pipe if sewer main installation is done by pipe bursting and SDR 26 PVC if sewer main installation is by the open cut method is used or as shown on the Contract Drawings.

B. The Contractor shall refer to the following related sections:

“Replacement of Existing Sewer Main by Pipe Bursting Method”

“Replacement of Existing Sewer Main by Open-Cut Method with SDR 26 PVC”

“New and Replacement of Existing Sewer Main by Open-Cut Method with C900/C905 PVC”

“Abandon and Remove Existing Sewer Main”

25.04 INSTALLATION

- A. Not all existing laterals and cleanouts shown on the Contract Drawings were located in the field. The exact location and depth of each sewer lateral is not known. It is the responsibility of the Contractor to verify the exact location, size and type of sewer lateral. All associated costs such as obstruction due to utilities and clearance of tree roots etc. shall be included in the bid price for lateral and cleanout replacement.
- B. Generally, the replacement will be made from the sewer main to a new cleanout to be located near the property line (in the City’s Right-of-way or easement) including riser, new boxes and frames. If the cleanout is located in an area that is not accessible, the lateral shall be reconnected at the main sewer and a new sewer cleanout shall be installed at an accessible area. Accessible areas shall either be one of the following locations: planting strip or behind the sidewalk (away from foot traffic). When using Open-Cut construction, sewer lateral shall be connected perpendicular to the sewer main from the City owned cleanout (see Standard Detail drawings). If pipe-bursting installation is selected, the Contractor shall do a pre-TV inspection prior to sewer lateral replacement. The lateral shall follow the existing sewer lateral alignment.
- C. The Contractor shall replace all sewer laterals and cleanouts with 4” diameter connections for single and duplex residential zones and with 6” diameter connections to the sewer main for multi-family, commercial and industrial zones. When installation of the new lateral is completed, the Contractor shall take care not to damage the sewer main or the lateral/main connection. The bedding zone of the cleanout area shall be backfilled with Class 1 permeable material.
- D. The inside portion of the fused HDPE pipe shall be smoothed thoroughly following fusion. No beads or strings should be present when construction is complete. Based upon the type of connection and its condition, Engineer may require a section of main be removed and a wye section installed.
- E. Replacement laterals constructed following the alignment of the existing laterals shall be inspected prior to and after reconstruction using CCTV methods conforming with Section 23, “Post Television Inspection.” Relocated laterals shall be inspected after reconstruction, also using CCTV methods conforming with Section 23.
- F. The Contractor shall ensure that all cleanout lids and rims remain entirely free from debris prior to placement of concrete around them as required on the Standard Details. Loose concrete shall be wiped free from top of lids and rims following placement of concrete, before curing occurs.

25.05 PAYMENT

- A. Payment for “4” Sewer Lateral” shall be at the Contract unit price bid for per linear foot for each size of lateral installed and shall be full compensation for furnishing all pre-TV inspection, post-TV inspection and repair, labor, materials, tools and equipment for doing

all the work including, but not limited to, pipe bursting and open-cut; disconnecting, removing and disposing of the existing laterals; installing new pipe; constructing a wye at the main or manhole; re-connection to the existing lateral, including PVC to HDPE adapters and long sweep elbows; testing of the lower laterals; and replacing surface landscaping and improvement or asphalt pavement.

- B. Payment for “Sanitary Sewer Cleanout” shall be at the Contract unit price bid for each cleanout replaced/installed including, but not limited to, labor, materials, tools and equipment for doing all the work and shall be full compensation for removing existing cleanout or lamphole, constructing the cleanout or lamphole riser and cover, backfill, compaction, and finish surface restoration, including but not limited to replacement of surface improvements and landscaping.

**END OF SECTION**



## **SECTION 26 POST TELEVISION INSPECTION**

### **26.01 GENERAL**

This section pertains to television inspection of the new sewer mains and laterals after pipe installation.

The Contractor shall furnish all labor, materials, and equipment necessary to perform closed circuit television inspection of the rehabilitated or newly installed sewer mains and laterals constructed under this Contract. The inspection shall be done one section at a time and the flow in the section being inspected shall be suitably controlled as specified.

The Contractor, after installing approximately every fifteen hundred linear feet (1,500') of new sewer main, shall perform post-TV inspection and submit the DVDs to the Engineer for review.

### **26.02 TELEVISION EQUIPMENT**

The television camera used for the inspection shall be one specifically designed and constructed for operation in connection with sewer inspection. It shall be operative in one hundred percent (100%) humidity conditions and shall have a 360-degree radial view rotating head. Lighting and camera quality (3 lux) shall be suitable to allow a clear in-focus picture of a minimum of six lineal feet of the entire inside periphery of the sewer pipe. Lighting for the camera shall minimize reflective glare. To insure peak picture quality throughout all conditions encountered during the survey, a variable intensity control of the camera lights and remote control adjustments for focus and iris shall be located at the monitoring station.

Focal distance shall be adjustable through a range from six inches to infinity. Continuously displayed on the monitors shall be; (1) date of the survey, (2) number designation of the upstream and downstream manholes corresponding to the line section being surveyed, and (3) a continuous forward and reverse readout of the camera distance from the manhole of reference. The remote reading footage counter shall be accurate to two-tenths of a foot (2/10'). The camera, television monitor, and other components shall be capable of producing a minimum 500-line resolution color video picture.

### **26.03 METHOD**

Television equipment specified in this section shall be used to perform television inspection on one manhole-to-manhole segment at a time. The inspection shall be performed by pulling the television camera through the line along the axis of the pipe at a uniform rate, stopping when necessary to ensure proper documentation of the sewer's condition and the exact location of each service connection. The camera should also inspect the condition of the lateral connection to the sewer main. Offsets, breaks or any defect on the sewer main, lateral or connection shall be noted on the preliminary post-TV inspection and be submitted to the City. The inspection shall be performed in a forward and/or backward direction, according to the line condition at the time the inspection is made.

#### 26.04 OPERATION

The camera shall be moved through the line in either direction at a uniform rate, stopping when necessary to permit proper documentation of the sewer condition. In no case will the television camera be pulled at a speed greater than thirty feet (30') per minute. Manual winches, power winches, TV cable, and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line. A self-propelled tractor unit may be necessary for lines with only one entrance access or to prevent set up at high traffic intersections. As the camera approaches a lateral connection, the camera progress shall be halted and the camera lens panned to further view the lateral pipe and connection to thoroughly evaluate its condition.

- A. When manually operated winches are used to pull the television camera through the line, walkie-talkie radios or other suitable means of communication shall be set up between the two manholes of the section being inspected to ensure good communications between members of the crew.
- B. The importance of accurate distance measurements is emphasized. The accuracy of the remote reading footage counter shall be checked periodically by use of a walking meter, roll-a-tape, or other suitable device. The accuracy shall be satisfactory to the City representative.
- C. Should any DVD or section thereof prove to be unsatisfactory to the City representative, the City may request part or the entire DVD be re-televised.

#### 26.05 FLOW CONTROL

The Contractor shall be responsible for completely bypassing sewage around the segment of sanitary sewer main being inspected during the entirety of the television inspection. Refer to Specification Section 29 for bypass system requirements.

The Contractor shall be responsible for control of sewage while televising sewers, by pumped bypass to the next manhole or other means acceptable to the Engineer. Maximum allowable flow depth shall be twenty-five percent (25%) of pipe diameter for pipes up to twelve inches (12") diameter, thirty percent (30%) for fifteen-inch (15") to twenty-four-inch (24") diameter, and thirty-five (35%) for greater than twenty-four-inch (24") diameter. If the CCTV camera is underwater for more than ten (10) linear feet, then the inspection shall be abandoned and the pipe dewatered to a minimum of 15% of the cross-sectional area of the pipe.

#### 26.06 RECORDS

The following listed documentation shall be provided and the cost for such shall be included in the Contractor's unit price for television inspection. No additional compensation shall be made.

- A. Television Inspection Reports (Logs): The Contractor shall keep printed location records that clearly show the location, in relation to the reference manholes, of each service lateral

observed during inspection. A printed, hard copy of such records will be supplied to the City representative. If possible, laterals should also be referenced by address (i.e., by person above ground following with radio and roll-a-tape).

- B. Each report, on each section of line televised, will have a summary and evaluation as to the general condition of that section and a digital picture of each lateral connection.
- C. Television inspection data will be supplied on DVD-R PC computer disks. The supplied data has to be on one of these software programs: ARIES, COBRA, PEARPOINT, WINCAN, CUES, PIPETECH, GBA SEWER MASTER-FIELD DATA COLLECTION MODULE. This shall be submitted with the corresponding hard copy reports and disks. Data entry shall include: ID Number, Address Number, MH# From, MH# To, Page #, TV Date, Pipe size, Map Footage, TV Footage, DVD # and Event Photographs. Each photographic image shall be saved in a JPEG file format and named with the footage of the event followed by the event (for example, defect BJCM at 107.9' would be named MH#B3001-107.9bjcm.jpg). The files shall be stored within a file folder named for the Upstream Manhole Number. The Contractor must also provide a query to list access to codes.
- D. Two master DVD indexes must be provided upon completion of the project. The first Master Index must be alpha-numerically sorted in the following order: (1) Street name, and (2) upstream manhole number. The second Master Index shall be in DVD Number order with each line section listed in the order they appear on each DVD.
- E. In addition, individual DVD indexes are required for each DVD, to be located at the beginning of the log reports from each DVD. Individual DVD indexes are to be listed in the same order as televised.
- F. DVD Video Recordings: The Contractor shall furnish color video DVD recordings. DVDs shall be labeled and individually numbered, beginning with number "FY 2015 Sewer Rehab #001". Labels shall be typewritten and include "COB CCTV Project", identified as Sanitary Sewer (SS), date of DVD submittal, and DVD number. An example of the correct label format follows:

COB CCTV Project, FY 2015 Sewer Rehab  
SS, Submitted 10/16/2015  
DVD # 001

- G. The first DVD submitted shall be inspected and subject to approval by the City's representative. When approved this will become the standard for subsequent DVDs. The purpose of DVD recording shall be to supply a visual and audio record of the location of the laterals to be placed on As-Built Drawings. Title to the DVDs shall transfer to the City. Each DVD shall include the following information:
  - 1. DATA VIEW VISIBLE ON DVD PRIOR TO INSPECTION:

- Street Name
- Street Addresses for all sewer laterals
- U/S and D/S MH number
- Anticipated distance of reach
- Size of line
- Type of pipe
- Direction of TV (U/S on D/S)
- Date and time of TV inspection

2. DATA VIEW VISIBLE ON DVD DURING INSPECTION:

- Street Addresses for all laterals
- U/S and D/S MH number
- Current distance along reach
- Date of TV inspection

3. AUDIO (MUST BE AUDIBLE ON DVD):

- Date and time of TV inspection
- Verbal confirmation of upstream & downstream manhole numbers
- Verbal description of direction of camera movement and depth of flow
- Verbal description of pipe size, pipe type, and pipe joint length
- Verbal description of lateral & verbal description of the location
- Verbal description of location of each service lateral
- Verbal description of each manhole

26.07 PAYMENT

- A. Payment for “Post CCTV Inspection” shall be at the contract price bid per linear foot of rehabilitated or replaced sewer main televised, which shall be full compensation for furnishing all the labor materials, and equipment, preparation of the logs, furnishing copies of the logs to the City, Polaroid and digital photos taken, DVDs recorded, traffic control, and wastewater flow control during the inspection. Measurement shall be based upon the actual length of pipeline televised, as determined by the Engineer.
- B. Pre-CCTV inspection of the sewer main shall be included in the price paid for “Construction Survey and Site Investigation”, and no additional payment beyond the price bid for that item will be made.

**END OF SECTION**

**SECTION 27 ABANDON OR REMOVE EXISTING MANHOLE AND ABANDON OR REMOVE EXISTING SEWER MAIN**

27.01 GENERAL

This section pertains to abandoning existing sewer structures and existing sewer main, and removal of existing sewer structures and existing sewer main as per the Contract Drawings.

27.02 MATERIAL AND INSTALLATION

The Contractor shall refer to Section 27 of these specifications for controlled density fill material and installation process.

27.03 ABANDONING AND REMOVING EXISTING SEWER MANHOLES AND LAMPHOLES OR CLEANOUTS

- A. Abandoning of existing sanitary sewer manholes and sewer structures shall be performed after the new sewer main is installed. The Contractor shall remove the manhole rim, cover, top manhole section (upper four feet) and fill the manhole void with 1-1/2 sack cement slurry (CDF) and restore all surfaces to original conditions.
- B. Removal of existing sanitary sewer manholes shall include removal of all manhole sections and base, and backfill to bottom of street structural section. Manhole removals shall generally be required when manholes to be removed are less than four feet deep. Unless otherwise stated in the drawing, backfill for removed manhole shall consist of imported backfill material or in unpaved areas manhole excavated material free of debris, roots more than two inches (2") diameter, brush, junk, and boulders larger than six inches (6") diameter as required by the Contract Drawings and Specifications for the work. Backfill shall be consolidated by mechanical compactors, vibrating compactors, or any combination as approved by Engineer. Compaction shall be not less than ninety-five percent (95%) of relative density of ASTM D-1557 as shown on the Standard Detail. The surface shall be restored to original condition. For asphalt replacement, the thickness shall be as shown on the Contract Drawings.
- C. Manhole covers in good condition shall be salvaged and delivered to the City corporation yard or as directed by the Engineer. All manhole frames from the abandoned or removed manholes are to be removed and delivered offsite at the Contractor's expense.
- D. Abandoning of existing lampholes or cleanouts shall consist of removing existing frame, cover and concrete collar and filling riser with 1-1/2 sack cement slurry (CDF) and restore all surfaces to original conditions.
- E. Removal of lampholes or cleanouts shall include removal of frame, cover, concrete collar, riser, and fittings, and backfill to bottom of street structural section. Unless otherwise stated in the drawing, backfill for removed lampholes or cleanouts shall consist of imported

backfill material or, in unimproved areas, excavated material free of debris, roots more than 2” diameter, brush, junk, and boulders larger than 6” diameter as required by the Contract Drawings and Specifications for the work. Backfill shall be consolidated by mechanical compactors, vibrating compactors, or any combination as approved by Engineer. Compaction shall be not less than 90% of relative density of ASTM D-1557. The surface shall be restored to original condition. For asphalt replacement, the thickness shall be as shown on the Contract Drawings or match existing.

27.04 ABANDONING EXISTING SEWER MAINS AND LATERALS OR STORM DRAIN

- A. All existing sewer mains and sewer laterals except ACP sewer mains to be abandoned are to be disconnected from manhole or at pipe locations as indicated on Contract Drawings and filled with 1-1/2 sack cement slurry (CDF). Existing ACP sewer mains to be abandoned shall be filled with 2-1/2 sack cement slurry (CDF). The Contractor shall use pumping methods where required to fill the entire length of sewer line to be abandoned. Contractor shall install plugs and provide means for venting air from the lines to be abandoned with a method approved by the Engineer.
- B. After abandoned pipe is disconnected from the manhole, opening at the manhole base shall be plugged with concrete.

27.05 REMOVAL OF EXISTING ACP SEWER MAINS (NOT IN CONTRACT)

- A. The Contractor shall comply with all work site, air emission, solid waste and personal safety and protection regulations as related to the excavation, exposure, cutting, handling, containment and disposal of existing ACP sewer main. The Contractor shall notify both the Bay Area Air Quality Management District and the Cal/OSHA regional office in Santa Rosa as detailed below.
- B. In removing the existing asbestos cement sanitary sewer mains, the Contractor shall be required to excavate to the top of the existing sewer without breaking the sewer or mixing it with the trench excavation. The trench spoils so excavated shall be removed from the site and disposed of at a site approved for permanent disposal of excavated spoils. The Contractor shall then use a combination of hand and machine excavation methods to remove the ACP sewer pipe in full lengths from the trench. **MIXING OF SOIL AND PIPE BEDDING AND BACKFILL WITH THE ACP TO BE REMOVED AND DISPOSED OF SHALL BE ABSOLUTELY MINIMIZED.** Cutting of existing pipe to remove full lengths of pipe intact shall be minimized. Where cutting of existing pipe is required, it shall be undertaken with saws applying sufficient liquid to prevent release of asbestos fibers to the work area, and be undertaken by personnel trained in the procedures enumerated in Section F below. Broken pipe, pipe fragments and soil and pipe bedding which has become contaminated by RACM during pipe removal, shall be handled, contained, stored and disposed of in accordance with the requirements for regulated asbestos containing materials (RACM) by a Contractor licensed for such activities pertaining to RACM.

- C. Prior to initiating ACP pipe removal, the Contractor shall have storage bins at the Contractor’s temporary project yard for placement of all Category II Non-friable Asbestos-Containing Material and RACM. All RACM shall be contained immediately in sealed bags which shall be placed in storage bins placed in secured areas for transport to a landfill licensed to accept RACM. All Category II Non-friable Asbestos-Containing Material shall also be immediately placed in storage bins for transport to landfill licensed to accept such material. **NO ACP SHALL BE TEMPORARILY STOCKPILED ON SITE EXCEPT IN STORAGE BINS PLACED IN SECURED AREAS.**
- D. The Contractor shall furnish the City with copies of the tipping fee receipts from the landfill at which the ACP and RACM is disposed as a condition of payment for the ACP removal and disposal under this item.
- E. The Contractor’s attention is directed to the Bay Area Air Quality Management District’s (BAAQMD) Regulation 11 for Hazardous Pollutants Rule 2 “Asbestos Demolition, Renovation and Manufacturing” and in particular, the following specific subsections:
1. 233.3: ACP pipe scheduled for removal and disposal and which cannot be removed intact as whole sections of pipe or is found to be broken upon unearthing for excavation of the replacement main is considered a regulated Category II nonfriable asbestos-containing material (RACM) “that may become or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation.”
  2. 303.3: “RACM ... shall be adequately wetted whenever exposed during demolition or renovation and disposed of as RACM as required in Section 304 and in particular sections 304.3 through 304.6.”
  3. 401: The Contractor shall submit a written plan as notification of intent to demolish or renovate to the Bay Area Air Quality Management District Air Pollution Control Officer (APCO) at least ten (10) working days prior to commencement of demolition or renovation. Refer to Regulation 11-2-401.3 for written plan requirements.
  4. 502: Waste shipment records shall include the items listed in sections 502.1 through 502.7.
- F. The removal, encapsulation or enclosure, storage and disposal of pipe materials containing asbestos shall be in accordance with Cal/OSHA, American Water Works Association Manual of Water Supply Practices No. M16 “Work Practices for Asbestos-Cement Pipe,” OSHA 29 CFR 1910.100, 1926.1101 Appendix F, Asbestos NESHAP; 40CFR 61-Subpart M, 40CFR 763-Appendix D and all other industry and regulatory requirements. Only employees with current training certificates from Cal/OSHA Approved Trainer may conduct ACP cutting activities. It is the Contractor’s responsibility to obtain the services of a Contractor certified by Cal/OSHA to perform asbestos-related work. Cal/OSHA shall also be notified at least ten (10) business days prior to initiating the ACP pipe removal work.
- G. A licensed waste hauler shall transport the ACP waste to a landfill licensed to accept the Category II Non-friable Asbestos-Containing Material and RACM asbestos. The

Contractor shall furnish the City with copies of the landfill tipping fee receipts.

27.06 PAYMENT

- A. Payment for “Abandon Existing Sanitary Sewer Manhole” shall be made at the unit price bid per each abandoned manhole, shall be based on a field count of manholes abandoned and shall include, but not be limited to, furnishing all labor, materials, equipment, all incidental costs, removal of top portion, backfill, AC pavement, landscaping, or other surface restoration, delivery of manhole cover to City corporation yard, and disposal of frames.
- B. Payment for “Abandon Existing Sanitary Sewer” shall be at the contract unit price bid for each linear foot of pipe abandoned or removed and shall include, but not be limited to, furnishing all labor, materials, equipment, all incidental costs, disconnecting pipe from existing manhole, filling existing pipe with CDF, plugging existing manholes and incidental costs for abandoning the existing sewer main. Payment under this item does NOT include removal of existing pipe to be excavated for new pipe.

**END OF SECTION**



**SECTION 28 TEMPORARY BYPASS PUMPING****28.01 GENERAL**

For the lump sum prices bid, the Contractor shall furnish all labor, equipment, and materials for temporary bypass pumping, piping and sewage flow diversion as required to construct the replacement sewers included in the project, complete the various interconnections between the new and existing sanitary sewers as shown on the Contract Drawings, and to allow for the cleaning, coating, and curing of pump station wet wells, or as required. Sewage flows shall be maintained at all times. The work shall include, but not be limited to, the following:

1. The Contractor shall be responsible for planning and designing all bypassing activities, such as temporary bypass pumping, temporary piping and connections, the use of plugs, flow-through plugs, and bulkheads. At all locations, the bypass system shall be designed to fully convey the sewage flows without causing sewage backups or overflows. All bypass systems shall include both a duty and a standby pump, each designed to fully convey the existing flows and both operational and available for immediate automatic operation.

The bypass pumps shall each be designed to discharge up to 200 gpm at maximum speed against the specific project location's static head plus the friction losses for the proposed bypass piping system.

2. All temporary bypass pumping operations shall be set up during dry weather conditions. The Contractor is hereby notified that the existing system is subject to large flow increases during rain events.
3. Once a bypass is initiated, the work requiring the bypassing shall proceed on a continuous basis until the interconnection is completed and normal gravity (or permanent pump station operation) flow is resumed.
4. Excavation and backfill for the temporary bypass pumping, piping systems, as well as the stone base and select fill, pavement replacement, and other work regarding temporary bypass pumping, piping, and flow diversion shall be paid for under the unit prices bid for this item.
5. The Contractor shall comply with all safety regulations regarding confined space entry, including continuous air monitoring of the confined space atmosphere, and shall provide all hoists, safety harnesses, protective clothing, gloves, etc., as required to work within confined spaces when installing, maintaining, and demobilizing the temporary bypass pumping system.
6. The Contractor shall notify the City immediately of any sanitary sewer overflows (SSOs) caused by bypass pumping failures. Cleanup and inspection costs, fines, and damages associated with SSOs shall be borne by the Contractor.

7. The Contractor shall provide all temporary bypass pumping, piping, and flow diversion as required to make connections to existing utilities and to relocate existing utilities, etc. whether or not specifically mentioned herein or shown on the Contract Drawings.

## 28.02 TEMPORARY BYPASS PUMPING

### A. General

Under this item the Contractor shall furnish all materials, labor, equipment, maintenance, etc. to implement temporary sewage bypass pumping and piping systems for the purpose of diverting the existing sewage flows around the work areas as needed to construct the replacement sewers and complete the pump station rehabilitation to be constructed as part of this Contract.

The design, installation and operation of the temporary pumping system shall be the Contractor's responsibility. The Contractor shall employ the services of a vendor who can demonstrate to the Engineer that he specializes in the design and operation of temporary bypass pumping systems. The vendor shall provide at least five (5) references of projects of a similar type, size and complexity as this project performed by his firm within the past three years. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.

### B. Shop Drawing Submittal Requirements

The Contractor shall prepare with the vendor a specific, detailed description of the proposed pumping system and submit it and the vendor's references to the Engineer for review.

The Contractor shall submit to the Engineer detailed plans and descriptions outlining all provisions and precautions to be taken by the Contractor regarding the handling of existing wastewater flow. This plan must be specific and complete, including such items as schedules, locations, elevations, capacities of equipment, materials and all other incidental items necessary and/or required to ensure proper protection of the facilities, including protection of the access and temporary bypass pumping locations from damage due to the discharge flows, and compliance with the requirements and permit conditions specified in these Contract Documents. No construction shall begin until all provisions and requirements have been reviewed by the Engineer.

The plan shall include but not limited to details of the following:

1. Staging areas for pumps;
2. Sewer plugging method and types of plugs;
3. Bypass pump sizes, performance curves, and number of each size to be on site;
4. Method of noise control for each pump and/or generator.

C. Equipment

1. Pumps

The pumps and drives shall be rated for continuous duty and shall be capable of pumping the specified flow range without surging, cavitation, or vibration. The pump shall not overload the driver at any point on the pump operating curve. Rotative components shall be statically and dynamically balanced. The pump shall be suitable for use with raw unscreened sewage and trash. The pump shall be a self-contained unit, designed for temporary use.

All pumps used shall be fully automatic self-priming units that do not require the use of foot-valves or vacuum pumps in the priming system. The pumps shall be diesel powered, and shall have properly maintained mufflers to suppress noise to the maximum extent practicable. All pumps used must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of influent flows.

The Contractor shall provide the necessary stop/start controls, level controls and alarms for the pumping system.

All pumps shall be Godwin 'Dri-Prime' automatic self-priming, float-controlled diesel driven pumps as manufactured by Godwin Pumps of America, Inc., equivalent from Rain for Rent or approved equal.

2. Piping

In order to prevent the accidental spillage of flows all exposed discharge piping systems installed on the ground surface for temporary bypass pumps shall be constructed of either rigid pipe with positive, restrained joints (Yellowmine pipe or approved equal), or ribbed, heavy duty hard suction hoses with flanged couplings and driveway ramps at all existing driveways. Under no circumstances will aluminum "irrigation" type piping or glued PVC pipe be allowed for exposed piping systems. Discharge hose will only be allowed in short sections and by specific permission from the Engineer. Collapsible discharge hoses will not be permitted.

Pipe crossing roadways shall be installed in temporary slit trenches, bedded, backfilled, and paved as shown on the details in the Contract Drawings.

Piping shall be of adequate wall thickness to withstand twice the calculated discharge pressure the piping system will be exposed to.

3. System Hydraulics

The temporary bypass system to bypass raw sewage flow shall be as required for the particular pumping condition.

The Contractor is referred to the Contract Drawings to determine lengths of temporary suction and discharge piping required for determination of friction losses and Total Dynamic Head required.

D. System Description and Operation

The temporary bypass system shall be designed to adequately pump all flows and any amount of flow up to the full available flow around the area to be bypassed in a safe and satisfactory manner.

The Contractor shall provide all pipeline plugs, pumps of adequate size to handle peak flow, and temporary suction and discharge piping to ensure that the total flow can be safely diverted around the project work area. Temporary bypass pumping system will be required to be operated 24 hours per day, 7 days per week.

The Contractor shall have adequate standby equipment available and ready for immediate operation and use in the event of an emergency or breakdown. A fully operational standby pump equal in size to the primary duty pump utilized shall be installed at the flow bypassing locations, ready for use in the event of primary pump failure.

The Contractor shall have all replacement pump retrieval hardware on site prior to setting up bypass pumping operations.

E. Performance Requirements

It is essential to the operation of the existing sewerage system that there be no interruption in the flow of sewage throughout the duration of the project. To this end, the Contractor shall provide, maintain and operate all temporary facilities such as dams, plugs, flow-through plugs, pumping equipment (both primary and back-up units as required), conduits, all necessary power, and all other labor and equipment necessary to intercept the sewage flow before it reaches the point where it would interfere with his work, carry it past his work and return it to the existing sewer downstream of his work.

The Contractor shall provide all necessary means to safely convey the sewage past the work area. The Contractor will not be permitted to stop or impede the main flows under any circumstances.

The Contractor shall maintain sewage flow around the work area in a manner that will not cause surcharging of sewers, damage to sewers and that will protect public and private property from damage and flooding.

The Contractor shall protect water resources, wetlands and other natural resources.

F. Field Quality Control and Maintenance

The Contractor shall perform leakage and pressure tests of the temporary bypass pumping discharge piping using clean water prior to actual operation. The Engineer will be given a minimum of 24-hours notice prior to testing.

The Contractor shall inspect temporary bypass pumping system at least daily to ensure that the system is working correctly.

The Contractor shall insure that the temporary pumping system is properly maintained and a responsible operator shall be on hand at all times when pumps are operating. Spare parts for pumps and piping shall be kept on site as required.

The temporary bypass pumping system must be operational at all times, 24 hours per day, 7 days per week, for as long as the bypassing operation is required. Any disruption in the system's operation shall immediately be corrected by the Contractor, at his expense, to restore operation. Such emergency work shall continue on a 24-hour, 7-day basis as required to restore operation to the temporary bypass pumping system. The Contractor shall provide all equipment and facilities, as he deems appropriate to guarantee system reliability.

The system shall include a high level alarm which will send an alarm to the City's Sewer Department and to the Contractor in case of system failure. The Contractor shall respond within an hour of the initiation of an alarm. If the Contractor does not respond within this timeframe, the City Public Works Department will respond and the Contractor will be backcharged for all costs associated with the City's response. The Contractor shall be responsible for all costs, damages, and fines associated with any bypass system disruption. The Contractor shall provide the Owner with an emergency (24-hour) telephone number which can be used to contact a responsible individual representing the general contractor during non-business hours.

G. Preparation

Contractor is responsible for locating any existing utilities in the area where temporary bypass pumping and piping is to be installed. The Contractor shall install his bypass pipelines in such a manner as to minimize any disturbances to existing utilities and shall obtain approval of the locations from the utility owner prior to installation. All costs associated with relocating utilities and obtaining approvals shall be borne by the Contractor.

During all temporary bypass pumping operation, the Contractor shall protect all local sewer lines from damage inflicted by any equipment. The Contractor shall be responsible for all physical damage to the local sewer lines caused by human or mechanical failure.

28.03 PAYMENT

If the Contractor, for the proper completion of the sewer replacement and rehabilitation work, requires temporary bypass pumping at a location where no bid item is included in this Contract, payment for “Temporary Bypass Pumping” shall be deemed to be included in the contract prices paid for the various items of work for sanitary sewer main replacements and rehabilitations at that location and no separate payments will be made.

**END OF SECTION**