CITY OF BERKELEY

DEPARTMENT OF PUBLIC WORKS

ENGINEERING DIVISION

SPECIFICATIONS

FOR

SANITARY SEWER REHABILITATION

SANITARY SEWER REHABILITATION AND REPLACEMENT - SAN PABLO AVENUE, SACRAMENTO STREET, UNIVERSITY AVENUE, ET AL.

SPECIFICATION NO. 26-11759-C

DECEMBER 2025

BID OPENING DATE: **January 6, 2026**

1947 CENTER STREET, 4TH FLOOR, BERKELEY, CALIFORNIA 94704
(510) 981-6400

CITY OF BERKELEY

DEPARTMENT OF PUBLIC WORKS

SPECIFICATIONS

FOR

SANITARY SEWER REHABILITATION AND REPLACEMENT - SAN PABLO AVENUE, SACRAMENTO STREET, UNIVERSITY AVENUE, ET AL.

SPECIFICATION NO. 26-11759-C

Prepared Under the Direction of:

Wahid Amiri, P.E.
Supervising Civil Engineer

Reviewed By:

Wahid Amiri, P.E.
Deputy Director of Public Works

Engineering Division
1947 Center Street, 4th Floor
Berkeley, California 94704
Project Engineer: Adadu Yemane, P.E.,
Associate Civil Engineer

ATTENTION

1. THE CONTRACTOR SHALL SUBMIT ALL CONTRACT DOCUMENTS INCLUDING BONDS AND INSURANCE BEFORE:
   March 4, 2026

2. THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS AND GUIDELINES OF ALL REGULATORY AGENCIES.

3. THE CONTRACTOR SHALL READ ALL BID ITEMS CAREFULLY AS SOME OF THE ITEMS MAY HAVE CHANGED.

4. THE CITY RESERVES THE RIGHT TO REJECT ANY AND ALL PROPOSALS.

5. DURING CONSTRUCTION, THE CONTRACTOR MAY BE REQUIRED TO ATTEND WEEKLY MEETINGS AT THE ENGINEER'S OFFICE.

6. THIS PROJECT IS SUBJECT TO STATE OF CALIFORNIA SB 854 – PUBLIC WORKS REFORM.

7. PROJECT INCLUDES WORK IN PRIVATE PROPERTY. WORK IN PRIVATE PROPERTY IS NOT PERMITTED UNTIL ACCESS AGREEMENTS HAVE BEEN SECURED BY THE CITY AND COPIES OF THE AGREEMENTS HAVE BEEN PROVIDED TO THE CONTRACTOR. SEE SPECIAL CONDITION NO. 20 FOR MORE INFORMATION.

8. SOME OF THE WORK SITES ARE LOCATED WITHIN CITY OF BERKELEY FIRE ZONE 2 AND ARE SUBJECT TO RESTRICTIONS IMPOSED DURING RED FLAG WARNINGS. SEE GENERAL CONDITION NO. 4 FOR MORE INFORMATION.

9. SEE SPECIAL CONDITION NO. 41 FOR FIRST ORDER OF BUSINESS.

10. CONTRACTOR SHALL SECURE EBMUD PERMITS AS NEEDED FOR DISCHARGE OF CIPP INSTALLATION WASTE INCLUDING CURING WATER OR STEAM CONDENSATE.

TENTATIVE SCHEDULE
(DATES SUBJECT TO CHANGE)

1.	Advertisement	December 12, 2025
2.	Bid Opening	January 6, 2026
3.	Pre-Award Conference	February 3, 2026
4.	Council Award	February 24, 2026
5.	Contract Documents Due	March 4, 2026
6.	Contract Award (Notice to Proceed)	March 16, 2026
7.	Start Construction	April 1, 2026
8.	Complete Construction	June 30, 2026

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BIDDING CONTRACTUAL DOCUMENTS

SPECIFICATIONS

FOR

SANITARY SEWER REHABILITATION
SANITARY SEWER REHABILITATION AND REPLACEMENT - SAN PABLO AVENUE, SACRAMENTO STREET, UNIVERSITY AVENUE, ET AL.

SPECIFICATION NO. 26-11759-C

NOTICE TO BIDDERS

1. Sealed bids will be received by the Finance Department – General Services Division in their office, **2180 Milvia Street**, **3rd Floor,** Berkeley, California up to the hour of:

2:00 P.M., Tuesday, January 6, 2026

at which time bids will be publicly opened and read by a representative of the General Services Division for the work provided for in the plans and specifications. One (1) full set of originals and two (2) additional original signature pages (Page A15) of the bid must be submitted, on forms which were prepared for this purpose and furnished by the City. Proposals must be submitted in a sealed envelope marked **SANITARY SEWER REHABILITATION –SAN PABLO AVENUE, SACRAMENTO STREET, UNIVERSITY AVENUE, ET AL., SPECIFICATION No. 26-11759-C**

Pre-Award Conference: The apparent low bidder will be invited to a pre-award conference scheduled for 11:30 A.M., Tuesday, **February 3**, 2026 at 1947 Center Street, 4th Floor, Berkeley, CA.

2. Scope of Work:

The work to be done consists of, but is not limited to:

a) All work requires coordination with City and private property owners.
b) Point (spot) repairs of sanitary sewer line at various locations.
c) CIPP lining (Method "A") of approximately 1,760 linear feet of sanitary sewer pipe ranging in size from 15-inch to 21-inch diameter.
d) Pipe-bursting (Method "B") of approximately 4,314 linear feet of sanitary sewer pipe ranging in size from 4-inch to 24-inch diameter.
e) Traditional Open-trench (Method "C") replacement of approximately 1,848 linear feet of sanitary sewer pipe ranging in size from 8-inch to 24-inch diameter.
f) Reconstruction of all lower laterals, including lateral connections to the main and two-way cleanouts, approximately 4,400 linear feet.
g) Remove existing maintenance holes and construction of new maintenance holes, including excavation, lining, and related work. Rehabilitation of existing maintenance holes including excavation, lining, and related work.
h) Pressure testing sewer mains for leaks, including all lower laterals, locating leaks and perform point (spot) repairs.
i) Abandonment of sanitary sewer mains and structures, as indicated in plans.
j) All work shall be in accordance with the Public Right-of-Way Accessibility Guidelines or PROWAG, latest edition, and to the satisfaction of the engineer.
k) Preparing and implementing bypass plans to facilitate the work and to maintain uninterrupted sewer service during construction.
l) Cold planning existing asphalt and hot mix asphalt paving.
m) Traffic Control Plans (TCP) shall prioritize pedestrian and bicycle safety and access, and bus facilities over vehicular traffic, in alignment with the City of Berkeley's policies. TCP shall follow guidance and intent provided in Appendix

10.

n) Portions of the work sites are located on private properties with limited access.
o) Caltrans Encroachment Permit conditions shall apply.

3. California Contractor License Classification required:
   A General Engineering, or
   C-34 Pipeline, or
   C-42 Sanitation System

4. Location: Various Locations throught the City. See location map and plan herein.

5. Plans and Specifications will be made available online for download, under the project's listing, at the City of Berkeley's Public Works website under Current Construction Project Bid Opportunities: https://berkeleyca.gov/doing-business/working-city/bid-proposal-opportunities. Bidders are responsible for notifying Adadu Yemane, P.E., Associate Civil Engineer via email at AYemane@berkeleyca.gov to be included on the Planholders List. Please include the following in the email subject header: "Spec. 26-11759-C – Request to be included in project Planholders List". In the body of the email, please state the Company Name, Address, Telephone Number, and Fax Number.

6. Compliance with SB 854: Public Works Reform: No contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

   No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

   This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

7. The plans and specifications may be examined by appointment at the Engineering Office, 1947 Center Street, 4th Floor, Berkeley, California. Hard copies are no longer available for purchase or shipping. Bid documents are available online for download at the web address shown above.

8. Each proposal must be accompanied by an unconditionally certified or cashier's check or bid bond made payable to the City of Berkeley, and such check or bond shall be in an amount equal to at least 10% of the amount of the bid.

9. During construction, the City may request or authorize additional work as part of the contract. Prior to commencement of any Contract Change Order (CCO) or Contract Amendment (CA), the Contractor shall submit Surety Company Bond Riders for the new contract amount. The new contract amount is the contractor's bid amount or authorized contract amount plus the CCO or CA. The Riders for any additional work shall be provided at no cost to the City.

Typically, the maximum authorized contract amount requiring a Rider is the Contractor's bid amount plus 10%.

10. Pursuant to City Council Resolution No. 59,853-N.S., each proposal must include a signed copy of the Oppressive States Resolution Disclosure Form regarding the Contractor's relationships with certain entities in Oppressive States.

11. Each proposal must include a signed copy of the Nuclear Free Zone Disclosure Form.

12. Each proposal must include a signed copy of the Equal Benefits Ordinance Disclosure Form.

13. Each proposal must include a signed copy of the Sanctuary City compliance Statement Form

14. Each proposal must include a signed copy of the Experience and Financial Qualifications and Taxpayer Identification Report.

15. Pursuant to City Council Resolution No. 70,926-N.S., this contract will be subject to the Community Workforce Agreement approved by the Berkeley City Council on June 27, 2023. The successful bidder and **all** subcontractors, at **any tier, will be required to sign** an Agreement to be Bound as a condition precedent to entering into any contract for this project. A copy of the Report and Resoltion is attached herein. Refer to Appendix 5 of the Specifications. "Contractors(s)" and/or "Subcontractor(s)" means any individual, firm, partnership or corporation, or combination thereof, including joint ventures, which is an independent business enterprise and has entered into a contract with the City or any of its contractors or subcontractors of any tier, with respect to the construction work necessary for any part of the Project. This shall include subcontractors not required to be listed in the bid documents. As applicable depending on its context, "Contractor" shall refer to Contractor or Contractor and Subcontractor.

16. Prior to starting work, the Contractor must furnish the following:

    a. Faithful Performance Bond in an amount not less than 100% of the amount of the contract, executed on the City of Berkeley Standard Performance Bond agreement form.

    b. Labor and Material Bond in the sum of not less than 100% of the amount of the contract.

    c. A certificate of Worker's Compensation Insurance with waiver of subrogation in favor of the City of Berkeley.

    d. Commercial general liability insurance coverage of no less than $2 million each occurrence Bodily Injury and $2 million each occurrence Property Damage, with defense costs payable in addition to policy limits.

    e. Comprehensive automobile liability insurance of no less than $2 million each occurrence Bodily Injury and $2 million each occurrence Property Damage.

f. Commercial Pollution Liability Insurance of no less than $1,000,000 Per Occurrence and $2,000,000 General Aggregate limit for bodily injury property damage (including loss of use of damaged property or of property which has not been physically injured or destroyed). See Special Condition No. 29 for additional information.

g. Insurance policies shall contain an endorsement naming the City, their employees, representatives and agents as additional insureds, but only with respect to liability arising out of the activities of the named insured.

h. The policies shall apply separately to each insured against whom claim is made or suit is brought except with respect to the limits of the company's liability.

i. Written notice of cancellation or of any limits reduction or change in said policy shall be mailed to the City and the Project Manager thirty (30) days in advance of the effective date thereof.

j. Contractor's insurance shall be primary insurance and no other insurance or self-insured retention carried or held by City shall be called upon to contribute to a loss covered by insurance for the named insured.

17. All forms and insurance certificates must have original signatures in blue ink.

18. See attached BIDDER'S AND CONTRACTOR'S CHECK LIST for additional items to be submitted.

19. In accordance with California State Labor Code, the wage scale is on file with the Engineering Office, or is attached herewith.

20. Award will be made by the City Council at a meeting within 75 days subsequent to the date set for bid opening. The Council reserves the right to reject any or all bids or any combination of bids.

21. Notice of Intent to Protest – An unsuccessful bidder who intends to protest the awarded contract must inform the Project Manager Adadu Yemane, P.E., Associate Civil Engineer at 1947 Center Street, 4th Floor, Berkeley, CA 94704. The Notice of Intent to Protest must be in writing and must reach the Project Manager not less than (1) one working day and not more than (5) five working days after the posting of the Notice of Intent to Award Contract. Failure to give written notice by Close of Business on that day shall waive the right to protest.

On the day after the final day to submit a Notice of Intent to Protest, the project manager shall make a service list consisting of those bidders who did submit a Notice of Intent to Protest, the Awardee, and the Contracting Department. The project manager shall include addresses and facsimile numbers on this list and shall forward this list to those bidder who submitted a Notice of Intent to Protest.

22. Questions and Addendums:

a. General information or plan holder's list: (510) 981-6400.

b. Questions concerning the anticipated work or scope of the project should be directed via email only to Adadu Yemane, P.E., Associate Civil Engineer AYemane@berkeleyca.gov or the Engineering Division, 1947 Center Street, 4th Floor, Berkeley, CA 94704, at (510) 981-6400, **no later than 5:00 P.M Friday December 19, 2025.**

c. It is the bidder's responsibility to check for answers to questions or any addenda on the City of Berkeley's website at: https://berkeleyca.gov/doing-business/working-city/bid-proposal-opportunities.

General Services Manager

BIDDER'S AND CONTRACTOR'S CHECK LIST

Items Required at Bid Opening: **2:00 P.M., Tuesday, January 6, 2026**

- ❍ Bidder's Proposals **(One full set of originals, Pages A7-A15; and two additional original signature pages, Page A15, signed in BLUE ink)**
- ❍ Addenda (if any)
- ❍ Bid Bond – At least 10% of Total Base Bid
- ❍ Experience and Financial Qualifications (Page A16)
- ❍ Taxpayer Identification Report (Page A17)
- ❍ Nuclear Free Zone Disclosure Form (Page A22)
- ❍ Oppressive States Compliance Statement (Pages A23-A24)
- ❍ Sanctuary City Compliance Statement (Page A25)
- ❍ Equal Benefits Ordinance Disclosure Form (Pages A28-A29)

Items Required at Pre-Award (Non-Discrimination and Contract Compliance) Conference:
11:30 A.M., Wednesday, February 3, 2026

- ❍ Memorandum of Understanding (Page A18)
- ❍ Work Force Composition Form (Pages A19-A20)
- ❍ Agreement for Change in Sub-Contractors (Page A21)
- ❍ Right to Audit Form (Page A26)
- ❍ Certification of Compliance with Equal Benefits Ordinance (Form EBO-1) (Pages A30-A31)
- ❍ First Source Agreement (Engineer's Estimate less than $500,000) (Pages A36-A38)
  OR
  Community Workforce Agreement To Be Bound and Hiring Plan (Engineer's Estimate of $500,000 or greater) (Pages A39-A40)*
- ❍ MBE/WBE Certification from Caltrans, Oakland, or San Francisco
- ❍ Proof of Compliance with SB 854

Items Required After Contract Award by City Council and Prior to Construction:

- ❍ Commercial General and Automobile Liability Endorsement form (Page A32)
- ❍ Worker's Compensation Insurance - Statutory Amount
- ❍ Liability Insurance - $2,000,000
- ❍ Performance Bond - 100% (executed on enclosed Performance Bond form) (Pages A33-A35)
- ❍ Labor and Material Bond- 100%
- ❍ Copy of City of Berkeley Business License
- ❍ Copy of State of California Contractor's License
- ❍ Work Schedule
- ❍ Submittals required at pre-construction meeting

Items Required During Construction:

- ❍ Work Schedule updates
- ❍ Weekly Payroll Statement (Fed Form WH-347 or equivalent)
- ❍ Monthly Manpower Utilization Report (DPR 356 or Fed Form 257)**
- ❍ Correspondence with unions and minority/female organizations

Items Required Upon Completion of Project:

- ❍ Guarantee Bond - 10%
- ❍ Post-Construction CCTV and logs
- ❍ As-Built Drawings

* This project is subject to the Community Workforce Agreement
** DPR-State Department of Parks and Recreation

BIDDER'S PROPOSAL

Bidders submitting proposals shall be very careful to follow all requirements in connection therewith. A checklist has been attached for guidance in complying with all phases of the bid process and project. Any proposal not complying with all these requirements may be rejected.

TO THE HONORABLE MAYOR AND
MEMBERS OF THE CITY COUNCIL

Pursuant to the provisions of the plans, specifications and contract documents, the undersigned proposed to perform the work as described therein a manner satisfactory to the responsible City official. All material, equipment, tools, labor and services necessary to the work will be furnished by the undersigned. All laws and ordinances relating to the work will be complied with, and a business license to do business in the City will be obtained. The undersigned declares that the plans, specifications, contract documents and the site of the work have been thoroughly examined and that this proposal is made without collusion with any person, firm, or corporation.

Execution of the proposal by the undersigned bidder shall become a binding contract on the parties when the award of a contract pursuant to said proposal is authorized by resolution of the City Council, where or as required by the Charter of the City of Berkeley, and the proposal is executed in writing in the name of the City by the City Manager, or an officer who is his/her authorized representative.

The undersigned agrees that when his proposal is executed he will furnish specified bonds and insurance, and he will begin work within the time specified, and complete work within the contract period or agree to the assessment of liquidated damages, all as stipulated in the attached pages of the Bidder's Proposal.

As a guaranty that the terms of this proposal will be complied with, the undersigned submits herewith a proposal guaranty for an amount equal to at least Ten Percent (10%) of his total bid.

All subcontractors who will perform work for the bidder on this project in the amount in excess of one-half of one percent (0.5%) of the total bid, including labor, materials and equipment, or work specifically fabricated off the job site according to detailed drawings contained in the plans, shall be listed, pursuant to Sections 4100 to 4113, inclusive of the California Government Code.

BIDDER'S PROPOSAL
(continued)

Name of Subcontractor and address	Subcontractor License No.	Type of Work	$ Amount

Contractors California License Number: _____

License Expiration Date: _____

I declare that representations made in this bid are under penalty of perjury.

_____ _____
Signature Title

THIS FORM SHALL BE COMPLETED AND SUBMITTED WITH BID PROPOSAL

BIDDER'S PROPOSAL

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT COST	TOTAL COST
1.	Mobilization/Demobilization	1	LS	$	$
2.	Traffic Control Plan	1	LS	$	$
3.	Lighted Message board	4	EA	$	$
4.	Pre-construction audio/video survey and distribution of public notices	1	LS	$	$
5.	Pre-construction closed circuit television inspection and location of active house laterals	9,634	LF	$	$
6.	Construction staking and cutsheets	1	LS	$	$
7.	Rehabilitate existing maintenance hole or junction box	70	EA	$	$
8.	Construct std. MH and drop MH, including lining, eccentric cones, all depths (Revocable)	1	EA	$	$
9a.	Remove existing structures and construct std. MH, drop MH, shallow MH, junction box, eccentric cones, all depths	Not Used			
9b.	Remove existing stucture and construct lamphole or two-way cleanout, all depths	1	EA	$	$
9c.	Remove existing structures and construct 36" HDPE MH, all depths	Not Used			

BIDDER'S PROPOSAL
(continued)

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT COST	TOTAL COST
10a.	Rehabilitation by Method "A" CIPP for maintaining pipe size from 15 to 15-inch pipe; includes point repair to correct sags	340	LF	$	$
10b.	Rehabilitation by Method "A" CIPP for maintaining pipe size from 21 to 21-inch pipe; includes point repair to correct sags	1,420	LF	$	$
11a.	Rehabilitation by Method "B" Pipe Splitting or Other Comparable Method for Increasing Pipe Size From 4-inch to 4-inch, or 4-inch to 6-inch Diameter; Includes Point Repairs to Correct Sags	25	LF	$	$
11b.	Rehabilitation by Method "B" Pipe Splitting or Other Comparable Method for Increasing Pipe Size From 6-inch to 6-inch, 6-inch to 8-inch, or 8-inch to 8-inch Diameter; Includes Point Repairs to Correct Sags	379	LF	$	$
11c.	Rehabilitation by Method "B" pipe splitting, reaming, or other comparable method for increasing pipe size from 8 to 10-inch, or 10-inch to 10-inch Diameter; Includes Point Repairs to Correct Sags	1,877	LF	$	$
11d.	Rehabilitation by Method "B" pipe splitting, reaming, or other comparable method for increasing pipe size from 10 to 12, or 12-inch to 12-inch Diameter; Includes Point Repair to Correct Sags	1,048	LF	$	$

BIDDER'S PROPOSAL
(continued)

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT COST	TOTAL COST
11e.	Rehabilitation by Method "B" pipe splitting, reaming, or other comparable method for increasing pipe size from 12 to 14, or 14-inch to 14-inch Diameter; Includes Point Repair to Correct Sags	326	LF	$	$
11f.	Rehabilitation by Method "B" pipe splitting, reaming, or other comparable method for increasing pipe size from 15 to 18, or 18-inch to 18-inch Diameter; Includes Point Repair to Correct Sags	317	LF	$	$
11g.	Rehabilitation by Method "B" pipe splitting, reaming, or other comparable method for increasing pipe size from 21 to 24, or 24-inch to 24-inch Diameter; Includes Point Repair to Correct Sags	342	LF	$	$
12a.	Sewer construction and replacement by Method "C" Traditional Open Trench Method for increasing pipe size from 8 to 10-inch diameter, or 10-inch to 10-inch; Includes Point Repair for Sags	534	LF	$	$
12b.	Sewer construction and replacement by Method "C" Traditional Open Trench Method for increasing pipe size from 10 to 12-inch diameter, or 12-inch to 12-inch; Includes Point Repair for Sags	8	LF	$	$

BIDDER'S PROPOSAL
(continued)

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT COST	TOTAL COST
12c.	Sewer construction and replacement by Method "C" Traditional Open Trench Method for increasing pipe size from 18 or 21 to 24-inch diameter, or 24-inch to 24-inch; Includes Point Repair for Sags	1,306	LF	$	$
13.	Lower lateral reconstruction (typically 4-inch and 6-inch laterals)	4,400	LF	$	$
14.	Installation of two-way cleanouts and lateral risers	121	EA	$	$
15.	Connection of active laterals to new or rehabilitated sewer main or MH	170	EA	$	$
16.	Post-construction closed circuit television inspection and construction As-Built Drawings	9,634	LF	$	$
17.	Remove existing and construct standard curb and gutter	13	LF	$	$

BIDDER'S PROPOSAL
(continued)

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT COST	TOTAL COST
18.	Remove existing, and construct standard sidewalk and driveway	225	SF	$	$
19.	Utility x-ings not shown and/or identified on the plans and not marked on street, length of x-ing <25 feet, 1/2-6 inch diameter (Revocable)	25	EA	$	$
20.	Utility x-ings not shown and/or identified on the plans and not marked on street, length of x-ing <25 feet, 6-24 inch diameter (Revocable)	10	EA	$	$
21.	Reconstruction/Replacement of City monuments (Revocable)	5	EA	$	$
22.	Supplemental Work	1	LS	$ 400,000	$ 400,000
23.	BART District Permit to Enter	Not Used			
24.	Caltrans Encroachment Permit/Authorization to work (Revocable)	1	LS	$	$
25.	EBRPD Permit - Additional provisions and insurance requirements.	Not Used			
26.	Stormwater Pollution Control and Sewage Spill Prevention and Response Requirements	1	LS	$	$

BIDDER'S PROPOSAL
(continued)

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT COST	TOTAL COST
27.	Sewer Bypass (for Sewer Mains 15" and Larger)	1	LS	$	$
28.	Investigate other existing sewer mains, structures, and laterals.	1	LS	$	$
29.	California Dept of Fish and Wildlife, Creek Permit - Additional Requirements For Work Adjacent to City's Creek	Not Used			
30.	Point (Spot) Repair	1	EA	$	$
31.	Plug and abandon existing sewer mains, sewer structure and laterals	1	LS	$	$
32.	Cold Plane 0.2' Incl. HMA Type A (Revocable)	39,319	SF	$	$
33a.	Pressure Testing Sanitary Sewer line	8	EA	$	$
33b.	Isolate Leak (Allowance)	8	EA	$	$
33c.	Sewer Rehabilitation (Allowance)	1	LS	$	$

TOTAL BID PRICE IN WORDS AND IN FIGURES:

_____

_____

DOLLARS AND CENTS/($)

Note:

*** Refer to Project Plans and/or Description of Bid Items section in Technical Provisions section of specifications for description of work included in bid items.**

**** Bid Item 22 - Supplemental Work is in addition to the Project's scope of work. This additional work may or may not be authorized to be performed by the Contractor as part of this Contract.**

BIDDER'S PROPOSAL
(continued)

The undersigned bidder agrees to accept payment in full for the work at the price set forth above in accordance with provisions of the specifications and agrees to start within Fifteen (15) WORKING days following issuance of the Notice to Proceed and to complete all work specified in the contract documents in accordance with the plans and specifications within **Sixty Five (65) WORKING days**. The Notice to Proceed will be issued when the contract is fully executed. The contract construction time is inclusive of the time for delivery of materials. By execution of this contract the City and the Bidder do hereby agree that the value of damage associated with the delay of the work is difficult to ascertain. Therefore, the Bidder agrees further to the assessment of **liquidated damages in the amount of Two Thousand Dollars ($2,000) for each working day** that the construction work remains incomplete beyond the expiration of the above construction time. The term of the contract is One Hundred Ten (110) WORKING days which include an additional Forty-Five (45) WORKING days for project closeout beyond the above construction time.

Company: _____ Address: _____

Name: _____ _____

Signature: _____ Phone: _____

Title: _____ Date: _____

Taxpayer I.D. No.: _____ Corporation: Yes [ ] No [ ]

(The following spaces to be used by the City)

Pursuant to City of Berkeley Council Resolution No. _____ N.S. adopted on _____, the City of Berkeley agrees to pay _____ the prices set forth above for the Total Bid Items in the amount of _____ _____($_____), in accordance with the terms and conditions set forth in Specification No. 26-11759-C. The Contractor shall complete all work specified in the contract documents in accordance with the plans and specifications within Sixty Five (65) WORKING days from the date established in the Notice-to-Proceed.

CITY OF BERKELEY

Dated: _____ By: _____
City Manager

Registered By: _____
Auditor

Attested By: _____
City Clerk

EXPERIENCE AND FINANCIAL QUALIFICATIONS

The bidder has been engaged in the contracting business under State License Number _____ for a period of _____ years.

The bidder's three most recently completed contracts are:

	I	II	III
Title of Project			
Owner			
Address			
Telephone No.			
Engineer in Charge			
Date Accepted			

Reference is hereby made to the following Bank or Banks as to the financial responsibility of the bidder:

Name of Bank _____ Address _____

_____ _____

Reference is hereby made to the following Surety Companies as to the financial responsibility and general reliability of the bidder:

Company _____ Address _____

_____ _____

_____

Signature of Bidder

TAXPAYER IDENTIFICATION REPORT

COMPANY NAME _____

_____

MAILING ADDRESS _____

_____

SOCIAL SECURITY NUMBER: _____

OR

EMPLOYER IDENTIFICATION NUMBER: _____

My Company is a Corporation **[ ]**

My Company is not a Corporation **[ ]**

I certify that the above information is true and correct:

_____ _____

Name Title

The Tax Equity and Fiscal Responsibility Act of 1982 (Public Law 97-248) requires the above reporting information be furnished to the City.

Persons who do not furnish their tax information numbers become subject to backup withholding by the City at a rate of 20% from each disbursement made to the recipient.

CITY OF BERKELEY
MEMORANDUM OF UNDERSTANDING
(MOU)

1. In the performance of this contract the Contractor (and all Subcontractors) agrees not to discriminate pursuant to Section 13.26 of the Berkeley Municipal Code.

2. In the performance of this contract the Contractor agrees that he/she is also responsible for his/her Subcontractor's compliance with Section 13.26 of the Berkeley Municipal Code.

3. For contracts that are not governed by a Community Workforce Agreement, the Contractor agrees to comply with Section 13.26 of the Municipal Code as applied to the First Source Program (see section 13.26.080).

The Contractor agrees to submit periodic employment and wage reports to the City's Contract Compliance Officer upon reasonable request.

_____	_____
Contractor	City Engineer or designee
_____	_____
Date	Date

WORKFORCE COMPOSITION OCCUPATIONAL CATEGORIES

Officials and Administrators - Occupations in which employees set broad policies, exercise overall responsibility for execution of these policies, or provide specialized consultation on a regional, district or area basis. Includes: department heads, bureau chiefs, division chiefs, directors, deputy superintendents, unit supervisors and kindred workers.

Professionals - Occupations that require specialized and theoretical knowledge that is usually acquired through college training or through work experience and other training that provides comparable knowledge. Includes: personnel and labor relations workers, social workers, doctors, psychologists, registered nurses, economists, dietitians, lawyers, systems analysts, accountants, engineers, employment and vocational rehabilitation counselors, teachers or instructors, and kindred workers.

Technicians - Occupations that require a combination of basic scientific or technical knowledge and manual skill that can be obtained through specialized post-secondary school education or through equivalent on-the-job training. Includes: computer programmers and operators, technical illustrators, highway technicians, technicians (medical, dental, electronic, physical sciences) and kindred workers.

Protective Service Workers - Occupations in which workers are entrusted with public safety, security and protection from destructive forces. Includes: police officers, fire fighters, guards, sheriffs, bailiffs, correctional officers, detectives, marshals, harbor patrol officers, and kindred workers.

Para-Professionals - Occupations in which workers perform some of the duties of a professional or technician in a supportive role, which usually requires less formal training and/or experience normally required for professional or technical status. Such positions may fall within an identified pattern of a staff development and promotion under a "New Transporters" concept. Includes: library assistants, research assistants, medical aides, child support workers, police auxiliary, welfare service aides, recreation assistants, homemaker aides, home health aides, and kindred workers.

Office and Clerical - Occupations in which workers are responsible for internal and external communication, recording and retrieval of data and/or information and other paperwork required in an office. Includes: bookkeepers, messengers, office machine operators, clerk-typists, stenographers, court transcribers, hearings reporters, statistical clerks, dispatchers, license distributors, payroll clerks, and kindred workers.

Skilled Craft Workers - Occupations in which workers perform jobs which require special manual skill and a thorough and comprehensive knowledge of the processes involved in the work which is acquired through on-the-job training and experience or through apprenticeship or other formal training programs. Includes: mechanics and repairpersons, electricians, heavy equipment operators, stationary engineers, skilled machining occupations, carpenters, compositors and typesetters, and kindred workers.

Service/Maintenance - Occupations in which workers perform duties which result in or contribute to the comfort, convenience, hygiene or safety of the general public or which contribute to the upkeep and care of buildings, facilities or grounds of public property. Workers in this group may operate machinery. Includes: chauffeurs, laundry and dry cleaning operatives, truck drivers, bus drivers, garage laborers, custodial personnel, gardeners and groundskeepers, refuse collectors, and construction laborers.

WORKFORCE COMPOSITION FORM FOR ALL CONSTRUCTION CONTRACTS

This form is to be completed and submitted prior to the Non-Discrimination Contract Compliance Conference with the City of Berkeley Contract Compliance Officer. The Contractor and all Subcontractors who will do work valued at $3,000 or more are required to submit this form. Weekly payroll reports will be compared to this listing to monitor compliance with the City of Berkeley Municipal Code Section 13.26. A payroll printout or other listing of employees providing the same information will be accepted.

Name of Contractor/Subcontractor: _____

Project: SANITARY SEWER REHABILITATION – SAN PABLO AVENUE, SACRAMENTO STREET, UNIVERSITY AVENUE, ET AL.

Name	Race*	Sex**	Trade/Craft	Hourly Base Rate	Hire Date	Employees to be used on this project

* A=Asian or Pacific Islander
AI=American Indian
B=Afro American
C=Caucasian
H=Hispanic (Mexican, Puerto Rican, Spanish, Cuban, Chicano, Central or South American)

** M = Male
F = Female

Signature of Contractor/Subcontractor: _____ Date: _____

Verified By: _____City Engineer or designee

AGREEMENT FOR CHANGE IN SUB-CONTRACTORS

I agree to use the Subcontractor(s) listed in the signed contract with the City of Berkeley. If it should become necessary to change Subcontractors, I will notify the Public Works Engineering Division by completing the following information:

Current Subcontractor(s)	Alternate Subcontractors	Reason for Change	Date

Signed by:

Verified by:

Prime Contractor	Subcontractor	City Engineer or designee
Date: _____	Date: _____	Date: _____

CITY OF BERKELEY
NUCLEAR FREE ZONE DISCLOSURE FORM

I (we) certify that:

1. I am (we are) fully cognizant of any and all contracts held, products made or otherwise handled by this business entity, and of any such that are anticipated to be entered into, produced or handled for the duration of its contract(s) with the City of Berkeley. (To this end, this disclosure form may be signed by more than one individual, if a description of which type of contracts each individual is cognizant is attached.)

2. I (we) understand that Section 12.90.070 of the Nuclear Free Berkeley Act (Berkeley Municipal Code Ch. 12.90; Ordinance No. 5784-N.S.) prohibits the City of Berkeley from contracting with any person or business that knowingly engages in work for nuclear weapons.

3. I (we) understand the meaning of the following terms as set forth in Berkeley Municipal Code Section 12.90.130:

   "Work for nuclear weapons" is any work the purpose of which is the development, testing, production, maintenance or storage of nuclear weapons or the components of nuclear weapons; or any secret or classified research or evaluation of nuclear weapons; or any operation, management or administration of such work.

   "Nuclear weapon" is any device, the intended explosion of which results from the energy released by reactions involving atomic nuclei, either fission or fusion or both. This definition of nuclear weapons includes the means of transporting, guiding, propelling or triggering the weapon if and only if such means is destroyed or rendered useless in the normal propelling, triggering, or detonation of the weapon.

   "Component of a nuclear weapon" is any device, radioactive or non-radioactive, the primary intended function of which is to contribute to the operation of a nuclear weapon (or be a part of a nuclear weapon).

4. Neither this business entity nor its parent nor any of its subsidiaries engages in work for nuclear weapons or anticipates entering into such work for the duration of its contract(s) with the City of Berkeley.

Based on the foregoing, the undersigned declares under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

Business Entity:

_____

Specification Name & No.:
SANITARY SEWER REHABILITATION
SAN PABLO AVENUE, SACRAMENTO STREET, UNIVERSITY AVENUE, ET AL.

SPECIFICATION NO. 26-11759-C

CITY OF BERKELEY

OPPRESSIVE STATES COMPLIANCE STATEMENT FOR COMMODITIES

The undersigned, an authorized agent of _____ (hereafter "Vendor"), has had an opportunity to review the requirements of Berkeley City Council Resolution No. 59,853-N.S., 60,382-N.S., and 70,606-N.S. (hereafter "Resolution"). Vendor understands and agrees that the City may choose with whom it will maintain business relations and may refrain from contracting with those Business Entities which maintain business relationships with morally repugnant regimes. Vendor understands the meaning of the following terms used in the Resolution:

"Business Entity" means "any individual, firm, partnership, corporation, association or any other commercial organization, including parent-entities and wholly-owned subsidiaries" (to the extent that their operations are related to the purpose of the contract with the City).

"Oppressive State" means: **Tibet Autonomous Region and the Provinces of Ado, Kham and U-Tsang; and Burma (Myanmar)**

“Personal Services” means “the performance of any work or labor and shall also include acting as an independent contractor or providing any consulting advice or assistance, or otherwise acting as an agent pursuant to a contractual relationship.”

Contractor understands that it is not eligible to receive or retain a City contract if at the time the contract is executed, or at any time during the term of the contract, it provides Personal Services to:

a. The governing regime in any Oppressive State.
b. Any business or corporation organized under the authority of the governing regime of any Oppressive State.
c. Any person for the express purpose of assisting in business operations or trading with any public or private entity located in any Oppressive State.

Vendor further understands and agrees that Vendor's failure to comply with the Resolution shall constitute a default of the contract and the City Manager may terminate the contract and bar Vendor from bidding on future contracts with the City for five (5) years from the effective date of the contract termination.

CITY OF BERKELEY
OPPRESSIVE STATES COMPLIANCE STATEMENT FOR COMMODITIES
(continued)

The undersigned is familiar with, or has made a reasonable effort to become familiar with, Vendor's business structure and the geographic extent of its operations. By executing the Statement, Vendor certifies that it complies with the requirements of the Resolution and that if any time during the term of the contract it ceases to comply, Vendor will promptly notify the City Manager in writing.

Based on the foregoing, the undersigned declares under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

Business Entity: _____

Specification Name & No.:
SANITARY SEWER REHABILITATION
SAN PABLO AVENUE, SACRAMENTO STREET, UNIVERSITY AVENUE, ET AL.
SPECIFICATION NO. 26-11759-C

I am unable to execute this Statement; however, Vendor is exempt under Section VII of the Resolution. I have attached a separate statement explaining the reason(s) Vendor cannot comply and the basis for any requested exemption.

Signature: _____ Date: _____

CITY OF BERKELEY

Sanctuary City Compliance Statement

The undersigned, an authorized agent of_____ _____(hereafter "Contractor"), has had an opportunity to review the requirements of Berkeley Code Chapter 13.105 (hereafter "Sanctuary City Contracting Ordinance" or "SCCO"). Contractor understands and agrees that the City may choose with whom it will maintain business relations and may refrain from contracting with any person or entity that provides Data Broker or Extreme Vetting services to the U.S. Immigration and Customs Enforcement Division of the United States Department of Homeland Security ("ICE"). Contractor understands the meaning of the following terms used in the SCCO:

a. "Data Broker" means either of the following:

i. The collection of information, including personal information about consumers, from a wide variety of sources for the purposes of reselling such information to their customers, which include both private-sector business and government agencies;

ii. The aggregation of data that was collected for another purpose from that for which it is ultimately used.

b. "Extreme Vetting" means data mining, threat modeling, predictive risk analysis, or other similar services." Extreme Vetting does not include:

i. The City's computer-network health and performance tools;
ii. Cybersecurity capabilities, technologies and systems used by the City of Berkeley Department of Information Technology to predict, monitor for, prevent, and protect technology infrastructure and systems owned and operated by the City of Berkeley from potential cybersecurity events and cyber-forensic based investigations and prosecutions of illegal computer based activity.

Contractor understands that it is not eligible to receive or retain a City contract if at the time the Contract is executed, or at any time during the term of the Contract, it provides Data Broker or Extreme Vetting services to ICE.

Contractor further understands and agrees that Contractor's failure to comply with the SCCO shall constitute a material default of the Contract and the City Manager may terminate the Contract and bar Contractor from bidding on future contracts with the City for five
(5) years from the effective date of the contract termination.

By executing this Statement, Contractor certifies that it complies with the requirements of the SCCO and that if any time during the term of the Contract it ceases to comply, Contractor will promptly notify the City Manager in writing. Any person or entity who knowingly or willingly supplies false information in violation of the SCCO shall be guilty of a misdemeanor and up to a $1,000 fine.

Based on the foregoing, the undersigned declares under penalty of perjury under the laws of the State of California that the foregoing is true and correct. Executed this_____day of_____, 20__, at___, California.

Printed Name:_____Title: _____

Signed:_____Date: _____

Business Entity: _____

CITY OF BERKELEY
RIGHT TO AUDIT FORM

The contractor agrees that pursuant to Section 61 of the Berkeley City Charter, the City Auditor's office may conduct an audit of Contractor's financial, performance and compliance records maintained in connection with the operations and services performed under this contract.

In the event of such audit, Contractor agrees to provide the Auditor with reasonable access to Contractor's employees and make all such financial, performance and compliance records available to the Auditor's office. City agrees to provide Contractor an opportunity to discuss and respond to/any findings before a final audit report is filed.

Signed: _____ Date: _____

Print Name & Title: _____

Company: _____

**City Auditor's Office Telephone No. (510) 981-6750

CITY OF BERKELEY
NOTICE REGARDING THE EQUAL BENEFITS ORDINANCE

As a condition of being awarded a contract with the City of Berkeley, the selected Contractor shall be required, during the performance of the agreement, to comply with the City's non-discrimination provisions of the Equal Benefits Ordinance (EBO) as set forth in Berkeley Municipal Code, Chapter 13.29.

The EBO requires that during the performance of a contract, the Contractor shall provide equal benefits to its employees with spouses and employees with domestic partners.

The EBO is applicable to the following employers:

- For-profit employers that have a contract with the City for the purchase of goods, services, public works or improvements, and other construction projects in the amount of $25,000 or more
- Non-profit employers that have a contract with the City for the purchase of goods, services, public works or improvements, and other construction projects in the amount of $100,000 or more
- Lessees of public property, licensees, concessionaires, and franchises that generate $350,000 or more in annual gross receipts
- Entities which receive a grant agreement of $100,000 or more

Contractors who are subject to the EBO must certify to the City that they are in compliance with the EBO and post this notice in a conspicuous place where all employees can see it. Subject contractors must also allow authorized City representatives access to records so the City can verify compliance with the Ordinance.

Compliance with the EBO
If a Contractor has not received a waiver from complying with the EBO and the timeframe within which it can delay implementation has expired but it has failed to comply with the EBO, the Contractor may be deemed to be in material breach of the City agreement. In such cases, the City may cancel, terminate or suspend the City agreement, in whole or in part. The City also may deem the Contractor an irresponsible bidder and disqualify the Contractor from contracting with the City for a period of five years. In addition, the City may assess liquidated damages against the Contractor which may be deducted from money otherwise due the Contractor, and pursue any other remedies available at law or in equity.

Violations
Any suspected violations of the EBO should be reported to:

EBO Compliance Officer,
City Manager's Office
2180 Milvia Street, Berkeley, CA 94704
510-981-7000

CITY OF BERKELEY
EQUAL BENEFITS ORDINANCE DISCLOSURE FORM

As a condition of being awarded a contract with the City of Berkeley, the selected Contractor/Vendor ("Contractor") may be required, during the performance of the contract, to comply with the City's non-discrimination provisions of the Equal Benefits Ordinance ("EBO") as set forth in Berkeley Municipal Code, Chapter 13.29. The EBO requires that during the performance of a contract, the Contractor shall provide equal benefits to its employees with spouses and employees with domestic partners. Benefits include, but are not limited to, health benefits, bereavement leave, family medical leaves, membership and membership discounts, moving expenses, retirement benefits, and travel benefits. A cash equivalent payment is permitted if an employer has taken all reasonable efforts to provide domestic partner's with access to benefits but is unable to do so. A situation in which a cash equivalent payment might be used is if the employer has difficulty finding an insurance provider that is willing to provide domestic partner benefits

The EBO is applicable to the following employers:

- For-profit employers that have a contract with the City for the purchase of goods, services, public works or improvements, and other construction projects in the amount of $25,000 or more
- Non-profit employers that have a contract with the City for the purchase of goods, services, public works or improvements, and other construction projects in the amount of $100,000 or more
- Lessees of public property, licensees, concessionaires, and franchises that generate $350,000 or more in annual gross receipts
- Entities which receive a grant agreement of $100,000 or more

Contractors who are subject to the EBO must certify to the City before execution of the contract by completing form EBO-1 that they are in compliance with the EBO or have been issued a waiver by the City. Contractors must also allow authorized City representatives access to records so the City can verify compliance with the Ordinance.

The EBO includes provisions that address difficulties associated with implementing procedures to comply with the EBO. Contractors can delay implementation of procedures to comply with the EBO in the following situations:

(1) until the first effective date after the first open enrollment process following the contract execution date, not to exceed two years if the Contractor submits evidence of engaging in reasonable efforts to comply with the EBO;
(2) until administrative steps can be taken to incorporate nondiscrimination in benefits in the contractor's infrastructure, not to exceed three months, unless extended at the discretion of the City Manager; and
(3) until the expiration of a Contractor's current collective bargaining agreement(s)

CITY OF BERKELEY
EQUAL BENEFITS ORDINANCE DISCLOSURE FORM
(continued)

Compliance with the EBO

If a Contractor has not received a waiver from complying with the EBO and the timeframe within which it can delay implementation has expired but it has failed to comply with the EBO, the Contractor may be deemed to be in material breach of the City agreement. In the event of a material breach, the City may cancel, terminate or suspend the City agreement, in whole or in part. The City also may deem the Contractor an irresponsible bidder and disqualify the Contractor from contracting with the City for a period of five years. In addition, the City may assess liquidated damages against the Contractor which may be deducted from money otherwise due the Contractor, and pursue any other remedies available at law or in equity.

By my signature below, I acknowledge that the Contractor understands that to the extent it is subject to the provisions of B.M.C. Chapter 13.29, the Contractor shall comply with this provision.

Printed Name:
_____Title:_____

Signature:
_____Date:_____

Business Entity:
_____

Specification Name & No.:
SANITARY SEWER REHABILITATION
SAN PABLO AVENUE, SACRAMENTO STREET, UNIVERSITY AVENUE, ET AL.
SPECIFICATION NO. 26-11759-C

To be completed by Contractor/Vendor

Form EBO-1
CITY OF BERKELEY
CERTIFICATION OF COMPLIANCE WITH EQUAL BENEFITS ORDINANCE

If you are a ***contractor***, return this form to the originating department/project manager. If you are a ***vendor*** (supplier of goods), return this form to the Purchasing Division of the Finance Dept.

SECTION 1. CONTRACTOR/VENDOR INFORMATION

Name:			Vendor No.:
Address:	City:	State:	ZIP:
Contact Person:		Telephone:	
E-mail Address:		Fax No.:	

SECTION 2. COMPLIANCE QUESTIONS

A. The EBO is inapplicable to this contract because the contractor/vendor has no employees.
☐ Yes ☐ No *(If "Yes," proceed to Section 5; if "No", continue to the next question.)*

B. Does your company provide (or make available at the employees' expense) any employee benefits?
☐ Yes ☐ No
If "Yes," continue to Question C.
If "No," proceed to Section 5. (The EBO is not applicable to you.)

C. Does your company provide (or make available at the employees' expense) any benefits to the spouse of an employee? ..... ☐ Yes ☐ No

D. Does your company provide (or make available at the employees' expense) any benefits to the domestic partner of an employee? ☐ Yes ☐ No
If you answered "No" to both **Questions C and D, proceed to Section 5. (The EBO is not applicable to this contract.)**
If you answered "Yes" to both **Questions C and D, please continue to Question E.**
If you answered "Yes" **to Question C and** "No" **to Question D, please continue to Section 3.**

E. Are the benefits that are available to the spouse of an employee identical to the benefits that are available to the domestic partner of the employee?.....☐ Yes ☐ No
If you answered "Yes," proceed to Section 4. (You are in compliance with the EBO.)
If you answered "No," continue to Section 3.

SECTION 3. PROVISIONAL COMPLIANCE

A. Contractor/vendor is not in compliance with the EBO now but will comply by the following date:

☐ By the first effective date after the first open enrollment process following the contract start date, not to exceed two years, if the Contractor submits evidence of taking reasonable measures to comply with the EBO; or

☐ At such time that administrative steps can be taken to incorporate nondiscrimination in benefits in the Contractor's infrastructure, not to exceed three months; or

☐ Upon expiration of the contractor's current collective bargaining agreement(s).

B. If you have taken all reasonable measures to comply with the EBO but are unable to do so, do you agree to provide employees with a cash equivalent?* ..... ☐ Yes ☐ No

* The cash equivalent is the amount of money your company pays for spousal benefits that are unavailable for domestic partners.

SECTION 4. REQUIRED DOCUMENTATION

At time of issuance of purchase order or contract award, you may be required by the City to provide documentation (copy of employee handbook, eligibility statement from your plans, insurance provider statements, etc.) to verify that you do not discriminate in the provision of benefits.

SECTION 5. CERTIFICATION

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that I am authorized to bind this entity contractually. By signing this certification, I further agree to comply with all additional obligations of the Equal Benefits Ordinance that are set forth in the Berkeley Municipal Code and in the terms of the contract or purchase order with the City.

Executed this _____day of _____, in the year _____, at _____, _____
(City) (State)

_____ _____
Name (please print) Signature

_____ _____
Title Federal ID or Social Security Number

FOR CITY OF BERKELEY USE ONLY

☐ Non-Compliant (The City may not do business with this contractor/vendor)

☐ One-Person Contractor/Vendor ☐ Full Compliance ☐ Reasonable Measures

☐ Provisional Compliance Category, Full Compliance by Date: _____

Staff Name(*Sign and Print*): _____Date: _____

COMMERCIAL GENERAL AND AUTOMOBILE LIABILITY ENDORSEMENT

The attached Certificates of Insurance are hereby certified to be a part of the following policies having the following expiration dates:

Policy No.	**Company Providing Policy**	**Exp. Date**
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

The scope of the insurance afforded by the policies designated in the attached certificates is not less than that which is afforded by the Insurance Service Organization's or other "Standard Provisions" forms in use by the insurance company in the territory in which coverage is afforded.

Such Policies provide for or are hereby amended to provide for the following:

1. The named insured is _____.

2. CITY OF BERKELEY ("City") is hereby included as an additional insured with respect to liability arising out of the hazards or operations under or in connection with the following agreement: _____.

The insurance provided applies as though separate policies are in effect for both the named insured and City, but does not increase the limits of liability set forth in said policies.

3. The limits of liability under the policies are not less than those shown on the certificate to which this endorsement is attached.

4. Cancellation or material reduction of this coverage will not be effective until thirty (30) days following written notice to Adadu Yemane, P.E., Department of Public Works, 1947 Center Street, 4th Floor, Berkeley, CA. 94704.

5. This insurance is primary and insurer is not entitled to any contribution from insurance in effect for City.

The term "City" includes successors and assigns of City and the officers, agents, employees, and volunteers.

_____
Insurance Company

Date: _____ By: _____
Signature of Underwriter's
Authorized Representative

PERFORMANCE BOND
CALIFORNIA PUBLIC WORKS

KNOW ALL MEN BY THESE PRESENTS,

That we, _____

as Principal, and _____,

a Corporation organized and existing under the laws of the State of _____ and authorized to transact surety business in the State of California, as Surety, are held and firmly bound unto the City of Berkeley (hereinafter called Obligee), in the sum of _____ Dollars ($_____), for the payment whereof well and truly to be made and we each of us bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION of the above obligation is such that, Whereas, the above named bounden principal entered into a contract dated _____, 20_____ with the said Obligee to do and perform the following work, to-wit:

_____

Which contract is hereby referred to, incorporated by reference, and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, That if the above bounden Principal shall well and truly keep, do, pay and perform, each and every, all and singular, all the matters, provisions, undertakings, covenants, terms, conditions, agreements and things in said contract set forth and specified to be by the said principal kept, done, paid and performed at the time and in the manner in said contract specified, and shall pay over, make good and reimburse to the above-named Obligee, all loss and damages which said Obligee may sustain by reason of failure

or default, or breach on the part of said Principal, then this obligation shall be void; otherwise to be and remain in full force and effect.

Whenever Principal shall be, and is declared by Obligee to be in default under the Contract, the Obligee having performed Obligee's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

1) Complete the Contract in accordance with its terms, provisions, undertakings, covenants, agreements, clauses, and conditions, or

2) Obtain a bid or bids for completing the Contract in accordance with its terms, provisions, undertakings, covenants, agreements, clauses, and conditions, and upon determination by Surety of the lowest responsible bidder, or, if the Obligee elects, upon determination by the Obligee and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and Obligee, and make available as Work progresses (even though there should be a default or a succession of defaults under the contract of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price, but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price," as used in this paragraph, shall mean the amount payable by Obligee to principal under the contract and amendments, thereto, less the amount properly paid by Obligee to Contractor.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or Corporation other than the Obligee named herein or the heirs, executors, administrators or successors of Obligee.

If any action or law or in equity is brought to enforce or interpret the provisions of this bond,

the prevailing party shall be entitled to reasonable attorney's fees in addition to any other relief to which it may be entitled.

SIGNED AND SEALED THIS _____ day of_____

_____, 20 _____.

_____

_____
Principal

_____

_____
Surety Attorney In Fact

CITY OF BERKELEY
FIRST SOURCE/LOCAL HIRING POLICY

First Source (B.M.C. 13.26) promotes the hiring of local jobseekers on local and publicly funded construction projects, in addition to non-construction jobs that are created after construction is complete.

In general, the following responsibilities are assumed by the City and general Contractors/Subcontractors.

CITY RESPONSIBILITIES:

1. Coordinate with Unions and CITY-funded employment/training agencies to ensure referral of applicants and training in accordance with CITY commitments.

2. Work with the local workforce development programs to ensure that they thoroughly screen applicants' experience/qualifications for jobs.

3. Follow up with workforce development agencies and employers on outcome of applicants referred for employment and will initiate corrective actions necessary for an effective employment/training delivery system.

4. At its discretion, be responsible for monitoring and, where necessary, enforcing compliance with this Agreement. This will be accomplished through periodic reviews, investigations of grievances and dispute resolution through administrative hearings. Pending conclusion of the hearings, the CONTRACTOR can continue normal operations and hiring.

5. At its discretion, review certified payroll or other relevant reports to determine whether the CONTRACTOR has maintained good faith efforts to hire and provide opportunities for Berkeley residents.

6. Ensure that local workforce development programs and Berkeley Housing Authority (for HUD Section 3 compliance where applicable) are notified that the First Source Agreement is in place.

GENERAL CONTRACTOR/SUBCONTRACTOR RESPONSIBILITIES:

Compliance with the City of Berkeley Non-Discrimination policy and employment goal as it relates to the First Source Program:

1. Meeting employment goals contained in the City construction component.
2. Notifying City or City's designee of project labor needs.
3. Interviewing qualified Berkeley residents before others are interviewed.
4. Providing information to City of application-for-work procedures.

CITY OF BERKELEY
FIRST SOURCE AGREEMENT

I certify that:

I **I am authorized to enter into this agreement on behalf of the company whose name appears below ("Contractor").**

II **Contractor understands and agrees to comply with the First Source Program as described in Berkeley Municipal Code Section 13.26.080.**

III **Contractor understands that agreement with Berkeley Municipal Code Section 13.26.080 means that Contractor agrees as follows:**

A. To interview and consider qualified Berkeley applicants before interviewing others.

B. To notify the applicable Union Hall(s) as to the local hiring requirement for this project and to request qualified Berkeley residents first.

C. That the Contractor has the sole discretion to make all final hiring decisions.

IV **Contractor also agrees:**

A. To ensure that workers employed through this agreement are treated in a manner that is equal to all other employees.

B. To fully document the reason(s) for not hiring persons referred by Union Halls or workforce development agencies.

C. To ensure that job specifications/requirements accurately reflect job functions.

D. To designate a qualified representative of the Contractor and each Subcontractor who will be the responsible party for implementation and compliance with the goals, objectives and responsibilities specified in this agreement. Contractor will inform the City of the designated representative(s) at the Non-Discrimination Conference.

E. To provide to the City, upon request, information on the employment status of First Source placements, and reason for separation if employee is terminated.

CITY OF BERKELEY
FIRST SOURCE AGREEMENT
(continued)

The above First Source Agreement provisions shall apply for the duration of covered contracts. Covered contracts are all construction projects over $100,000, and shall include all subcontracts.

I declare the foregoing to be true and correct under penalty of perjury.

Signed: _____ Date: _____

Title: _____

Company: _____

_____ Date: _____
City Engineer or designee

CITY OF BERKELEY
AGREEMENT TO BE BOUND FORM

The undersigned, as a Contractor or Subcontractor ("Contractor") on a City Project ("Project"), for and in consideration of the award to it of a contract to perform work on said Project, and in further consideration of the mutual promises made in the Project's Community Workforce Agreement ("Agreement"), a copy of which was received and is acknowledged, hereby:

1. Accepts and agrees to be bound by the terms and conditions of the Agreement, together with any and all amendments and supplements now existing or which are later made to said Agreement.

2. Certifies that it has no commitments or agreements which would preclude its full and complete compliance with the terms and conditions of said Agreement;

3. Agrees to secure from any Contractor (as defined in said Agreement) which is or becomes a subcontractor (of any tier to it, and from any successors, a duly executed Agreement to be bound in form identical to this document.

4. Contractor agrees that it shall be bound by all applicable trust agreements and plans for the provision of such fringe benefits as accrue to the direct benefit of the construction persons, including Health and Welfare, Pension, Training, Vacation, and/or other direct benefits provided pursuant to the appropriate craft agreement contained in Schedule "A" of Agreement.

Date: _____

Company Name: _____

Name of Prime contractor or Higher Level Subcontractor:

_____

Name of Project: _____

Signature: _____

Print Name: _____

Title: _____

Contractor's License #: _____

Motor Carrier Permit (CA) #: _____

CITY OF BERKELEY
CWA HIRING PLAN
(to be submitted prior to Notice to Proceed date)

Name of Project: **SANITARY SEWER REHABILITATION – SAN PABLO AVENUE, SACRAMENTO STREET, UNIVERSITY AVENUE, ET AL., SPEC. NO. 26-11759-C**

Name of Company Reporting: _____

Name of Person Completing Form: _____ _____ _____
Name/Title Signature Date

Employee Name	Core/ Current Or TBD*	Employee Address	City & Zip Code	Trade	Estimated Hours on Project	Journey or Apprentice and Period	Pay Rate

*If employee is TBD please enter the trade & planned hours only, and re-submit form with names and addresses after workforce is determined.

Signatory to union: ☐Yes ☐No If yes, please list trades: _____
Comments:

Return to: Employment Programs Administrator
2180 Milvia Street, 2nd floor
Berkeley, CA 94704 c/o Local Hire Programs
localhire@berkeleyca.gov

PART B
SPECIAL PROVISIONS

SPECIFICATIONS

FOR

SANITARY SEWER REHABILITATION
SANITARY SEWER REHABILITATION AND REPLACEMENT - SAN PABLO AVENUE, SACRAMENTO STREET, UNIVERSITY AVENUE, ET AL.

SPECIFICATION NO. 26-11759-C

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DESCRIPTION OF BID ITEMS

Description of Bid Items including their respective measurement for payment are listed below:

BID ITEM NO. 1: MOBILIZATION AND DEMOBILIZATION

Mobilization shall include obtaining insurance and bonds, moving all materials and equipment onto the site, obtaining and paying for all permits by other agencies if applicable, furnishing temporary construction utilities, installing construction signs (see Special Conditions of the Special Provisions for details), and installing any temporary buildings, spaces and facilities for the Resident, Project Representative and inspectors, and other construction facilities all as required for the proper performance and completion of the work.

Demobilization shall include final cleaning and restoration of the job site, removal of all temporary facilities and equipment from the work area, disconnection of the temporary construction utilities and turnover of project to the City.

Measurement for payment shall be as Lump Sum (LS). For the purpose of payment, mobilization will be assumed to be 60 percent of the total amount bid for this item. Payment for mobilization will be according to the following schedule.

A. When the monthly partial payment estimate of the amount earned, not including the amount earned for mobilization, is 5 percent or more the original contract amount, 50 percent of the contract item price for mobilization will be included in said estimate for payment.

B. When the monthly partial payment estimate of the amount earned, not including the amount earned for mobilization, is 10 percent or more of the original contract amount, the total amount earned for mobilization shall be 75 percent of the contract item price for mobilization, and said amount will be included in said estimate for payment.

C. When the monthly partial payment estimate of the amount earned, not including the amount earned for mobilization, is 20 percent or more of the original contract amount, the total amount earned for mobilization shall be 100 percent of the contract item price for mobilization, and said amount will be included in said estimate for payment.

BID ITEM NO. 2: TRAFFIC CONTROL PLAN AND PROVISIONS

This item shall include all labor, materials, and equipment as needed to provide traffic control as described under Special Condition No. 24 of the specifications. Contractor shall submit a proposed traffic control plan, no later than two (2) weeks after the award of the project by the Berkeley City Council, for review and approval by the City's traffic engineer. The plan shall be prepared under the direction of a licensed traffic engineer or civil engineer, who must stamp and sign the plan.

Contractor shall be aware that bicycle and pedestrian convenience and safety takes precedence over motor vehicle convenience. Contractor shall prepare traffic control plans such that closures or detours have little to no impact to pedestrian and bicyclist path of travel.

This item shall include, but not limited to, traffic control for sewer rehabilitation, sewer point (spot) repairs, sewer bypass, and pavement restoration in project work zones.

Measurement for payment shall be as Lump Sum (LS). The contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment.

BID ITEM NO. 3: LIGHTED MESSAGE BOARD

This item is to provide compensation for additional notification near the work area. The Contractor shall provide portable changeable message boards for use on the project at the City's request. Each portable message sign unit shall consist of a controller unit, a power supply, and a structural support system, all mounted on a trailer, per Caltrans Standard Specification Section 12-3.32. Message boards shall be installed as directed by the Engineer at least one (1) week prior to start of construction and shall be relocated to the next street location as job progresses or as directed by the Engineer. Board shall be maintained to the satisfaction of the Engineer.

Measurement for payment shall be as Each (EA).

BID ITEM NO. 4: PRE-CONSTRUCTION AUDIO/VIDEO SURVEY, AND DISTRIBUTION OF PUBLIC NOTICES

This item shall include all labor, materials, and equipment, including, but not limited to, recording devices, video cameras, cameras, and other equipment as required to perform a pre-construction survey to document existing conditions at the project site, staging areas, and other areas affected by the work. The contractor shall submit written records, photographs, and videos to the City prior to commencing work. The documentation of pre-construction conditions for the areas affected by the work is to facilitate restoration of the areas to existing conditions or better.

This item shall also include all labor and materials associated with the distribution of Public Notices to residences, businesses, and other properties affected by the work. The first Public Notice will be prepared and distributed by the City. The second Public Notice (Door Hanger) shall be distributed by the Contractor at least 72 hours prior to construction. The Contractor shall submit the "Door Hanger" for approval by the City prior to distribution to the residences, businesses, and other properties affected by the work.

Measurement for payment shall be as Lump Sum (LS). The Contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment.

BID ITEM NO. 5: PRE-CONSTRUCTION CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION AND LOCATION OF ACTIVE SEWER LATERALS

This item shall include coordination with and notification of the public; locating, identifying, marking and recording all active laterals; and documenting the pre-construction condition of existing sewer mains. This item shall include labor, materials, utility marking devices, CCTV equipment, videos devices, and other CCTV related materials for clear documentation of deficiencies in the existing sewer pipes and location of laterals. Flow control, diversion and/or bypass pumping required in order to facilitate the pre-construction CCTV shall be included.

Documentation shall follow the National Association of Sewer Service Companies (NASSCO) pipeline assessment certification program (PACP) coding standards for all defects and consist of a color, DVD-format video, log sheets, and a written report detailing the pre-construction condition of the pipeline and lateral connection/openings. The report shall note the time and date of video inspection, street name, upstream and downstream maintenance hole, direction of view, direction of flow, surface material, pipe size, pipe material, lateral connections, video tape number, counter number, and a detailed logging of defects encountered. The report shall be prepared by an operator or worker who holds current PACP certification and shall be done using POSM format.

The camera shall be lowered into the upstream maintenance hole (or access point) and placed into the pipe. The camera cable shall be retracted to remove slack to ensure an accurate distance reading. The cable distance-counter shall be reset to the distance between the centerline of the maintenance hole and the front lens of the camera. The camera shall provide a view of the inside of the insertion maintenance hole, then move through the pipeline in a downstream direction whenever possible, stopping at the center of the next maintenance hole and provide a view of the inside of the end structure. The cable distance counter shall measure the distance between each inspection segment – centerline to centerline. The camera shall stop at all significant observations to ensure a clear and focused view of the pipe condition. Observations shall include, but not be limited to: Laterals – Standard, Laterals – Protruding, Cracks, Offset Joints. Open Joints, Sags, Line Deviations, Siphons, Missing Sections, Mortar, Infiltration, Debris, Grease, and Roots. If the quality of the video is deemed unacceptable by the Engineer, the pipeline shall be re-televised at no additional cost to the City.

Contractor shall identify all defects in the existing pipe requiring corrective action prior to pipe rehabilitation and identify any areas that require additional corrective actions that are above and beyond allowance for point repairs included in the bid items for pipe rehabilitation. Any areas that may require additional corrective actions shall be documented and provided to the Engineer for immediate review and direction. CCTV shall be provided to the City's Engineer within 2 weeks of notice to proceed.

Measurement for payment shall be in Linear Foot (LF) of pre-construction video inspection of pipe inspected (regardless of pipe size) and submittal of video and report to the City. Any time or materials expended on investigating inactive laterals shall be included in the unit cost of locating active laterals. Work on this bid item shall be in accordance with Sub-section 500-

1 of the Technical Provisions.

BID ITEM NO. 6: CONSTRUCTION STAKING AND CUT SHEETS

This item shall include all labor, materials, and equipment for the setting of construction stakes or markers as necessary to establish the lines and grade required for the execution and completion of the work specified in the plans and specifications. Included in this bid item is the preparation of cut/fill sheets to be submitted to the Engineer for approval prior to staking. The Contractor shall be responsible for any errors made in the sewer flow line and grade of the finished work and shall remedy the defective work with no extra cost to the City.

Measurement for payment shall be as Lump Sum (LS). For additional information, see Special Conditions of the specifications.

BID ITEM NO. 7: REHABILITATE EXISTING MAINTENANCE HOLE OR JUNCTION BOX, ALL DEPTHS

Contractor shall verify that the maintenance hole or precast concrete junction box identified to be rehabilitated is a precast concrete maintenance hole or precast concrete junction box. Brick maintenance holes shall not be rehabilitated except where specifically noted. If the structure is not a precast concrete maintenance hole or junction box, Contractor shall notify the Engineer for further direction and prior to any further work on the structure. If the structure is a precast concrete maintenance hole, work shall proceed as described below.

This item shall include all labor, materials and equipment as needed for rehabilitation of existing structure. Work includes but is not limited to removal of existing concrete as required, removal of existing coating, removal of existing steps, removal and replacement of the rim, frame and cover, delivery of discarded frame and cover to the City's Corporation Yard, repair of damaged connections to structures, construction of new concrete flow channel as indicated in the plans and specifications, installation of new drop tee connection when elevation difference between the inlet and outlet is at least the distance for the required fittings and the drop is 18-inches or greater, cleaning using hydraulically propelled, high-velocity jet, or mechanically powered equipment, lining with Mainstay ML-72, Parson Environmental PARSON MH LINER, or other approved equal within interior bed of maintenance hole and to interior wall , coating of maintenance hole base and interior wall with Mainstay DS-5, Parson Environmental PARSONPOXY SEL-80, or other approved equal, vacuum testing (spark/holiday or pull testing is not an acceptable test method), removal and disposal of debris, sediment and grease, flow control, diversion or bypass pumping, dewatering, furnishing of concrete to raise the maintenance hole invert to the elevation shown in the Plans, and forming and reconstructing channels and base. The existing structure channel shall be removed prior to placing new pipe and concrete. If plastic pipe is laid through maintenance holes, cement water stop maintenance hole coupling shall be used at the pipe entry and exit point for all pipes, and shall be in accordance with the plans and specifications.

Listed below are the names of concrete repair and liner material for maintenance hole

rehabilitation and their local distributor:

a) Mainstay by Madewell Products Corporation
Steve Hallam, Sales Manager
Telephone: (770) 856-4470
Fax: (866) 859-2961

b) Parson Environmental Products, Inc.
Telephone: (800) 356-9023
Fax: (610) 582-6064

Any similar methods submitted by the Contractor that will produce the same result of eliminating water infiltration shall be reviewed and approved by the Engineer. Rehabilitation of the maintenance hole interior surface by means of grouting only will not be accepted. Maintenance hole rehabilitation shall include the installation of an approved lining and coating material. Refer to Section 500-2.5 of Part D – Technical Provisions for lining material and epoxy coating requirements.

Measurement for payment shall be as Each (EA). The Contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment and after the delivery of the discarded frame and cover to the City's Corporation Yard. **The City reserves the right to withhold payment for work under this bid item until successful completion of required testing.**

BID ITEM NO. 8: CONSTRUCT STD. MAINTENANCE HOLE AND DROP MAINTENANCE HOLE, INCL. LINING, ECCENTRIC CONES, ALL DEPTHS (REVOCABLE)

This item shall include all labor, materials, and equipment necessary for the excavation and construction of a new standard maintenance hole or drop maintenance hole as shown in the plans and specifications, the connection to pipe, drop connection, concrete encasement, bedding, backfill, including imported backfill, aggregate base material, compaction, coating of the interior wall of the maintenance hole (see Bid Item No.7 for a list of liner and coating requirements), vacuum testing, flow control, diversion or bypass pumping, dewatering, temporary and permanent resurfacing, including asphalt or concrete pavement reconstruction to restore the existing improvements. Standard maintenance holes located in the street areas shall be TYPE A frame and cover in accordance with I/I Standard Detail, Drawing No. 14 and; maintenance hole located in the backline areas shall be TYPE B frame and cover in accordance with I/I Standard Detail, Drawing No. 15. Standard maintenance holes shall be as shown on Project Plans, City Standard Plan 7895 Sheet 26, including standard frame and cover. Item shall also include temporary shoring, sheeting, and bracing (which may include sheet piling) as necessary for the execution and completion of the work specified in the plans and specifications.

Measurement for payment shall be as Each (EA) regardless of depth.

Contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment. **The City reserves the right to withhold payment for work under this bid item until successful completion of required testing.**

BID ITEM NO. 9a: REMOVE EXISTING STRUCTURE AND CONSTRUCT STD. MAINTENANCE HOLE, DROP MAINTENANCE HOLE, INCL. LINING, ECCENTRIC CONES, ALL DEPTHS (NOT USED)

Contractor shall verify that the structure identified to be removed is a brick maintenance hole. If the maintenance hole is not a brick maintenance hole, Contractor shall notify the Engineer for further direction and prior to any further work on the maintenance hole. If the structure called out to be removed is an existing lamphole, cleanout, or junction box, contractor shall verify that the structure called out on the plans accurately reflects field conditions. If the maintenance hole is a brick maintenance hole or other structure as called out on the plans, work shall proceed as described below.

This item shall include all labor, materials, and equipment necessary for the excavation and complete removal of existing maintenance hole, lamphole, cleanout, or junction structure, removal and replacement of the maintenance hole rim, frame and cover, delivery of discarded frame and cover to the City's Corporation Yard, removal and disposal of debris, the construction of a new standard maintenance hole, mini- maintenance hole, drop maintenance hole, or junction box as shown in the plans and specifications, the connection to pipe, drop connection, concrete encasement, bedding, backfill, including imported backfill, aggregate base material, compaction, coating of the interior wall of the maintenance hole (see Bid Item No.7 for a list of liner and coating requirements), vacuum testing, flow control, diversion or bypass pumping, dewatering, temporary and permanent resurfacing, including asphalt or concrete pavement reconstruction to restore the existing improvements. Standard maintenance holes located in the street areas shall be TYPE A frame and cover in accordance with I/I Standard Detail, Drawing No. 14 and; structures located in the backline areas shall be TYPE B frame and cover in accordance with I/I Standard Detail, Drawing No. 15. Standard maintenance holes shall be as shown on Project Plans, City Standard Plan 7895 Sheet 26, including standard frame and cover. Item shall also include temporary shoring, sheeting, and bracing (which may include sheet piling) as necessary for the execution and completion of the work specified in the plans and specifications.

Measurement for payment shall be as Each (EA) regardless of depth.

The Contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment and after the delivery of the discarded frame and cover to the City's Corporation Yard. **The City reserves the right to withhold payment for work under this bid item until successful completion of required testing.**

BID ITEM NO. 9b: REMOVE EXISTING STRUCTURE AND CONSTRUCT

LAMPHOLE OR CLEANOUT, ALL DEPTHS

Contractor shall verify that the structure identified to be removed on the plans matches field conditions. If the structure type called out on the plans does not match field conditions, Contractor shall notify the Engineer for further direction and prior to any further work on the maintenance hole. If the structure called out to be removed is verified to match field conditions, work shall proceed as described below.

This item shall include but is not limited to all labor, materials, and equipment necessary for the excavation, pipe cutting and complete removal of existing lamphole, cleanout, or junction structure, including removal of the rim, frame and cover, delivery of discarded frame and cover to the City's Corporation Yard, removal and disposal of debris, installation of a cleanout and lateral riser, cleanout fitting, couplings, riser, connection to the existing sewer, concrete collar, frame, cover, backfill including imported backfill, compaction, vacuum testing, flow control, diversion or bypass pumping, dewatering, temporary and permanent resurfacing, including asphalt or concrete pavement reconstruction to restore the existing improvements. Item shall also include temporary shoring, sheeting, and bracing (which may include sheet piling) as necessary for the execution and completion of the work specified in the plans and specifications.

This item also includes restoration of the work area to equal or better conditions including any affected landscaping, hardscapes, planters, fencing, walls, etc.

Measurement for payment shall be as Each (EA). The Contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment and after the delivery of the discarded frame and cover to the City's Corporation Yard. **The City reserves the right to withhold payment for work under this bid item until successful completion of required testing.**

BID ITEM NO. 9c: REMOVE EXISTING STRUCTURES AND CONSTRUCT 36" DIAMETER HDPE MH, ALL DEPTHS (NOT USED)

Contractor shall verify that the structure identified to be removed on the plans matches field conditions. If the structure type called out on the plans does not match field conditions, Contractor shall notify the Engineer for further direction and prior to any further work on the maintenance hole. If the structure called out to be removed is verified to match field conditions, work shall proceed as described below.

This item shall include but is not limited to all labor, materials, and equipment necessary for the excavation, pipe cutting and complete removal of existing lamphole, cleanout, or junction structure, including removal of the rim, frame and cover, delivery of discarded frame and cover to the City's Corporation Yard, removal and disposal of debris, installation of a 36" diameter HDPE MH, reducer, riser, connection to the existing sewer, concrete collar, frame, cover, backfill including imported backfill, compaction, vacuum testing, flow control, diversion or bypass pumping, dewatering, temporary and permanent resurfacing, including

asphalt or concrete pavement reconstruction to restore the existing improvements. Item shall also include temporary shoring, sheeting, and bracing (which may include sheet piling) as necessary for the execution and completion of the work specified in the plans and specifications.

This item also includes restoration of the work area to equal or better conditions including any affected landscaping, hardscapes, planters, fencing, walls, etc.

Measurement for payment shall be as Each (EA). The Contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment and after the delivery of the discarded frame and cover to the City's Corporation Yard. **The City reserves the right to withhold payment for work under this bid item until successful completion of required testing.**

BID ITEM NO. 10: REHABILITATION BY METHOD "A" CURED-IN-PLACE-PIPE (CIPP) LINER, INCLUDES POINT REPAIR TO CORRECT SAGS

This method of sewer rehabilitation involves the insertion of an approved polyester, epoxy, or epoxy-vinyl ester-resin-impregnated flexible fabric tube. The material shall be compatible with and capable of carrying epoxy or epoxy-vinyl-ester resin, be able to withstand installation pressures and curing temperatures. The approved epoxy shall be compatible with the application and be able to cure in the presence of hot water or steam. Refer to Section 500-1.4 of the "Greenbook" 2015 Edition and Part D – Technical Provisions for material composition, testing and other requirements for the installation of CIPP liner. Refer to Section 500-1.2 of the "Greenbook" 2015 Edition and Part D – Technical Provisions for Pipeline Point Repair/Replacement. PVC Pipe Liner is not allowed for this project.

If specified on the plans, this method can also include the use of an approved ultraviolet (UV) light-cured resin-impregnated fiberglass tube liner (See Special Condition No. 30). The Project Engineer reserves the right to change the design from UV CIPP to flexible fabric (felt) CIPP.

The following applies to CIPP installations in plastic host pipe:

CIPP in plastic host pipe is more time-consuming and challenging than conventional CIPP, in part because the heating process required to cure the liner can warp the host pipe, meaning the curing process has to be slower and cooler. As such, the liner and curing method selected need to be chosen with care. Approved methods for CIPP in plastic pipe are listed below.

- An approved epoxy-impregnated flexible fabric tube with steam or hot water-cure. If epoxy liners are proposed, Contractor shall submit verification that they have adequate experience with using epoxy liners successfully on comparable plastic host pipe projects, which might include listing of three comparable completed projects or other acceptable documentation that the contractor is skilled in this work.

- Polyester fabric liners with styrene-free vinyl ester resin may be used in conjunction with hot water cure. Steam cure may be acceptable at Engineer's sole discretion if Contractor submits verification that they have adequate experience with using the combination of styrene-free vinyl ester resin and steam cure on comparable plastic-host pipe projects. Such documentation might include listing of three comparable completed projects or other acceptable documentation that the contractor is skilled in this work.

- Alternates to the options listed above may be submitted to Engineer for approval. Submittal shall include detailed documentation that the methodology chosen is suitable for lining a plastic host pipe. Documentation shall include that that liner type/cure type has been used successfully on at least three different comparable plastic host pipe projects, and written documentation from the manufacturer that the submitted materials and methods are an appropriate choice, or other method of demonstrating expertise that is acceptable to the Engineer. Approval of any alternate is at the sole discretion of the Engineer.

The following applies to all CIPP installations, regardless of host pipe material:
The cured-in-place liner thickness shall be a minimum of 0.24 inches (6.0 mm) or as calculated by the Contractor, whichever is greater. Liner design calculations shall be supported by field analysis, technical assumptions, requirements of these Specifications and ASTM F 1216 X1.2.1. Calculations and product information shall be submitted in accordance with Part C, Subsection 401.12 of the Specifications prior to ordering liner.

The CIPP liner shall fit sufficiently tight within the existing pipe so as to not leak at the maintenance holes, at the service connections or through the wall of the installed pipe. If leakage occurs at the maintenance holes or the service connections, the Contractor shall seal these areas to stop all leakage using a material compatible with the CIPP and host pipe, resistant to sulfuric acid, and suitable for contact with sewage, as approved by the Engineer.

Contractor responsible to obtain all EBMUD permits, including but not limited to disposal or discharge **of any water** into an EBMUD wastewater treatment plant, as required by applicable regulations as part of the contract scope (See Appendix 8). Contractor is responsible for repair of host pipe should it become damaged during the construction process.

This item shall include all labor, materials, and equipment necessary for the execution and completion of this rehabilitation method, including, but not limited to surface removal and restoration of any existing improvements disturbed by construction including restoration of curb, gutter, sidewalk and asphalt, restoration of existing improvements such as landscaping, lawn, brick walkways, retaining walls, driveways, fences, all concrete joint to joint, etc. (See Special Condition No. 18), dewatering, flow control, diversion or bypass pumping (See Special Condition No. 40; Note that bypass pumping for sewer mains 15" and larger, shall be included in Bid Item No. 27), point repairs, removal of protruding laterals, removal of root intrusion (See Special Condition No. 42 and Appendix 8), excavation, backfill including

imported backfill, sewer cleaning, insertion and curing of fabric tube, reinstatement of lateral connections, and pressure testing sewer pipe post liner installation.

Item shall also include the performance of point repairs needed to correct the alignment (sags, offset joints, protruding laterals, etc.) and shall be replaced in-kind, with the new pipe's dimensions and material matching the existing pipe, if such repairs are not identified in the drawings and encountered during pre-construction closed-circuit television inspections or construction. This item includes an allowance for one additional point repair (25 contiguous feet, or less) per 600 feet of total existing pipe being rehabilitated in the unit price bid. See Special Condition No. 15. Point repairs identified in the drawings are included in Bid Item No. 30.

Any damage to existing maintenance hole lining caused by the Contractor during performance of work under this bid item shall be repaired to the satisfaction of the Engineer at no cost to the City.

Unless otherwise noted on the Plans, lower laterals connected to mains rehabilitated by Method "A", shall be rehabilitated and paid for per Bid Item No. 13.

Obtaining construction access from property owners for work on private property shall be included in the unit bid price, see Special Condition No. 20.

The Contractor shall verify the actual dimensions and sizes of existing pipes prior to procuring CIPP materials. If the actual dimensions and sizes are outside of acceptable tolerances provided by the CIPP manufacturer and require a larger CIPP than described in the contract bid documents, a change order will be issued to adjust the cost, and the Contractor will be compensated for any increase based on the unit cost difference between the bid unit price and the actual unit price for labor and materials. If the actual dimensions and sizes are outside of acceptable tolerances provided by the CIPP manufacturer and require a smaller CIPP than described in the contract bid documents, a change order will be issued to adjust the cost, and the City will be credited for any decrease based on the unit cost difference between the bid unit price and the actual unit price for labor and materials.

Payment for traffic control plans required for work under this bid item are included in Bid Item No. 2.

Measurement for payment shall be in Linear Foot (LF). Payment shall be per host pipe diameter and material as follows:

Bid Item No. 10a: Method "A", CIPP, 15-inch diameter, non-plastic host pipe
Bid Item No. 10b: Method "A", CIPP, 21-inch diameter, non-plastic host pipe
Bid Item No. 10c: Method "A", CIPP, 36-inch diameter, non-plastic host pipe

Payment includes as-built submittals to the City. **The City reserves the right to withhold payment for work under this bid item until successful completion of required testing.**

BID ITEM NO. 11: REHABILITATION BY METHOD "B" PIPE SPLITTING OR OTHER COMPARABLE METHOD, INCLUDES POINT REPAIR TO CORRECT SAGS

This method involves the use of a hydraulically powered system to install a new pipe through, and in the place of, an existing pipe. This method includes the operation known as pipe splitting or bursting whereby the hydraulic powered system is used to expand and break away existing pipe and at the same time pull a new pipe into the resulting pipe space.

This method also includes the operation known as sliplining whereby a new pipe is inserted into and pulled through an existing pipe of larger diameter, and the existing pipe generally remains intact.

There are several types of pipe breaking and/or sliplining equipment now available and the Contractor shall submit to the City for review and approval the method to be used, procedures, equipment and diagrammatic sketches showing the pipe installation.

EBMUD's zone of influence for ground movement caused by pipe splitting shall be determined by the inside diameter of the existing pipe subtracted from the outside diameter of the expander head and multiplying by ten (Pipe Bursting Good Practices Guidelines, NASTT). These findings shall be provided to the City and reviewed by EBMUD prior to the start of construction.

This item shall include all labor, materials, and equipment necessary for the execution and completion of this rehabilitation method, including, but not limited to potholing of utilities, surface removal and restoration including temporary and permanent resurfacing, but not limited to surface removal and restoration of any existing improvements disturbed by construction including restoration of curb, gutter, sidewalk and asphalt, restoration of existing improvements such as landscaping, lawn, brick walkways, retaining walls, driveways, fences, all concrete joint to joint, etc. (See Special Condition No. 18), excavation of pits, dewatering, flow control, diversion or bypass pumping (See Special Condition No. 40), point repairs, excavation backfill including concrete grout where noted on the drawings and at lateral connections and other openings, imported backfill, compaction of bedding material beneath and around the location of active lateral connections and at excavation pits, pipe cleaning, pipe installation, and pressure testing of new sewer line.

Pipe bursting method shall be in accordance with Section 500-1.6 of Part E -"Regional Standards" June 30, 2016 Edition. Refer to Section 500-1.2 of the "Greenbook" 2015 Edition and Part D – Technical Provisions for Pipeline Point Repair/Replacement.

At no extra cost to the City, Contractor shall repair to original condition any surface damaged as a result of ground heave from method "B" rehabilitation. This includes restoration of grading, paving, sidewalks, driveways, curb, gutter, striping, landscaping, or of any other surface feature damaged by method "B" rehabilitation.

Item shall also include the performance of point repairs needed to correct the alignment (sags, offset joints, protruding laterals, etc.) and shall be replaced in-kind, with the new pipe's dimensions and material matching the existing pipe, if such repairs are not identified in the drawings and encountered during pre-construction closed-circuit television inspections or construction. This item includes an allowance for one additional point repair (25 contiguous feet, or less) per 600 feet of total existing pipe being rehabilitated in the unit price bid. See Special Condition No. 15. Point repairs identified in the drawings are included in Bid Item No. 30.

Obtaining construction access from property owners for work on private property shall be included in the unit bid price, see Special Condition No. 20).

Item shall also include temporary shoring, sheeting, and bracing (which may include sheet piling) as necessary for the execution and completion of the work specified in the plans and specifications. See Special Condition No. 19 for approximation of ground elevation and depth of excavation for backline sewers.

The Contractor shall verify the actual dimensions and sizes of existing pipes. If the actual dimensions and sizes require a larger pipe than described in the contract bid documents, a change order will be issued to adjust the cost, and the Contractor will be compensated for any increase based on the unit cost difference between the bid unit price and the actual unit price for labor and materials. If the actual dimensions and sizes require a smaller pipe than described in the contract bid documents, a change order will be issued to adjust the cost, and the City will be credited for any decrease based on the unit cost difference between the bid unit price and the actual unit price for labor and materials.

Payment for traffic control plans required for work under this bid item are included in Bid Item No. 2.

Additional pavement restoration required for pipe splitting due to paving moratorium streets shall be paid under this bid item. Pavement restoration for moratorium streets shall conform to the City of Berkeley Standard Detail, Plan No. 8136.

Measurement for payment shall be in Linear Foot (LF). Payment shall be per new pipe diameter as follows:

Bid Item No. 11a: Sewer main replacement maintaining pipe size at 4-inch and increasing pipe size from 4-inch to 6-inch diameter using Method "B" Pipe Splitting

Bid Item No. 11b: Sewer main replacement maintaining pipe size at 6-inch and 8-inch diameter and increasing pipe size from 6-inch to 8-inch diameter using Method "B" Pipe Splitting

Bid Item No. 11c: Sewer main replacement maintaining pipe size at 10-inch and increasing pipe size from 8-inch to 10-inch diameter using Method "B" Pipe Splitting

Bid Item No. 11d: Sewer main replacement maintaining pipe size at 12-inch and increasing pipe size from 10-inch to 12-inch diameter using Method "B" Pipe Splitting

Bid Item No. 11e: Sewer main replacement maintaining pipe size at 12-inch and 14-inch diameter and increasing pipe size from 12-inch to 14-inch diameter using Method "B" Pipe Splitting

Bid Item No. 11f: Sewer main replacement maintaining pipe size at 18-inch diameter and increasing pipe size from 15-inch to 18-inch diameter using Method "B" Pipe Splitting

Bid Item No. 11g: Sewer main replacement maintaining pipe size at 20-inch diameter and increasing pipe size from 18-inch to 20-inch diameter using Method "B" Pipe Splitting

Bid Item No. 11h: Sewer main replacement maintaining pipe size at 24-inch diameter and increasing pipe size from 21-inch to 24-inch diameter using Method "B" Pipe Splitting

Where no upsize is specified, the inner diameter of the new pipe shall match that of the existing pipe or be an approved equivalent.

Where shown on the Contract Plans, as an option the Contractor may select Method "C" Traditional Open Trench as a construction method substitution to Method "B" Pipe Splitting at no additional cost to the City.

The Contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment. Payment includes As-Built submittals to the City. **The City reserves the right to withhold payment for work under this bid item until successful completion of required testing.**

BID ITEM NO. 12: SEWER CONSTRUCTION AND REPLACEMENT BY METHOD "C" TRADITIONAL OPEN TRENCH METHOD, INCLUDES REPAIR OF SAGS

This item shall include all labor, materials, and equipment necessary for the execution and completion of this work including, but not limited to saw cutting of existing surface, excavation, hand excavation including potholing to determine the location of existing sewer and adjacent main and service utilities before trenching, correction of conflict between new sewer and utilities, removal and disposal of abandoned utilities as required, surface removal and restoration of any existing improvements disturbed by construction including restoration of curb, gutter, sidewalk and asphalt, restoration of existing improvements such as landscaping, lawn, brick walkways, retaining walls, driveways, fences, all concrete joint to joint, etc. (see Special Condition No. 18), flow control, diversion or bypass pumping (Note: Bypass Pumping for sewer mains 15" and larger, shall be included in Bid Item No. 27), locating wire, connection to existing structures, dewatering, bypass pumping, pipe provision and installation, bedding, backfill, including imported backfill, aggregate base material, compaction of bedding material beneath and around the main and at the locations of active

lateral connections, pipe cleaning, pipe installation, temporary resurfacing, permanent resurfacing including concrete pavement reconstruction, pressure testing of new sewer line, and all other work (excluding maintenance holes) necessary to install the pipe complete and in place.

This method includes the excavation of trenches large enough to remove the existing pipe and accommodate the installation of new HDPE pipe. HDPE pipe length shall be assembled in the field with butt-fused joints in accordance with ASTM D 2657 and Section 500-1.3.5 of the Technical Provisions.

Obtaining construction access from property owners for work on private property shall be included in the unit bid price (see Special Condition No. 20).

Item shall also include temporary shoring, hydraulic shoring, sheeting, and bracing (which may include sheet piling) as necessary for the execution and completion of the work specified in the plans and specifications. See Special Condition No. 19 for approximation of ground elevation and depth of excavation for backline sewers.

Item shall also include the performance of point repairs needed to correct the alignment (sags, offset joints, protruding laterals, etc.) and shall be replaced in-kind, with the new pipe's dimensions and material matching the existing pipe, if such repairs are not identified in the drawings and encountered during pre-construction closed-circuit television inspections or construction. This item includes an allowance for one additional point repair (25 contiguous feet, or less) per 600 feet of total existing pipe being rehabilitated in the unit price bid. See Special Condition No. 15. Point repairs identified in the drawings are included in Bid Item No. 30.

Payment for traffic control plans required for work under this bid item is included in Bid Item No. 2.

Additional pavement restoration required for traditional open trench due to paving moratorium streets shall be paid under Bid Items No. 33 and/or 34. Pavement restoration for moratorium streets shall conform to the City of Berkeley Standard Detail, Plan No. 8136. Moratorium streets and limits affected by this bid item are as follows:

9th Street	Heinz Avenue to Southern End
Bancroft Way	Piedmont Avenue to Milvia St
Heinz Avenue	7th Street to San Pablo Avenue
McGee Avenue	Dwight Way to Russell Street
Parker Street	San Pablo Avenue to Mabel Street

Measurement for payment shall be in Linear Foot (LF). Payment shall be per new pipe diameter as follows:

Bid Item No. 12c: Sewer construction and main replacement maintaining pipe size

at 10-inch diameter and increasing pipe size from 8-inch to 10-inch diameter using Method "C" Traditional Open Trench

Bid Item No. 12d: Sewer construction and main replacement maintaining pipe size at 12-inch diameter and increasing pipe size from 10-inch to 12-inch diameter using Method "C" Traditional Open Trench

Bid Item No. 12e: Sewer construction and main replacement maintaining pipe size at 24-inch diameter and increasing pipe size from 21-inch to 24-inch diameter using Method "C" Traditional Open Trench

Where no upsize is specified, the inner diameter of the new pipe shall match that of the existing pipe or be an approved equivalent.

Where shown on the Contract Plans, as an option the Contractor may select Method "B" Pipe Splitting as a construction method substitution to Method "C" Traditional Open Trench at no additional cost to the City.

The Contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment. Payment includes As-Built submittals to the City. **The City reserves the right to withhold payment for work under this bid item until successful completion of required testing.**

BID ITEM NO. 13: LOWER LATERAL RECONSTRUCTION (TYPICALLY 4-INCH AND 6-INCH LATERALS)

This item shall include all labor, materials, and equipment necessary for notification and coordination with the public and for installation of lower lateral reconstruction, including but not limited to saw cutting of existing surfacing including concrete pavement; surface removal and restoration; excavation; dewatering; removal and disposal of existing pipe; locating wire; flow control, diversion or bypass pumping; provision and installation of high density polyethylene pipe (HDPE SDR-17) and fittings (the new lateral pipe and two-way cleanout shall match the existing size); connection to sewer main; bedding; backfill including imported backfill; compaction; mortar cement for plugging abandoned sewer main at point of disconnections; mortar cement for plugging abandoned sewer laterals at point of disconnection; demolition and removal of existing tee, lateral riser, and cleanout frame and cover for abandoned sewer laterals; testing; temporary and permanent resurfacing including asphalt or concrete pavement reconstruction to match existing improvements disturbed by construction including restoration of curb, gutter, sidewalk and asphalt, restoration of existing improvements such as landscaping, lawn, brick walkways, retaining walls, driveways, fences, all concrete joint to joint, etc. (see Special Condition No. 18); temporary sheeting, plywood, or equivalent type of cover to protect newly-poured concrete from vandalism; sidewalk and driveway repair; and all other necessary work to install the pipe complete and in place.

Item shall also include temporary shoring, sheeting, and bracing as necessary for the execution and completion of the work specified in the plans and specifications. See Special Condition No. 19 for approximation of ground elevation and depth of excavation for

backline sewers.

The Contractor shall verify the actual dimensions and sizes of existing pipes. If the actual dimensions and sizes require a larger pipe than described in the contract bid documents, a change order will be issued to adjust the cost, and the Contractor will be compensated for any increase based on the unit cost difference between the bid unit price and the actual unit price for labor and materials. If the actual dimensions and sizes require a smaller pipe than described in the contract bid documents, a change order will be issued to adjust the cost, and the City will be credited for any decrease based on the unit cost difference between the bid unit price and the actual unit price for labor and materials.

Additional pavement restoration required for lower lateral reconstruction due to paving moratorium streets shall be paid under this bid item. Pavement restoration for moratorium streets shall conform to the City of Berkeley Standard Detail, Plan No. 8136. Moratorium streets and limits affected by this bid item are as follows:

9th Street	Heinz Avenue to Southern End
Bancroft Way	Piedmont Avenue to Milvia St
Heinz Avenue	7th Street to San Pablo Avenue
McGee Avenue	Dwight Way to Russell Street
Parker Street	San Pablo Avenue to Mabel Street

Measurement for payment shall be Linear Foot (LF). Pipe shall be measured along the centerline of the pipe from downstream side of the two-way cleanout near the curb or sidewalk to the connection of the fitting at the sewer main, per Plan Detail 1 of Sheet 27. Unit prices for this bid item are for all depths. Payment includes all As-Built drawings and completion of "Sewer lateral As- Built Record" Forms. **The City reserves the right to withhold payment for work under this bid item until successful completion of required testing.**

OPTION- Lower lateral reconstruction using pipe rehabilitation method "B" instead of open trench method shall conform to the description of bid item – "SEWER REHABILITATION BY METHOD "B" – PIPE SPLITTING OR OTHER COMPARABLE METHOD" and Special Condition No. 15. Replacement of Concrete encased lower lateral encountered when using this method shall be removed at the Contractor's expense.

OPTION- Lower lateral reconstruction using pipe rehabilitation Method "A" instead of open trench method shall conform to the description of bid item – "SEWER REHABILITATION BY METHOD "A" – CURED IN PLACE PIPE (CIPP) LINER" and Special Condition No. 15. **This method for lateral rehabilitation is only acceptable where indicated on the plans.**

BID ITEM NO. 14: INSTALLATION OF TWO-WAY CLEANOUT AND LATERAL RISER

This item shall include all labor, materials, and equipment necessary for notification and

coordination with the public and for installation of a two-way cleanout and lateral riser, including but not limited to, excavation, surface removal and restoration of any existing improvements disturbed by construction including restoration of curb, gutter, sidewalk and asphalt, restoration of existing improvements such as landscaping, lawn, brick walkways, retaining walls, driveways, fences, all concrete joint to joint, etc. (see Special Condition No. 18); pipe cutting, cleanout fitting, couplings, riser, connection to the lateral and/or existing building sewer, concrete collar, frame, cover, backfill including imported backfill, compaction, flow control, and dewatering as required. Where a two-way cleanout is installed three feet or less from sewer main, contractor shall replace and re-connect the lateral from the cleanout to the sewer main (See Bid Item No. 13).

Measurement for payment shall be as Each (EA). Payment includes all As-Built drawings and completion of "Sewer lateral As- Built Record" Forms.

BID ITEM NO. 15: CONNECTION OF ACTIVE LATERALS TO NEW OR REHABILITATED SANITARY SEWER MAIN OR MAINTENANCE HOLE

Contractor is responsible for reconnecting all active sewer laterals to the new or rehabilitated sewer mains and maintenance holes. This item shall include all labor, materials and equipment necessary for preparation of maintenance hole or new sewer main for lateral connection; lateral connection including butt fusion, saddle or wye, and miscellaneous materials; use of in situ cutter, bedding, excavation, backfill including imported backfill; dewatering, flow control, diversion or bypass pumping, testing, compaction, and temporary and permanent resurfacing to match existing improvements. The contractor is responsible for locating all active sanitary sewer laterals connecting to rehabilitated sewer main or maintenance hole prior to construction. Payment for locating active sewer laterals is included as part of Bid Item No. 5.

Sanitary sewer lateral connection(s) to HDPE mains shall be in accordance with Sections 500-1.6.6 and 500-1.6.12 of the “Regional Standards”, June 30, 2016 Edition. Sanitary sewer lateral connection(s) to CIPP lined mains shall be in accordance with details shown on Plans.

For laterals rehabilitated via Method “A” CIPP liner (only allowed where indicated on the plans), this item includes the installation of TopHat or approved equal at connections where shown on the Plans.

Measurement for payment shall be as Each (EA). Payment includes all As-Built drawings and completion of "Sewer lateral As- Built Record" Forms.

BID ITEM NO. 16: POST–CONSTRUCTION CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION AND CONSTRUCTION AS-BUILT DRAWINGS

Post-construction CCTV inspection shall be performed to determine if the construction of the new pipe is in compliance with the plans and specifications. This item shall include labor,

CCTV equipment, videos and other CCTV related materials for proper documentation of the newly installed sewer pipes. Flow control, diversion and/or bypass pumping required in order to facilitate the post-construction CCTV of the large diameter sewer pipe shall be included in Bid Item No. 28.

The camera shall be lowered into the upstream maintenance hole (or access point) and placed into the pipe. The camera cable shall be retracted to remove slack to ensure an accurate distance reading. The cable distance-counter shall be reset to the distance between the centerline of the maintenance hole and the front lens of the camera. The camera shall provide a view of the inside of the insertion maintenance hole, then move through the pipeline in a downstream direction whenever possible, stopping at the center of the next maintenance hole and provide a view of the inside of the end structure . The cable distance counter shall measure the distance between each inspection segment – centerline to centerline. The camera shall stop at all significant observations to ensure a clear and focused view of the pipe condition. Observations shall include, but not be limited to: Laterals – Standard, Laterals – Protruding, Cracks, Offset Joints. Open Joints, Sags, Line Deviations, Siphons, Missing Sections, Mortar, Infiltration, Debris, Grease, and Roots. Defects encountered during the video inspection and any rejected work shall be repaired and re-televised at the Contractor's expense.

Post-construction CCTV inspection shall be documented with written reports that include a NASSCO Pipeline Assessment Certification Program (PACP) coding of all defects. The PACP coding shall be accomplished by an operator or worker who holds current PACP certification. Inspection report shall be done using POSM format. Documentation shall consist of a color, DVD-format video, log sheets, and a written report detailing the post-construction condition of the pipeline and lateral connection/openings. The report shall note the time and date of video inspection, street name, upstream and downstream maintenance hole, direction of view, direction of flow, surface material, pipe size, pipe material, lateral connections, video tape number, counter number, and a detailed logging of defects encountered. If the quality of the video is deemed unacceptable by the Engineer, the pipeline shall be re-televised at no additional cost to the City.

Measurement for payment shall be in Linear Foot (LF) of post-construction video inspection of pipe inspected (regardless of pipe size) and submittal of two (2) copies of the final video and report to the City. Payment includes all As-Built submittals to the City.

BID ITEM NO. 17: REMOVE EXISTING AND CONSTRUCT STANDARD CURB AND GUTTER

This item is an allowance for replacement of deteriorated curb and gutter that is adjacent and outside the limit of trench excavation. Estimated cost for the restoration of curb and gutter directly under the sewer trench excavation shall be included under sewer construction. The exact location of work of this bid item will be determined and marked in the field by the Engineer. The curb and gutter damaged during the construction shall be restored at the Contractor's expense. Work shall include saw cutting, excavation, provision of temporary curb ramps for access, removal and disposal of discarded concrete, backfill material,

compaction test, Portland Cement Concrete, formwork and all other work necessary to construct the curb and gutter in place.

Measurement for payment shall be in Linear Feet (LF). The Contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment.

BID ITEM NO. 18: REMOVE EXISTING AND CONSTRUCT STANDARD SIDEWALK AND DRIVEWAY

This item is an allowance for all labor, materials, and equipment necessary for the replacement of deteriorated sidewalk and driveways that are adjacent and outside the limit of trench excavation. Estimated cost for the restoration of the sidewalk and driveways directly over the sewer trench excavation and full width of sidewalk to be removed and replaced shall be included under sewer construction. The exact location of work of this bid item will be determined and marked in the field by the Engineer. The sidewalk damaged during the construction shall be restored at the Contractor's expense. Work shall include saw cutting, excavating, provision of temporary curb ramps for access, removal and disposal of discarded concrete, backfill material, aggregate base material, compaction, Portland Cement Concrete, form work and all other work necessary to construct standard sidewalk and driveways complete and in place.

Measurement for payment shall be in Square Foot (SF). The Contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment.

BID ITEM NO. 19-20: UTILITY CROSSINGS NOT SHOWN AND/OR IDENTIFIED ON THE PLANS AND NOT MARKED ON THE STREET (REVOCABLE)

This item is to provide an allowance for all labor, materials, and equipment necessary for potholing unforeseen utility company pipes or ducts not shown and/or identified on the Plans. This excludes existing sewer laterals encountered during open excavation and construction of the sanitary sewer. Included in this item are field investigations, hand excavation, removal and disposal of abandoned utility pipes and ducts 24-inches or smaller, field investigations, hand excavation, removal and disposal of abandoned pipes in conflict where required.

The Contractor shall notify the Engineer upon encountering this unforeseen utility crossing and before continuing the trench excavation.

Measurement for payment shall be made as Each (EA) and by the actual number of potholing performed. This item is revocable if not potholing is required.

BID ITEM NO. 21: RECONSTRUCTION/REPLACEMENT OF CITY MONUMENT (REVOCABLE)

The Contractor shall be responsible for the preservation of existing survey monuments,

benchmarks, reference points, and stakes. The Contractor shall replace City Monuments and reference marks removed during the performance of the work. Whenever a City Monument is designated to be removed during the performance of the work, the Contractor shall replace the monument in accordance with Standard Plan 7940, 8090, 8091 or 8179, as applicable. Monument casings (boxes and lids) shall be provided by the contractor, and dome brass markers shall be supplied by the City.

Monument replacement must be done in a neat, workman-like manner. Pavement cuts shall be accurate, with vertical cuts to exact dimensions as shown on the Standard Plan. Each replacement monument shall be constructed such that the center of the dome brass marker is set within 0.04 foot of the referenced position. Monument boxes and lids shall be placed at the proper finished grade and as detailed by Standard Plan 7940, 8090, 8091 or 8179, as applicable. Existing monument lids shall be salvaged by the Contractor and delivered to the City Survey Staff or Project Inspector.

Monument referencing shall be done by a Professional Land Surveyor licensed in the State of California hired by the contractor, and copies of the corner records for the referenced monuments shall be provided to the City prior to the start of construction. For each monument that has been removed or disturbed during construction, the replacement monument location(s) will be established by the referencing surveyor after final pavement is completed. The new dome brass marker shall not receive final punching prior to seven (7) days after completion of the monument construction.

For each monument depicted in the plan set that has not been removed, a Professional Land Surveyor licensed in the State of California hired by the contractor shall provide to the City a surveyor's report, signed and stamped, detailing the post-construction findings at each monument, either verifying that the monument remains in its pre-construction location, or that the monument has indeed been disturbed.

In the event that any non-referenced monuments or monument reference points become in danger of being disturbed due to construction, the Contractor shall cease the threatening activity and notify the Project Manager and City Survey Staff immediately. Response to endangered monuments or reference points is a priority and they shall be referenced in accordance with the City of Berkeley Monument Reference Guidelines (see Appendix). In no case may an unreferenced monument or monument reference point be damaged during construction.

Should any monument not designated for replacement be disturbed or sustain damage during construction, the Contractor shall bear the expense for rebuilding it as well as for the survey work that a Professional Land Surveyor licensed in the State of California hired by the contractor must perform in the process. In any instance where the City deems a damaged monument to be irreplaceable, whether designated or not designated for replacement, the Contractor shall be fined $20,000 per monument.

Measurement for payment will be as Each (EA) for each monument installed. Work

under this bid item shall include all labor, material, and incidentals necessary to install the monument complete in place. The Contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment and after the delivery of the salvaged lids to the City Survey Staff or Project Inspector.

BID ITEM NO. 22: SUPPLEMENTAL WORK

This item is an allowance for all labor, materials, and equipment for standby construction services as the need may arise by the City for responding to urgent or emergency sanitary sewer related projects located within the City. When the standby services are necessary, the City will define the location, limits and scope of work for the project and will request a cost proposal from the Contractor. The City has the option to accept, negotiate, approve or reject at its sole discretion any cost proposals for additional work requested. The additional work may include sanitary sewer replacement/rehabilitation and related work in either backline sewer easements on private property or within street and public right of way.

The scope will be defined, and shall include all labor, material , and equipment as needed to complete the work such as mobilization, demobilization, traffic control, construction signage, public notification, and construction staking, and may include, but is not limited to, flow control, diversion and/or bypass pumping, maintenance hole rehabilitation, construction of new maintenance hole, pipe rehabilitation, locating active laterals, lower lateral reconstruction, installation of two-way cleanouts, connection of active laterals to rehabilitated sewer main, pre- and post-construction CCTV, and preparation and submission of As-Builts. The City does not have an obligation to provide or approve of any additional work under this bid item allowance.

Measurement for payment shall be as Lump Sum (LS). The Contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment.

BID ITEM NO. 23: BAY AREA RAPID TRANSIT (BART) DISTRICT PERMIT TO ENTER (NOT USED)

Not Used

BID ITEM NO. 24: CALTRANS ENCROACHMENT PERMIT/WORK AUTHORIZATION (REVOCABLE)

The City has obtained an encroachment permit for project work within Ashby Avenue (Highway 13). The Contractor shall apply for and obtain a double encroachment permit from Caltrans prior to start of work.

A minimum of one week prior to start of work under the Encroachment Permit, Contractor shall give notice to, and approval of construction details, operations, public safety, and traffic control shall be obtained from State Representative listed in the Encroachment

Permit. Additional time beyond the required one week minimum advanced notice may be required for obtaining traffic control approval.

The contractor shall perform work in accordance with the provisions as stated in the Caltrans Double Permit, refer to Appendix 7 for in the permit issued to the City.

Full compensation for conforming to the requirements in the encroachment permit, and work authorization, including any required fees, shall be considered as included in the bid price.

Measurement for payment shall be as Lump Sum (LS).

BID ITEM NO. 25: CITY OF OAKLAND – ADDITIONAL PROVISIONS AND PERMIT REQUIREMENTS (NOT USED)

Not Used

BID ITEM NO. 26: STORMWATER POLLUTION CONTROL AND SEWAGE SPILL PREVENTION AND RESPONSE REQUIREMENTS

Stormwater Pollution Control shall be per Specifications, Special Condition No. 22, STORMWATER POLLUTION CONTROL.

The Contractor shall be fully responsible for preventing sewage spills, containing any sewage spillage, recovery and legal disposal of any spilled sewage, any and all fines, penalties, claims, and liability arising from negligently causing a sewage spill and any violation of any law, ordinance, code, order, or regulation as a result of a sewage spill.

Prior to the start of construction, the Contractor shall develop and submit to the City's Representative, for review and approval, a written Spill Response Plan, developed to respond to any construction related sewage spill. This shall include, but is not limited to, all labor, materials and equipment necessary for the items below:

a. Identification of all nearby waterways, channels, catch basins and entrances to underground storm drains and furnishing all of the necessary materials, supplies, tools, equipment, labor and other services.
b. Means and methods of monitoring the flow in the sewer bypass system.
c. Arrangements for an emergency response unit comprised of emergency response equipment and trained personnel to be immediately dispatched to the job site in the event of sewage spill(s).
d. An emergency notification procedure, which includes an emergency response roster with telephone numbers and arrangements for backup personnel and equipment and an emergency notification roster. The Contractor shall designate a primary and secondary representative and include their respective phone numbers, pager numbers, and cellular phone numbers. The Contractor's representatives shall be accessible and available at all

times to respond immediately to any construction related emergency.

In case of sewage spill, the Contractor shall act immediately without instructions from the City's representative, to control the spill and take all appropriate steps to contain it in accordance with their Spill Response Plan. The Contractor shall immediately notify the City's representative of the spill and all actions taken. The Contractor shall, within two working days maximum from the occurrence of the spill, submit to the City's representative a written confirmation describing the following information related to the spill:

a. the nature and volume
b. the specific location, date and time
c. the duration
d. the cause
e. the type of remedial and/or clean up measures taken and the date and time of implementation
f. the corrective and/or preventive actions taken
g. the water body impacted and results of any necessary monitoring

It shall be the Contractor's responsibility to assure that all field forces, including subcontractors, know and obey all safety and emergency procedures, including the Spill Response Plan.

Measurement for payment shall be as Lump Sum (LS).

BID ITEM NO. 27: SEWER BYPASS (FOR SEWER MAINS 15" AND LARGER)

The Contractor shall provide temporary means to maintain and handle the sewage flow in the existing sanitary sewer system as required to complete the necessary construction and rehabilitation requirements, including but not limited to pre-construction and post-construction CCTV, rehabilitation of maintenance hole, and lateral connections. The Contractor shall prepare and submit a detailed bypass plan to the City's Representative for approval before the bypass is installed. The bypass plan shall include all traffic control measures for implementing the plan. The Contractor shall size the bypass system to handle the peak flow of the system. The Contractor shall submit the bypass plan a minimum three (3) weeks advanced for City review.

The Contractor shall provide a one-hundred percent (100%) back-up in the bypass system. The Contractor shall utilize the backup system to mitigate any additional wet weather flows, perform the necessary maintenance and repairs on the bypass system, and exercise and ensure the operability of the backup system.

Any pump, including backup pumps, shall be appropriate for sanitary sewer effluent containing solids and fibers, and be a complete unit with its own suction and discharging pumping. The backup bypass system shall be fully installed, operational, and ready for immediate use. Prior to the full operation of the bypass system, the Contractor shall

demonstrate that both the primary and backup bypass systems are fully functional and adequate, and shall certify the same, in writing.

The Contractor shall provide one dedicated fuel tank for every pump/generator, if fuel/generator pumps are used. The Contractor shall provide a fuel level indicator outside each fuel tank. The Contractor shall continuously (while in use) monitor the fuel level in the tanks and ensure that the fuel level does not drop below a level equivalent to two (2) hours of continuous bypass system operation. The Contractor shall take the necessary measures to ensure the fuel supply is protected against contamination. This includes, but is not limited to fuel line water traps, fuel line filters, and protecting fuel stores from precipitation. If electric power driven pumps are used, the Contractor shall provide an emergency standby power generator.

The Contractor shall continuously (while in use) monitor the operation of the bypass system and all impacted facilities, and shall continuously monitor the flow levels downstream and upstream of the bypass to detect any possible failure that may cause a sewage backup and/or spill. The Contractor shall include the means and methods of monitoring the flow in their Spill Response Plan. The Contractor shall routinely inspect and maintain the bypass system, including the backup system. The Contractor shall maintain a log of all pertinent inspection, maintenance and repair records.

This item shall include all labor, materials, and equipment necessary for the execution and completion of this work including, but not limited to saw cutting of existing surface, excavation, hand excavation including potholing to determine the location of existing sewer and adjacent main and service utilities before trenching, correction of conflict between sewer bypass and utilities as required, removal and disposal of abandoned utilities as required, surface removal and restoration of any existing improvements disturbed by construction including restoration of curb, gutter, sidewalk, curb ramp, valley gutter and asphalt, restoration of existing improvements such as landscaping, lawn, brick walkways, retaining walls, driveways, speed tables, fences, all concrete joint to joint, etc. (see Special Condition No. 18), bypass plan, flow control, diversion or bypass pumping, dewatering, pump setup, plugging, pipe provision and installation, fuel/electricity, maintenance, monitoring water levels, bedding, backfill, including imported backfill, aggregate base material, compaction of bedding material beneath and around the bypass, temporary resurfacing, pipe removal, permanent resurfacing including concrete pavement reconstruction, restoring all existing striping and pavement markings affected by sewer replacement, testing of sewer bypass line, and all other work (excluding maintenance holes) necessary to install the sewer bypass complete and in place.

All labor, materials, and equipment associated with these sewer bypass requirements for sewer mains 15” and larger shall be included in this bid item. Typical flow control, diversion, and bypass pumping required to complete the necessary construction of smaller sewer mains shall be included in subsequent bid items. See bid item descriptions.

All permits and fees necessary for the sewer bypass are the responsibility of the Contractor

and shall be included in this pay item at the Contractor's expense.

The Contractor shall perform all work associated with bypass pumping without causing damage to existing improvements to remain, and without causing a spill of sewage outside the sewer system. Any damage resulting from the Contractor's work shall be repaired or replaced to the satisfaction of and at no cost to the City, at the Contractor's expense. All fines, and cost associated with the cleanup of spills, shall be the responsibility of the Contractor.

Measurement for payment shall be as Lump Sum (LS). A payment of 15% will be made upon complete installation and startup of the bypass pumping system and a 10% payment will be made upon disassembly of the bypass pumping system and restoration of all disturbed areas. The remaining 75% will be paid on the basis of work completed as noted on the monthly submission of progress payment.

Sanitary sewer flow data and flow hydrograph is provided in Appendix 11. Additional data, including sewer network maps, if available, may be requested by the Contractor via email to AYemane@berkeleyca.gov. Allow three working days in advance for a response. The Contractor shall be responsible for verifying actual flows in the field and all field conditions.

BID ITEM NO. 28: INVESTIGATE OTHER EXISTING SEWER MAINS, SEWER STRUCTURES AND LATERALS

This item shall include all labor, CCTV equipment, utility locating equipment, pressure testing, and all other equipment and materials required for investigation, testing, and/or field location work identified on the drawings. This item does not include investigation and location work included under Bid Item No. 5.

CCTV investigation shall be in accordance with Section 312-3 of the Technical Specifications. The Contractor shall notify the City's Representative upon completion of the investigation and submit the video(s) and report(s).

Measurement for payment shall be as Lump Sum (LS). The Contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment.

BID ITEM NO. 29: CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, CREEK PERMIT – ADDITIONAL REQUIREMENTS FOR WORK ADJACENT TO CITY'S CREEK (NOT USED)

BID ITEM NO. 30: POINT (SPOT) REPAIRS

This item shall apply to point (spot) repairs as shown on the drawings, regardless of pipeline or maintenance hole material. This item shall include all labor, materials, and equipment necessary for the execution and completion of this work as described on the drawings and these specifications, including excavation of trenches large enough to repair the identified defect and expose 5ft of pipe.

Obtaining construction access from property owners for work on private property shall be included in the unit bid price (see Special Condition No. 20).

Items shall include all labor, materials, and equipment necessary for the execution and completion of this work including, but not limited to saw cutting of existing surface, excavation, hand excavation including potholing to determine the location of existing sewer and adjacent main and service utilities before trenching, correction of conflict between new sewer and utilities, removal and disposal of abandoned utilities as required, surface removal and restoration of any existing improvements disturbed by construction including restoration of curb, gutter, sidewalk and asphalt, restoration of existing improvements such as landscaping, lawn, brick walkways, retaining walls, driveways, fences, all concrete joint to joint, etc. (see Special Condition No. 18), flow control, diversion or bypass pumping (Note: Bypass Pumping for sewer mains 15" and larger, shall be included in Bid Item No. 27), removal of protruding laterals, removal of root intrusion (See Special Condition No. 42), locating wire, connection to existing structures, dewatering, bypass pumping, pipe provision and installation, bedding, backfill, including imported backfill, aggregate base material, compaction of bedding material beneath and around the main and at the locations of active lateral connections, pipe cleaning, pipe installation, temporary resurfacing, permanent resurfacing including concrete pavement reconstruction, testing of new sewer line, and all other work (excluding maintenance holes) necessary to install the pipe complete and in place.

The pipe repaired under this bid item shall be replaced in-kind, with the new pipe's dimensions and material matching the existing pipe, unless otherwise specified by the City or directed by the Engineer.

Traffic control plans required for work under this bid item are included in Bid Item No. 2.

Measurement for payment shall be made as Each (EA) and paid on the basis of work completed as noted on the monthly submission of progress payment. Payment includes As-Built submittals to the City for those repaired defects.

BID ITEM NO. 31: PLUG AND ABANDON EXISTING SEWER MAINS, SEWER STRUCTURES AND LATERALS

This item shall include all labor, excavation equipment, and all other equipment and materials required for abandonment and plugging of existing sewer mains, sewer structures and laterals where noted on the drawings. Item shall also include, slurry fill, restoration of disturbed site conditions in kind or better.

Measurement for payment shall be as Lump Sum (LS). The Contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment.

BID ITEM NO. 32: COLD PLANE 0.2' INCLUDING HMA TYPE A (REVOCABLE)

General

Cold planing shall include all work necessary to remove existing asphalt and/or concrete pavement to a predetermined depth as indicated on the drawings. The work includes, but is not limited to, removal of the existing pavement adjacent to or on top of gutters, cross gutters, ends of overlays, equipment crossings, railroad crossings, and bridge approaches.

Existing pavement surface on roadways to be milled prior to pavement inlay shall be cold planed as specified herein.
This work shall also include producing and placing hot mix asphalt (HMA) surface course using modified Standard Process and placing Minor Hot Mix Asphalt using the Method Process as indicated herein.

Comply with Section 39, "Hot Mix Asphalt," of the State Standard Specifications (Non-revised Edition) except as modified in these special provisions.

HMA associated with surface restoration of trenching and excavations for sewer main, maintenance hole, and sewer lateral restoration and spot repairs is not included in this bid item. Said restoration is understood to be included as part of each sanitary sewer rehabilitation item.

Submittals

Submit JMF information on Form CEM-3511 and Form CEM-3512. Submit Form CEM-3513 or CEM-3514 for mixes that have been verified within last 12 months. Provide most recent CEM-3513 if mix has not been verified within the last 12 months. For unverified mixes or out of date mix tests, final acceptance will be based on production startup tests and Contractor will be paving at their own risk.

Submit Quality Control Plan that conforms to the current Caltrans Quality Control Plan Review Checklist for Hot Mix Asphalt. Allow 20 calendar days for review.

Cold Planing

Equipment

The machine used for planing shall have performed satisfactorily on similar work and shall meet the following requirements:

The planing machine shall be specifically designed and built for the planing of bituminous pavements without the addition of heat. It shall have the ability to plane Portland cement concrete patches in the bituminous pavement, or Portland cement concrete pavements. The cutting drum shall be a minimum of 48 inches wide and shall be equipped with carbide tipped cutting teeth placed in a variable lacing pattern to produce the desired finish.

The machine shall be capable of being operated at speeds of zero to forty feet per minute, self-propelled, and have the capability of spraying water at the cutting drum to minimize dust. The machine shall be operated in such a way so that no fumes or smoke will be produced. The machine shall be capable of removing the paving material next to curbs or gutters and be designed such that the operator thereof can at all times observe the planing operation without leaving the controls. The machine shall be adjustable for slope and depth and shall be equipped with sonic sensing devices for controlling depth.

Construction

Limits of cold planing will be marked in the field by the Engineer prior to construction. The depths and dimensions of the cold planing are designated on the plans.

Cold planing may require removal of existing asphalt concrete above gutter lips, in addition to the required depth below the gutter lip, due to prior overlays. Concrete gutter pans under may be present under the existing pavement at various locations throughout the project sites. The Contractor shall remove pavement with cold plane equipment, or by other means as necessary, to the required depths, or to the top of gutter pan, whichever is less. If gutter pans are encountered within the specified cold plane depth, coordinate HMA placement with the Engineer

Pavement to be cold planed may contain pavement fabric.

Cold planing operation will not commence until a sweeper is on site.

Lowering Utility Covers

Prior to cold planing on streets to have a uniform depth of the existing surface removed, all utility covers shall be lowered such that the cutting teeth of the planing machine passes over the adjusted lid without causing damage to the lid or frame. Contractor shall be responsible for maintaining any temporary asphalt fill material over these facilities until the final paving surface is installed. The Contractor shall clearly mark or reference lowered sanitary sewer and water valves in case emergency access is required by the agency responsible for operation of the sewer and water system.

Pavement Removal

All pavement areas called out for removal and replacement shall be cold planed to the dimensions indicated on the plans, or as directed by the Engineer. Pavement against curb faces shall be removed to the full depth designated for that particular section of roadway. If pavement against curb faces cannot be removed by the planing machine, the Contractor shall use other means to remove this material. Any damage to the adjoining improvements proposed to remain shall be repaired by the Contractor to the satisfaction of the Engineer at no cost to the City.

Schedule

The Contractor shall schedule the work such that HMA surface course paving is completed within 5 working days after milling. Milled pavement surface shall not be opened to traffic and all traffic lanes shall be open for traffic outside the approved working hours, unless authorized otherwise in writing by the Engineer.

Failure to comply with these provisions shall subject the Contractor to $1,500 per street per calendar day in liquidated damages. Multiple occurrences of liquidated damages per calendar day are not restricted.

Temporary Striping

Streets to be milled shall be temporarily striped after completion of cold planing prior to pavement resurfacing work. Temporary striping shall consist of temporary tab markers and reflective traffic striping tape by 3M (or equal) and shall be continuously maintained by the Contractor until resurfacing work is performed. Temporary striping will be placed to match existing conditions, delineate lane lines, center lines, crosswalks, and other traffic striping legends.

Tolerances

The pavement surface after cold planing shall be uniformly rough. The grade shall not deviate from a suitable straight edge more than 1/4 inch at any point. When multiple passes are required to create the cold planed surface, the maximum variation from a stringline or straight edge shall be 1/4 inch high to 1/2 inch low. High points out of tolerance shall be replaned to fall within tolerance. Low areas shall be filled with asphalt concrete as specified herein to meet tolerances. The cost of such correction of low areas shall be entirely borne by the Contractor.

Removal and Disposal of Material

During the cold planing operation, the Contractor shall sweep the roadway with mechanical equipment and remove all loosened material from the project site until completion of the removal work.

All material removed shall be considered the property of the Contractor and shall be removed and disposed of at the Contractor's expense.

In addition to removing the cold planed asphalt concrete, the Contractor shall remove any asphalt concrete which is adhered to the top of the adjacent gutter, cross gutter, or apron.

Air Pollution Control

The Contractor shall take all necessary measures to avoid the dispersion of dust. Attention

is directed to Subsection 14-9.02 of the Standard Specifications.

Temporary Transitions

The Contractor shall construct temporary pavement transitions prior to allowing traffic onto cold planed pavement areas. Such transitions shall have a maximum slope of 20:1 and be constructed on kraft paper or other suitable bond breaker such that upon removal of the transition a clean notch remains. Temporary transitions are required along all planed edges at existing or new curb ramps. Temporary transitions shall also be provided along all planed edges with a drop off greater than 1 inch in depth at all paving conforms, cross gutters, and commercial and residential driveways.

Correction of Tear Out Areas

If tear-out to the remaining, underlying layers occurs during the cold planing operation, the Contractor shall adjust his operation to minimize tear-out. Corrections shall include changing operation speed and replacing cutting teeth. Changes in cold planing depth shall only be made with approval of the Engineer.

Areas torn out by lack of diligence on the Contractors part shall be corrected by placement of asphalt concrete conforming to the requirements of these Technical Provisions. Areas torn out due to pre-existing adhesion problems in the existing asphalt concrete shall be corrected at the City's expense as directed by the Engineer.

Asphalt Concrete

Asphalt concrete surfacing and the placing thereof shall conform to the requirements of the Section 39, "Asphalt Concrete", of the State Standard Specifications and per Section 16 of the City of Berkeley Improvement Standards. Asphalt concrete shall be produced at an established commercial mixing plant.

Submittals

Submit JMF information on Form CEM-3511 and Form CEM-3512. Submit Form CEM-3513 or CEM-3514 for mixes that have been verified within last 12 months. Provide most recent CEM-3513 if mix has not been verified within the last 12 months. For unverified mixes or out of date mix tests, final acceptance will be based on production startup tests and Contractor will be paving at their own risk.

Submit Quality Control Plan that conforms to the current Caltrans Quality Control Plan Review Checklist for Hot Mix Asphalt. Allow 20 calendar days for review.

Material Delivery Tickets shall be submitted daily.

Contractor shall submit all quality control field test results daily and laboratory test results

within 5 calendar days of sampling.

Materials

Aggregate

The hot mix asphalt to be used will be as follows unless modified by the Engineer:

Base Courses:	3/4-inch, Type A
Intermediate Courses:	1/2-inch, Type A
Surface Courses:	1/2-inch, Type A

Asphalt Binder

The grade of asphalt binder mixed with aggregate for HMA (Type A) shall be as follows:

Base Course:	PG 64-10
Intermediate Course:	PG 64-10
Surface Course:	PG 64-10

Mix Properties

Mix voids shall be targeted at 3.5%.

The allowable production range for mix voids shall be 2.0% to 5.0%.

The mix shall include 0.5% of liquid anti-strip. No Warm Mix Additive shall be allowed.

Delivery Tickets

Material delivery tickets shall be submitted daily. Each delivery ticket shall include information on the material type, binder type, oil content, and the mix design number. Material delivered to the project without such annotations shall be subject to rejection. The Contractor shall provide, as each truck reaches the project, State certificates of weight and measure to the Engineer. The Contractor shall provide the Engineer with a tabulation, upon completion of the project, which shows gross, tare, and net weights for each truck load delivered to the project.

Construction

General

The paving shall be performed so no longitudinal paving joints remain at the end of each day’s paving operation.

Surface Preparation

The work shall consist of preparing the existing street surfaces prior to the commencement of paving. Such work shall include removing raised pavement markers, removing thermoplastic traffic markings and legends, controlling nuisance water, sweeping, watering, and removing loose and broken pavement and foreign material as specified in the Standard Specifications and these Technical Provisions, and as directed by the Engineer.

All vertical edges to be paved shall be tack coated. These include, but are not limited to, curb faces, gutter lips, swale edges, cross gutter edges, and pavement edges.

Tack coat shall be utilized and shall be either emulsified asphalt Grade RS-1, RS-1h, SS-1, or SS-1h conforming to Section 94, "Asphaltic Emulsions," or paving grade asphalt conforming to Section 92, "Asphalts Binder."

The asphalt tack coat shall be placed with a calibrated distributor truck per Subsection 93-1.03C of the Standard Specifications, unless otherwise specified by the Engineer. The application temperature of the asphalt emulsion shall be 300 degrees Fahrenheit minimum and 375 degrees Fahrenheit maximum.

All cold joints, both longitudinal and transverse, shall be heated with a torch immediately prior to paving. Cold joints include previous passes placed more than three hours prior. All cold joints shall be tack coated.

Leveling, Transitions, and Hot Mix Asphalt Fills

A leveling course of variable thickness shall be placed and compacted prior to placing the surface course at locations where directed by the Engineer. The leveling course will be used to correct pavement irregularities such as rutting, variable cross slope, or variable longitudinal slope. Where two overlays of different thickness abut at a longitudinal joint, the Contractor shall add to the thinner section to match the thicker lift and provide a smooth transition and uniform cross-fall. Cold planing ridges or other rises in the pavement surface may be required by the Engineer. The Engineer will determine the exact limits and thickness of the leveling courses, hot mix asphalt fills, and transitions.

The Contractor shall construct temporary pavement transitions at all transverse paving joints greater than 1 inch prior to allowing traffic onto the paved surface. Temporary pavement transitions shall have a maximum slope of 20:1 or as approved by the engineer and be constructed on Kraft paper or other suitable bond breaker such that upon removal of the temporary pavement transition, a clean notch remains. The temporary transitions may be constructed of either cold mix or hot mix. Temporary transition shall be required at driveways where drop off is more than 1 inch.

The Contractor shall continuously maintain the temporary pavement until final paving.

Each temporary transition shall be inspected by the Contractor and repaired as necessary to comply with these provisions at the end of each day including weekends and holidays.

Failure to comply with these provisions will result in a liquidated damage of $250 per day per transition and/or the cost of City crews making the repairs if necessary to correct for public safety.

Layout

The Contractor shall layout and mark the location of the edges of the paving passes of the surface course to match the new layout of the lane lines. The layout shall be made at least 24 hours prior to paving. The layout shall be approved by the Engineer prior to paving.

If the striping is to remain unchanged, the edges of the paving passes shall conform to existing lane edges.

In all cases where practical, each lane shall be paved in a single pass. In tapered transition areas, the shoulder areas shall be paved first, then the through lane shall be paved immediately after the shoulder paving.

For paving which incorporates new quarterpoints or gradebreaks due to keycuts or other conditions, the Contractor shall provide equipment capable of adjusting to the new surface profile at the appropriate locations. The profile adjustments shall be within twelve inches of the actual gradebreak or quarterpoint.

The Contractor shall take sufficient measurements during laydown to ensure that the full design hot mix asphalt layer depth is provided at each quarterpoint, gradebreak, or transition. Failure to provide the design depth at these areas will result in rejection of the work. Correction of this rejected work will include milling out the new hot mix asphalt from the road edge to the centerline or nearest inside lane line and repaving. The minimum length of the milled and corrected area shall be fifty feet.

Tolerances

The finished hot mix asphalt surface shall be flush with, to 1/4 inch (0.20 feet or 6 mm) above, the gutter lips. The finished pavement surface shall not be lower than the gutter lips.

The average pavement thickness shall be equal to the specified thickness for the project.

For total pavement thicknesses of less than four inches, the minimum allowable thickness will be 1/4 inch less than that specified.

For total pavement thicknesses of four inches or more, the minimum allowable thickness will be 1/2 inch less than that specified.

Automatic Screed Controls

For all main line street or roadway paving with single lane length exceeding 300 feet, automatic screed controls shall be required. Automatic screed controls shall not be required for the paving of parking lots, intersections, cul-de-sacs, alleyways or other irregular areas.

In addition to the requirements in Section 39-1.10 and 39-1.11 of the Standard Specifications, hot mix asphalt shall be placed with spreading equipment equipped with fully automatic screed and grade sensing controls which shall control the longitudinal grade of the screed. Automatic controls shall conform to and be operated in accordance with the provisions herein.

Unless approved otherwise, ski-type devices with a minimum length of 30 feet shall be used to provide a reference for the grade sensor. Skis shall be constructed and installed in such a manner that a reference to the average elevation of the existing pavement, along the length of the ski, is maintained at the sensor point. When placing surfacing adjacent to surfacing previously placed in conformance with these provisions, a joint matching shoe of adequate size and type to properly sense the grade of the previously placed mat may be used in lieu of the 30-foot ski.

The ski shall be mounted at a location which will provide an accurate reference for the surfacing being placed. This may require the ski to be mounted ahead of and inside the outer limits of the screed. Automatic cross slope control may be accomplished by use of a ski and grade sensor on each side of the paving machine.

Automatic screed controls shall be installed in such a manner that the occasional manual adjustments necessary to maintain the attitude of the screed parallel to the underlying pavement are readily accomplished. Automatic screed controls shall be installed so that with little or no delay, use of the automatic controls can be discontinued and the screed controlled by manual methods.

If it is determined by the Engineer that the existing grade and cross slope are too irregular for the automatic controls to provide the quality of work required, the use of the automatic controls shall be discontinued and the spreading equipment adjusted by manual methods. Use of automatic controls shall resume when the Engineer has determined that it is again practical and so orders.

Compacting

Rolling shall be performed as indicated in the referenced Caltrans specifications.

The roller water shall contain a soap type compound to prevent sticking of the HMA material to the rollers. The soap type compound shall not damage the HMA or impede the

bonding of layers.

The number of rollers required for each paving operation shall be such that all rolling for density can be completed before the temperature of the hot mix asphalt mixture drops below 240 degrees Fahrenheit.

Breakdown rolling shall commence when the hot mix asphalt is placed. Rolling shall be accomplished with the drive wheel forward and with the advance and return passes in the same line.

For leveling courses, breakdown rolling shall consist of three coverages with an 8 to 12-ton pneumatic roller followed by a finishing coverage with a steel wheel roller. The rolling may begin with a single pass of a steel wheel roller until the pneumatic has sufficient opportunity to warm up to avoid tracking and picking up material from the mat. The pneumatic roller tires shall be treated with a non-petroleum based product to prevent pickup. Failure to successfully provide for breakdown rolling with the pneumatic roller after a reasonable warm up time will be cause for termination of paving activities until the Contractor can provide equipment which will perform without pickup.

The Contractor shall have hand-compaction equipment immediately available for compacting all areas inaccessible to rollers. Hand-compaction shall be performed concurrently with breakdown rolling. If for any reason hand-compaction falls behind breakdown rolling, further placement of hot mix asphalt shall be suspended until hand-compaction is caught up. Hand-compaction includes vibraplates and hand tampers. Hand torches shall be available for rework of areas which have cooled.

After compaction, the surface texture of all hand work areas shall match the surface texture of the machine placed mat. Any coarse or segregated areas shall be corrected immediately upon discovery. Failure to immediately address these areas shall cause suspension of hot mix asphalt placement until the areas are satisfactorily addressed, unless otherwise allowed by the Engineer.

Contractor Quality Control

The HMA shall be verified by the engineer prior to placement on the jobsite. If agreed to by the Contractor and the Engineer, the production start-up may be used for verification. If the production start-up is used for verification the Engineer may require removal and replacement of the HMA, at his discretion, in the event of verification failure.

Contractor quality control testing is optional. However, if the contractor fails to submit quality control results to the engineer within 72 hours of HMA placement, the contractor waives all rights to dispute the Engineer’s results. In the event of asphalt binder or Hamburg wheel track testing by the Engineer, the contractor has 5 days to submit their test results from the time the Engineer informs the contractor that he is performing testing or the contractor waives the right to dispute the Engineer’s results.

The Engineer shall test for conformance with aggregate quality characteristics at the beginning of the project.

The Engineer shall test air void content, Hveem stability, and voids in mineral aggregate (VMA) a minimum of once per day.

The Engineer may sample the hot mix asphalt from truck beds at the plant, from the hopper of the paving machine, or from the mat behind the paver at the discretion of the Engineer. The Contractor shall facilitate the sampling process.

Engineer's Acceptance

The City shall be notified 48-hours prior to scheduling pavement placement so that Quality Assurance personnel can be scheduled.

1. Materials Acceptance

Modify 39-3.02A Testing as follows:

Add the following footnote:

h. Contractor can perform independent quality control testing continuously during paving using nuclear or non-nuclear methods.

i. For minor HMA placement, the Engineer will monitor the contractor's work for conformance to the Method Process. In addition, the Engineer will collect HMA samples and verify the mix.

The Engineer may withhold acceptance in the event of any failing test result until the Contractor has addressed the failing material to the Engineer's satisfaction.

2. Compaction Acceptance

Sublots to determine compaction testing shall be based on the following:

a. Each 750 tons, or part thereof, placed on an individual street in a paving day. If over 750 tons are placed in a single paving day on an individual street, up to 150 tons over 750 tons can be moved in to the previous 750 ton sublot.

b. If multiple streets are paved in a day, each street will be considered its own sublot with multiple sublots on streets where greater than 750 tons are placed.

The in-place density shall be between 92.0 percent and 97.0 percent of maximum theoretical unit weight using a nuclear gauge. Gauge compaction testing shall be

performed in accordance with CTM 375. Final compaction is based on the average nuclear gauge results for the sublot. The nuclear gauge will be core correlated the first day of paving.

If nuclear gauge compaction testing results are failing, the contractor can request coring to verify the results. Three cores will be sampled for each sublot and the average of the three cores for each sublot will determine the in-place density. The core locations will be determined using random sampling charts in CTM 375. The engineer will mark the core locations.

Cores may be taken up to 5 calendar days after placement and may be 4 or 6 inches in diameter. The engineer will provide results within 3 working days of receiving the cores.

Passing cores shall be paid for by the owner. Failing cores will be paid for by the contractor. If the core testing produces both passing and failing cores, the cost will be prorated between the contractor and the owner.

Contractor shall core the full depth of the new overlay and existing asphalt layers and backfill the cores holes with rapid set concrete. The cores shall be sawcut at the new overlay line prior to testing. **Failure to backfill the core holes on the same day as the coring is performed will subject the Contractor to liquidated damages in the amount of $250 per day per location.**

For the percent of maximum theoretical density, the following table shall apply to deductions for average compaction of a sublot:

Reduced Payment Factors for % of Max. Theoretical Density

HMA (Type A) Percent of Maximum Theoretical Density	Reduced Payment Factor	HMA (Type A) Percent of Maximum Theoretical Density	Reduced Payment Factor
92.0	0.0000	97.0	0.0000
91.9	0.0125	97.1	0.0125
91.8	0.0250	97.2	0.0250
91.7	0.0375	97.3	0.0375
91.6	0.0500	97.4	0.0500
91.5	0.0625	97.5	0.0625
91.4	0.0750	97.6	0.0750
91.3	0.0875	97.7	0.0875
91.2	0.1000	97.8	0.1000
91.1	0.1125	97.9	0.1125
91.0	0.1250	98.0	0.1250
90.9	0.1375	98.1	0.1375
90.8	0.1500	98.2	0.1500
90.7	0.1625	98.3	0.1625
90.6	0.1750	98.4	0.1750
90.5	0.1875	98.5	0.1875
90.4	0.2000	98.6	0.2000
90.3	0.2125	98.7	0.2125
90.2	0.2250	98.8	0.2250
90.1	0.2375	98.9	0.2375
90.0	0.2500	99.0	0.2500
< 90.0	Remove and Replace	> 99.0	Remove and Replace

Measurement and Payment

The contract price paid per Square Foot (SF) for **"Cold Plane 0.2' Including HMA Type A (Revocable)"** is a revocable item. The contract price paid per square foot shall include full compensation for furnishing all the labor, materials, tools, equipment, incidentals, and for doing all the work necessary to demolish and remove all existing pavement by cold planing, removal, off haul, and disposal of existing asphalt concrete above the lip of gutter and within gutter pans, to the depths required, lowering and re-setting utilities, and place all the asphalt concrete, complete and in place, including surface preparation, tack coat, furnishing, placing and compaction, all as specified in City of Berkeley Standards, these special provisions, and as directed by the Engineer, and no additional compensation will be allowed. This item shall be paid by the actual square footage of work performed at moratorium sites. Pavement restoration in the non-moratorium sites resulting from sewer rehabilitation will be covered

under Bid Item No. 11, Bid Item No. 12 and Bid Item No. 31.

BID ITEM NO. 33: PRESSURE TESTING SANITARY SEWER LINE

General

Gravity sewer lines, laterals and appurtenances shall be substantially watertight. All precautions shall be taken by the Contractor to secure watertightness throughout the component parts of the system. All jointing of pipe shall be subject to rigorous inspection by the Engineer or his representative. In addition, before the acceptance of the work and prior to the admission of any sewage into the system, the Contractor shall perform the tests herein specified and otherwise demonstrate to the satisfaction of the Engineer the watertightness of the sewer lines, including lower laterals and appurtenances. All leakage in excess of the maximum allowable amount hereinafter stipulated shall be corrected (ie remove and replaced, rehabilitated, or as approved by the engineer).

The test shall be conducted to include existing sewer mains and house connecting sewer lower laterals.

Execution

Where an existing sewer main is to be pressure tested, plug ends at maintenance hole with pneumatic plugs. The design of the plugs shall be such that they will hold against the test pressure without requiring external blocking or bracing. One of the plugs shall have three air hose connections: one for inflation of the plug, one for reading the air pressure in the sealed line, and one for introducing air into the sealed line.

Prior to testing, the inside of each completed piping system shall be thoroughly flushed and cleaned of all dirt, loose scale, sand and other foreign material. Cleaning shall be by sweeping, flushing with water or blowing with compressed air, as appropriate for the size and type of pipe. Accumulated material shall be removed at each maintenance hole and no material shall be allowed to enter the existing sewer system. The Contractor shall install temporary strainers, temporarily disconnect equipment, or take other appropriate measures to protect equipment while cleaning piping. Prior to testing existing sewer mains, Contractor shall perform pre-testing CCTV of sewer mains and lower laterals conforming to the requirements of Bid Item No. 5: Pre-Construction Closed Circuit Television (CCTV) Inspection and Location of Active Sewer Laterals.

If a City cleanout cannot be located for any lateral identified during the pre-testing CCTV, Contractor shall notify the Engineer and the pipe shall be omitted from testing **until installation of City cleanout is completed**. Contractor shall notify the Engineer of any suspected storm drain cross connections to the sanitary sewer main.

All lower laterals shall be plugged at the cleanout and tested together with the sewer main.

Low pressure air shall then be introduced into the sealed line until the internal air pressure reaches 4.0 psig greater than the average back pressure resulting from any ground water that may be over the pipe. At least two minutes shall elapse to allow the pressure to stabilize. The pressure shall be at least 4 psig at the beginning of the test.

All low-pressure air tests shall be 1.0 psig drop tests using the times specified in Table 1 of Uni-B-6-98 "Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe." (See Appendix 12). If any pipe (MH to MH) does not pass the low-pressure air test, contractor shall isolate sections of the pipe and retest until the location of failure can be determined within five (5) feet.

Measurement & Payment

Measurement for payment shall be made as Each (EA) for **"Pressure Testing Sanitary Sewer Line"** and paid for by **Bid Item 33a** on the basis of work completed as noted on the monthly submission of progress payment. Payment includes As-Built submittals to the City for those repaired defects. The Contractor shall furnish all facilities, including labor, materials, equipment, and tools necessary to conduct the tests and cleaning operations. The cost of testing and cleaning sewers shall be included in the unit bid price, and no additional allowance will be made therefor.

Measurement for payment shall be made as Each (EA) for **"Isolate Leak (Allowance)"** and paid for by **Bid Item 33b** on the basis of work completed as noted on the monthly submission of progress payment. This item is an allowance for furnishing all facilities, including labor, materials, equipment, and tools necessary to conduct additional tests to identify and isolate the leaks within the pipe. The cost of testing shall be included in the unit bid price, and no additional allowance will be made therefor.

Measurement for payment shall be in Lump Sum (LS) for **"Sewer Rehabilitation (Allowance)"** and paid for by **Bid Item 33c** on the basis of work completed as noted on the monthly submission of progress payment. This item is an allowance for furnishing all facilities, including labor, materials, equipment, and tools necessary to perform spot repairs, rehabilitate and/or replace the pipes were leaks are identified as follows:

Where the contractor has isolated any leaks to within five (5) feet, the Contractor shall perform a spot repair. Measurement for payment shall be made as Each (EA) and paid for by Bid Item No. 33c at the unit costs of Bid Item 30.

Where a pipe section requires replacement, as an option the Contractor may select Method "B" Pipe Splitting or Method "C" Traditional Open Trench as a construction method for replacement. Once approved by the Engineer, measurement for payment shall be in Linear Foot (LF) and paid for by Bid Item No. 33c at the unit costs of Bid Items 11 and 12, respectively.

Method "A" Cured in Place Pipe (CIPP) Liner is only acceptable as approved by the Engineer. Measurement for payment shall be in Linear Foot (LF) and paid for by Bid Item No. 33c at the unit cost of Bid Item 10.

The Contractor shall be paid on the basis of work completed as noted on the monthly submission of progress payment. Payment includes As-Built submittals to the City. **The City reserves the right to withhold payment for work under this bid item until successful completion of required testing.**

After sewer main cleaning, pre-construction CCTV of the sewer main shall be paid for under **Bid Item No. 5**. After sewer lower lateral cleaning, pre-construction CCTV of the lower lateral shall be paid for under **this Bid Item No. 33a**.

Installation of new two-way cleanouts shall be paid for under **Bid Item No. 14**.

PLANS

The following are Plans showing the sheet numbers and their corresponding drawing title:

SHEET	DRAWING TITLE
1	COVER SHEET
2	ABBREVIATIONS, GENERAL NOTES & LEGEND
3	INDEX SHEET
4	PLAN & PROFILE – UNIVERSITY AVENUE
5	PLAN & PROFILE – UNIVERISTY AVENUE, ADDISON STREET
6	PLAN & PROFILE – ALLSTON WAY, MARTIN LUTHER KING JR WAY
7	PLAN & PROFILE – SACRAMENTO STREET, POE STREET
8	PLAN & PROFILE – PARKER STREET
9	PLAN & PROFILE – SAN PABLO AVENUE, HEINZ AVENUE
10	PLAN & PROFILE – SAN PABLO AVENUE
11	PLAN & PROFILE – GRAYSON STREET
12	PLAN & PROFILE – GRAYSON STREET, NINTH STREET
13	PLAN & PROFILE – NINTH STREET, HEINZ AVENUE
14	PLAN & PROFILE – NINTH STREET
15	PLAN & PROFILE – NINTH STREET, MABEL STREET
16	PLAN & PROFILE – ASHBY AVENUE
17	PLAN & PROFILE – FOLGER AVENUE
18	PLAN & PROFILE – SAN PABLO AVENUE
19	PLAN & PROFILE – HASKELL STREET
20	PLAN & PROFILE – HASKELL STREET, SACRAMENTO STREET
21	PLAN & PROFILE – OREGON STREET
22	PLAN & PROFILE – BANCROFT WAY, CALIFORNIA STREET
23	PLAN & PROFILE – DWIGHT WAY, KING STREET
24	PLAN & PROFILE – PRINCE STREET

SHEET	DRAWING TITLE
25	CONSTRUCTION DETAILS
26	CONSTRUCTION DETAILS
27	CONSTRUCTION DETAILS
28	CONSTRUCTION DETAILS
29	CONSTRUCTION DETAILS
30	SURVEY CONTROL

DESCRIPTION OF GENERAL CONDITIONS

General Condition No. 1: Pre-Construction Meeting

1.01 Prior to commencement of work at the site, a preconstruction meeting will be held at Engineering Division conference room, 4th Floor, 1947 Center Street, Berkeley. Date and time of the meeting will be as agreed upon by the Contractor and the Engineer. The meeting shall be attended by:

a. Contractor and his superintendent
b. Contractor's principal subcontractors and representatives of major material suppliers and manufacturers as appropriate
c. City Engineer, Inspectors, and/or his representatives
d. City's Surveyor, Traffic Engineer, Police and/or Fire Departments
e. City's Contract Compliance Officer
f. City's Employment Programs Administrator
g. City's Parks/Waterfront Department
h. Representatives of EBMUD, PG&E, Telephone Co., Cable TV and AC Transit

1.02 The purpose of the meeting is to discuss and establish construction procedures such as field coordination, inspection, and anticipated problems to be encountered during the performance of the work. The agenda of the meeting will include the following:

a. Contractor's tentative schedules
b. Contractor's submittals
c. Project layout and project staging
d. Traffic control
e. Housekeeping
f. Payment
g. Coordination with other utility companies
h. Change orders
i. Notification to the property owner
j. Public Relation Policy

1.03 The Engineer will preside, note, and distribute the minutes of the meeting to all persons in attendance.

General Condition No. 2: Audio-Video Survey

Where the preconstruction and audio-video survey does not, in the judgment of the Engineer, adequately document the condition of existing improvements, the Contractor shall supplement the audio-video tapes with such still photographs as the Engineer may direct. The costs of such still photographs shall be deemed to be included in the lump sum bid amount for the audio-video survey. If a separate bid item is otherwise not provided, the preconstruction audio-video survey shall be included in prices paid for the various contract items of work involved and no additional compensation will be allowed. It shall be the responsibility of the Contractor to adequately document the condition of existing improvements, and the

Contractor may be held liable for any damage whose pre-existence he/she is unable to document.

General Condition No. 3: Holidays

3.01 The full width of the street's traveled way shall be opened for use by public traffic on designated legal holidays and Reduced Service Days.

3.02 Designated legal holidays are January 1, the third Monday in February, the last Monday in May, July 4, the first Monday in September, November 11, Thanksgiving Day, and December 25. When a designated legal holiday falls on a Sunday, the following Monday shall be observed as a designated legal holiday. When November 11 falls on a Saturday, the preceding Friday shall be observed as a designated legal holiday.

3.03 The following are recognized City Holidays. No work shall be performed on these days unless previously authorized by the Engineer.

- Third Monday in January (Martin Luther King's Birthday)
- Lincoln's Birthday
- **Monday or Friday nearest March 30 (Cesar Chavez Day)**
- Monday or Friday nearest May 18 (Malcom X Day)
- Monday or Friday nearest June 19 (Juneteenth)
- Second Monday in October (Indigenous People's Day)
- Day After Thanksgiving Day

3.04 No work shall be performed during the Christmas holiday season from November 21 through January 3 within the designated City streets in the business districts and all designated highway routes.

3.05 Designated streets and their limits are listed below:

Telegraph Ave.	Bancroft Ave.	to	South City Limits
Bancroft Ave.	Piedmont Ave.	to	Shattuck Ave.
Durant Ave.	Shattuck Ave.	to	Bowditch Street
College Ave.	Webster St.	to	Russell St.
Sacramento Ave.	University Ave.	to	South City Limits
Shattuck Ave.	Rose Ave.	to	Ashby Ave.
Adeline St.	Shattuck Ave.	to	Alcatraz Ave.
University Ave.	Sixth St.	to	Oxford St.
Hearst Ave.	Frontage Rd.	to	Sixth St.
Gilman St.	Frontage Rd.	to	Hopkins St.
Center St.	Fulton Ave.	to	Martin Luther King, Jr.
Kittredge St.	Fulton Ave.	to	Milvia St.
Vine St.	Walnut St.	to	Shattuck Ave.
Solano Ave.	The Alameda	to	West City Limits
Allston Way	Fulton Ave.	to	Milvia St.

Addison St.	Fulton Ave.	to	Milvia St.
Fourth St.	Addison St.	to	Virginia St.
Euclid Ave.	Hearst Ave.	to	Ridge Rd.
Fulton Ave.	Hearst Ave.	to	Dwight Way

3.06 Designated highway routes are:

Ashby Avenue
Tunnel Road
San Pablo Avenue

3.07 Due to budgetary constraints, City of Berkeley offices will be closed approximately one day every month (Typically 2nd Fridays) for "Reduced Service Days". When a holiday falls on that day, the previous day shall be a Reduced Service Day. Despite the City's reduced level of service, the contractor shall plan to perform work during such days. Reduced Service Days will be included in the Engineer's accounting of working and calendar days. Following are the planned future closure dates which are subject to change. Dates extending past the end of June 2026 are to be confirmed and will be provided to the Contractor as necessary.

March 13, 2026
April 10, 2026
May 8, 2026
June 12, 2026

DESCRIPTION OF SPECIAL CONDITIONS

Special Condition No. 1: TECHNICAL SPECIFICATIONS

Part D of the specifications contains standard technical specifications for new sewer construction and sewer rehabilitation. Not all types of work described in Part D are required for this project.

Special Condition No. 2: OPEN TRENCH

The maximum open trench length described in Subsection 306-3.5 shall be changed to 300 feet.

Special Condition No. 3: UPPER LATERALS

Rehabilitation of upper laterals are not included in the scope of work. Limit of work is noted in the miscellaneous details sheet of the Plans.

Special Condition No. 4: PERFORMANCE OF THE CONTRACT

Performance of the contract shall begin within fifteen (15) working days from the date of award of the contract instead of thirty (30) calendar days or 14 calendar days as stated in Subsection 301.6 and 801.2 of Part C - General Provisions. Prior to the commencement of construction, the Contractor shall submit all submittals, traffic plans and construction schedules with sufficient time for their review and approval by the Engineer.

Special Condition No. 5: IMPORTED TRENCH BACKFILL

Imported trench backfill material shall be crushed aggregate base consisting entirely of crushed rock and rock dust conforming to the requirements of Section 200-1.1 and 200-1.2 of the Standard Specification for Public Works Construction, 2015 Edition. The aggregate shall be uniformly graded, such that the percentage composition of the material by weight, as determined by laboratory sieves conform to the following gradation:

Sieve Size	Percentage Passing
1 - 1/2"	100
3/4"	60 - 100
3/8"	50 - 65
No. 4	30 - 55
No. 30	10 - 30
No. 200	3 - 9

Trench backfill material shall not contain roots, sods, brush, wood, vegetable matter, other organic and deleterious materials.

Approved recycled materials maybe used in the pipe trench backfill zone. Recycled materials shall be well-graded, cleaned and free of any toxic and harmful contaminants. Broken and crushed asphalt concrete shall be limited to a maximum of 25% of the total mixtures of recycled materials. The Contractor shall include test results of these materials in the submittals.

Special Condition No. 6: TEMPORARY BITUMINOUS SURFACING

Temporary Bituminous Surfacing (cutback) shall be placed immediately following final compaction of the trench backfill and aggregate base and with the approval of the Engineer. Minimum depth of cutback shall be 2 inches to the top of grade, compacted with vibratory compactor or roller and as approved by the Engineer. Temporary cutback shall be inspected and maintained by the Contractor on a daily basis and temporary surfacing shall be maintained including correction of ridges and depressions to a condition where the surface shall not vary to more than 1/2 inch from the edge of the 10-foot straight edge.

Upon notification from the Engineer, the Contractor shall correct the surface deficiencies within 24 hours. The City may request the City crews or contract another contractor to perform the necessary work and repairs if the deficiencies have not been corrected after the 24-hour notification.

The cost of the work performed by City crews or another contractor plus an additional 70 percent surcharge shall be paid by the Contractor by deduction from payment due on the contract.

Special Condition No. 7: CLEANUP WORK

Cleanup of work areas shall be in accordance with Subsections 401.6, Cleaning up; 401.7, Dust and Debris Control; 401.7-1, Emergency Cleanup Work; and 401.13, Final Cleaning Up of Part C - General Provisions. Street cleaning equipment shall include an approved self-propelled or walk-behind mechanical street sweeping and vacuuming device to remove sediment, dirt, and debris from the project site during construction activities and for final clean-up.

Underground Service Alert and other utility paint markings shall be eradicated and removed at the end of construction at the request of the City's Representative.

In the event the Contractor fails to satisfactory comply to the requirements stated on the noted subsections and the Engineer determines that an emergency exists, the Contractor will be notified by the Engineer to correct the violation immediately.

Cleanup, debris and dust control shall be a daily maintenance requirement. After a 24-hour notification to the Contractor for non-compliance or deficiencies, the City may request City crews or contract another contractor to perform the necessary clean-up work.

The cost of the work performed by City crews or another contractor plus an additional 70 percent surcharge shall be paid by the Contractor by deduction from payment due on the Contract.

Special Condition No. 8: AS-BUILT RECORDS

In accordance with Subsection 401.15 of the General Provisions, the Contractor shall maintain at the jobsite one (1) set of marked Plans for review by the Engineer at all times, and shall submit as-built records of the project to the Engineer upon completion of the work. As-builts shall be legibly written and in printed style on a full-size set of plans. The following are changes and additions that shall be incorporated in the as-builts:

a) Location of lateral connections to the main sewer measuring from the downstream maintenance hole. Locations shall be recorded within 2 feet of the actual location of the connection. The Contractor shall write every station for each location/connection.
b) Location of each sewer clean-out and location of sewer lateral from clean-out to sewer main. Location shall be recorded within 2 feet of the actual location and address of property served shall be verified.
c) Demolition and removal of non-active sewer laterals, tee, riser, and clean-outs.
d) Sewer Alignment changes made during construction for the sewer main and sewer laterals.
e) Identify on as-built where sewer replacement was installed by trenchless method.
f) Maintenance hole depth and location changes. The Contractor shall indicate the final inverts, maintenance hole rim elevation, and station.
g) Location of unforeseen structures in conflict with sewer alignment encountered during trench excavation. Contractor shall also indicate the type of structure, sizes, and bottom elevation with respect to the project elevation.
h) Identify pipe material that was installed for all reaches of new and replaced and rehabilitated piping.

The Contractor shall complete and submit "SEWER LATERAL AS-BUILT RECORD" FORMS (attached) upon completion of work. Lateral As-Built information required shall be logged as the work progresses.

SANITARY SEWER LATERAL AS-BUILT RECORD
CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

DATE: _____

PLAN SHEET: _____ OF _____

PROJECT: _____

LOCATION (STREET IN WHICH SANITARY SEWER MAIN IS LOCATED):

STREET: _____

HOUSE NUMBER	STREET	DOWNSTREAM MAINTENANCE HOLE ID	DISTANCE FROM LAST DOWNSTREAM MAINTENANCE HOLE (LF)	LAID LATERAL LENGTH (LF)	LATERAL MATERIAL	REMARK

Special Condition No. 9: GUARANTEE OF WORK

The Contractor shall guarantee the entire work constructed by him/her under the contract in accordance with Subsection 801.13 of the General Provisions. The guarantee shall be for a period of one year after completion and acceptance by the City.

The Contractor shall agree to make, at his/her own expense, any repairs or replacements made necessary by defects in materials and workmanship which becomes evident within the said guarantee period. The Contractor shall make all repairs and replacements within 10 Working Days after receipt of verbal/written notification for repair/replacement from the Engineer. However, the Contractor shall respond within 24 Hours after notification to repair or replace nonfunctional sanitary sewer lateral and main that is causing inconvenience and a health hazard to the public.

The City may request the City crews or contract another contractor to perform the necessary repair/replacement work if the deficiencies have not been corrected after the prescribed length of time. Payment for this work plus administrative cost shall be reimbursed from the Surety Bond submitted by the Contractor.

Special Condition No. 10: CONSTRUCTION SIGNAGE

The Contractor shall provide four (4) construction signs for this project and shall be placed on locations designated by the Engineer. The size of construction signs is 2'-7" x 6'-0", white background color and in black uniform lettering. Construction signs shall be installed on both ends of the street scheduled for rehabilitation two days prior to start of construction and shall be relocated to the next street location as job progresses or as directed by the Engineer. Construction signs are included under Bid Item "Mobilization and demobilization" and shall conform to the detail noted in the Standard Details Section. Signs shall be maintained to the satisfaction of the Engineer.

The Contractor shall provide two (2) portable changeable message boards for use on the project at the City's request. Each portable message sign unit shall consist of a controller unit, a power supply, and a structural support system, all mounted on a trailer, per Caltrans Standard Specification Section 12-3.32. Message board shall be installed as directed by the Engineer two days prior to start of construction and shall be relocated to the next street location as job progresses or as directed by the Engineer. Construction signs are included under Bid Item "Mobilization and demobilization". Board shall be maintained to the satisfaction of the Engineer.

Special Condition No. 11: PARKING SIGN AND PERMIT FEES

The City will provide "NO PARKING" signs to the contractor upon request for this project at no cost. Permit fees for city work under this city construction will be waived.

Special Condition No. 12: PUBLIC RELATION REQUIREMENTS

Public Relation Policy. In the course of serving its citizens, it is the policy of the City of Berkeley to be responsive, helpful and courteous to its resident at all times. Any City's employee or City's Contractor that will be in contact with residents, in person or by telephone, will adhere to this policy.

The Contractor is required to prepare a Public Relations Plan to implement the above policy. The Plan shall be submitted for approval before commencing the work under this contract. The Contractor shall certify that he understands and will adhere to the City's Public Relation Policy, and that all Contractor employees will be briefed on proper relations with the public in accordance with above policy statement.

Contractor's employees without specific public relations responsibilities shall be informed of the name of the Contractor's and the City's Public Relation Coordinators for referral purposes.

Any Contractor's employee who does not adhere to the above public relations policy by displaying rude, offensive and uncooperative behavior shall be discharged immediately on written request of the engineer per subsection 801.4

Public Relation Plan: The Public Relations Plan shall include but is not limited to the following:

a. Name of the contractor's Public Relations Coordinator and his/her experience with interfacing with the public.

b. Plans for conducting public impact assessments prior to commencing the total project, each stage of the project, as necessary to execute the provisions of this contract without undue impact on the public.

c. Techniques or plans for interfacing with the public and agencies at various stages of the project, especially during work on upper laterals located on private property.

d. Method of notifying and informing the public and agencies prior to construction stages, providing ample time to address their concerns.

e. Plans for coordinating public relations matters with the City during the preconstruction conference, weekly meetings and during review of the construction schedule.

f. Provisions for and frequency of briefing employees on the details of executing the Public Relations Plan.

Poor performance and non-adherence to the City's public relations policy are grounds for being declared a non-responsive contractor that may result in the city rejecting bids on future

contracts.

No additional compensation will be paid by the City for implementing Public Relations Policy requirements. All such related effort is a mandatory requirement of the contract.

Special Condition No. 13: UTILITIES IN CONFLICT WITH SANITARY SEWER AND STORM DRAIN

The Contractor shall determine the unknown location of main and service utilities in advance of work in order not to delay the schedule of construction. Advance potholing shall be included in the planning and execution of the work. No additional compensation will be paid by the City for the performance of this work. At the direction of the Engineer, it is Contractor's responsibilities to make correction if conflict arises among utilities. If conflict arises, the Contractor shall inform the Engineer in advance before any correction is made.

Special Condition No. 14: NON-DISCRIMINATION AND CONTRACT COMPLIANCE CONFERENCE

At the Non-Discrimination and Contract compliance conference, the apparent lowest responsive bidder shall submit the proposed staffing resources in order to start and complete the project within the contract time frame. This should account for other Berkeley contracts that the Contractor may be working on concurrently or within the same time frame.

Special Condition No. 15: PIPE REHABILITATION AND REPLACEMENT USING TRENCHLESS METHOD

Rehabilitation of existing sewer pipes using the trenchless method will be used in this project; locations and methods are shown on the Plans. The two trenchless methods are as follows: Method "A" - Cured-In-Placed-Pipe liner (CIPP), Folded and Reformed PVC pipe liner, Deformed/reformed HDPE pipe liner; Method "B" – Pipe breaking, pipe splitting or bursting, sliplining, or other comparable method. These two methods of pipe rehabilitation ("A" & "B") do not apply where the new sewer is to be installed at a different slope and flowline elevations (open-cut method) from the existing sewer that is to be removed and replaced.

The Contractor shall be responsible for determining the condition and alignment of the existing pipes to be rehabilitated through closed circuit television inspection (CCTV). Cleaning of the pipeline and removal of debris such as sludge, grease, roots, rocks and any foreign materials shall be performed prior to pipe rehabilitation. All costs incurred with this work shall be included in the bidder's proposal.

Existing sags and/or vertical offsets that would affect the alignment of the new pipe installed using these methods are to be corrected by the Contractor prior to start of pipe placement. Sags in the new replacement sewer that appears in the post construction video inspection tapes are to be removed and corrected by open trench, and shall be at the expense of the Contractor with no additional compensation or cost to the City.

For Method "B", the Contractor shall furnish and install HDPE SDR – 17. Approved color for inside wall are white, gray and other approved light-colored pipe. Both the inside and outside may be of the same color. For pipe rehabilitation work involving sliplining (i.e. new pipe O.D. is of a smaller diameter than existing host pipe I.D.), the new pipe shall be installed such that it rests permanently at the invert of the host pipe throughout its entire length. Refer to Section 500-3 of the "Greenbook" 2015 Edition for annular space grouting requirements for the installation of sliplining systems.

Prior to construction, the Contractor shall submit to the City for review and approval the materials, procedures, equipment, shop drawings and other submittals as required by the Plans and Specifications.

Special Condition No. 16: PAVEMENT STRIPING AND LANE MARKING RESTORATION TIME LIMIT

Restriping and pavement marking to restore those deleted, or damaged shall be completed within ten (10) working days after finish paving or asphalt resurfacing is completed.

Special Condition No. 17: CONSTRUCTION STAKING AND CUT SHEETS

This section hereby revises section 501.7 of the General Provisions of these specifications.

Construction surveys and stakes to establish the lines and grades and to establish the replacement position for Survey Monuments will be the responsibility of the Contractor and not provided by the City.

The Contractor will be responsible for setting lines and grades for the execution and completion of the work in accordance with the Plans and Specifications. The Contractor will be held responsible for all errors in staking discovered during the performance of the work and no additional compensation shall be charged to the City for correction of such deficiency.

Stakes or marks will be set by the Contractor, utilizing a qualified land surveyor in conformance with the requirements in Chapter 12, "Construction Surveys," of the California Department of Transportation's Surveys Manual.

In all other respects, Section 501.7 and the General Provisions of these specifications remain in full force and effect.

Special Condition No. 18: PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS

The Contractor shall be responsible for the protection of public and private property adjacent to the Work and shall exercise due caution to avoid damage to such property.

The Contractor shall repair or replace all existing improvements and street pavements which are not designated for removal (e.g., street sections, curbs, gutters, driveways, fences, walls, structures, landscaping, etc.) which are damaged or removed as a result of its operations. Repairs and replacements shall be at least equal to existing improvements, and shall match them in finish and dimensions.

Prior to initiating work in the public right of way and in the easements, the Contractor shall make an audio/video recording of the affected areas showing all existing improvements, and their conditions. The recordings shall be turned over to the Engineer in DVD-format and shall serve as historical documentation of the preconstruction conditions.

Damages within the public right of way including street pavement will be restored to the satisfaction of the Engineer after work on that particular block is completed.

Any damages to the private properties will be restored to the satisfaction of the property owner/engineer within seven (7) days of the damage(s), and prior to mobilizing pipe installation and rehabilitation in another project area. Non-conformance and delays by the contractor in restoration on private property can cause and generates highly publicized complaints from the property owners.

The Engineer will have the authority to stop or curtail pipe construction/rehabilitation work in another location or vicinity of the project in order to complete the required restoration work.

Special Condition No. 19: APPROXIMATION OF EXISTING GROUND GRADES FOR BACKLINE SEWER PROFILES

Existing ground elevations shown on the plans for the Sewer Profiles for backline sewers are approximate.
Actual ground elevation may be higher or lower at specific locations than shown on the drawings.

No additional compensation will be provided where some actual depths are deeper than shown on the plans; but are offset by other areas that are shallower than shown over the sewer centerline, and where it does not exceed the overall average depth of backline sewer where excavation is required.

Special Condition No. 20: CONSTRUCTION ACCESS AGREEMENTS

Construction access agreements are required for work in private property on backline sewers and where access across private property is required for completion of work. Contractor shall not perform any work in private property until access agreements have been acquired. The City is in the process of acquiring access agreements from owners of private property anticipated to be affected by performance of the work. When needed, the Contractor shall meet with owner(s)/tenant(s) of those properties requiring access agreements to discuss means

and methods of construction. The Contractor may be required to reschedule or change the planned sequence of sewer work in private property as needed to accommodate property owner scheduling requests.

A typical access agreement form is included as Appendix 9.

Special Condition No. 21: TEMPORARY SHEETING, SHORING, AND BRACING

Temporary sheeting, shoring and bracing shall be installed in accordance with requirements of OSHA and the Construction Safety Orders of the State of California, pursuant to the provisions of Section 6707 of the California Labor Code. Sheeting, shoring and bracing plans shall be signed and sealed by a California registered engineer and submitted to the City prior to start of this work.

Payment for temporary sheeting, shoring, and bracing or equivalent method shall be included in the bid items for the construction of temporary bypass operations, maintenance holes, and sewer pipes rehabilitation or construction.

Special Condition No. 22: STORMWATER POLLUTION CONTROL

Standard Specifications referred under Special Condition No. 22 is the State of California, Department of Transportation (Caltrans) Standard Specifications, 2015 Edition.

22.01 Stormwater Pollution Control. The intent of these requirements is compliance with Federal, State, City, and other local agencies' regulations that prohibit non-stormwater discharges from construction sites. Pollutants (any substance, material, or waste other than rainfall-derived stormwater) discharged to storm drains is strictly prohibited. Further, the Contractor is informed that Federally Endangered species have been identified in creeks within the City limits. Point source, pollutants, stormwater, and other relevant information are defined in Berkeley Municipal Code (BMC) Chapter 17.20 – DISCHARGE OF NON-STORMWATER INTO CITY'S STORM DRAIN SYSTEM – REDUCTION OF STORMWATER POLLUTION, and the City's stormwater NPDES (National Pollutant Discharge Elimination System) Permit No. CAS612008. These documents are available upon request.

22.02 Best Management Practices (BMP) and Source Control. The Contractor shall use appropriate BMPs and source control techniques on the site(s) at all times, regardless of time of year or rainfall conditions, in order to prevent non-stormwater discharges from construction sites. BMPs shall be in conformance with the California Stormwater Quality Association's "Stormwater Best Management Practice Handbook", current edition.

22.03 Stormwater Pollution Prevention Plan (SWPPP) and Coordinator. The Contractor shall prepare, submit for favorable review by the City, and implement a SWPPP which shall contain at a minimum the items included in this section. The SWPPP shall show the

locations of all storm drains, storm drain pipes, creeks, creek culverts, points of entry (catch basins, inlets, outlets), and other features through which stormwater flows. The SWPPP shall identify each point of entry and show how each entry point will be protected. The SWPPP shall include a protocol for allowing drainage to flow properly during rainfall events WHILE STILL PREVENTING non-stormwater discharges from entering the storm drains, creeks, and Bay. The Contractor shall designate an individual (to be approved by the City) available at all times of sufficient authority to halt work and implement BMPs and source control measures for the Contractor and all sub-contractors, suppliers, and other personnel that may be at the construction site(s), to prevent non-stormwater discharges from the construction site(s). This individual shall be the contact person for all matters of the project regarding non-stormwater discharges. The SWPPP shall include descriptions and sketches of all BMPs, show locations and describe protocols for implementing and maintaining the following BMPs for but not limited to material storage, dewatering operations, bypass pumping, saw-cutting operations, pavement operations, concrete operations, grading and excavation operations, spill prevention and control, vehicle and equipment cleaning, vehicle and equipment operation and maintenance, litter control, dust control, pavement cleaning, and construction waste management. All employees, subcontractors, suppliers, and any others involved with the construction site(s) shall be trained in implementing, the importance of, and purpose of the SWPPP. Training records shall be submitted to the City along with requests for progress payment. Where BMPs affect traffic or parking, they shall be shown on the traffic control plans for the construction site(s). The SWPPP shall be updated to meet changing stages of the construction site(s). Work shall not begin without the City completing its review and finding no exceptions taken on the SWPPP and finding at City's sole discretion that the SWPPP meets the intent and goals of the project.

In addition, the Contractor shall observe the following guidelines:

a) Paving during wet weather:
   1) No paving while it is raining.
   2) No paving of the top lift of asphalt concrete (AC) on any day that experiences ¼" of rain in a twenty-four period
   3) No paving of bottom lift if previous seventy-two (72) hour period experienced more than ½" of rain, unless directed by the City Engineer or his designee.
b) Store materials in accordance with Section 13-4.03C, "Material Management" of the Standard Specifications.
c) Cover inlets and maintenance holes when applying asphalt, seal coat, tack coat, slurry seal, fog seal, etc. in conformance with the provisions in Section 13-4.03E (7), " Paving, Sealing, Sawcutting, Grooving, and Grinding Activities," of the Standard Specifications
d) Place drip pans or absorbent materials under paving equipment when not in use.
e) During wet weather store paving equipment indoors or cover with tarp or other waterproof covering.
f) Sweep site daily to prevent sand, gravel or excess asphalt from entering or being transported by rain into the storm drain system.

g) Keep ample supplies of drip pans or absorbent materials on-site.
h) If paving involves Portland cement concrete, refer to Section 13-4.03D (3) Concrete Waste of the Standard Specifications.

Do not wash out concrete trucks into storm drains, open ditches, streets, streams, etc. The Contractor shall prevent the discharge of pollutants from concrete operations by using measures to prevent run-on and run-off pollution, properly disposing of wastes, and by implementing the following BMPs:

a) Store all materials in waterproof containers or under cover away from drain inlets or drainage areas.
b) Avoid mixing excess amounts of Portland cement materials. Dispose of any excess materials properly.
c) Whenever possible, perform washout of concrete trucks off-site where discharge is controlled and not permitted to discharge to the storm drain system. For on-site washout:
    1) Locate washout area at least fifty (50) feet from storm drains, open ditches or other water bodies, preferably in a dirt area.
    2) Confine run-off from this area by constructing a temporary pit or bermed area large enough for the liquid and solid waste.
d) Wash out concrete wastes into the temporary pit where the concrete can set, be broken up and then disposed of properly. If the volume of water is greater than what will allow concrete to set, allow the wash water to infiltrate and/or evaporate, if possible. Remove or vacuum the remaining silt and debris from the ponding or bermed area and dispose of it properly.
e) Dispose of waste water from washing of exposed aggregate to dirt area. The dirt area shall be adequate to contain all the waste water and once the waste water has infiltrated, any remaining residue must be removed.
f) Collect and return sweepings from exposed aggregate concrete to a stockpile or dispose of the waste in trash container.

22.04 Training. The Contractor is responsible for ensuring all personnel, laborers, sub-contractors, suppliers, and any other personnel that are involved with the construction site(s) are trained in the importance of preventing non-stormwater discharges. Each worker shall be certified as being trained before being allowed to work. Before any work begins, the Contractor shall submit and certify under penalty of perjury a list of all workers who have been trained on the importance of pollution prevention, BMP and source control operation and maintenance, and recognize the authority of the City to stop the work in the event of a non-stormwater discharge. The training shall include as a minimum, review of the BMP and SWPPP, and all BMPs (including BMP operation and maintenance) that are planned for the construction site(s).

22.05 Enforcement. The City has the authority through this contract and appropriate sections of the BMC to enforce any portions of this section. City enforcement may include but is not limited to: citations, orders to abate, bills for City cleanup costs and

administration, civil suits, and criminal charges and enforcement. Enforcement action by the City does not void or suspend any enforcement actions by other agencies and actions by the City and other agencies shall be cumulative.

22.06 Submittals and Contract Time. Contractor is cautioned and advised to have appropriately trained staff with any applicable certifications prepare all submittals for Storm Water Pollution Controls including the SWPPP, and have appropriately trained staff available to meet with City staff to review the submittals. It is considered reasonable that the Contractor shall make a complete and acceptable submittal at least by the second submission. The City reserves the right to deduct monies from payments due to Contractor to cover additional costs of project manager's and Architect/Engineer's review beyond the second submission. Illegible submittals will be rejected and returned to the Contractor.

Special Condition No. 23: CREEK PROTECTION

The Contractor shall be responsible for and conduct all aspects of the work within the requirements of BMC Chapter 17.08 – PRESERVATION AND RESTORATION OF NATURAL WATERCOURSES (Creek Ordinance), and any other creek protection requirements by other agencies. Portions of the Work involving a creek channel may not be permitted between October 15 through April 15, or other dates as may be stipulated in applicable permits. Any work between the creek banks shall be conducted to not create conditions which will allow erosion, and shall be fully restored to equal or better than the erosion resistant condition as before the work undertaken. Complying with the requirements of creek protection shall include but not be limited to scheduling the Work around any time periods prohibiting work within creek limits, installing erosion control measures and employing appropriate BMPs for controlling erosion, monitoring, updating and modifying BMPs to meet the requirements for changing site conditions to comply with erosion control and creek protection, and replanting creek banks to reestablish erosion resistance and bank stability.

Special Condition No. 24: TRAFFIC CONTROL

Traffic Control Plans (TCP) must be prepared to avoid and minimize construction impacts on pedestrian, bicycle, and bus facilities in Berkeley consistent with the City's policies. TCPs must follow the guidance and intent provided in APPENDIX 10 -- CITY OF BERKELEY PEDESTRIAN, BYCYCLE, AND BUS FACILITY ACCOMODATION IN CONSTRUCTION ZONES. This document specifies when and where pedestrian, bicycle, and bus facilities may be relocated, detoured, diverted, modified, and closed for this project. In case of conflicts with the requirements of APPENDIX 10, the Caltrans Permit, and Special Conditions, the more stringent shall prevail.

Contractor shall provide traffic control within the work zone throughout the project as needed for the various traffic situations and street configurations in full conformance with the Federal Highway Administration's (FHWA) latest edition of the "California

Manual on Uniform Traffic Control Devices 2014" (MUTCD), as amended for use in California" herein after referred to as Traffic Control Manual. The Traffic Control Manual may be obtained online at https://dot.ca.gov/programs/safety-programs/camutcd

Construction area signs shall be furnished, installed, maintained and removed by the Contractor when no longer required. **Extensive traffic signage, e.g., warning signs and detour signs, may be required for this project.** Contractor shall be responsible for placing all barricades for perimeter street closures as required. Per Section 501.10 – Traffic Control of the General Provisions, at main entry and exit points of each work location, the Contractor shall provide a 30" x 30" sign advising the public of the anticipated period of time that traffic delays may be anticipated. This sign will also include name and telephone number of the Contractor along with starting and completion dates of the contract. Sign will be erected 7 days in advance of any work.

Placement of traffic control on San Pablo Avenue (State Route 123) or Ashby Avenue (State Route 13) will require an encroachment permit from the State of California. Contractor shall apply and pay for such permit from the State of California, the cost of which shall be included in the cost bid for this item. Contractor shall be responsible for providing traffic control plan for encroachment permit to and obtaining approval of said traffic control plan from State of California. Contractor shall be responsible for all notification of work to, application for and obtaining work authorization number from State of California. Any damages arising from work related to encroachment permit shall be the responsibility of the Contractor.

The Contractor shall be responsible for posting "No Parking" signs a minimum of four days in advance of concrete work, paving operations, failed area, and planning work so as to comply with the City's construction notification requirement of 72 hours. Cones shall not be used as barricades. "No Parking" signs may be obtained from the City at no cost to the Contractor. The "No Parking" signs shall be updated as necessary. The Contractor shall check and maintain (e.g., re-install missing signs, reposition displaced barricades, etc.) postings on a regular basis prior to start of work.

If traffic is to be detoured over a centerline or detoured in advance of the work, detour plans must be submitted to and approved by the Engineer prior to starting work. Police, Fire and Public Works Department shall be notified at least two days in advance of any work which will interfere with the normal flow of vehicular or pedestrian traffic. Intersection closure may only occur if the two adjacent intersections remain open, unless otherwise approved by the Engineer. The Contractor shall coordinate his traffic control/diversion plan with City personnel, a minimum of 3 weeks prior to starting work, to assure that traffic is diverted in a safe and convenient manner.

Truck routes shall be approved by the City's Traffic Engineer prior to start of work. Truck traffic is not allowed on Marin Avenue within the City of Albany.

Personal vehicles of the Contractor's employees shall not be parked within the area of work.

A minimum of one (paved) traffic lane, not less than 12 ft. wide, shall remain open for use by public traffic during construction operations. When construction operations are not actively in progress, not less than two such lanes shall be open to public traffic. The Contractor may be allowed to close residential streets if approved in writing in advance by the Engineer. No work that interferes with public traffic shall be performed between 6:00 p.m. and 7:00 a.m.

Start of work shall be no earlier than 7:30 a.m. No work process, including starting, warm up, and delivery of equipment, shall be done outside of work hours. The use of vehicle horns to alert residents to move their vehicles out of the construction zone is not permitted. The Contractor should attempt to locate vehicle owners by knocking on doors.

The full width of the traveled way shall be open for use by public traffic on Saturdays, Sundays and designated legal holidays, and when construction operations are not actively in progress, unless specified otherwise.

Minor deviations from the requirements of this section concerning hours of 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 provides written approval.

The traffic control system shall consist of closing traffic lanes in accordance with the Traffic Control Manual. Signs and other devices for the traffic control system shall conform to the Traffic Control Manual.

If any component in the traffic control system is damaged, 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 to its original condition or replace said component and shall restore the component to its original location.

Lane closures may be made for work periods only. At the end of each work period, all components of the traffic control system shall be removed from the traveled way, shoulder and auxiliary lanes. If the Contractor so elects, said components may be stored at selected central locations approved by the Engineer within the limits of the public right-of-way.

Sufficient barricades and flashing lights shall also be placed to supplement all traffic signs used to divert and control traffic. Signs and barricades shall be checked periodically every day and replaced or repaired as necessary. Any hazardous conditions shall be immediately eliminated.

The Contractor, at the end of each day, shall provide pedestrian and vehicle

crossings at all street intersections. If the project is left open overnight, it shall be graded in such a way that pedestrians and vehicles can safely pass through the project. Temporary concrete, asphalt, or wood ramps shall be installed and maintained at all locations where existing ramps have been temporarily removed.

In accordance with Section 1603.1 of the Detail Specification, where a tack coat has been spread, pedestrian crossing areas shall be covered with sand so that the asphalt does not adhere to shoes.

No vehicular traffic shall be allowed on a tack coat.

Cleanliness is extremely important. Dust producing conditions shall be eliminated as soon as they are created.

If Contractor violates any of these provisions, a fine of $1,000 will be assessed for the first violation, $5,000 for the second and $10,000 for the third and further subsequent violations.

24.01 ACCESS AND EGRESS

The Contractor shall cooperate with all business owners and residents occupying properties fronting on the streets in the matter of access and egress. **Contractor shall maintain a clear and accessible pedestrian corridor per the Pedestrian Access during Construction Projects Detail included herein.**

Where a business property has more than two vehicular paths of access, one path, 10 feet in width, shall remain open during all business hours, unless approved by the Engineer.

24.02 LANE CLOSURES

No lane closures shall be permitted on the following streets Monday through Friday between 7:00 A.M. – 9:00 A.M. and 4:00 P.M. – 6:00 P.M., and Saturdays between 10:00 A.M. – 2:00 P.M., unless approved in advance by the City Traffic Engineer if it can be explained why such closure cannot reasonably be avoided. On Saturdays when UC football games are scheduled all construction-related lane closures along these corridors must be reopened at least 4 hours before the start of the game.

Major Streets:

- University Avenue
- San Pablo Avenue
- Shattuck Avenue
- Telegraph Avenue
- Sacramento Street
- Martin Luther King Jr. Way

- Ashby Avenue
- College Avenue
- Gilman Avenue
- Adeline Street

Notwithstanding the above, the Traffic Engineer reserves the right to review and comment on each individual traffic control plan based on its own merits.

Note: Routine maintenance, inconvenience to construction method or schedule, or adverse impacts on cost of work will generally not be accepted as grounds for exceptions.

Special Condition No. 25: CURED-IN-PLACE-PIPE LINER

This amendment modifies the Standard Specifications for Public Works Construction, 2015 Edition, Part 5 regarding materials, minimum physical properties and chemical resistance of felt or equivalent nonwoven liner material.

A. Materials

The sewn tube shall consist of one or more layers of absorbent non-woven felt fabric and meet the requirements of ASTM F1216 or ASTM F1743, Section 5.

Resin system shall be a corrosion resistant polyester, vinyl ester, or epoxy and catalyst system that when properly cured within the tube composite meets the requirements of ASTM F1216 and ASTM F1243.

B. Minimum Physical Properties

The cured pipe material (CIPP) shall conform to the structural properties listed as follows:

Modulus of Elasticity (ASTM D-790) – 250,000 psi.
Flexural Stress (ASTM D-790) – 4,500 psi.

C. Chemical Resistance

The CIPP liner shall meet the chemical resistance requirement of ASTM D5813. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction.

Special Condition No. 26: DIRECTIONAL DRILLING (NO DIG METHOD)

Directional drilling is an alternate method to the traditional open cut method in installing gravity sewers on new alignment or grade without causing any major damage to existing improvements or disruption in the backyard easement and busy streets. The three steps involved in the installation of pipeline by directional drilling are as follows:

1. Drilling of pilot hole -the pilot is constructed by a rotary drilling head using

pressurized mud to excavate and remove the soil. The drill rods are typically 10 feet long and hollow to transport drilling fluid and locating sensor wires. Tracking and locating the drilling operation is monitored by a surface-tracking device, which receives an electronic signal from the drilling head.

2. Reaming operation - This is to enlarge the pilot hole to a diameter large enough to accept the pipe. Reaming is accomplished by a rotating mechanical cutting tool and pressurized drilling mud that cuts and mixes the soil into the drilling mud slurry. Reaming may be done in one or more steps depending on the size of the pipeline and the nature of the soil.

3. Pipe insertion - Pipe insertion is accomplished by pulling the pipe into the reamed hole by the drill rod usually immediately behind the rotating mechanical reaming tool to ensure clearance of the hole. The reaming and pipe insertion may be accomplished by the same step. As the pipe is inserted, drilling mud is displaced and removed by a vacuum truck or pump. The drilling mud also acts as a lubricant to reduce friction on the pipe and fill the annular space between the outer wall of the pipe and the undisturbed soil.

Special Condition No. 27: BOND RIDERS FOR ADDITIONAL WORK DURING CONSTRUCTION

During construction, the City may request or authorize additional work as part of the contract. Prior to commencement of any Contract Change Order (CCO) or Contract Amendment (CA), the Contractor shall submit Surety Company Bond Riders for the new contract amount. The new contract amount is the contractor's bid amount or authorized contract amount plus the CCO or CA. The Riders for any additional work shall be provided at no cost to the City. Typically, the maximum authorized contract amount requiring a Rider is the contractor's bid amount plus 10%.

Special Condition No. 28: RETAINED FUNDS

Pursuant to California Assembly Bill 2173 (AB 2173), the City shall retain five percent (5%) of such estimated value of work done as part security for the fulfillment of the Contract by the Contractor. Section 901.4.1 Retained Funds of the General Provisions of these specifications is hereby revised, decreasing the amount of retained funds from ten percent (10%) to five percent (5%). In all other respects, Section 901.4.1 and the General Provisions of these specifications remain in full force and effect.

Special Condition No. 29: COMMERCIAL POLLUTION LIABILITY INSURANCE

Contractor shall procure and maintain at its expense or cause its subcontractor to procure and maintain, a broad form Contractors Commercial Pollution Liability Insurance including contractual liability coverage for losses caused by pollution conditions (including sudden and non-sudden pollution conditions) arising from the services and operations of the Contractor

or any subcontractor, and the cleanup, removal, transportation, storage, disposal, or handling of hazardous or toxic chemicals, materials, substances, or any other pollutants or pollution conditions, in an amount not less than $1,000,000 Per Occurrence and $2,000,000 General Aggregate limit for bodily injury property damage (including loss of use of damaged property or of property which has not been physically injured or destroyed). All costs of defense shall be outside the limits of the policy.

Any such insurance provided by a subcontractor must be approved separately in writing by the City. Approval of a substitution of a subcontractor's insurance shall require a certification by the Contractor that all activities for which Contractors Pollution Liability Insurance will provide coverage will be performed exclusively by the subcontractor providing the insurance. The deductible shall not exceed $25,000 per claim. Contractual liability shall include coverage of tort liability of another party to pay for bodily injury, property damage (including loss of use of damaged property or of property which has not been physically injured or destroyed), or environmental damage to a third person or organization. There shall be no endorsement or modification of the coverage limiting the scope of coverage for either "insured vs. insured" claims or contractual liability. Occurrence based policies shall be procured before the Work commences and shall be maintained for the duration of this Contract. Claims Made policies shall be procured before the Work commences, shall be maintained for the duration of this Contract, and shall include a 12 month extended Claims Discovery Period applicable to this Contract or the existing policy or policies must continue to be maintained for 12 months after the completion of the Work under the Contract without advancing the retroactive date. Except as provided for under California law, the policy or policies must provide that the City is entitled to thirty (30) days prior written notice (10 days for cancellation due to non-payment of premium) of cancellation or non-renewal of the policy or policies.

Special Condition No. 30: PIPE REHABILITATION AND REPLACEMENT USING UV – CURED RESIN IMPREGNATED FIBERGLASS TUBE

The Engineer may, at his or her discretion, exercise the option to direct the Contractor to rehabilitate the structurally and/or functionally deteriorated sanitary sewer pipelines using the trenchless method of cured-in-place pipe (CIPP) with a resin impregnated fiberglass tube that is cured by ultraviolet light.

The CIPP material shall consist of a resin-impregnated fiberglass material tube ("Liner") which when cured shall extend the full length of the original pipe and provide a structurally sound, smooth, joint-less and watertight pipe. Refer to Part D, Section 500.1.14.

Special Condition No. 31: LIQUIDATED DAMAGES

The Contractor shall pay the City of Berkeley the sum stated in the Bidder's Proposal for each and every working days delay in finishing the work in excess of the number of working days prescribed in the specifications. The City will strictly enforce liquidated damages on this contract. Contractor shall carefully assess their capacity to complete the

work within the designated working days prior to submitting a bid for the work.

Special Condition No. 32: SB 854 – PUBLIC WORKS REFORM

No contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

Special Condition No. 33: PAVEMENT THICKNESS

Concrete pavement and asphaltic concrete pavement thickness vary throughout the City. Contractor is required to match during pavement restoration the thickness of the existing pavement. Contractor shall assume that concrete pavement is up to 7-inches thick and asphaltic concrete pavement is up to 15-inches thick for the basis of bid. These values do not include any base or subbase material as required elsewhere in these Contract Documents.

Special Condition No. 34: TERMINATION OF CONTRACT FOR CONVENIENCE

a. Owner may terminate performance of the Work under the Contract Documents in accordance with this clause in whole, or from time to time in part, whenever Owner shall determine that termination is in Owner's best interest. Termination shall be effected by Owner delivering to the Contractor notice of termination specifying the extent to which performance of the Work under the Contract Documents is terminated, and the effective date of the termination.

b. Contractor shall comply strictly with Owner's direction regarding the effective date of the termination, the extent of the termination, and shall stop work on the date and to the extent specified.

c. Contractor shall be entitled to a total payment on account of the Contract work so terminated measured by (i.) the actual cost to Contractor of Work actually performed, up to the date of the termination, with profit and overhead limited to twelve percent (12%) of actual cost of work performed, up to but not exceeding the actual contract value of the work completed as measured by the Schedule of Values and Progress Schedule, (ii.) offset by payments made and other contract credits. In connection with

any such calculation, however, Owner shall retain all rights under the Contract Documents, including but not limited to claims, indemnities, or setoffs.

d. Under no circumstances may Contractor recover legal costs of any nature, nor may Contractor recover costs incurred after the date of the termination.

Special Condition No. 35: SUBMITTAL REVIEW PROCEDURE

Unless otherwise specified, the Engineer shall review the submittal and return to the Contractor within ten (10) working days after receipt of the submittal instead of ten (10) calendar days as stated is Subsection 401.12-3 of Part C – General Provisions.

Special Condition No. 36: POST-CONSTRUCTION CCTV

If the Contractor fails to complete and submit all post-construction CCTV videos and reports to the City prior to the end of the term of the contract, as defined in the Bidder's Proposal and as amended by the Engineer, the City may assess a fine of $4.00 per linear foot of new sewer main and lower lateral not inspected.

Special Condition No. 37: ORDINANCE NO. 7,670-N.S. GENDER

In accordance with Ordinance No. 7,670-N.S. the term manhole shall be replaced by the term maintenance hole throughout the contract documents.

Special Condition No. 38: PRECEDENCE OF CONTRACT DOCUMENTS

Section 501.4 of the General Provisions is completely revised to the following:

In the case of discrepancy or ambiguity in the Contract Documents, the following order of precedence shall prevail:

1. Federal and State requirements
2. Permits from other agencies as may be required by law
3. Signed Agreements and terms and conditions referenced therein.
4. Special Provisions
5. General Provisions
6. Technical Provisions
7. Regional Standard for Sanitary Sewer System Installation, Rehabilitation and Repair (June 30, 2016)
8. Standard Specifications for Public Works Construction, Parts 2,3, and 5
9. Contract Plans, including General Notes
10. Standard Details and Detail Specifications
11. State Standard Plans as referenced in the Contract Documents

Furthermore, in the case of discrepancy or ambiguity within any Contract Document listed above, the following precedence criteria shall be observed as applicable:

1. Modifications in inverse chronological order (i.e., most recent prevail)
2. Written numbers over figures, unless obviously incorrect
3. Figured dimensions over scaled dimensions
4. Large-scale (detail) Plans over small-scale (general) Plans.

In any conflict between a bill or list of materials shown in the Contract Documents and the actual quantities required to complete the Work required by the Contract Documents, then the actual quantities shall take precedence.

Notwithstanding anything to the contrary above, should any provisions or requirement of any Contract Document conflict with another provision or requirement in the Contract Documents on subject matters of hazardous waste abatement, clean up, disposal, or required safety standard or methods, then the most stringent provision or requirement shall control.

Special Condition No. 39: PROGRESS PAYMENT REQUIREMENT

a) In addition to the requirement in Section 901.3 of the General Provisions, Application for Payment shall be accompanied by an as-built submittal identifying the work completed as of the date of the Application.

b) The United States Environmental Protection Agency (EPA) and Regional Water Quality Control Board Consent Decree requires the City to complete an Annual Report for work completed during the fiscal year. Contractor shall submit to the City an Application for Payment for the total amount of work done and acceptable materials furnished and delivered by Contractor on the ground for the period ending on the 30th of June. The Application for Payment shall be submitted no later than 10 days from June 30th.

Special Condition No. 40: FLOW BAYPASS SYSTEM

PART 1 - GENERAL

1.1. Flow Bypass System Requirements

A. Performance Requirements:

i. It is essential to the operation of the City's sewage system that there be no service interruption for the customers and that the flow of sewage throughout the duration of the Project be done in a manner that does not endanger public health or the environment. Provide, maintain, and operate all temporary facilities such as dams, plugs, flow-through plugs, pumping

equipment (both primary and backup units as required), conduits, and all necessary power to intercept the sewage flow before it reaches the point where it would interfere with The Work, carry it past the Work, and return it to the existing sewer downstream of the Work.

ii. Design, install, and operate temporary flow bypass and pumping systems where required.

iii. Convey the sewage safely past the Work area. Do not stop or impede the main flows under any circumstances.

iv. Maintain sewage flow around and within 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, including the routing of sewage overflow in the event of failure of any bypass system.

v. Protect water resources, wetlands, and other natural resources.

vi. Qualified personnel responsible for bypass pumping operations 24 hours per day, 7 days per week, including holidays.

B. Design Requirements:

i. Provide flow through plugs, pumps of adequate size to handle peak flow, and/or temporary discharge piping, to ensure that the total flow of the various pipelines and service connections can be safely diverted around the sections to be rehabilitated.

ii. Install a minimum of two pumps where pumping is required, each of which shall be capable of pumping the total contributing flows (100 percent redundancy). All pumps shall be online, isolated by individual valves, and be ready for use within five minutes in the event of an emergency or breakdown of an on-line pump.

iii. Provide onsite portable lights for emergency use only.

iv. Provide standby power facilities for emergency use if pumps are equipped with electric motors.

v. All joints of pipe used shall be restrained.

vi. Contractor shall provide pipeline plugs as necessary for all shutdowns, temporary bypass operations, or where handling of upstream flows is proposed in lieu of or in addition to bypass pumping.

vii. Method of work and layout of equipment for bypass system conveyance across streets and intersections shall be included with and approved by the governing encroachment permit for the jurisdiction. Allowed at-grade conveyance scheme shall include adequate traffic control devices and personnel, as per governing encroachment permit. Buried conveyance scheme shall also include adequate traffic contr9I devices and personnel as per governing encroachment permit. All trenching will be restored per governing encroachment permit.

1.2. SUBMITTALS

A. Detailed plans and descriptions outlining complete flow bypass pumping system for flow rerouting. Bypass system plan shall include an emergency response plan to be followed in the event of a failure of the bypass system, and shall outline in detail the proposed sequencing for all proposed system outages, system startup and switchovers, including time of day and. amount of time required, and emergency response details regarding personnel involved and cleanup procedures as applicable. All plans shall be submitted to the Engineer at least 8 weeks prior to required operation of bypass system. Sewer system outages are not permitted.

B. Where pumping is required, submit complete information on pumping system. Location for temporary pumps, pipe routing, maintenance hole tie in locations, and pumping and flow handling methods shall be submitted with bypass system plan. If flow handling without a bypass system (i.e., plugging upstream pipelines and utilizing a combo truck to capture upstream flows) is proposed, Contractor shall provide sufficient detail in the bypass system plan for the complete operation of the flow handling scheme.

C. Where standby generators are required, submit complete information on generation system.

D. All bypass pumping equipment shall be rated for low noise rate compliance. Decibels of the entire operation shall not exceed 86 dBA at 50 feet for work during normal working hours. If pumping is required outside normal working hours, generators shall be "Whisper Quiet" and rated for low noise rate compliance in residential neighborhoods and per governing jurisdiction. Generators shall not produce noise such that a reasonable person of normal sensitiveness residing in the work area is caused discomfort or annoyance. The Contractor shall submit proposed equipment, inclusive of dBA ratings to the Engineer for approval prior to use.

E. Provide emergency contact names and phone numbers of Contractor's supervisor and personnel qualified to remediate any disruption in bypass pumping operations.

F. The Contractor shall provide all necessary means to safely convey the sewage past the work area.

G. The Contractor shall immediately notify the District should a sanitary sewer overflow (SSO) occur and take all necessary actions to control, to contain, and to clean up and disinfect the spillage to the satisfaction of the District and/or other governmental agency. If sewage is spilled into public or private property, the Contractor shall wash down, clean up, and disinfect the spillage to the satisfaction of the property owner, District, and/or other governmental agency.

1.3. QUALITY ASSURANCE

A. Contractor to be completely responsible for any overflow or spillage of any material due to failure of any portion of the flow bypass system.

B. Contractor shall pay all fines or costs associated with such spillages, this condition is in addition to indemnification and insurance provisions defined elsewhere for The Work.

C. Contractor to be responsible for any cleanup or restoration resulting from such spillages.

D. Contractor shall demonstrate that flow bypass system performs in conformance with these requirements prior to putting into use. Demonstration shall require Engineer’s concurrence for proper operations.

E. Contractor shall provide flow bypass around the section of pipe designated for rehabilitation. The bypass system shall be made by plugging the line at an existing upstream maintenance hole(s) and pumping the flow into a downstream maintenance hole or adjacent system. The pump and bypass lines shall be of adequate capacity and size to handle the flow.

1.4. FLOWS

A. Considerations for project area flow bypass / handling setup are provided below. It is the Contractor's responsibility to review the various considerations for project setup and execution for the preparation of the bypass system plan/submittal.

Bypass pumping system shall be in accordance to the flow data provided in Appendix 10.

1.5. CONTINGENCY

A. During the startup of and/or switchover from a flow bypass system, Contractor shall have tanker trucks available onsite, as a contingency for collection of flows. Size and number of trucks shall be adequate to contain and dispose of all material in the case of flow bypass system failure. Tanker trucks may be emptied at an approved location. Tanker trucks may also be used as part of the flow handling approach. Use of tanker trucks, and contingency equipment and approach shall be specifically addressed in the Bypass System Plan submittal.

PART 2 - PRODUCTS

2.1. PUMP SYSTEMSPUMPS MAY BE GAS, ELECTRIC, OR DIESEL POWERED.

A. Pumps may be end suction or submersible.

B. Bypass piping shall be rubber gasketed, with a minimum pressure rating of 50 psi and no visible leaks under operating conditions. Pipe supports, thrust restraints and valves shall be provided, including an air valve at the high point. Piping shall be sufficiently restrained and supported to prevent movement during pump cycling. Lay flat rubber hose shall not be used.

C. Temporary fencing, gates, locks and screening shall be provided to protect and screen the equipment from the public, and maintain security for all properties whose security is affected by the bypass flow system. Contractor shall provide the City with keys to all locks.

PART 3 - EXECUTION

3.1. GENERAL

A. For any flow bypass system equipment located in a street, sidewalk, or other vehicle or pedestrian travel-way that is not allowed to be closed, the equipment shall be:
   a. Temporarily buried, backfilled, and paved.
   b. Ramps adequate to allow crossing by traffic may be used only during work hours when the Contractor is on the project site. Collapsible conduit shall not be allowed.
B. At least 1 week prior to bypass work in a particular area, the Contractor shall notify the affected residents in writing of the intended work, the starting date and duration, and any coordination requirements to facilitate work progress. The Contractor shall be required to adequately notify affected residents of schedule changes.
C. Bypass pumping and flow diversion shall be monitored at all times by a competent person familiar with the pumping equipment and the flow bypass system including pedestrian and vehicle traffic control.
D. Rehabilitated pipelines may be utilized to convey sewage prior to final acceptance, provided all pipe and structures downstream have been tested, cleaned, inspected, and accepted.
E. Contractor shall conform to all safety provisions pertaining to confined space entry when entering any confined space including but not limited to pipes, MHs, and tanks.
F. All bypassing will require coordination with City staff at least 48 hours in advance. System outages are not permitted.
G. City of Berkeley does not allow sewer blockage or bypassing 36 hours before a forecasted rain event and 36 hours after a rain event.

Special Condition No. 41: CONSTRUCTION PHASING AND COORDINATION

Pre-construction closed circuit television inspection of existing sanitary sewer mains, maintenance holes, and laterals shall be the first order of business. This shall be followed

by maintenance hole replacement and rehabilitation work, installation of two-way cleanouts, lateral reconnection to sewer main, spot repairs, and any other work as indicated in the plans not associated with full sewer main rehabilitation shall be the first order of business. These areas include:

Martin Luther King Jr Way from MH 17-304-47 to MH 17-304-38
University Avenue from MH 15-004-70 to MH 15-004-68
Addison Street from MH 15-004-03 to MH 15-004-01A
Ashby Avenue from MH 17-000-25 to MH 17-000-23
Mabel Street from MH 17-102-A6 to MH 17-102-A7

The Contractor shall provide CIPP material submittal at least three weeks prior to the planned CIPP installation to allow for City review and to obtain prior approval from EBMUD.

The Contractor shall submit a bypass plan at least three weeks in advance to allow for City review and approval.

Point (spot) repairs including, but not limited to, all root removal shall be completed prior to CIPP installation.

Special Condition No. 42: TREE AND ROOT PROTECTION AND ROOT PRUNING

Care shall be taken when working near trees, public or private. For all phases of the work, the Contractor is responsible for protecting trees and Contractor will replace any trees judged damaged at the sole discretion of the City.

Underground Service Alert (USA) of Northern/Central California and Nevada

a) The Contractor will contact USA North 811 Call Before You Dig in accordance with all applicable requirements.
b) The Contractor will notify USA North that there will be root grinding and root removal in addition to the sidewalk removal.
c) The Contractor will ensure that the utility location marks are offset so that they are placed on a permanent surface that will not be removed. Offset marks locate the utility by showing the orientation of the utility and the distance from the marks to the utility.

Limb and Trunk Protection

This applies when trees are not surrounded by protective fencing. Trees situated in a tree well or sidewalk planting strip shall have the trunk protected by wrapping it with straw tubes (wattle) or vertical wood slats (*ex.* 2x4), up to a minimum of 8 feet from grade. Wooden slats shall be angled to protect the root flare at the base of the tree and bound securely on the outside. Closed cell foam or an equivalent material shall be used to protect the trunk of the tree where it contacts the slats. Lateral branches below 8 feet shall also be protected. Contractor shall

keep deleterious materials associated with project construction from contacting any part of the trees, or being placed or stored in the tree well or planting strip.

Root Protection and Preparation for Root Pruning

a) Existing surface shall be removed in a manner that prevents any machinery, such as a backhoe, Bobcat®, or mini-excavator, from traveling over the exposed root zone.
b) Contractor shall make every attempt to not scrape, skin, or pull on roots. Hand excavation around roots may be required.
c) Where roots must be pruned, the area shall be excavated down to the depth required for the improvements prior to the City Representative inspecting the site; and all rock, concrete or other loose material shall be removed.
d) No roots shall be torn or pulled using any other tools or machinery unless already severed on each end by one of the approved pruning tools.
e) Exposed roots shall be covered with soil, mulch, or wet burlap if they will be exposed for more than 48 hours without measurable precipitation.

Root Pruning Requirements

a) All pruning of roots shall be performed using a stump/root cutting machine, saw, axe, or any other sharp blade tool; resulting in a flat surface with the adjacent bark firmly attached.
b) Roots 2 inches in diameter or greater shall be pruned by the Contractor in accordance with these provisions.
c) Roots smaller than 2 inches in diameter shall be pruned by the Contractor in accordance with these provisions, with the exception of contacting the City Representative.
d) Large roots may be shaved to a depth of no more than one-third of their thickness or as approved by the City.
e) At no time will any root pruning cut into the root flare as defined by the City Representative.

All debris resulting from root pruning shall be removed by the Contractor.

Herbicide Application and Treatment Requirements

a) The application of herbicide to the roots shall be done in accordance with the manufacturer's recommendations and specifications in such a manner to preclude damage to surrounding vegetation. Any damaged vegetation so designated by the City Representative shall be replaced by the Contractor at no additional cost to the City. All safety precautions as recommended by the manufacturer shall be adhered to concerning handling and applications of the herbicide. Herbicide shall be handled by only qualified persons if required by law.
b) The herbicide and the application method shall be submitted in accordance with Part C, Section 4, Subsection 401.12 of the Specifications.

Should tree, root, bush pruning, herbicide treatment, and/or chemical root control be required to construct the improvements shown on the plans, specified in these Special Provisions, and as directed by the Engineer, the Contractor will inform the City Representative of the schedule

for when the roots are expected to be exposed. The Contractor shall notify the Engineer at least 3 business days in advance of tree or root pruning. See Appendix 8 for EBMUD chemical root control notification procedures. The City Representative will inspect each site to approve the necessary root pruning, or work with the Engineer to modify the work to accommodate the tree roots. The City Representative will indicate which roots may be pruned and where root pruning is prohibited. Root pruning must adhere to the directions of the City.

Special Condition No. 43: PEDESTRIAN ACCESS DURING CONSTRUCTION PROJECTS

The purpose of the following standards for construction in the public right-of-way is to ensure pedestrian safety and access. The standards apply to City of Berkeley crews, contractors with the City and all other persons working in the public right-of-way. With the unique nature of each project, situations may arise which have not been covered in these standards; each project requires review on a case-by-case basis to ensure that complete, safe, usable and accessible paths of travel are maintained during construction.

All construction activities involving work affecting pedestrian access or safety within the public right-of-way shall comply with the following requirements for disability access during construction:

1. **Maintenance of a clear and accessible pedestrian corridor**

   a. The pedestrian corridor shall be a nominal width of 6’ where feasible and not less than 4’ wide at single points of contact. The corridor shall conform to the most recent Americans with Disabilities Act Accessibility Guidelines (ADAAG) for slope, cross-slope, surface characteristics, and projections from the side, to the maximum extent feasible.

   b. The accessible pedestrian corridor, to the maximum extent feasible, shall coincide with the corridor for the general public and shall connect with facilities throughout and adjacent to the project area.

   c. Equipment, debris, construction materials, or vehicles shall not obstruct the pedestrian corridor, existing ramps, temporary ramps, private entrances, or adjoining walkways. The Contractor shall clean public walkways adjoining the construction site of accumulated trash and debris.

   d. The Contractor or permittee shall not park vehicles in or otherwise obstruct blue curb parking spaces, except as permitted by the City Traffic Engineer as a component of an approved traffic plan.

2. **Installation of temporary ramps that conform to accessibility standards**

   The Contractor or permittee shall maintain temporary concrete, asphalt, or wood ramps to

provide a safe path of travel for mobility-impaired pedestrians at all locations where permanent ramps have been temporarily removed during construction and where needed by pedestrians being routed into and out of the parking lane, a crosswalk, or the street area.

a. Temporary ramps shall be constructed so that their removal will not damage the existing pavement, curb and gutter. After the project, the Contractor shall restore any damaged surfaces to their original condition.

b. Ramps shall have a minimum 4' wide walking surface and a slope not to exceed 8%. The walking surface of any ramp shall be non-slip during all weather conditions and shall be even and smooth. Curb ramps shall be kept free of debris, staging material, equipment, etc.

c. Asphalt or concrete ramps shall be constructed to snugly meet the existing adjacent surfaces without gaps. Where drainage may be impaired by an asphalt or concrete ramp, a schedule 40 PVC pipe, minimum 2" in diameter, shall be installed through the ramp.

d. Wood ramps shall be constructed with ¾" or thicker plywood platform, supported at the curbside with a suitable wood framing, and anchored to the street on the street side with 16d nails. Ramps shall have a smooth transition without vertical or horizontal gaps larger than ¼" between the wood and the concrete curb.

e. Transitions between temporary ramps and the street surface shall be smooth such that no lip exists at the base of the ramp. For a wood ramp, this may be achieved by installing a minimum of 3" of cutback asphalt tamped evenly and securely in place.

f. The sides of a ramp shall be protected where there is any drop-off. Protection may consist of barricades or guardrails, or, for asphalt or concrete ramps, flared sides with slope not exceeding 8%. For a short time period and as long as continuous supervision of pedestrians is provided on-site, when approved by the City's Engineer, edge protection at the side of ramps may consist of closely spaced traffic cones.

3. <u>Construction of signposts, barricades and fencing</u>

Impenetrable barricades shall be used to separate pedestrians from hazards. Such barricades shall be installed and maintained on all sides of excavations that may be exposed to pedestrians, particularly pedestrians who are blind. Barricades shall be constructed using materials and methods that are suitable to the site conditions. Signs and fencing material shall not protrude into the clear pathway.

a. A-frames used for defining a path of travel, not barricading trenches from vehicular travel, shall be placed end-to-end without spacing between adjacent barricades, and they all shall be connected, set up, and maintained to ensure that individual A-frames

do not move out of place or separate throughout the duration of the hazardous condition. As an example of an acceptable connection, A-frames may be connected by 2 X 4's that are attached along the base of the barricade system. (This will help a person who is blind negotiate a safe path of travel. Openings between A-frames would give confusing signals to a person who is blind and using a "long cane," "walking cane" or "white cane.")

b. Caution tape does not provide an adequate barricade and shall not be used by itself to delineate the path of travel. However, it may be used in addition to other protections to highlight danger, and it may be used in conjunction with true barricades, such as A-frames.

c. Where fencing material, such as chain link or plastic mesh, is used alongside a pedestrian corridor, there shall be a minimum 3" height, solid, uninterrupted toe-board at the bottom of the fence. This baseboard will act as a guide-strip for blind pedestrians using canes. A safe design can be achieved by attaching a solid material, e.g., wood, bender board, sheet metal or other solid rail to the fencing material or supports between 1" and 5" above grade, allowing drainage beneath, if necessary. The material should have a high visual contrast to the street/sidewalk surface. (Walking canes used by blind pedestrians and wheelchair foot pedals could get caught in fencing or A-frames unless there is a sold bottom "shoreline.")

d. Signposts, scaffolding and fencing supports shall be placed entirely outside the pedestrian path of travel so the path is a minimum 4' wide and 80" high without obstruction. Scaffolding wing nuts, fence-post footings and support braces shall not protrude into the walkway. Signs shall not protrude into the pathway below 80" height.

e. The Contractor shall maintain the construction barriers in sound, neat and clean condition during construction. Whenever a barricade erected by the Contractor is removed or breached, the Contractor shall immediately replace the barricade and take appropriate measures to ensure it remains in place. Hazards identified by the Inspector shall be abated within an hour of notification to the crew.

4. <u>Identification of the safe path of travel</u>

If a portion of the public pedestrian way is rerouted due to construction, the path of travel shall be clearly defined. Where the Traffic Engineer determines a pedestrian access corridor cannot be provided or for a brief duration cannot be utilized, notification shall be provided for pedestrians who have mobility or vision impairments.

a. Paths of travel that do not continue to the next corner or to a safe crosswalk shall be closed to through pedestrian traffic. Signs, a minimum of 36" x 36", containing lettering stating that the sidewalk is closed and directing pedestrians to use the other sidewalk must be posted and maintained at the corners of each block or at the

crosswalk affected. Alternatively, flaggers may be posted at each closed corner or at the crosswalks to direct and assist pedestrians.

b. Pedestrian access corridors necessitated by the closure of the sidewalk shall be clearly delineated with closely-spaced cones or barricades, fences and/or other methods as deemed necessary and as approved by the City's Engineer. When a walkway extends into the roadway, the delineation shall separate pedestrians safely from traffic. A safe design can be achieved by protecting pedestrian traffic with a fence or railing 42" in height on the street side of the walkway.

c. Curb ramp alignment can help direct blind pedestrians to and through the temporary path of travel. If a crosswalk is closed due to construction then curb ramps leading into that crosswalk also should be barricaded in such a manner that walkways that are not closed remain accessible to use. (Curb ramps are not used solely by persons in wheelchairs. They are also an indicator to persons who are blind that there is a crosswalk and a safe path of travel to cross the street.)

5. <u>Surfacing of pedestrian corridors</u>

During construction, tripping hazards and barriers for people with mobility impairments must be removed to maintain an accessible pedestrian corridor.

a. Any change of level in a path of travel which exceed ¼" height must be beveled at 45º to provide a smooth, non-tripping transition. No change in level in the path of travel shall exceed ½" unless it is ramped.

b. Trenches, temporary paving or walking surfaces, wooden platforms or steel plates, grates, utility covers, and conduit or raceways in the pedestrian corridor, shall have a smoothly finished, firm walking surface made even with the surrounding walkways.

c. The aisle or loading area adjacent to an accessible parking space is part of the pedestrian corridor. To the maximum extent feasible, construction work adjacent to an accessible parking zone shall not block the sidewalk area that serves the blue painted curb.

6. <u>Restoration of pedestrian routes</u>

a. The Contractor or permittee shall remove temporary ramps as soon as construction of the permanent access ramp is completed and usable.

b. As construction work is completed, the surface of the pedestrian path of travel shall be restored free from all ridges, gaps, bumps and rough edges.

c. Construction that affects an existing curb ramp shall include replacement or repair of the curb ramp to meet current City standards to the satisfaction of the City's Engineer.

7. Telephonic Notification to Disability Community When Construction Occurring

The Contractor or Subcontractor shall telephonically notify the East Bay Center for the Blind and the Ed Roberts Campus when there is to be a construction project on Adeline Street, between Russell and Fairview Streets. The telephonic notice should be provided 72 hours in advance and should provide the date, time and purpose of the project, as well as a contact person at the City that can be reached with questions or comments.

East Bay Center for the Blind: 1-510-843-6935
Ed Roberts Campus: 1-510-225-6300

8. Liquidated Damages

The Contractor shall be assessed liquidated damages in the amount stated in the Bidder's Proposal.

Special Condition No. 44: REVOCABLE BID ITEMS

Bid items noted as "revocable items" may be deleted entirely or in part from the Work at the option of the City. The provisions in Section 401.2, "Alterations and Increased or Decreased Quantities," of the Standard Provisions shall not apply to such omission, and no compensation will be allowed the Contractor by reason of such omission.

Special Condition No. 45: MORATORIUM STREETS

A street designated as a "Moratorium Street" restricts saw cutting and trenching for a minimum of five years. If construction operations require saw cutting and trenching on a moratorium street, the pavement repair parameters are specified in the plans. Repairs must include a minimum of a 0.2' cold plane and hot mix asphalt for the area indicated in the contract plans.

PART C
GENERAL PROVISIONS

SPECIFICATIONS

FOR

SANITARY SEWER REHABILITATION
SANITARY SEWER REHABILITATION AND REPLACEMENT - SAN PABLO AVENUE, SACRAMENTO STREET, UNIVERSITY AVENUE, ET AL.

SPECIFICATION NO. 26-11759-C

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AMENDMENT TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, PART 1 2015 EDITION

This Amendment to the Standard Specifications for Public Works Construction applies to the rehabilitation and construction of sewers and other improvements as shown in the Plans.

This Amendment modifies the Standard Specifications for Public Works Construction, 2015 Edition, Part 1; and its provisions take precedence over those Standard Specifications.

Only those materials and construction methods described in the Standard Specifications, as modified by this Amendment, and included in the Contract Documents, will be used by the Contractor.

GENERAL PROVISIONS

SECTION 1 - DEFINITION OF TERMS

101.1		--	Whenever in these specifications, or in any documents or instruments where these specifications govern, the following terms are used, they shall have the following meanings:
101.2	AASHTO	--	The latest revised specifications of the American Association of State Highway and Transportation officials.
101.3	As Directed	--	As directed by the Engineer or his designated representative.
101.4	ASTM	--	The latest revised specifications of the American Society for Testing Materials.
101.5	Standard Specifications	--	The 2000 Edition Standard Specifications for Public Works Construction, "The Greenbook".
101.6	Bidder	--	Any individual, firm, partnership, or corporation submitting a proposal for the work contemplated, acting directly or through a duly authorized representative.
101.7	City, Agency	--	City of Berkeley.
101.8	Council	--	City Council of the City of Berkeley.

101.9	Engineer	--	The Manager of Engineering for Public Works of the City of Berkeley (City Engineer) or his/her designated representative(s).
101.10	Contract	--	The written agreement covering the performance of the work.
101.11	Contractor	--	The person or persons, partnership, association or corporation, private or municipal, who have entered into a contract with the City, as party or parties of the second part of his or their legal representatives.
101.12	Laboratory	--	The official testing laboratory of the City or other laboratories authorized by the Engineer.
101.13	Proposal	--	The written offer of the bidder for the work when made out and submitted on the prescribed proposal form, properly signed and guaranteed.
101.14	Proposal Guaranty	--	The security required by the notice to bidders to be furnished by the bidder as a guaranty that the bidder will enter into a contract for the construction of the work upon award.
101.15	Plans	--	The official plans, profiles, cross-sections, details, working drawings, and supplemental drawings, or reproductions thereof, approved by the Engineer, which show the location, character, dimensions, and details of the work to be done, and which are to be considered as a part of the contract supplementary to these specifications.
101.16	Purchasing Agent	--	The Purchasing Agent of the City of Berkeley.
101.17	Specifications	--	The directions, provisions, and requirements contained herein, supplemented by special provisions, pertaining to the method and manner of performing the Work, and to the quantities and qualities of materials to be furnished under the Contract. The term Specifications shall include the Contract Documents, General Provisions, Special Provisions, Technical Specifications, Standard Details, and all supplementary agreements entered into between the contracting parties.

101.18	Subcontractor	--	The person or persons, partnership, association, or corporation, private or municipal, who have a direct contract with the Contractor. It includes one who furnishes material worked to a special design according to the Plans or Specifications of the work, but does not include one who merely furnishes material.
101.19	Street	--	Any dedicated right-of-way for public use as an avenue, highway, lane, alley, court, crossing, or intersection.
101.20	The Work	--	All the work described in the Specifications and Contract or indicated on the Plans as the contemplated improvement covered by the Contract.
101.21	Contract Change Order	--	A written order to the Contractor signed by the Engineer directing an addition, deletion or revision in the work, an adjustment in the contract price, or the contract time issued after the effective date of the Contract. A change order may or may not also be signed by the Contractor.
101.22	Allowance	--	An inexact bid quantity listed on the Bidder's Proposal in anticipation that work of the particular nature will be required, but the quantity is not known until the work of the whole is in progress or completed. The quantity listed is for comparison of total bids. Bidder agrees to do each unit of work for the unit price bid in the proposal.
101.23	Resident Engineer	--	Designated inspection representative(s) of the Engineer.
101.24	NPDES Permit	--	National Pollutant Discharge Elimination System Permit
101.25	RWQCB	--	San Francisco Regional Water Quality Control Board
101.26	Traffic Engineer	--	The Transportation Manager of the Transportation Division of the Public Works Department of the City of Berkeley, or his/her designated representative(s)

SECTION 2 - PROPOSAL REQUIREMENTS AND CONDITIONS

201.1 **AVAILABILITY OF PLANS AND SPECIFICATIONS.** Plans and Specifications may be examined at the office of the Engineering Division. Copies of the Plans and Specifications are available at the office of the Engineering Division. Copies of the Notice to Bidders and proposal forms may be obtained from the Engineering Division.

201.2 **APPROXIMATE ESTIMATE.** The quantities given in the Notice to Bidders, Proposal, and Contract forms are approximate only, being given as a basis for the comparison of bids, and the City does not, expressly or by implication, agree that the actual amount of work will correspond therewith. For work bid on a lump sum price basis, any estimate of quantities is provided only for the convenience of Bidders and is not guaranteed correct by the City.

201.3 **EXAMININATION OF PLANS, SPECIFICATIONS, AND SITE OF THE WORK.** The Bidder shall examine carefully the site of the work contemplated and the proposal, Plans, Specifications, and Contract forms therefore. It will be assumed that the Bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and quantities of work to be performed and materials to be furnished, and as to the requirements of these Specifications, the Plans, and the Contract.

201.4 **PROPOSAL FORM.** All proposals must be submitted on forms for that purpose furnished by the City. Letters of transmittal cannot be considered as part of the bid.

All proposals shall give the prices proposed, and shall be signed by the Bidder, who must give his address. The Bidder shall fill out all blanks in the proposal form as therein required. In case of error, unit prices will govern over extensions and written words will govern over numerals, unless it can be established that an obviously incorrect entry has been made.

201.5 **REJECTION OF PROPOSALS CONTAINING ALTERATIONS OR IRREGULARITIES.** Proposals may be rejected if they show any alterations of form, additions not called for, conditional bids, incomplete bids, or irregularities of any kind. When proposals are signed by an agent, other than an officer or manager of a corporation or a member of a partnership, a power of attorney or written authorization must be on file with the City prior to opening bids or shall be submitted with the proposal; otherwise, the proposal will be rejected as irregular and unauthorized.

201.6 **PROPOSALS GUARANTY.** All bids shall be presented in a sealed envelope and shall be accompanied by a proposal guaranty made payable to "City of Berkeley" and for the amount equal to at least ten percent (10%) of the bid unless otherwise specified on the Notice to Bidders. Said guaranty shall be an unconditional certified or cashier's check, a bank or postal money order, or bid bond executed as surety by a corporation authorized to issue surety bonds in the State of California.

201.7 **WITHDRAWAL OF PROPOSALS.** Any bid may be withdrawn at any time prior to but not after, the hour fixed in the public notice for the opening of bids, provided that a request in writing executed by the Bidder or through a duly authorized representative, for the withdrawal of such

bid is filed with the Purchasing Agent. The withdrawal of a bid shall not prejudice the right of a Bidder to file a new bid.

201.8 **DISQUALIFICATION OF BIDDERS.** More than one proposal from an individual, a firm or partnership, a corporation or an association under the same or different names will not be considered. Reasonable ground for believing that any Bidder is interested in more than one proposal for the work contemplated will cause the rejection of all proposals in which such Bidder is interested. If there is a reason of believing that collusion exists among the Bidders, none of the participants in such collusion will be considered in this or future proposals. Proposals in which the prices are unbalanced may be rejected.

201.9 **COMPETENCY OF BIDDERS.** Prior to the submission of bids, the Contractor shall be licensed in accordance with the provisions of Chapter 9 of Division III of the Business and Professional Code of the State of California and evidence of such license shall be presented to the Engineer on request.

The Engineer may require the Bidder to present satisfactory evidence that he has sufficient experience and that he is fully prepared with the necessary capital, materials, machinery, and skilled workmen to carry out the contract.

201.10 **MATERIAL GUARANTY.** Before any contract is awarded, Bidders may be required to furnish a complete statement of the origin, composition, and manufacture of any or all materials to be used in the construction of the work, together with samples, which may be subjected to the tests provided for in these Specifications to determine their quality and fitness for the work.

201.11 **ADDENDA.** Prior to the time set for opening of bids, the Engineer may issue addenda for clarification of the Plans or Specifications or for minor alterations in the work. Such addenda shall take precedence over Plans, Specifications, and all other Contract Documents issued prior to the opening of bids.

SECTION 3 - AWARD AND EXECUTION OF CONTRACT

301.1 **CONSIDERATION OF BIDS.** Bids will be opened publicly by the Purchasing Agent of the City on the date and at the time set forth in the Notice to Bidders. The right is reserved by the City by action of the Council to reject any or all bids, to advertise for new proposals, to negotiate in the open market for a Contract at a reasonable price, to purchase in the open market, to have the work performed by City employees, or to abandon the work, if in the judgment of the Council, the best interests of the City will be promoted thereby.

301.2 **AWARD OF CONTRACT.** The award of the Contract, if awarded, will be to the lowest responsive Bidder whose proposal complies with all the requirements prescribed. The award, if made, will be made within seventy-five (75) calendar days after the opening of the proposals. All bids will be compared on the basis of the Engineer's estimate of the quantities of work to be done.

301.3 **RETURN OF PROPOSAL GUARANTEES.** All proposal guarantees will be held by the City until the Contract has been authorized by Council resolution and signed by the City Manager after which guarantees for unsuccessful proposals will be returned to the unsuccessful Bidders. If bids are rejected, the proposal guarantees will be returned after the date of the rejection.

301.4 **CONTRACT BONDS.** At the time of execution of the Contract by the City Manager, the Contractor will be required to furnish a Surety Company Contract bond for faithful performance in the sum of not less than one hundred percent (100%) of the amount of his Contract, in addition to which he will be required to furnish a Surety Company labor and material bond in the sum of not less than one hundred percent (100%) of the amount of the Contract in accordance with the provisions of state laws.

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.

301.5 **EXECUTION OF CONTRACT.** The Bidder's Proposal (offer) shall become a binding contract on the parties when the award of a contract pursuant to said proposal is authorized by resolution of the City Council. The proposal will then be executed in writing by the City Manager, or his/her authorized representative, in the name of the City.

301.6 **FAILURE TO PERFORM CONTRACT.** If the successful Bidder fails to begin performance of the Contract within thirty (30) calendar days from the date of the award of the Contract, the City will either let the Contract to the next lowest Bidder or will reject all other bids and call for new bids. The successful Bidder who has failed to begin performance of the Contract shall be liable to the City for the sum, not exceeding the amount of such cash, check, money order or bond as shall have been deposited as a proposal guaranty, by which the amount of the Contract, covering the said proposal, executed by and between the City and some third party, may exceed the amount bid by the original successful Bidder. Such portion of said cash, check, money order, or original bond as equals said sum shall be deemed to be liquidated damages and shall be declared forfeited to the

City and shall be collected and paid to the City.

SECTION 4 - SCOPE OF WORK

401.1 **WORK TO BE DONE.** The intent is to prescribe complete work or improvement, which the Contractor undertakes to do in full compliance with the Plans, Specifications, and Contract. The Contractor shall perform all items of work covered and stipulated in the Specifications and Contract, together with any extra work, all in accordance with lines, grades, cross-sections, and dimensions shown on the Plans. It is further intended that all miscellaneous work required to make driveways, sidewalks, intersections, roof drains, and other privately owned improvements conform to the new work shall be performed by the Contractor. The Contractor shall furnish, unless otherwise provided in these Specifications, all material, implements, machinery, equipment, tools, supplies, transportation, and labor necessary to the prosecution and completion of the work.

All work described in the Plans and Specifications will be let under one contract unless otherwise set forth in the Notice to Bidders or on the Bidder's Proposal.

401.2 **ALTERATIONS AND INCREASED OR DECREASED QUANTITIES.** The City reserves the right in writing, to increase or decrease the quantity, to order additions to, omissions from, or corrections, alterations and modifications in the line, grade, form dimensions, Plan or kind or amount of work, or materials herein contemplated, or any part thereof, either before or after the beginning of construction, as may be deemed necessary or advisable by the Engineer, provided such alterations do not change the total cost of the project, based on original estimated quantities and the unit prices bid, by more than twenty percent (20%), and provided further that such items do not change the total cost of any major item by more than fifty percent (50%). (A major item is one where the total cost is more than ten percent (10%) of the total Contract price.) Any alterations in excess of these limits will be treated as extra work and will be covered by a Contract change order, the same as though the alteration were an extra work item.

Should conditions during the progress of the work make it impossible for the Contractor to comply strictly with the terms of the Contract, the Contractor shall apply in writing to the Engineer for an alteration, provided that it is not detrimental to the work or does not entail additional cost. If such alteration is acceptable to the Engineer, the Contractor shall be notified in writing, whereupon the alteration may be made. When such alteration is not acceptable to the Engineer, the Contractor shall determine some other method of doing the work which shall be acceptable.

Such alteration and increased or decreased quantities shall in no way affect or make void this Contract or any part thereof, except what is necessarily affected by such alteration and is clearly the evident intention of the parties to this Contract.

401.3 **EXTRA WORK.** New and unforeseen items of work will be classed as extra work when they cannot be covered by any of the various items for which there is a bid price or by combinations of such items, or if the character of an item is materially changed on which the Contractor based his bid price, and that change materially increases or decreases the cost of the item as outlined in Section 401.2 hereof.

Prices for extra work shall be itemized and covered by a Contract change order submitted by the Contractor and approved by the Engineer prior to actual starting of such work.

Should the parties be unable to agree on unit prices for the extra work, or if it is impractical, the Engineer may instruct the Contractor to proceed with the work by force account and he shall be paid as provided in Section 901.2 of these Specifications.

401.4 **UNAUTHORIZED WORK.** Work done without lines and grades being given, work done beyond the lines and grades shown on the Plans, work done in the absence or without the knowledge of the Engineer, including any work performed by subcontractors without proper superintendence by the Contractor, as provided for in Section 501.6, or any extra work done without written authority, will be considered as unauthorized and at the expense of the Contractor and will not be measured or paid for by the City.

401.5 **PROTECTION OF UTILITIES.** A preliminary study of the location of underground utilities within the limits of the work has been made. The location of the underground utilities indicated on the Plans is not guaranteed to be accurate or complete, but is plotted for the general information of the Contractor. The Contractor shall contact Underground Service Alert (USA) at (800) 642-2444 at least four (4) working days before excavating, to allow utility companies to mark and identify their respective utilities within the limit of the work. Aboveground utilities are not shown on the Plans. It shall be the responsibility of the Contractor to coordinate and determine the exact locations and/or depths of all of the aboveground utilities, underground utilities, and their service locations.

The Contractor shall be responsible for protecting and supporting the aboveground utilities and the identified underground utilities that occur in the limits of the work with a method acceptable to the respective utility owners. The cost of protecting and supporting the utilities shall be included in the bid prices for the various items of work. Any identified damage to the Pacific Bell Telephone, PG&E, EBMUD, or Cable TV lines shall be repaired by the respective utility owner at the Contractor's expense.

See also Sections 701.25.1 and 701.25.2.

401.6 **CLEANING UP.** The Contractor shall not allow the site of the work to become littered with trash, rubbish, and waste material, but shall maintain the site in a neat and orderly condition throughout the construction period. The Engineer shall have the right to determine what is or is not trash, rubbish or waste material and the place and manner of disposal.

The Contractor shall maintain a neat appearance to the Work. Contractor shall promptly remove splattered concrete, asphalt, oil, paint, corrosive liquids and cleaning solutions from surfaces to prevent marring or other damage.

Broken concrete debris, and unsuitable excavated native soil during construction shall be disposed of concurrently with its removal. If stockpiling is necessary all debris shall be placed in trash bins daily

and shall be removed or disposed of weekly. Any waste shall not be buried on the site or disposed of into storm drains, sanitary sewers, streams, or waterways.

Forms or falsework that are to be re-used shall be stacked neatly concurrently with their removal. Forms and false work that are not to be re-used shall be disposed of concurrently with their removal.

Full compensation for conforming to the provisions in this section, not otherwise provided for, shall be considered as included in prices paid for the various Contract items of work involved and no additional compensation will be allowed therefor.

Sidewalks, street area, parking strips, and driveway approaches must be kept reasonably clean at all times during construction and be completely and carefully cleaned after the work has progressed beyond the immediate vicinity to the satisfaction of the Engineer. Reasonable cleanup is defined as no dust, rock, or mud on any portion of the public right-of-way or the private properties as a result of the Contractor's work.

401.7 **DUST AND DEBRIS CONTROL.** The Contractor shall be responsible for controlling dust in the air and rocks, debris, mud or dirt which are scattered as a result of his operations on the job. The Contractor shall be responsible for cleaning all mud, rock, dust, dirt, and debris-producing materials that originate in the project area and are deposited on other public or private property by truck tires, spillages, or by other means. The Contractor shall have suitable and adequate street cleaning equipment on the project site at all times.

The Contractor shall begin cleanup operation by 3:00 PM and before the end of each day's work. The Contractor shall clean all paved portions of the project and paved streets leading from the project that have dust-producing materials or debris deposited upon them. The work areas shall be swept clean at the end of each day's work and at other times when directed by the Engineer.

The Contractor shall restrict the use of water to control dust in order to conserve water during drought situations or mandated rationing required by the Water Utility Company. Any discharge that is not composed entirely of stormwater, except discharges pursuant to a NPDES permit, into the local drainage system is unlawful. The temporary diversion of storm and subsurface waters must be approved by the RWQCB and Engineer. The Contractor shall implement appropriate erosion and sediment control measures to reduce pollutants into the City's drainage system and public right-of-ways.

The cost of the above work, including the providing of barricades, water and other materials, labor, and equipment shall be at the sole cost and expense of the Contractor.

The Engineer may determine that an emergency exists when dust, rocks, debris, mud, or dirt are scattered in the public right of way or in the private properties as a result of Contractor's activities and/or deterioration of such conditions due to rain. The emergency conditions may also be declared when traffic or the Contractor's equipment travelling through a job causes dust to fly or rocks, debris, mud, or dirt to be scattered. Similar emergency conditions may be determined by the Engineer if the

storage of materials, tools, or any other equipment related to the project, in the public rights of way, is obstructing or blocking access to the neighboring properties, dangerously placed without proper barricades and lights, and stockpiled materials and washwaters are entering into the street gutter and storm drain inlets.

401.7-1 **EMERGENCY CLEANUP WORK.** In any case in which the Contractor fails to satisfactorily complete the cleanup work described in this section, the Engineer or his representative may determine that an emergency exists. In the event an emergency is determined by the Engineer, the Contractor shall immediately make available manual labor or mechanical equipment capable of handling the cleaning process. During such an emergency, City forces may be called upon to complete the cleanup work, or the City may contract for the cleanup work. All construction work shall be shut down during this cleanup work by the City/Contract forces. The Engineer may shut down further construction work until the violations are corrected to the satisfaction of the Engineer. The cost of the work performed by City/Contract forces plus an additional 70% surcharge shall be paid by the Contractor by deduction from payment due him on the Contract. No compensation shall be given to the Contractor for stoppage of work.

Such action by the Engineer, however, shall not relieve the Contractor of his responsibility for any damages which may occur before, during or after such action has been taken by the Engineer, and shall place no liability upon the City or the Engineer.

401.8 **NOISE CONTROL.** All construction machinery and vehicles employed on the project shall be equipped with approved sound muffling devices, and operated in a manner to cause the least noise consistent with efficient performance of the work. Section 701.11 specifies time limitation in which engine driven equipment shall not be operated.

401.9 **TEMPORARY LIGHT, POWER, AND WATER.** The Contractor shall at its own expense, furnish, install, maintain, and remove all temporary light, power, and water, including piping, wiring, lamps, and other equipment, necessary for the work. The Contractor shall not draw water from any fire hydrant, except to extinguish a fire, without first obtaining permission from the water agency concerned.

401.10 **COORDINATION WITH AFFECTED RESIDENTS.** This Contract may include a significant amount of work within construction easements in private property. The Contractor shall be required to provide adequate notification to, and coordination with, the affected residents. At least 1 week prior to working in easements, the Contractor shall notify the affected residents in writing of the intention to perform work within their properties, the starting dates of work, and duration of the work.

The Contractor shall only initiate an amount of work that can be reasonably completed on the same day. If the initiated work is unfinished, the Contractor shall provide adequate covers and appropriate barricades and warning signs to ensure public safety to the satisfaction of the Engineer. After completion of work in the easement area, the Contractor shall obtain written release from the property owners and give a copy to the Engineer. Any damages to the properties shall be restored and handled

in accordance with Section 401.11 of this specification.

In addition, service connections may be required to be temporarily stopped for rehabilitation of the sewer mains and/or laterals. At least 1 week prior to working in a particular area, the Contractor shall notify the affected residents in writing of the intended work, the starting date and duration, and any coordination requirements to facilitate work progress. The Contractor shall be required to adequately notify affected residents of schedule changes.

For service connection disruptions required to make system improvements, the Contractor shall provide a second notice to residents/businesses not less than 48 hours prior to service interruption. For interruptions in service longer than the limits specified below, the Contractor shall at his cost arrange for and provide in-kind services. Maximum interruption time without provision of in-kind services for private residences shall be as follows:

Water Services: 4 hours
Sewer Services: 7 hours

All interruptions shall be restored by the Contractor at the end of each day.

The Contractor shall plan for and provide the services of a septic tank pumper truck to periodically pump out any sewage which may accumulate in excavation pits at the two-way clean-out location. Alternatively, the Contractor may utilize submersible sewage pumps or trash pumps to convey the sewage from the pits to a functional portion of the existing sanitary sewer within the project area.

The Contractor shall at all times perform his lateral connection work so as to minimize the quantity of sewage which may accumulate, to minimize adverse impacts on public health and sanitation and to minimize the potential for odors. The Contractor shall at all times maintain an adequate supply of bottled chlorine bleach (sodium hypochlorite solution) to treat any accumulated sewage should this be determined necessary by the Engineer to minimize odors and to protect the public and workers' health.

All costs to the Contractor for coordination with the affected residents shall be included in bid prices for the replacement or rehabilitation of sewer mains and laterals.

401.11 **PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS.** The Contractor shall be responsible for the protection of public and private property adjacent to the Work and shall exercise due caution to avoid damage to such property.

The Contractor shall repair or replace all existing improvements and street pavements which are not designated for removal (e.g., street sections, curbs, gutters, driveways, fences, walls, structures, landscaping, etc.) which are damaged or removed as a result of its operations. Repairs and replacements shall be at least equal to existing improvements, and shall match them in finish and dimensions.

Prior to initiating work in the public right of way and in the easements, the Contractor shall make an audio/video cassette tape recording of the affected areas showing all existing improvements, and their conditions. The tapes shall be turned over to the Engineer and shall be used as a historical recording of the preconstruction conditions. The costs of the preconstruction audio-visual survey shall be the responsibility of the Contractor.

Any damages to the private properties will be restored to the satisfaction of the property owners/Engineer within seven (7) days of the damage(s).

Damages within the public right of way including street pavement will be restored to the satisfaction of the Engineer after work on that particular block is completed.

401.12 **SUBMITTALS.** Where required by the Specifications, the Contractor shall submit descriptive information which will enable the Engineer to advise the Agency whether the Contractor's proposed materials, equipment or methods of work are in general conformance to the design concept and in compliance with the drawings and Specifications. The information to be submitted shall consist of proposed construction schedule, traffic control plan, shoring, sheeting and bracing as required drawings, Specifications, descriptive data, certificates, samples, test results and such other information, all as specifically required in the Specifications. In some instances, specified submittal information described some, but not all, features of the material, equipment, or method of work. Features not requiring submittals shall be as specified.

401.12-1 **CONTRACTOR'S RESPONSIBILITIES.** Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the material, equipment or method of work shall be as described in the drawings. Submittal documents shall be clearly edited to indicate only those items, models, or series of equipment, which are being submitted for review. All extraneous materials shall be crossed out or otherwise obliterated. The Contractor shall insure that there is no conflict with other submittals and notify the Engineer in each case where his submittal may affect the work of another Contractor or the Agency. The Contractor shall insure coordination of submittals among the related crafts and subcontractors.

401.12-2 **TRANSMITTAL PROCEDURE.**

401.12-2a General. Submittals regarding material and equipment shall be accompanied by a transmittal form. A separate form shall be used for each specific item, class of material, equipment, and items specified in separate, discrete sections, for which the submittal is required.
Submittal documents common to more than one piece of equipment shall be identified with all the appropriate equipment numbers. Submittals for various items shall be made with a single form when the items taken together constitute a manufacturer's package or are so functionally related that expediency indicates checking or review of the group or package as a whole.

401.12-2b Deviation from Contract. If the Contractor proposes to provide material, equipment, or method of work which deviates from the requirements of the Plans and Specifications, he shall indicate as "deviation" on the transmittal form accompanying the submittal copies.

401.12-2c Submittal Completeness. Submittals which do not have all the information required to be submitted, including deviations, are not acceptable and will be returned without review.

401.12-3 **REVIEW PROCEDURE.** Submittals are specified for those features and characteristics of materials, equipment, and methods of operation which can be selected based on the Contractor's judgment of their conformance to the requirements of the Plans and Specifications. Other features and characteristics are specified in a manner which enables the Contractor to determine acceptable options without submittals. The review procedure is based on the Contractor's guarantee that all features and characteristics not requiring submittals conform to the Plans and Specifications. Review shall not extend to means, methods, techniques, sequences or procedures of construction, or to verifying quantities, dimensions, weights or gages, or fabrication processes except where specifically indicated or required by the Contract documents or to safety precautions or programs incident thereto. Review of a separate item, as such, will not indicate approval of the assembly in which the item functions.

When the Contract documents require a submittal, the Contractor shall submit the specified information as follows:

1. One reproducible original of all the submitted information. When individual sheets in the submittal exceed 8-1/2 inches x 11 inches, a sepia shall be submitted.

2. Four copies of all the submitted information.

Unless otherwise specified, within 10 calendar days after receipt of the submittal, the Engineer shall review the submittal and return one copy of the marked-up reproducible original noted in #1 above. The reproducible original will be retained by the Engineer. The returned submittal shall indicate one of the following actions:

1. If the review indicates that the material, equipment or work method complies with the Contract documents, submittal copies will be marked "NO EXCEPTIONS TAKEN." In this event, the Contractor may begin to implement the work method or incorporate the material or equipment covered by the submittal.

2. If the review indicates limited corrections are required, copies will be marked "MAKE CORRECTIONS NOTED." The Contractor may begin implementing the work method or incorporating the material and equipment covered by the submittal in accordance with the noted corrections.

3. If the review reveals that the submittal is insufficient or contains incorrect data, copies will be marked "AMEND AND RESUBMIT." Except at his own risk, the Contractor shall not undertake work covered by this submittal until it has been revised, resubmitted and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."

4. If the review indicates that the material, equipment, or work method does not comply with the Contract documents, copies of the submittal will be marked "REJECTED -SEE REMARKS." Submittals with deviations which have not been identified clearly may be rejected. Except at his own risk, the Contractor shall not undertake the work covered by such submittals until a new submittal is made and returned marked either "NO EXCEPTIONS TAKEN" or " MAKE CORRECTIONS NOTED."

401.12-4 **EFFECT OF REVIEW OF CONTRACTOR'S SUBMITTALS.** Review of drawings, methods of work, or information regarding materials or equipment the Contractor proposes to provide, shall not relieve the Contractor of his responsibility for errors therein and shall not be regarded as an assumption of risks or liability by the Engineer or the Agency, or by any officer or employee thereof, and the Contractor shall have no claim under the Contract on account of the failure, or partial failure, of the method of work, material, or equipment so reviewed. A mark of "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED" shall mean that the Agency has no objection to the Contractor, upon his own responsibility, using the plan or method of work proposed, or providing the materials or equipment proposed.

401.13 **FINAL CLEANING UP.** Upon completion of the work, and before acceptance and final payment, the Contractor shall clean the project areas and remove all surplus and discarded materials, falsework, rubbish and temporary structures and restore in an acceptable manner all property, both public and private, which has been damaged during the prosecution of the work, and shall leave the improvement in a neat and presentable condition throughout the entire length of the improvement under Contract to the satisfaction of the Engineer. If the Conditions as noted above are not corrected immediately, the Engineer may declare an emergency and take necessary action in accordance with Section 401.7-1 of this Specification.

401.14 **CHANGED CONDITIONS.** The Contractor shall notify the Engineer in writing of the following Work site conditions, hereinafter called changed conditions, promptly upon their discovery and before they are disturbed.

1. Subsurface or latent physical conditions differing materially from those represented in the Contract; and

2. Unknown physical conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in work of the character being performed.

The Engineer will promptly investigate conditions when notified or any conditions discovered by him which appear to be changed conditions. If the Engineer determines that the conditions are changed conditions and that they will materially increase or decrease the costs of any portion of the Work, a Change Order will be issued adjusting the compensation for such portion of the work in accordance with Subsection 401.3. If the Engineer determines that conditions of which has been notified by the Contractor do not justify an adjustment in compensation, the Contractor will be so advised in writing.

Should the Contractor disagree with such determination, it may submit a notice of potential claim to the Engineer, as provided in Section 501.12.

If the Engineer determines that the conditions are changed conditions and that they will materially affect the performance time, the Contractor, upon submitting a written request, may be granted an extension of time subject to the provisions of Section 801.7.1.

The Contractor's failure to give notice of changed conditions promptly upon their discovery and before they are disturbed shall constitute a waiver of all claims in connection therewith.

401.15 **AS-BUILT RECORDS.** The Contractor shall maintain at the jobsite one (1) set of Plans marked to show any deviations which have been made from the Plans, including buried or concealed construction and utility features revealed during the course of construction. Record the horizontal and vertical location of all buried utilities that differ from the Plans. These Plans shall be available for review by the Engineer at all times. Upon completion of the work, deliver the marked set of prints in good condition to the Engineer for incorporation into the original drawings.

SECTION 5 - CONTROL OF THE WORK

501.1 **AUTHORITY OF THE ENGINEER.** The Engineer shall decide all questions which may arise as to the quality or acceptability of materials furnished and work performed, and as to the manner or performance and rate of progress of the work; all questions which may arise as to the interpretation of the Plans and Specifications; all questions as to the acceptable fulfillment of the Contract on the part of the Contractor; and all questions as to compensation. His decision shall be final and he shall have authority to enforce and make effective such decisions and orders which the Contractor fails to carry out promptly.

501.2 **PLANS.** All authorized alterations affecting the requirements and information given on the approved Plans shall be in writing. No changes shall be made in any plan or drawing after the same has been approved by the Engineer, except by direction of the Engineer. Where at any time reference is made to the Plans, the interpretation shall be the Plans as affected by all authorized alterations then in effect.

501.3 **CONFORMITY WITH PLANS AND ALLOWABLE DEVIATION.** Finished surfaces in all cases shall conform to the lines, grades, cross sections, and dimensions shown on the approved Plans. Deviation from the approved Plans, as may be required by the exigencies of construction, will, in all cases, be determined by the Engineer and authorized in writing.

501.4 **COORDINATION WITH CONTRACT DOCUMENTS.** These Specifications, the Plans, and all supplementary documents are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be cooperative, to describe and provide for a complete work. If there is a conflict between Contract Documents, the document highest in precedence shall control. The precedence shall be:

1. Federal and State requirements.
2. Permits from other agencies as may be required by law.
3. Special Provisions
4. General Provisions
5. Contract Plans, including General Notes.
6. Standard Details.
7. Amendments to the Standard Specifications for Public Works Construction, 2000 Edition.
8. Standard Specifications for Public Works Construction, 2000 Edition, Part 2 - Construction Materials, Part 3 - Construction Methods and Part 5 – System

Rehabilitation.

9. Reference Specifications.

Change orders, supplemental agreements, and approved revisions to Plans and Specifications will take precedence over documents listed above. Detailed plans shall have precedence over general plans.

501.5 **INTERPRETATION OF PLANS AND SPECIFICATIONS.** Should it appear that the work to be done or any of the matters relative thereto are not sufficiently detailed or explained in the Plans or Specifications, the Contractor shall apply to the Engineer for such further explanations as may be necessary and shall conform to the same as part of the Contract, so far as may be consistent with the original Specifications; and in the event of any doubt or question arising regarding the true meaning of the Specifications, reference shall be made to the Engineer, whose decision thereon shall be final.

In the event of any discrepancy between any drawing and the figures written thereon, the figures shall be taken as correct.

Any part of the work which is not mentioned in the Specifications, but is shown in the Plans, or any part not shown on the Plans but described in the Specifications, shall be performed by the Contractor.

501.6 **SUPERINTENDENCE.** The Contractor will be supplied with five copies of the Plans and Specifications. Additional sets of Plans and Specifications shall be provided at the Contractor's cost which shall be equal to the City's reproduction costs. The Contractor shall have available on the work, at all times, one copy of each of said Plans and Specifications; he shall give the work the constant attention necessary to facilitate the progress thereof and shall cooperate with the Engineer and with other Contractors in every way. The Contractor shall, at all times, have a competent superintendent capable of reading and thoroughly understanding the Plans and Specifications, as his agent on the work, who shall receive instructions from the Engineer or his authorized representatives.

The superintendent shall have full authority to execute the order or directions of the Engineer without delay and to promptly supply such materials, tools, plant equipment, and labor as may be required. Such superintendent shall be furnished irrespective of the amount of work sublet.

501.7 **LINES AND GRADES.** Lines and grades for the work will be given by the Engineer. The Contractor shall give at least 48 hours' notice when he will require the services of the Engineer for laying out any portion of the work.

The Contractor may be required to furnish labor, at no extra cost to the City, to assist the City survey party. In general, this would mean the occasional furnishing of a laborer to drive stakes, pull maintenance hole covers, move obstructions, etc., in order to expedite the work.

The Contractor shall protect stakes set by City surveyors by placing guard stakes or large objects to

protect them from damage. The Engineer shall charge the Contractor for all time spent resetting stakes.

501.8 **AUTHORITY AND DUTIES OF RESIDENT ENGINEER.** Duly authorized Resident Engineers, who shall perform their duties under the direction of the Engineer, will be assigned to the project or each part thereof. The presence of the Resident Engineer shall in no way lessen the responsibility of the Contractor. In case of any dispute arising between the Contractor and the Resident Engineer as to materials furnished or the manner of performing work, the Resident Engineer shall have authority to reject materials or suspend the work until the questions at issue can be referred to and decided by the Engineer. The Resident Engineer is not authorized to revoke, alter, enlarge, relax, or release any requirement to these Specifications, nor to approve or accept any portion of the work, nor to issue instructions contrary to the Plans and Specifications.

501.9 **INSPECTION.** The Contractor shall furnish the Engineer or his designated representative with access to the work for ascertaining whether the work performed and materials used are in accordance with the requirements and intent of the Specifications and Contract.

The Contractor shall give the Engineer or his representative notice of the time when he or his subcontractors will start the various units or operations of the work. Notice shall be given at least 24 hours in advance of starting or resumption time exclusive of Saturdays, Sundays, or holidays, for the purpose of permitting the Engineer to make the necessary assignment of his representative or inspector on the work. Any work performed by the Contractor or his subcontractors in conflict with said notice shall be removed if so ordered by the Engineer, his representative or inspector on the work.

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

501.10 **TRAFFIC CONTROL.** The Contractor shall submit three copies of proposed traffic control plan to the Engineer for approval at least five (5) working days prior to commencement of work. No work will be started unless the traffic plan and requirements in Section 801.2 is duly approved. This plan will be submitted in the form of a drawing locating the project area and all major and minor access and exits to and out of this area. The plan will also include the immediate neighboring areas where the traffic shall be directly or indirectly affected as a result of construction work in the project area.

The traffic control plan shall be developed for various traffic situations and street configurations in the work and surrounding areas in full conformance with the "State of California Business, Transportation and housing Agency Department of Transportation Manual of Traffic Controls for Construction and Maintenance Work Zone" dated 1985, hereinafter referred to as Traffic Control Manual.

At main entry and exit points of each work location, the Contractor shall provide a 30" X 30" sign

advising the public of the anticipated period of time that traffic delays may be anticipated. This sign will also include name and telephone number of the Contractor along with starting and completion dates of the Contract. Sign will be erected 7 days in advance of any work.

If traffic is to be detoured over a centerline or detoured in advance of the work, detour plan must be incorporated in the traffic control plan. Police, Fire, and Public Works Department shall be notified at least 48 hours in advance of any work which will interfere with the normal flow of vehicular or pedestrian traffic. Intersection closure may only occur if, in the traffic plan, the two adjacent intersections remain open, unless otherwise approved by the Engineer.

All signs and devices proposed to warn, direct, and control traffic in the vicinity of the work shall conform in size, shape, and color to the requirements set forth in the Traffic Control Manual mentioned above and approved by the Engineer in accordance with the traffic control plan.

The full width of the traveled way shall be open for use by public traffic on Saturdays, Sundays, designated legal holidays, after 3:00 P.M. on Fridays and the day preceding designated legal holidays, and when construction operations are not actively in progress.

Cost of traffic controls, including flag person, shall be included and spread among appropriate bid items as determined by the Contractor.

Public parking on streets may be restricted as necessary.

The Contractor shall furnish, erect, and maintain all signs except "No Parking" signs which shall be obtained by the Contractor from the City of Berkeley. All signs shall be placed as directed by the Engineer. The "No Parking" signs must be posted by the Contractor no later than 72 hours or as directed by the Engineer in advance of the time of need. "No Parking" signs shall bear the name of the Contractor and shall also specify the "No Parking" dates and locations.

The Contractor shall replace within a 24-hour period any sign that has been damaged, loss, or worn out.

The Traffic Engineer shall have authority to change the traffic plan and make recommendations through the Engineering Inspector after the project has started and throughout the project.

The Contractor shall comply with the traffic engineering recommendations within a 24-hour period or immediately if requested. Failure to comply with this item shall be enough reason for the Engineer to stop the project.

501.11 **DEFECTIVE AND UNAUTHORIZED WORK.** All work which is defective in its construction or deficient in any of the requirements of these Specifications shall be remedied, or removed and replaced by the Contractor in an acceptable manner, and no compensation will be allowed for such correction.

Upon failure of the Contractor to comply immediately with any order of the Engineer made under the provisions of these Specifications, the Engineer shall have the authority to cause defective work to be remedied, or removed and replaced, and unauthorized work to be removed, and to deduct the costs thereof from any monies due or to become due the Contractor.

501.12 **DISPUTED CLAIMS.** In any case where the Contractor deems extra compensation is due him for work or materials not clearly covered in the Contract, or not ordered by the Engineer as extra work, the Contractor shall notify the Engineer in writing of his intention to make claim for such extra compensation before he begins the work on which he bases the claim. If such notification is not given or the Engineer is not afforded proper facilities by the Contractor for keeping strict account of actual cost, then the Contractor hereby agrees to waive the claims for such extra compensation.

Such notice by the Contractor, and the fact that the Engineer has kept account of the cost as aforesaid, shall not in any way be construed as proving the validity of the claim. The claim must be passed upon by the Engineer. In case the claim is found to be just, it shall be allowed and paid for as extra work. Unless the Contractor gives notice of his claim to the Engineer within 10 calendar days, or before he begins the work on which he bases his claim, whichever is sooner, it will not be considered.

501.13 **ARBITRATION.** Disputed claims may be settled by arbitration if both parties mutually agree. The arbitration procedures shall be in accordance with the construction industry arbitration rules of the American Arbitration Association. Arbitration awards shall be presented in writing and shall include the following elements: (1) legal "finding of fact" established by the arbiter; (2) specific breakdown of the dollar amounts allocated for each issue under arbitration; (3) the arbiter's "conclusion of law"; (4) a summary of the evidence; and (5) reasons underlying the arbiter's award.

501.14 **FINAL INSPECTION.** Whenever the work provided and contemplated by the Contract shall have been satisfactorily completed and the final cleaning up performed, the Engineer will make the final inspection.

501.15 **PROGRESS MEETINGS.** The Contractor shall schedule and hold regular on-site progress meetings weekly and at other times as requested by the Engineer or as required by progress of the Work. The Contractor, Engineer, and all subcontractors active on the site shall be represented at each meeting. The Contractor may, at its discretion, request attendance by representatives of its suppliers, manufacturers, and other subcontractors. The purpose of the meetings will be to review the progress of the work, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop.

501.16 **SUBSTITUTION.** Any materials, process, or article may be requested for a substitution by the Contractor, in lieu of that specified or shown, under the following conditions:

1. Requests must be submitted in writing sixty (60) days prior to starting the work, as established by the Engineer, so as not to cause any delay in completion of the project.

2. The Contractor shall, at no cost to the City, furnish all testing, data, engineering, and design

services (including the review costs incurred by the Engineer) for items offered as equivalent to those specified. Test methods and findings shall, prior to installation, be subject to approval of the Engineer.

3. On sewer rehabilitation projects, the sewer rehabilitation methods shown on the Plans are the minimum levels acceptable for the respective reaches. The three sewer rehabilitation methods, in descending order of acceptability, are as follows:

Replacement
Inversion-Lining/CIPP
Sliplining

Substitution with a lower level rehabilitation method will not be permitted unless field conditions dictate that a lesser method will provide comparable sewer integrity. A credit change order will be prepared accordingly. The foregoing shall require the approval of the City and the Engineer. Substitution with higher level rehabilitation method may be acceptable subject to approval of the Engineer.

1. No requests for substitution will be considered during the bidding period.

2. Any substitution of any material, process, or article shall be at no additional costs to the City. Substitution with a lesser level rehabilitation method shall be accomplished by credit change order. Substitution with a higher-level method shall be accomplished by a no cost change order.

The Engineer reserves all rights and will have final approval as to the substitution of alternative rehabilitation methods.

501.17 **REINSPECTION, RETESTING, AND RE-STAKING.** All costs incurred by the City for reinspection of poor workmanship, failing air tests, failing compaction tests, failing tests of any kind, and re-staking caused by the Contractor shall be deducted from the amounts due the Contractor by Contract change order. The Engineer's decision as to determination of poor workmanship shall be final.

SECTION 6 - CONTROL OF MATERIAL

601.1 **SAMPLE AND TESTS.** At the option of the Engineer, the source of each of the materials shall be approved by the Engineer before delivery is started and before such material is used in the work. Representative preliminary samples of the character and quality prescribed shall be submitted by the Contractor or producer of all materials to be used in the work, for testing or examination as desired by the Engineer.

All tests of materials furnished by the Contractor shall be made in accordance with commonly recognized standards as set forth in the Specifications and such other special methods and tests as may be prescribed.

The Contractor shall furnish such samples of materials as are requested by the Engineer, without charge. No material shall be used until it has been approved by the Engineer. Samples will be secured and tested by the laboratory whenever necessary to determine the quality of material.

601.2 **DEFECTIVE MATERIALS.** All materials not conforming to the requirements of these Specifications shall be considered as defective, and all such defective materials, whether in place or not, shall be rejected. They shall be removed immediately from the site of the work unless otherwise permitted by the Engineer. No rejected material, the defects of which have subsequently been corrected, shall be used until approved in writing by the Engineer.

Upon failure on the part of the Contractor to comply with any order of the Engineer made under this provision of these Specifications, the Engineer shall have authority to remove and replace defective material and deduct the cost of removal and replacement from any monies due or to become due the Contractor.

601.3 **STORAGE OF MATERIALS.** Materials shall be so stored as to ensure the preservation of their quality and fitness for the work. Stored materials shall be so located as to facilitate prompt inspection. Space for main storage/construction yard shall be the Contractor's responsibility.

No construction material shall be stockpiled in the street for a period of more than five (5) days at a particular location. Contractor shall coordinate with the Engineer to designate such temporary storage areas. The delivery of materials on site should be scheduled in installments in such a way that all stockpiled materials are used within the above specified period. Proper lighted barricades and other required traffic controls shall be maintained at all times around the stored materials. No material shall be stored on the sidewalk area and/or in front of driveways or within 15 feet of a fire hydrant or catch basin, passageways, or in such a way as to hinder pedestrians, vehicular flow, or drainage.

Street curbs and gutters shall be clear from stockpiled materials. All stockpiled materials shall be covered at the end of the day. To maintain flow of unobstructed surface water on the street, 4" diameter minimum drain pipes shall be provided along the gutters if any materials are stockpiled in those areas.

At least one lane shall be kept open in the street at every time during the time material is stockpiled in the public right of way. Any violation of the above requirements will result in a declaration of an emergency situation by the Engineer and proper remedial action shall be taken in accordance with Section 401.7 of this specification.

Clean up and tidiness under Section 401.6 shall be adhered to and enforced.

601.4 **TRADE NAMES OR ALTERNATIVES.** Whenever any article or any class of materials is specified by a trade name or by the name of any particular patentee, manufacturer or dealer, it shall be and is mutually understood to mean and specify the article or class of materials described, or any other equal thereto in quality, finish, and durability, and equally as serviceable for the purpose for which it is intended, subject to the approval and acceptance of the Engineer.

SECTION 7 - LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC

701.1 **LAWS TO BE OBSERVED.** The Contractor shall keep himself fully informed of all state and national laws and all municipal ordinances and regulations of the City which in any manner affect those engaged or employed in the work, or which in any way affect the conduct of the work, and or all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same.

The Contractor shall at all times observe and comply with, and shall cause all agents and employees to observe and comply with all such laws, ordinances, regulations, orders and decrees, including all provisions of the Occupational Safety and Health Act of 1970 and all amendments thereto, and all applicable federal, state, municipal, and local safety regulations; and shall protect and indemnify the City, the Council, and the Engineer, and all of its and their officers and agents and servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or his employees. If such discrepancy or inconsistency is discovered in the Plans, Drawings, Specifications, or Contract for the work in relation to any such law, ordinance, regulation, order or decree, the Contractor shall forthwith report the same, in writing, to the Engineer.

701.2 **HOURS OF LABOR.** Eight (8) hours of labor shall constitute a legal day's work for all workers employed on this Contract and the Contractor and any Subcontractor under him shall comply with and be governed by the laws of the State of California having to do with working hours as set forth in Division 2, Part 7, Chapter 1, Article 3 of the Labor Code of the State of California as amended.

The Contractor shall forfeit, as penalty to the City of Berkeley, twenty-five dollars ($25.00) for each laborer, worker, or mechanic employed in the execution of the Contract, by him or any subcontractor under him, upon any of the work herein before mentioned, for each calendar day during which said laborer, worker, or mechanic is required or permitted to work more than eight (8) hours in any one calendar day and forty (40) hours in any one calendar week in violation of said Labor Code.

701.3 **APPRENTICES.** The Contractor and any subcontractor working under him must comply with and be governed by the laws of the State of California having to do with the employment of apprentices on public works as set forth in Sections 1777.5 and 1777.6 of the Labor Code of the State of California.

Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

701.4 **NONDISCRIMINATION.** There shall be no discrimination against any employee who is employed in the work covered by this Contract, or against any applicant for such employment, because of race, religion, color, disability, national origin, or sexual preference. This provision shall

include, but not be limited to, the following employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training including apprenticeship.

In order that this provision against discrimination shall achieve the intended result, before a Contract is awarded to the apparent successful bidder there shall be a pre-award conference between such apparent successful bidder and the City Manager, or the City Manager's designated representative. Such pre-award conference shall be held after the opening of bids and before award of the Contract at a date and time to be designated by the City Manager, or his representative, and at such pre-award conference the apparent successful bidder shall present to the City Manager, or his authorized representative, the proposed program of affirmative action to ensure that persons are employed and employees are treated so that they receive equal opportunities without regard to race, religion, color, disability, national origin, or sexual preference. Such program shall include not only the affirmative action proposed to be undertaken by the apparent successful bidder in his own employment practices, but also the affirmative action that he proposes to undertake to assure that all Subcontractors working under him provide equal employment opportunities for all without regard to race, religion, color or national origin. Failure to carry out the proposed program of affirmative action shall be deemed to be a violation of the Contract within the meaning of Section 701.26 of the General Provisions.

In the event the apparent successful bidder refuses or fails to participate in such pre-award conference, or refuses or fails to present a program of proposed affirmative action, the Council may determine that he is not the lowest responsive bidder and his bid shall be rejected. In such event, the City Council shall have the right to declare such apparent successful bidder to be a non-responsive bidder, in which case no Contract shall be awarded to him by the City for a period of at least three (3) years from the date of the declaration by the Council that he is a non-responsive bidder, and then only after satisfactory evidence that he will comply with the requirements of this Section of the General Provisions.

If the bid of the apparent successful bidder is rejected by the Council and the Council wishes to award the Contract to another bidder, such Contract shall not be awarded until such bidder has complied with the requirements of this Section relating to pre-award conference and the effects thereof, as hereinabove set forth, shall be applicable to said other bidder, except that such pre-award conference shall be held within five (5) days following the action of the Council in rejecting the bid. The other bidders shall be considered for award pursuant to this paragraph in the order of their bids starting with the next lowest responsive bidder and continuing until a bidder complies with the requirements of this Section, or until the Council takes other action as authorize by Section 67 of the Charter.

701.5 **PREVAILING WAGE.** The Contractor and any subcontractor working under him must comply with and be governed by the laws of the State of California having to do with the prevailing wage to be paid as is set forth in Division 2, Part 7, Chapter 1, Article 2 of the Labor Code of the State of California as amended.

The Contractor shall forfeit, as penalty to the City, twenty-five dollars ($25.00) for each laborer, workman, or mechanic employed, for each calendar day or portion thereof, such laborer, workman, or mechanic is paid less than the general prevailing wages hereinafter stipulated for any work done

under the attached Contract, by him or by any subcontractor under him, in violation of the provisions of said Labor Code. In addition, the Contractor shall pay to the workmen the wages resulting from the difference between the stipulated wage rate and the wages actually paid.

The Engineer has a current copy of general prevailing wage rates applicable to the work, a copy of which is made part of this Specification by reference.

701.6 **COMPENSATION INSURANCE.** Before beginning work, the Contractor shall furnish to the Engineer a certificate of insurance as proof that he has taken out full compensation insurance for all persons whom he may employ directly or through subcontractors in carrying out the work specified herein, in accordance with laws of the State of California. Such insurance shall be maintained in full force and effect during the period covered by this Contract.

701.7 **GOVERNMENTAL REGULATIONS.** Bid price shall not be in excess of maximum prices permitted by the federal or state government.

All orders are subject to ability to obtain and use materials and deliver finished products under federal and state regulations and orders. If shipping dates are subject to delays resulting from preference rating or priority shipments order or requested by the United States Government or by any department, commission or agency thereof, the Contractor shall not be held liable for such delay.

701.8 **TAXES.** The City is liable for the State Sales Tax and where the County of purchase has adopted the Uniform Sales Tax law and a City and/or County tax is collected by the State, the City of Berkeley is liable for this tax also.

The City is exempt from the Federal Excise Tax and exemption certificates will be furnished. In certain instances, the bidder and subcontractor may be liable for Federal Excise Tax. Bidder must determine whether Federal Excise Tax is chargeable to him and if so, the amount of the tax should be included in the amount bid.

Any new or additional taxes levied after the adoption of these Specifications that are payable by the City are not to be included in the price bid, but added thereto when invoiced.

701.9 **PERMIT AND LICENSES.** The Contractor shall procure all permits and licenses, pay all charges and fees, and give all notice necessary for the lawful prosecution of the work.

701.10 **ROYALTIES AND PATENTS.** The Contractor shall pay all royalties and patent fees. He shall defend all suits and claims for infringements of any patent rights and shall save the City harmless from loss on account thereof, except that the City shall be responsible for all such loss when a particular process or the product of a particular manufacturer is specified. If, however, the Contractor has information that the procedures or article specified is an infringement of a patent, he shall be responsible for any loss unless he promptly gives said information to the City.

The Contractor shall assume all responsibilities arising from the use of patented materials, equipment,

devices or processes used on or incorporated in the work.

All fees and royalties for any patented invention or process used in connection with the work shall be included in the price bid for such work, and the Contractor shall obtain a permit from the patentee for use of the same.

701.11 **PUBLIC CONVENIENCE AND SAFETY.** The Contractor shall so conduct his operations as to cause the least possible obstruction and inconvenience to the public.

Residents along the work shall be provided passage as far as practicable. Convenient access to driveways, houses, and buildings along the work shall be maintained and temporary crossings shall be provided and maintained in good conditions. Contractor shall maintain access to all driveways except when actually doing construction within the driveway boundaries, at which time parking access will be maintained unless alternate arrangement can be made with the property owners or tenants in advance. No more than one intersection street shall be closed at any one time without the approval of the Engineer.

The Contractor shall furnish all flagperson, barricades, barriers, lanterns, flares, "DR" type detour signs, and other devices which may be necessary for adequate and safe traffic control, and in accordance with the approved traffic control plans per Section 501.10 of this Specification.

Traffic control shall be performed in accordance with the following requirements:

- Safe pedestrian passage shall be provided at all times on the project site.

- All open trenches will be covered with appropriately thick steel plates in accordance with the "Work Area Traffic Control Handbook" published by Building News, Inc. (888) 264-2665. Safe passage for all vehicles shall be maintained at all times in both directions.

- Sufficient number of reflectorized signs shall be supplied and used on the job site at all times to efficiently control traffic in accordance with this Specification. Each and all barricades shall be equipped with operative automatic flashers.

- Berkeley Police and Fire Departments, Berkeley School District, City Streets and Utilities Division, and A.C. Transit shall be advised of the planned construction, blocked streets, and other changes affecting traffic conditions (48 hours in advance), every work day or more frequently. Additionally, the Police and Fire Departments and Resident Engineer must be given telephone numbers where the Contractor may be reached at all hours in the event of an emergency involving the work. Appropriate Police, Fire, Berkeley School District, City Streets and Utilities Division, and A.C. Transit telephone numbers are as follows:

Police:	510-981-5900
Fire:	510-981-5900
School:	510-644-6150

Streets & Utilities Division:	510-981-6620 (where applicable)
A.C. Transit:	510-839-2882

Proper signs and devices shall be used to warn, direct, and control traffic in the vicinity of the Work and shall conform in size, shape, and color to the requirements set forth in the Specifications and approved by the Engineer in accordance with the Traffic Control Plan.

Where such facilities are not provided or are out of service, and an emergency exists that necessitates protective measures, the Engineer or his representative, may provide such facilities during the emergency and the cost thereof shall be paid by the Contractor or deducted from monies due or to become due him on the Contract. Such action by the Engineer, however, shall not relieve the Contractor of his responsibility for any damages which may occur before, during or after such precaution has been taken by the Engineer, and shall place no liability upon the City or the Engineer.

To keep evening and night noise levels to a minimum, no engine driven equipment shall be operated between 5:00 p.m. and 7:30 a.m. unless previously authorized by the Engineer.

701.12 **RESPONSIBILITY FOR DAMAGE.** The City, the Council, or the Engineer shall not be answerable or accountable in any manner for any loss or damage that may happen to the work or any part thereof; or for any materials or equipment used in performing the work; or for injury or damage to person or persons, either workmen or the public; or for damage to adjoining property from any cause whatsoever during the progress of the work or at any time before final acceptance.

The Contractor shall be held responsible for any and all loss, accidents, injury or damage to persons or property which may be the result of this Contract and for which the City might be held liable. The Contractor shall protect and indemnify the City and save it harmless in every way from all claims, suits or actions of law for damage or injury to persons or property that may arise or be occasioned in any way because of this Contract. The Council may retain so much of the money due the Contractor as shall be considered necessary, until disposition has been made of such suits or claims for damages as aforesaid.

701.13 **PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE.** Before commencing the work, the Contractor shall furnish to the City Attorney satisfactory evidence of public Liability and Property Damage insurance with limits of liability as listed in the Notice to Bidders and as approved by the City's Risk Manager. Such insurance shall name the City of Berkeley officers, employees, agents and its consultants associated with the project (City to provide names of the consultant(s)) as additional named insured and it shall be provided that any cancellation or reduction in coverage of the insurance by either the assured or the insurance company will not be effective until thirty (30) days after written notice thereof has been given to the City.

701.14 **CONTRACTOR'S RESPONSIBILITY FOR WORK.** Until the formal acceptance of the work by the Engineer, the Contractor shall have the charge and care thereof, except as provided in Section 701.11, Public Convenience and Safety, and shall bear the risk of injury or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution

or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any cause before final acceptance and shall bear the expense thereof, except such injuries or damages as occasioned by acts of war.

701.15 **ENTRY RIGHTS.** The right is reserved to the City, and also to railway, water, gas, telephone, telegraph, cable television and electric power transmission companies to enter upon the work for the purpose of making repairs and changes that have become necessary by reason of work. Projects financed in whole or in part with State funds shall be subject to inspection at all times by the State of California agency having jurisdiction or his agent.

701.16 **COOPERATION BETWEEN CONTRACTOR AND UTILITY COMPANIES.** The Contractor shall be responsible for ascertaining the nature and extent of any simultaneous, collateral, and essential work by others. The City, its workers and Contractors, and others shall have right to operate within or adjacent to the workers to perform such work.

The City, the Contractor, and each of such workers, Contractors, and others shall coordinate their operations and cooperate to minimize interference.

The Contractor shall include in its bid all costs involved as a result of coordinating its work with others. The Contractor will not be entitled to additional compensation from the City for damages resulting from such simultaneous, collateral, and essential work. If necessary to avoid or minimize such damage, or delay, the Contractor shall redeploy its work force to other parts of the work.

Should the Contractor be delayed by the City, and such delay could not reasonably have been foreseen and prevented by the Contractor, the Engineer will determine the extent of the delay, the effect of the delay on the project as a whole, and any commensurate extension of time.

If the work of the Contractor is delayed because of any acts or omissions of any other Contractor or utility company, the Contractor shall on that account have no claim against the City other than for an extension of time.

701.17 **OBSTRUCTION.** No material or other obstruction shall be placed within fifteen (15) feet of fire hydrants, which must be at all times readily accessible to the Fire Department. Where the completion of the work requires their removal, the Contractor shall remove and dispose of all structures, debris, or other obstructions encountered in making the improvement.

701.18 **SANITARY CONVENIENCES.** Necessary sanitary facilities for the use of workers properly secluded from public observation and in compliance with health ordinances and laws, shall be constructed and maintained in an approved manner by the Contractor, and their use shall be strictly enforced.

701.19 **PRESERVATION OF MONUMENTS.** The Contractor shall carefully preserve bench marks, reference points and stakes, and in case of willful or careless destruction, they will be charged with the entire cost of replacing them and shall be responsible for any mistakes that may be caused

by their unnecessary loss or disturbance. Monuments which have to be removed shall not be disturbed until authorized by the Engineer.

The Contractor shall provide the City with a minimum of 72 hours' notice of any activities which may result in the displacement damage or destruction of monuments.

701.20 **OPENING SECTIONS OF NEW WORK.** Whenever, in the opinion of the Engineer, any section of the Work is in a condition for beneficial use by the City it may be opened for use. Such openings, when authorized in writing by the Engineer shall not represent acceptance of that portion of the Work unless all specified testing has been satisfactorily completed.

The Contractor will be responsible for all necessary repairs on any section of work, so opened, due to defective material or work, damage by Contractor's operation, or to natural causes other than ordinary wear and tear until final completion and acceptance of the work. Such repairs shall be at the expense of the Contractor.

701.21 **ACCEPTANCE OF WORK ON CONTRACT.** When the final inspection is completed and it has been determined that the Work is in accord with the Plans and Specifications, the Engineer will formally accept the Contract. After such acceptance, the Contractor will be relieved of protecting the Work, except for such correction or repair as shall be required to correct any defect in the Work. The Contractor will not be required to perform any further work thereon except such items as may be reserved specifically in the Specifications or formal written acceptance, and he shall be relieved of responsibility for injury to persons or property or damage which occurs after the formal written acceptance.

701.22 **CORRECTION OF ERRORS, RECOVERY FOR ERRORS, DISHONESTY OR COLLUSION.** The City reserves the right to correct any error that may have been made in any estimate that has been paid. The City also reserves the right to claim and recover by process of law any sums sufficient to correct any error or make good any deficiency in the Work, regardless of when such error, dishonesty or collusion shall be discovered.

701.23 **RIGHTS IN MATERIALS AND SALVAGE.** Ownership of materials incorporated in the Work is vested in the name of the City. Any material delivered and paid for in part by the City or any material furnished by the City to be incorporated in the Work, is or becomes the property of the City. Any salvageable materials or installations existing at the site of the work (such as maintenance hole rings and covers, catch basin gratings, angle iron, pipe railings, valve boxes and lamp-hole boxes, and other steel, cast iron or metallic materials) that are the property of the City, if they are to be removed shall be delivered F.O.B. to the storage yard designated by the City. The salvageable materials shall be cleaned of clinging concrete and debris and delivered to the storage yard in the same condition as it existed prior to removal, unless the Contractor is instructed otherwise by the Engineer.

701.24 **RIGHT-OF-WAY.** The right-of-way for the work to be constructed will be provided by the City. The Contractor shall make his own arrangements, and pay all expenses for additional area required by him outside the limits of the right-of-way, unless otherwise provided in the Special

Provisions.

701.25.1 **UNDERGROUND FACILITIES.** The City has investigated underground conditions to the extent allowed by the City records and has indicated on the Drawings such underground structures and conditions as are known to exist. In addition, the Drawings indicate information furnished to the City by the utility agencies concerning their facilities. The City does not guarantee, either expressly or by implication that the underground conditions indicated are either complete or exact as to locations and depths. No additional allowance will be made in cases where underground conditions vary as to number, structures, depths, locations or any other condition from the information shown on the Drawings. In all cases, the cost of dealing with the identified underground facilities encountered will be considered as being included in the bid prices for the various items of work.

701.25.2 **PROTECTION OF AND LIABILITY FOR UNIDENTIFIED UNDERGROUND PUBLIC UTILITIES.** The following is pursuant to California Government Code Division 5, Chapter 3.1, Section 4215. The City is responsible for the removal, relocation or protection of existing utilities located on the construction site that is subject of these Plans and Specifications if such existing underground utilities are not identified in the Plans and Specifications and made a part of the invitation for bids. The Contractor will not be assessed liquidated damages for delay in completion of the Contract, when such delay is caused by failure of the City or utility owner to provide for removal or relocation of the unidentified existing utility facilities.

701.26 **COMPLIANCE WITH CONTRACT.** In the event any provision of the Contract including the General Provisions and Specifications, is violated, and the Contractor refuses to comply after 10 days written notice is given by the City, the City shall have the additional right, without further notice, to cancel the Contract and/or declare such Contractor to be a non-responsive bidder, in which case no contract shall be awarded him by the City of a period of at least three (3) years from the date of violation, and then only after satisfactory evidence that he will comply with City specification and contract provisions.

SECTION 8 - PROSECUTION AND PROGRESS

801.1 **SUBLETTING AND ASSIGNMENT.** The Contractor shall give his personal attention to the fulfillment of the Contract and shall keep the work under his control. The Contract may be assigned only upon written consent of the Engineer.

Subcontractors will not be recognized as such, and all persons engaged in the work of construction will be considered as employees of the Contractor, and their work shall be subject to the provisions of the Contract and Specifications.

When a portion of the work sublet by the Contractor is not being prosecuted in a manner satisfactory to the Engineer, the subcontractor shall be removed immediately on the written request of the Engineer and shall not again be employed on the work.

801.2 **PROGRESS OF THE WORK AND TIME FOR COMPLETION.** The Contractor shall begin work within 14 calendar days from date of receipt of Notice to Proceed and shall diligently prosecute the same to completion before the expiration of the time specified in the Bidding Documents. After issuing of Notice to Proceed and prior to commencement of mobilization and construction, the Contractor shall be required to attend a pre-construction meeting. The Engineer may extend the starting date.

801.3 **PROGRAMMING WORK.** After notification of award and at least five (5) working days prior to start of any work, the Contractor shall submit to the Engineer for approval its proposed construction schedule. No construction work will start unless the schedule is approved by the Engineer. The construction schedule shall be in the form of a tabulation, chart, or graph and shall be in sufficient detail to show the chronological relationship of all activities of the project including, but not limited to, estimated starting and completion dates of various activities, submittal of shop drawings to the Engineer for approval, procurement of materials, and scheduling of equipment. The construction schedule shall reflect completion of all work under the Contract within the specified time and in accordance with these Specifications. The schedule shall include completion dates of all major activities on a block to block basis.

If the Contractor desires to make a major change in the method of operations after commencing construction, or if the schedule fails to reflect the actual progress, the Contractor shall submit to the Agency a revised construction schedule in advance of beginning revised operations.

Loss of work for any cause during the period of time prior to the submission of the progress schedule will not be considered by the Engineer in his computation of time extensions. In addition, the Contractor shall submit a complete list of subcontractors who will perform the work on this project and a list of all major material suppliers. No substitutions of any kind will be allowed, either of subcontractors or material suppliers without the written approval of the Engineer.

In case of any delays from the original schedule due to any reason, the Contractor will immediately notify the Engineer and resubmit the revised schedule within forty-eight (48) hours of that change.

Any request for change in the original schedule shall be evaluated and approved or denied in accordance with requirements listed in these Specifications.

All work on the project shall be performed between the hours of 7:30 AM and 5:00 PM on a regular work day. No work shall be scheduled beyond these hours on a regular work day, City observed holiday, or weekend without prior approval from the Engineer. The Contractor shall submit this request in writing at least one week in advance. The Contractor shall pay for the inspection time of the City's resident Engineer or his designated representative on an overtime basis for required inspection of work performed beyond the mentioned regular day working hours and on holidays or weekends. This inspection charge will be deducted from the Contractor's progress payment.

All work, including finish paving on a City block and final clean up, shall be completed within five (5) weeks from the start of construction on the respective City block.

801.4 **CHARACTER OF WORKERS.** If any subcontractor or person employed by the Contractor shall refuse to carry out the provisions of the Plans and Specifications or shall appear to the Engineer to be incompetent or to act in a disorderly or improper manner, he shall be discharged immediately on the written request of the Engineer, and such person shall not again be employed on the work.

801.5 **TEMPORARY SUSPENSION OF WORK.** The Engineer shall have the authority to suspend the work wholly or in part, for such period as he may deem necessary due to unsuitable weather, or to such other conditions as are considered unfavorable for the suitable prosecution of the work, or for such time as he may deem necessary due to the failure on the part of the Contractor to carry out orders given, or to perform any provisions of the work. In addition, the Contractor shall comply with the Traffic Engineering recommendation within a 24-hour period or immediately if requested. Failure to comply with this shall be sufficient reason for the Engineer to suspend the work. The Contractor shall immediately obey such orders of the Engineer and shall not resume the work until ordered in writing by the Engineer.

801.6 **LIQUIDATED DAMAGES FOR FAILURE TO COMPLETE WORK IN SPECIFIED TIME.** Time is of the essence and an essential condition of the Contract. If all the work called for under the Contract is not completed before or upon the expiration of the time set forth in the Bidding Documents, damage will be sustained by the City. Since it is and will be impracticable to determine the actual damage which the City will sustain in the event of and by reason of such delay, it is therefore agreed that the Contractor will pay to the City the sum specified in the Bidding Documents for each and every working day beyond the time prescribed to complete the work, not as a penalty, but as a predetermined liquidated damage. The Contractor agrees to pay such liquidated damages as are herein provided, and in case the same are not paid, agrees that the City may deduct the amount thereof from any money due or that may become due the Contractor under the Contract.

801.7 **EXTENSION OF TIME.** If the work called for under the Contract is not completed within the time specified, the Engineer may extend the time for completion if it serves the best interest of the City. If the time limit for the completion of the Contract is extended, the Engineer may charge

to the Contractor or deduct from the final payment for the Work, all or any part of the actual cost of engineering, inspection, superintendence, and other overhead expenses which are incident to the Work, and which accrue during the period of such extension. The cost of final surveys and preparation of final estimate shall not be included in such charges.

801.7.1 **EXTENSION OF TIME DUE TO EXTRA WORK AND INCLEMENT WEATHER.** Extensions of time for extra work, when granted, shall be based upon the effect of delays to the Work and will not be granted for noncontrolling delays to minor portions of the work unless it can be shown that such delays did or will delay the progress of the Work. Extensions of time for inclement weather, when granted, shall be based upon impacts to the Contractors work operations causing not less than 75 percent of the effort to be shut down.

801.8 **DELAYS AND SUSPENSION OF WORK.** The Contractor shall not be assessed with liquidated damages nor the cost of engineering and inspection during any delay in the completion of the work caused by the wrongful act or negligence of the City or its employees, agents or representatives, by acts of God, acts of the public enemy, fire, floods, epidemics, quarantine restrictions, labor disputes, freight embargoes, materials delays when approved by the Engineer, inclement weather or delays of Subcontractors due to such causes provided, that the Contractor shall within five (5) working days from the end of any such delay notify the Engineer in writing of the cause of delay. The Engineer will determine the extent of delay and his findings of the facts thereon shall be final.

In the event the Contractor is delayed in the work by the wrongful act or negligence of the City or its employees, agents or representatives, which said delay is not caused by or the continuance of which is not due to any act or conduct on the part of the Contractor, reimbursement or payment to the Contractor for such delay, if at all, shall be limited to any money actually and necessarily expended on the job during the period of delay, solely by reason of said delay. No reimbursement, payment or allowance will be made for anticipated profits, rental charges for equipment owned by the Contractor, or any overhead or indirect costs.

801.9 **ACCEPTANCE OF PAYMENT DOES NOT CONSTITUTE WAIVER.** If the City accepts any work or makes any payment under this Contract after a default by reason of delays, the payment or payments shall in no respect constitute a waiver or modification of any of the provisions in regard to time of completion and liquidated damages.

801.10 **SUSPENSION OF CONTRACT.** If at any time the Contractor has failed to supply an adequate working force or materials of proper quality, or has failed in any other respect to prosecute the work as intended by the terms of the Contract, notice thereof in writing will be served upon him and his surety by the Engineer. Should the Contractor neglect or refuse to provide means for satisfactory compliance with the Contract within three (3) working days, the Engineer shall have the power to suspend the operations of the Contractor. Upon receiving notice of such suspension, the Contractor shall discontinue said work or such parts of it as the Engineer may designate. Upon such suspension, the Contractor's control of the Work shall terminate. The City or its duly authorized representative, may take possession of all or any part of the Contractor's materials, tools, equipment,

and appliances upon the premises, and use the same for the purpose of completing said Contract, and hire such force and buy or rent such additional machinery, tools, appliance and equipment, and buy such additional materials and supplies at the Contractor's expense as may be necessary for the proper conduct of the Work and for the completion thereof. The City may employ other parties to carry the contract to completion, employ the necessary workmen, substitute other machinery or materials, and purchase the materials contracted for, in such manner as the Engineer may deem proper. The City may annul and cancel the Contract and relent the work or any part thereof.

801.11 **LIABILITY OF CONTRACTOR IN EVENT OF SUSPENSION OR CANCELLATION.** Any excess of cost over and above the contract price because of suspension of the Contract will be charged against the Contractor and his sureties, who will be liable therefor. In the event of such suspension, all moneys due the Contractor or retained under the terms of this Contract shall be forfeited to the City until all obligations of the Contract have been met. Such forfeiture will not release the Contractor or his sureties from liability for failure to fulfill the contract.

The Contractor and his sureties will be credited with any surplus of money so forfeited by the suspension or cancellation of the contract after the completion of the work by the City as above provided. The Contractor or his surety may claim any surplus remaining after all just claims for such completion of the Contract have been paid.

801.12 **DECISION OF COUNCIL BINDING ON ALL PARTIES.** The final determination of the question as to whether there has been non-compliance with the Contract sufficient to warrant the suspension or annulment thereof, rests with the Council. Its decision shall be binding on all parties to the Contract.

801.13 **GUARANTEE.** The Contractor shall guarantee the entire Work constructed by him under the Contract to be free of defects in materials and workmanship for a period of one year after completion and acceptance by the City. The date of initiation of this guarantee period shall be the date of the filing of the Notice of Completion by the City.

The Contractor shall agree to make, at his own expense, any repairs or replacements made necessary by defects in materials and workmanship which become evident within said guarantee period. The Contractor hereby agrees to defend, to indemnify and hold harmless the City, its officers, agents and employees, and its consultants associated with the project (City to provide name of consultant), against and from all claims and liability arising from damage and injury due to said defects. The Contractor shall make all repairs and replacements promptly upon receipt of written order from the Engineer. If the Contractor fails to make the repairs and replacements promptly, the City may do the Work and the Contractor and his surety shall be liable to the City for the cost of such work.

The performance of guarantee and conditions specified above shall be secured by a surety bond which shall be delivered by the Contractor to the City prior to the date on which final payment is made to the Contractor. Said bond shall be in an approved form and executed by a surety company or companies satisfactory to the City, in the amount of 10 percent of the Contract price. Said bond shall remain in force for the duration of the guarantee period.

SECTION 9 - MEASUREMENT AND PAYMENT

901.1 **MEASUREMENT OF QUANTITIES.** For all items of work, other than those to be paid for by lump sum, after the work is completed and before final payment is made therefore, the Engineer shall make final measurements to determine the quantities of various items of work performed as the basis for final settlement. The Contractor, in case of unit price items, will be paid for the actual amount of work performed and for the actual amount of materials in place, in accordance with these Specifications as shown by the final measurements. All work completed under this Contract shall be measured by the Engineer according to the standards of weight and measures recognized by the National Bureau of Standards. A ton shall consist of two thousand (2,000) pounds avoirdupois.

Measurement for items paid for on the basis of lineal or surface area shall be along centerline distances and in horizontal planes. In computing volumes, the method of average end areas will be used with the aid of planimeter. The pay weight for all items to be paid for by weight shall be determined by actual certified scale weight, certified shipping weight or computed weight if so specified.

In order that the City of Berkeley shall have control over materials paid for on a tonnage basis, certain procedures, as outlined below, shall be followed.

1. The Resident Engineer shall be notified prior to the delivery of materials which are to be paid for on a tonnage basis.

2. Material delivered must be accompanied by a weight tag at the time of delivery.

3. The Resident Engineer must validate each tag at the time of delivery.

4. Tags will be accepted and initialed only on the date shown on the tag, which shall be the date of delivery.

5. Final quantities will be based on initialed tags only.

Materials specified for measurement by tallying of vehicles having predetermined carrying capacity shall be hauled only in approved units, struck off at the top of the carrying unit or to permanent lines at the loading point and tallied at the point of delivery. Unless all vehicles have uniform carry capacity, each hauling unit shall be marked identifying the approved capacity.

901.2 **EXTRA AND FORCE ACCOUNT WORK.** Extra work as defined in Section 401.3, when ordered and accepted, shall be paid for under a Contract change order in accordance with the terms therein provided. Payment for extra work will be made at the unit price or lump sum previously agreed upon by the Contractor and the Engineer; or by force account.

If the work is done on force account, an amount equal to the sum of the following items shall be used as full and proper compensation therefor, and such amount shall be added to the price fixed by the

terms of this Contract for the part of the work affected:

1. The actual cost to the Contractor of the material required for the Work as furnished and delivered by him at the site of the Work.

2. The actual cost to the Contractor of the labor (including foremen devoting their exclusive attention to the work in question) required to incorporate all of said material into the Work and to finish the Work in accordance with directions and the cost of workers compensation insurance premiums for said labor.

3. The actual cost to the Contractor of equipment required for the extra work, except that the rate paid shall not exceed the current prevailing equipment rental rates. The charge for equipment shall be only for that time of actual operation devoted exclusively to the work in question.

4. Ten percent (10%) of Item 2, which shall be considered as covering the cost of small tools, plant and superintendence, and clerical work in connection with the changes.

5. Fifteen percent (15%) of the sum of Items 1, 2, and 3, which shall be considered as covering all other expenses and profit.

The City reserves the right to furnish such materials required as it deems expedient, and the Contractor shall have no claim for profit on the cost of such materials.

In order that a proper estimate may be made by the Engineer of the net cost of labor and materials entering into extra work, in accordance with the procedure herein stated, the Contractor shall furnish daily an itemized statement of materials and labor supplied, together with the cost of such material and the wages paid and shall furnish vouchers for quantities and prices of such labor, material or work. In case the Contractor fails to comply with the above provisions, he shall have no claim for compensation against the City for such extra work.

This method of determining the price of work shall not apply to the performance of any work or the furnishing of any materials which is susceptible of classification under the items for which prices are established in this Contract as is required or reasonably implied to be performed or furnished under this Contract.

901.3 **PROGRESS PAYMENTS.** The Engineer shall, once in each month, cause an estimate in writing to be made of the total amount of work done and the acceptable materials furnished and delivered by the Contractor on the ground and not used to the time of such estimate, and the value thereof according to the schedule of prices contained in the accepted bid for work. The Engineer may make an estimate of such items of work that are only partially completed on a prorating basis and pay for that portion of the item of work completed as work done.

The Contractor may request the Engineer to establish a basis for prorating the unfinished items of work, but must use such a schedule for said prorating as will then be established by the Engineer. In

order to receive payment, the Contractor shall make his bills in triplicate and deliver to the office of the Engineer.

901.3.1 **BID ITEM BREAKDOWN.** The Contractor shall submit proposed bid item breakdowns for progress payment purpose within 5 days following Award. Engineer shall establish a basis for prorating unfinished items of work utilizing Contractor's proposal, but Engineer shall not be limited to breakdown of items as proposed by the Contractor. Unbalanced or "front loaded" breakdowns shall be rejected.

901.4.1 **RETAINED FUNDS.** Pursuant to Article XI, Section 66 of the City Charter, the City shall retain ten percent (10%) of such estimated value of work done as part security for the fulfillment of this Contract by the Contractor and shall monthly pay to the Contractor, while carrying on the work, the balance not retained, as aforesaid, after deducting therefrom all previous payment and all sums to be kept or retained under the provisions of this Contract. No such estimate or payment shall be required to be made when in the judgment of the Engineer, the work is not proceeding in accordance with the provisions of this Contract or when, in his judgment, the total value of the work done since the last estimate amounts to less than one thousand dollars ($1,000.00).

901.4.2 **PAYMENT OF RETAINED FUNDS.** Attention is directed to Section 901.3 of the General Provisions "Progress Payments" and in particular to the retention provisions of Section 901.4.1 “Retained Funds”.

1. At the request and expense of Contractor, the City will make payments of funds withheld from progress payments to Contractor or to an Escrow Agent, pursuant to the terms of Section 22300 of the Public Contract Code if Contractor deposits with the City or with a state or federally chartered bank as escrow agent an equal value of securities eligible for substitution pursuant to Section 22300 of the Public Contract Code. Contractor agrees that any escrow agreement under this Contract provision must substantially conform to the form escrow agreement in Section 22300 of the Public Contract Code. Securities will be held in the name of the City, with the Contractor as beneficial owner. The City will determine market value of substituted securities. Contractor will deposit additional securities to restore the total market value of deposited securities if the market value decreases below the retention amount.

2. The Contractor shall bear the expense of the Escrow Agent who may be either the City Treasurer or the bank, in connection with the escrow deposit made.

3. The Contractor shall obtain the written consent of the surety to such agreement.

901.5 **FINAL PAYMENTS.** The Engineer shall, after the completion of the requested work in each area, make a final estimate of the amount of work done thereunder, and the value of such work, and the City shall pay the entire sum so found to be due after deducting therefrom all previous payments and all amounts to be kept and all amounts subject to correction in the final estimate and payment.

The final payment shall not be due and payable until the expiration of thirty-five (35) calendar days from the date of acceptance of a specific phase of the work by the Engineer, and upon receipt of a bill for the amount due on the work from the Contractor.

No certificate given or payments made under the Contract, except the final certificates or final payment, shall be conclusive evidence of the performance of the Contract, either wholly or in part, against any claim of the Contractor, and no payment shall be construed to be an acceptance of any defective work or improper materials.

The payment of the final amounts due under the Contract, and the adjustment and payment for any Work done in accordance with any alterations of same, shall release the City, the Council, and the Engineer from any and all claims or liability on account of work performed under the Contract or any alteration thereof.

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PART D
TECHNICAL PROVISIONS

SPECIFICATIONS

FOR

SANITARY SEWER REHABILITATION
SANITARY SEWER REHABILITATION AND REPLACEMENT - SAN PABLO AVENUE, SACRAMENTO STREET, UNIVERSITY AVENUE, ET AL.

SPECIFICATION NO. 26-11759-C

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AMENDMENT TO THE "REGIONAL STANDARDS" FOR SANITARY SEWER SYSTEM INSTALLATION, REHABILITATION, AND REPAIR, JUNE 30, 2016 EDITION

AND

AMENDMENT TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, PARTS 2, 3 AND 5, 2015 EDITION

For Sanitary Sewer Rehabilitation and
Relief Sewer Construction
In the City of Berkeley

This Amendment to the "Regional Standards" for Sanitary Sewer System Installation, Rehabilitation, and Repair, June 30, 2016 Edition ("Regional Standards") and to the Standard Specifications for Public Works Construction, 2015 Edition, Parts 2, 3 and 5 ("Greenbook") applies to the construction of relief sewers, collection system sewers, and sewer laterals (lower laterals), as well as the rehabilitation of existing sewers and structures in sanitary sewage collection systems, existing sewer lateral connections and sewers laterals.

This Amendment modifies the "Regional Standards" and the "Greenbook," its provisions take precedence over those Standard Specifications.

Only those materials and construction methods described in the Standard Specifications, as modified by this Amendment, and included in the Contract Documents, will be used by the Contractor. Sanitary sewer pipe types to be used for this project shall be as noted in Section 207-26.

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PART 2 – CONSTRUCTION MATERIALS

SECTION 201 – CONCRETE, MORTAR AND RELATED MATERIALS

- Page 55 of Greenbook

201-10 MANHOLES, CLEANOUTS AND APPURTENANT MATERIALS.

- Page 26 of Regional Standards -

ADD PARAGRAPH FOLLOWING FIRST PARAGRAPH OF SUBSECTION 201-10 OF THE "REGIONAL STANDARDS", TO READ AS FOLLOWS

Contractor shall remove all existing brick manholes and replace with a standard pre-cast concrete manhole as specified in this section and the standard details.

REPLACE SUBSECTION 201-10.2.2 OF THE "REGIONAL STANDARDS" WITH THE FOLLOWING

201-10.2.2 Pre-cast Manhole Sections. Precast manhole sections where not otherwise modified in the Plans, shall conform to ASTM C478 and meet the following requirements:

1. The wall thickness shall not be less than 5 inches for 48-inch diameter barrel sections and 6 inches for 60-inch diameter barrel sections.

2. All sections shall be fully cured and shall not be shipped nor subjected to loading until the design compressive strength has been reached.

3. Precast base sections shall have the base slab integral with the sidewalls. Precast base sections shall be used only if the invert plan and alignment of the sewer connections in the base exactly match the field measured angles between the connecting sewers. Contractor shall field verify all sewer inverts for precast manhole bases prior to ordering base sections. Where base sewer inverts do not match existing sewer inverts, Engineer shall reject base section at his expense without time extension to the Contract.

201-10.2.6 Jointing Manhole Sections.

ADD THE FOLLOWING AFTER THE LAST SENTENCE OF SUBSECTION 201-10.2.6 OF THE "REGIONAL STANDARDS"

Contractor shall submit product information for all material in accordance with Part C, Subsection 401.12 of the Specifications.

ADD NEW SUBSECTIONS 201-10.2.7, 201-10.2.8 AND 201-10.2.9 TO "REGIONAL STANDARDS", TO READ AS FOLLOWS

201-10.2.7 Manhole Frames and Covers. Manhole frames and covers shall be in accordance with Subsection 303-8.12 and as shown on the Standard Details.

201-10.2.8 Watertight Manhole Frames and Bolted Lids. Watertight manhole frames and bolted lids shall be in accordance with the requirements in Subsection 303-9.12 for off road areas and Standard Details. Final selection shall be based on approval of the Engineer.

201-10.2.9 Manhole Steps. Manhole steps are not allowed.

ADD NEW SUBSECTION 201-10.3.1 TO "REGIONAL STANDARDS", TO READ AS FOLLOWS

201-10.3.1 Cleanout Frames and Covers. Castings shall conform to Standard Detail. The bearing surfaces of the cover shall seat firmly into the frame without rocking. Unless otherwise specified, exposed surfaces with the castings assembled and disassembled shall be painted with a commercial quality asphalt paint after testing and inspection.

REPLACE SUBSECTION 201-10.5.2 OF THE "REGIONAL STANDARDS" WITH THE FOLLOWING

201-10.5.2 Pipe Stubouts For Service Connections. Conform to the requirements for future service connection pipe.

201-10.5.3 Pipe Stubouts For Future Sewer Connections. Pipe stubouts shall be the same type as approved for use in lateral, main, or trunk sewer construction. Strength classifications shall be same class as in adjacent trenches. Where there are two different classes of pipe at a manhole, the higher strength pipe will govern strength classification. Rubber gasketed watertight plugs shall be furnished with each stubout and adequately braced against all hydrostatic or air pressures.

SECTION 207 – GRAVITY PIPE

- Page 130 of Greenbook

207-19 POLYETHYLENE (PE) SOLID WALL PIPE AND LINER.

- Page 28 of Regional Standards -
- Page 168 of Greenbook -

*** REPLACE SUBSECTION 207-19.1 OF THE "REGIONAL STANDARDS" WITH THE FOLLOWING***

207-19.1 General. Polyethylene (PE) plastic solid wall pipe and liner for use in gravity flow sanitary sewers, storm drains, and sewer laterals shall comply with ASTM D 3350 or ASTM F 714. Unless otherwise indicated, pipe shall conform to SDR 17. Fittings shall comply with ASTM D2683 or D3261.

Joints shall be butt fusion joints for the main line of pipe and be in accordance with Subsection 500-1.6.4.1. Where PE pipes must be joined in a trench, pipes shall be joined by an electro-fusion coupling. The inside diameter of an electro fusion coupling shall match the outside diameter of the adjoining pipe.

Lateral connections to the main line shall be made with fused branch saddles, electrofusion saddles or using HDPE sewer stub tees or wyes. The inside diameter of the fusion joints shall match the outside diameter of the adjoining pipe.

Fused joints or couplings shall have a 5-year satisfactory history of performance based on information submitted by Contractor for each size and DR of joint or coupling. Joints shall meet AWWA C906 requirements. Joint pressure ratings shall meet or exceed the pipe pressure rating of the adjoining pipe.

REPLACE SUBSECTION 207-19.3 OF THE "GREENBOOK" WITH THE FOLLOWING

207-19.3 Pipe Acceptance. At the time of manufacture, each lot of pipe, liner, and fittings shall be inspected for defects and tested in accordance with ASTM D3350.

The liner or pipe shall be homogeneous throughout, uniform in color, free of cracks, holes, foreign materials, blisters or deleterious faults.

The Contractor shall submit in accordance with Part C, Subsection 401.12 of the Specifications, certification by the manufacturer that materials used in the manufacture of the pipe and the pipe and the pipe fittings conform to the requirements of these specifications. The Contractor shall also supply written certification that all resins/pellets used in the manufacture of the pipe are from a single

producer. Failure to meet this requirement will result in rejection of the pipe.

For testing purposes, a production lot shall consist of all pipe or liner having the same marking number. It shall include any and all items produced during any given work shift and must be so identified as opposed to previous or ensuing production.

ADD NEW SUBSECTION 207-19.6 TO THE "GREENBOOK", TO READ AS FOLLOWS*

207-19.6 Dimensions. The SDR for liner pipe shall be as shown on the Plans. The inside diameter of the liner shall be the maximum available that satisfies the SDR requirement together with the requirement that the outside diameter shall not exceed 90 percent of the inside diameter of the existing pipe. The Contractor shall be responsible for field verifying the pipe. The Contractor shall be responsible for field verifying the actual internal diameter of the existing sewer for each installation prior to ordering the liner for that reach.

207-25 HIGH DENSITY POLYETHYLENE (HDPE) GASKETED JOINT PIPE.

- Page 28 of Regional Standards -

REPLACE SUBSECTION 207-25 OF THE "REGIONAL STANDARDS WITH THE FOLLOWING

207-25.1 General. This subsection covers the requirements of HDPE gasketed joint pipe for use in sanitary sewers, as per ASTM F894. The pipe shall be made by the continuous winding of a special profile wall design onto suitably sized mandrels and shall be constant internal diameters. Joints shall be gasketed joints as per ASTM F477. They shall be molded or produced from an extruded shape approved by the manufacturer and spliced into circular form.

207-25.2 Material Composition. The pipe shall be made of high density, high molecular weight polyethylene pipe material meeting the requirements of Type III, Class C, Category 5, Grade P34, as defined in ASTM D1248. If approved by the Engineer, materials meeting the requirements of cell classification PE 334433 C or higher cell classification in accordance with ASTM D3350 may be used. The high density polyethylene resin compound shall, as a minimum, meet the following requirements:

Test	Value	Units	ASTM test number
Density (pipe)	0.955	grams/cc	D1505
Density (natural base resin)	0.944	grams/cc	D1505
Melt Index (M)	0.14	grams/10 min	D1238 (E)
High Load Melt Index (HLMI)	11.0	grams/10 min	D1238 (F)
Melt Flow Ratio (MI/HLMI)	150	--	--
Thermal Stability	260	degrees C	D3350
Tensile Yield	3625	psi	D638

Elongation	800	percent	D638
ESCR (50 degrees C) (50% lgepal)	1500	F (20) hrs	D1693 (B)
Flexural Modulus (tangent)	136,000	psi	D790

207-25.4 Marking. Each standard and random length of pipe shall be marked with a coded number which identifies the manufacturer, size, ring stiffness coefficient, material designation, plant location, machine, manufacture date and shift on which the pipe was extruded.

207-25.6 Pipe Acceptance. The Contractor shall provide the test results indicating that the HDPE pipe and fittings meet or exceed the physical properties specified in Subsection 207-25.2. The permitted tolerance shall be nominal diameter plus or minus ¼ inch. Pipe supply that does not meet this requirement will be rejected.

The pipe and fittings shall be homogeneous throughout, uniform in color, and free from cracks, holes, foreign materials, blisters or deleterious faults.

207-25.7 Installation and Field Inspection of HDPE Gasket Joint Pipe. Pipe shall be installed in conformance with the manufacturer's recommendations including, but not limited to:

1. Sheeting extending below the top of the pipe shall be cut off above the top of the pipe and left in place. This metal sheeting may be removed with the Engineer's approval.

2. Trench shields or boxes shall not be placed below the top of the pipe.

3. Bedding shall be shovel-sliced to ensure proper placement under the pipe haunch. Contractor shall compact the bedding material mechanically as needed.

4. Transition pipe support shall be provided at least three diameters long and 12 inches deep at manholes.

5. All manhole connections shall be treated as if the connection is below the water table. The manhole connections shall be per manufacturer's recommendations. Manhole connections shall be submitted to Engineer for approval.

6. An experienced, competent, factory representative of the manufacturer shall visit the site of the work and inspect, check and approve the pipe installation in accordance with this specification. Arrange for the representative to devote a minimum of 5 non-consecutive days at the site for inspection and instruction of Contractor personnel as scheduled or agreed by the Engineer. The representative shall furnish the Engineer a written report covering the field visits.

   Site installation instruction is a prerequisite for payment of installed HDPE pipe. No payment for HDPE pipe shall be made until both the Contractor and the pipe manufacturer have submitted certified documentation that the proper installation instruction has been

given and received.

7. Pipe shall be bedded in conformance with Subsection 306-6. Backfill shall conform to Subsection 306-12. Field inspection shall conform to Subsection 306-7.7.3.

ADD NEW SUBSECTION 207-26 TO THE "GREENBOOK", TO READ AS FOLLOWS
207-26 SANITARY SEWER PIPE TYPES – Sanitary sewer pipe type to be used for this project shall be as follows:

207-26.1 Trunk and Collector Sewer Main. Method "C" – High Density Polyethylene (HDPE) gasketed joint pipe, in accordance with ASTM F894 and subsection 207-25; Polyethylene Pipe (PE) SDR-17 in accordance with Subsection 207-19. The following materials may only be used under special circumstances as approved by the Engineer on a case-by-case basis: Vitrified Clay Pipe (VCP), extra strength, bell and spigot, in accordance with ASTM C700; ASTM D2241; Polyethylene Pipe (PE) SDR 21 in accordance with subsection 207-19.

207-26.2 Lower Laterals. Polyethylene Pipe (PE) SDR-17 in accordance with Subsection 207-19. The following materials may only be used under special circumstances as approved by the Engineer on a case-by-case basis: Polyethylene Pipe (PE) SDR 21 in accordance with subsection 207-19. Vitrified Clay Pipe (VCP), extra strength, bell and spigot, in accordance with ASTM C700.

207-26.3 Pipe Rehabilitation Using Trenchless Method

a) Method "A". Cured-in-Place pipe liner (CIPP), Deformed/Reformed HDPE pipe liner. Refer to Part 5, Section 500 (Pipeline System Rehabilitation) of the Standard Specifications, 2015 Edition (Greenbook). See Special Condition No. 15 and Appendix 1 for additional requirements.

b) Method "B". Pipe-breaking, pipe-bursting, pipe-splitting or other comparable method. High Density Polyethylene (HDPE) in accordance with subsection 207-25; Polyethylene Pipe (PE) SDR-17 in accordance with Subsection 207-19. See Special Condition No. 15 and Appendix 1 for additional requirements.

207-26.4 Storm Drain Pipe. Reinforced Concrete Pipe (RCP), Class II in Accordance with ASTM C 76; Polyethylene Pipe (PE) SDR 17 in accordance with Subsection 207-19.

SECTION 217 – BEDDING AND BACKFILL MATERIALS

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REPLACE SUBSECTION 217-1.1 OF THE "GREENBOOK" WITH THE FOLLOWING

217-1.1 General. Unless otherwise specified in the Special Provisions or shown on the Plans, pipeline bedding material shall be in accordance with City of Berkeley Standard Plan No. 8136.

REPLACE SUBSECTION 217-2.1 OF THE "GREENBOOK" WITH THE FOLLOWING

217-2.1 General. Unless otherwise specified in the Special Provisions or shown on the Plans, pipeline trench backfill material shall be in accordance with City of Berkeley Standard Plan No. 8136. Trench backfill material, whether native or imported, material shall be free from shale, sod, roots, rubbish, trash, lumber, organic material, ashes and other debris, unusual color, contamination, and sulfide odor.

When native material is unsuitable for use in backfill, it shall be disposed of off the Work site, and suitable material capable of being compacted to required relative densities shall be furnished by the Contractor at their expense.

PART 3 – CONSTRUCTION METHODS

SECTION 303 – CONCRETE AND MASONRY CONSTRUCTION

- Page 319 of Greenbook -

REPLACE SUBSECTIONS 303-9.1.b, 303-9.1.c AND 303-9.1.d OF THE "REGIONAL STANDARDS" WITH THE FOLLOWING

303-9 INSTALLATION OF MANHOLES, CLEANOUTS AND APPURTENANCES.

- Page 29 of Regional Standards -

303-9.1.b Rock Base. Prior to placing the concrete manhole base, a thickness of 8 inches of crushed aggregate as specified in Subsection 201-10.2 shall be placed upon the earth subgrade and compacted to 90 percent relative compaction by mechanical means.

303-9.1.c Concrete Manhole Base. Cast-in-place concrete manhole base shall be constructed as shown on the Plans and Standard Details and shall conform to the applicable requirements of Section 303. Concrete shall be Type II low alkali in accordance with Section 201. The use of Type III (High Early Strength) concrete in lieu of Type II concrete is prohibited. The concrete shall be vibrated to densify and screeded so that the first precast manhole section to be placed has a level uniform bearing surface for the full circumference. An approved metal forming ring shall be used to form a level joint groove in the fresh concrete of the manhole base to receive the first precast manhole section. Contractor shall provide a watertight joint in accordance Subsection 201-10.2.6 between the base and first precast manhole section.

303-9.1.d Placing Precast Manhole Sections. Precast manhole sections shall be carefully inspected prior to installation. Sections with chips or cracks in the tongue shall not be used. Ends of precast manhole sections shall be cleared of foreign materials.

Precast manhole sections shall be installed in a manner that will result in a watertight joint. Rubber "O"-ring gaskets or preformed flexible joint sealant as specified in Subsection 201-10.2.6 shall be installed in strict conformance with the manufacturer's recommendations. Only pipe primer furnished by the gasket manufacturer will be approved. If leaks appear in the manholes, the inside joint shall be caulked with non-shrink epoxy mortar as specified in Subsection 303-9.1.m, Item No. 5, to the satisfaction of the Engineer, and prior to manhole testing.

REPLACE SUBSECTIONS 303-9.1.f AND 303-9.1.g OF THE "REGIONAL STANDARDS" WITH THE FOLLOWING

303-9.1.f Drop Manholes. Drop manholes shall be constructed where necessary to meet the requirements of Standard Detail" Outside Drop Connection – Concrete Encased". The drop assembly shall be connected to the sewer pipe with an approved adapter. The lower elbow shall be supported

by concrete poured monolithically with the manhole base.

303-9.1.g Flexible Joints. For all manholes flexible joints shall be provided at a distance of not less than 1 foot and not greater than 1-1/2 feet from the manhole outside wall. Flexible joints shall also be provided at the edge of the manhole base for all manholes. Pipes entering manholes shall be laid on firmly compacted base rock, or crushed rock approved by Engineer, on undisturbed earth under each stubout.

REPLACE SUBSECTIONS 303-9.1.h AND 303-9.1.i OF THE "REGIONAL STANDARDS" WITH THE FOLLOWING

303-9.1.h Pipe Stubouts

303-9.1.h.1 For Service Connections. Four and six-inch diameter service connection stubouts shall be provided in manholes where shown on the plans. The service connection stubouts shall be placed in the manhole base. The maximum and minimum length outside the manhole wall shall be as shown on the Standard Details. All stubouts shall be furnished with a watertight gasket pipe plug suitably braced against blowoff. Compacted crushed aggregate as specified hereinbefore shall be placed upon the undisturbed earth.

Unless otherwise directed by the Engineer, the elevation of the inside top of service connection pipe shall match the elevation of the inside top of the outlet pipe.

303-9.1.h.2 For Future Sewer Connections. Stubouts from manholes for future sewer connections shall be installed as shown or required by the Engineer. Maximum and minimum length outside the manhole wall shall be as shown on the Standard Details. Pipes in precast walls or manhole base shall be constructed in accordance with details shown on the Plans. Compacted crushed aggregate, as specified hereinbefore shall be placed upon the earth under all stubouts.

Semi-permanent plugs shall be installed in the end of stubouts with gasket joints similar to sewer pipe being used. Plugs shall be capable of withstanding all internal or external pressures without leakage. All plugs shall be adequately braced to prevent blowoffs.

303-9.1.i Permanent Plugs. Abandoned mains shall be plugged and disconnected from existing manholes per Standard Detail Plan No 8224.

REPLACE SUBSECTIONS 303-9.1.k, 303-9.1.l, 303-9.1.m, AND 303-9.1.n OF THE "REGIONAL STANDARDS" WITH THE FOLLOWING

303-9.1.k Manhole Frames and Covers. Frames and covers shall be installed on top of manholes to positively prevent all infiltration of surface or groundwater into manholes. Frames shall be set in a bed of mortar with the mortar with the mortar carried over the flange of the ring as shown on the Plans. Set frames so tops of covers are flush with surface of adjoining pavement or ground surface, unless otherwise shown or directed. Provide a concrete manhole collar as shown on the standard

Details.

All manholes located in off-road areas shall have bolt down covers, manufactured by Phoenix Iron Works, Model P-1002, Neenah Foundry Company, Model R-1915-G-Type L, or equal. All manhole covers shall be provided with 1/4-inch neoprene gasket seals and closed pick holes. Bolts, nuts, washers, etc., shall be 316-stainless steel.

303-9.1.l Manhole Over Existing Sewers. Manholes shall be constructed over existing operating sewer lines at locations shown. Excavation shall be as specified hereinbefore.

Flow through existing sewer lines shall be maintained at all times. New concrete and mortar work shall be protected for a period of 3 days after concrete has been placed. Contractor shall submit his plans for diverting sewage flow and obtain Engineer's approval before starting. Engineer's approval shall not relieve Contractor of the responsibility for maintaining adequate capacity for flow at all times and adequately protecting new and existing work.

The new base shall be constructed under and around the existing sewer as specified herein.

Prior to concrete placement, Contractor shall cut VCP above the springline for the length of the internal dimensions of the structure. VCP pipe so cut may be left in place after concrete placement. Where PVC or HDPE pipe is used to convey the flow, prior to concrete placement, the pipe shall not be cut at springline. PVC or HDPE pipe shall be removed from within the interior of the structure after the concrete has cured sufficiently.

303-9.1.m Connection to Existing Manholes. Sewers shall be connected to existing manholes. Provide all diversion facilities and perform all work necessary to maintain sewage flow in existing sewers during connection to the manholes such that sewer overflows or backups into sewer laterals do not occur. Break out existing manhole bases and ground as necessary to provide smooth flow into and through existing manholes. The connection procedure shall be as follows:

1. Core drill or otherwise cut an opening approximately 6-inches in diameter greater than the outside diameter of the pipe.

2. Form a keyway in the cut edge of the existing wall by chipping approximately 1 inch deep, if the spigot or plain end of the pipe is being inserted.

3. Roughen the surface of the pipe to be encased in the wall by sandblasting or other means. Plastic pipes shall be provided with a waterstop gasket.

4. Coat the surface of the existing wall edge and the area of the pipe to be encased with an epoxy bonding agent such as Sikadur® 32 Hi-Mod Epoxy Adhesive, as manufactured by the Sika chemical Corporation; Concresive 1001-LPL, as manufactured by Adhesive Engineering Co.; or equal. The grout must be placed while the bonding agent is still tacky.

5. Fill the space between the pipe and the existing wall with a nonshrink, nonmetallic grout as manufactured by Master Builders, U.S. Grout Corp (5 Star), or equal. The grout shall be in accordance with ASTM C1107 and have 0.00 percent shrinkage when tested according to the requirements of ASTM C827 and US Army Corps of Engineers Spec CRD C621.

6. The pipe shall be shored in place so that there is no possibility of movement during and after the grouting operation. The shoring shall not be removed until the grout has attained a compressive strength of 3000 psi or higher.

303-9.1.n Special Manholes. Special manholes shall be constructed in conformance with the applicable requirements of Section 303 and as shown on the Plans. Shop drawings of specials manholes including appurtenances such as cones, frames, steps and stubouts shall be submitted in accordance with Part C, Subsection 401.12 of the Specifications.

ADD THE FOLLOWING SUBSECTIONS 303-9.1.p, 303-9.1.q, AND 303-9.1.r TO THE "REGIONAL STANDARDS"

303-9.1.p Plastic Manholes. Plastic manholes (HDPE, or other approved material) may be used in place of precast manholes in the backyard easement areas upon approval of the Engineer. Contractor shall submit the manufactures product information and costs prior to the first manhole installation. Plastic manholes shall not be used in street areas. The manhole shall be watertight, one-piece construction, corrosion and chemical resistant to sanitary sewage, and installed per manufacturer's recommendations.

Pipe connections to the manhole shall be made with a neoprene boot, constructed to the sewer pipe outside diameter, and 316-stainless steel clamps. A shelf shall be constructed within the manhole using sand and a concrete cap. The manholes shall be designed for loadings that may be expected at the installed location.

A concrete base of adequate weight shall be installed to anchor the manhole when the groundwater level is at the surface of the manhole. Attachment of the concrete base to the plastic manhole shall be adequate to withstand the buoyant force described above. Manhole connectors shall be embedded in the plastic material. Any metal connecting devices shall be 316-stainless. Grade rings, concrete collars, frames and covers, and other appurtenances shall be in accordance with Section 303.

Shop drawings are required in accordance with Part C, Section 401.12 of the Specifications.

303-9.1.q Watertight Manholes. Watertight manholes shall be constructed where shown or specified. Watertight manhole frames and covers shall be prevented from blowing off during sewer surcharging by installation of watertight manhole frames bolted lids as shown. Bearing surfaces shall be sealed with neoprene gasket.

303-9.1.r Manhole Steps. Manhole steps are not allowed as shown on the Standard Details, and in accordance with Subsection 206-7.3.

ADD THE FOLLOWING SUBSECTION 303-9.3 TO THE "REGIONAL STANDARDS"

303-9.3 Payment. Manholes satisfactorily constructed complete, in place, and tested will be paid for at the unit price for each manhole.

Appurtenances such as manhole cones, frames, covers, gratings, steps, stubouts will be considered part of the manhole and no direct or additional payment will be made therefore.

Special manholes constructed complete, in place, will be paid for at the respective unit prices bid for each. Appurtenances as shown or specified will be considered part of the manhole and no direct or additional payment will be made therefore.

Drop assemblies, regardless of size and depth, constructed complete, in place, will be paid for at the unit price bid for each.

The unit prices in the Bid shall include full compensation for furnishing all labor, supervision materials, tools, and equipment for doing all work, including any rework, involved in, or appurtenant to each item as shown on the Plans or in the Specifications.

SECTION 306 – OPEN TRENCH CONDUIT CONSTRUCTION

- Page 372 of Greenbook -

306-3 TRENCH EXCAVATION.

- Page 31 of Regional Standards –
- Page 376 of Greenbook –

306-3.1 General.

REPLACE THE THIRD PARAGRAPH OF SUBSECTION 306-3.1 OF THE "GREENBOOK" WITH THE FOLLOWING

Excavation shall include the removal of all water and materials of any nature which interfere with the construction work. The Contractor shall keep excavations reasonably free from sewage and water during construction. The flow level shall be drawn down below the bottom of excavations to maintain the undisturbed state of natural soils and allow the placement of any fill to the specified density. Disposal of all flow shall be made at the nearest downstream manhole and shall not damage property or create a public nuisance. The Contractor shall have on hand pumping equipment and machinery in good working condition for emergencies and shall have workmen available for its operation. Dewatering systems shall operate continuously until backfill has been completed to 1 foot above the normal static groundwater level.

Groundwater shall be controlled to prevent softening of the bottom of excavations, or formation on "quick" conditions. Dewatering systems shall not remove natural soils. Dewatering shall not adversely affect adjacent structures. Any excavation below pipe zone shall be backfilled with bedding material suitably densified. All cost associated with dewatering shall be included in the unit costs listed in the bid proposal for works that require excavation.

REPLACE THE LAST PARAGRAPH OF SUBSECTION 306-3.1 OF THE "REGIONAL STANDARDS WITH THE FOLLOWING"

Contractor shall pothole to verify the depths of underground utility crossings, the Contractor shall excavate to locate said underground utility crossings and relay this depth information to the Engineer.

REPLACE SUBSECTION 306-3.3 OF THE "GREENBOOK" WITH THE FOLLOWING

306-3.3 Removal and Abandonment of Existing Conduits and Structures.

306-3.3.1 General. All sanitary sewers and storm drains to be abandoned shall be completely filled with Controlled Low Strength Material (CLSM) per Subsection 201-6 of the "Regional Standards".

The CLSM shall be self-leveling, non-shrink, and have minimum unconfined compressive strength of 50 psi and maximum of 150 psi at 28 days. Abandoned mains shall be plugged 5 feet in length at each end with lean mix (two sacks of cement per cubic yard) concrete. The concrete shall be pumped into the pipe. The exposed end of the plug shall be finished smooth and flush to the end of the pipe.

When a sanitary sewer or storm drain is to be abandoned within specified limits, all structures and appurtenances within said limits shall also be abandoned.

When manholes are to be abandoned, the upper portion shall be excavated to remove the cone, frame, and cover. The manhole shall be perforated at the base to prevent the entrapment of water. The manhole shall be filled with sand meeting the requirements of Subsection 200-1.5.1.

Cover sets, gratings, and other steel components (except reinforcing bars) of removed or abandoned structures shall be salvaged and returned to the agency.

306-3.3.2 Payment. Payment for abandonment of sewers shall include compensation for all labor, material, equipment, excavation, and backfill including imported backfill, and traffic control.

Payment for abandonment or removal of manholes shall include compensation for all labor, material, equipment, excavation, and backfill including imported backfill, and traffic control.

REPLACE SUBSECTION 306-3.4 OF THE "GREENBOOK" WITH THE FOLLOWING

306-3.4 Minimum and Maximum Pipe Zone Trench Width.

a) Rigid Pipe. For rigid pipe including VCP and RCP, the minimum and maximum width of trench permitted shall be as directed on the Plans or Standard Details.

   If the maximum trench width is exceeded, the Contractor shall provide additional bedding, another type of bedding, or a higher strength of pipe, as approved by the Engineer at no additional cost to the Agency.

b) Flexible Thermoplastic Pipe. For flexible thermoplastic pipe including PE, trench width shall be in accordance with ASTM D2321 and as indicated on the Plans.

306-6 BEDDING.

- Page 378 of Greenbook –

***REPLACE SUBSECTION 306-6 OF THE "GREENBOOK" WITH THE FOLLOWING

306-6.1 General. Bedding shall be defined as that material supporting, surrounding and extending to between 6 inches and 18 inches above the top of the pipe, as shown in the Details. Bedding shall be crushed aggregate in accordance with Subsection 200-2.2.1. Where it becomes necessary to remove boulders or other interfering objects at subgrade for bedding, any void below such subgrade shall be filled with the bedding material designated on the Plans. Where concrete is specified to cover the pipe, the top of the concrete shall be considered as the top of the bedding.

If soft, spongy, unstable, or other similar material is encountered upon which the bedding material or pipe is to be placed, this unsuitable material shall be removed to a minimum depth of 18 inches beneath the bottom of the pipe and replaced with bedding material suitably densified. The cost for removing and disposing of unsuitable material and providing densified bedding material shall be at Contractor's expense.

Bedding material shall first be placed so that the pipe is supported for the full length of the barrel with full bearing on the bottom segment of the pipe equal to a minimum of two-fifths times the outside diameter of the barrel. If the pipe is to be laid in a rock cut, there shall be at least 6 inches of bedding below the pipe. Then the remainder of the bedding shall be placed. Bedding shall be compacted to a minimum of 90 percent of ASTM D1557 (AASHTO T-180) prior to backfilling. Unless the sheeting or shoring is to be cut off and left in place, densification of bedding for pipe shall be accomplished after the sheeting or shoring has been removed from the bedding zone.

Densifying by jetting will not be permitted.

In dry trench conditions, bedding material shall be crushed aggregate. Bedding shall be well graded and shall conform to the gradation requirements presented in Subsection 200-2.2.1.

Bedding material and installation of flexible thermoplastic pipe shall also be in accordance with ASTM D2321.

Concrete used for bedding shall be one of the classes of concrete specified in Subsection 201-1. Concrete bedding cure time prior to backfill shall be as specified in Subsection 201-1.1.2.

Unless otherwise specified, special pipe bedding will not be required for ductile iron water pipe, and the trench bottom need not be shaped to the outside diameter of the pipe. However, the trench bottom shall provide firm and uniform bearing.

Continuity of bedding material shall be interrupted by low permeability groundwater barriers to impede passage of water through the embedment. Barrier material shall be low permeability clay

material and shall be compacted to 90 percent of maximum density. Material may be suitable job excavated material, free from stones or lumps exceeding 3 inches in greatest dimension, organic matter, and debris. A groundwater barrier of compacted soil shall be placed at or near each manhole or special structure along the sewer line. The groundwater barrier shall be keyed a minimum of 6 inches into undisturbed material on the top of the pipe embedment. The barrier shall be 18 inches thick.

306-7 PREFABRICATED GRAVITY PIPE.

- Page 31 of Regional Standards –
- Page 380 of Greenbook –

306-7.4 Vitrified Clay Pipe (VCP)

REPLACE SUBSECTION 306-7.4.2.1 THROUGH 306-7.4.2.4 OF THE "GREENBOOK" WITH THE FOLLOWING

306-7.4.2.1 General. Except where open joints are shown, joints in vitrified clay pipe shall be made up using a shielded repair coupling with 316 stainless steel clamp bands meeting the requirements of the CSA B602, ASTM D5926, and ASTM C1173.

REPLACE SUBSECTION 306-7.4.4 OF THE "REGIONAL STANDARDS" WITH THE FOLLOWING

306-7.4.4 Special Joints. Shielded repair coupling with 316 stainless steel clamp bands meeting the requirements of the CSA B602, ASTM D5926, and ASTM C1173 shall be used to join sections of pipe of dissimilar materials.

306-7.7 Plastic Sewer and Drainage Pipe

REPLACE SUBSECTION 306-7.7.2.2 OF THE "GREENBOOK" WITH THE FOLLOWING

306-7.7.2.2. Gasket-Type ABS, CHDPE and PVC Pipe. Joints shall consist of integral bell with factory-assembled rubber ring gasket and show no signs of leakage when tested in accordance with ASTM D3212. The rubber gasket shall meet the requirements of ASTM F477.

The pipe fittings shall be assembled with lubricant supplied by the manufacturer. Where water is encountered during the placement of pipe, a special water-resistant lubricant shall be used. Pipe shall be provided with "home" marks.

ADD NEW SUBSECTION 306-7.7.2.4 TO THE "GREENBOOK", TO READ AS FOLLOWS

306-7.7.2.4 Jointing of HDPE Gasketed Pipe. Field jointing of HDPE gasketed joint pipe shall be in accordance with the approved manufacturer's printed instructions which shall be furnished to the Engineer. The gasket shall be in accordance with ASTM F477, and the joint shall be in accordance with ASTM D3212.

306-7.8 Gravity Pipeline Testing

REPLACE SUBSECTION 306-7.8.2.1 OF THE "GREENBOOK" WITH THE FOLLOWING

306-7.8.2.1 General. All leakage tests and post-installation closed circuit television (CCTV) inspections shall be completed and approved prior to placing permanent resurfacing.

When leakage or infiltration exceeds the amount allowed by the specifications, the Contractor at its expense shall locate the leaks and make the necessary repairs or replacements in accordance with the Specifications to reduce the leakage or infiltration to the specified limits. Any individually detectable leaks shall be repaired, regardless of the results of the tests.

Contractor shall provide the Engineer with 24 hours notification for all activities requiring inspection. Where the Contractor schedules concurrent activities requiring inspection at different locations, Contractor shall be responsible for the cost of additional Inspectors. All persons retained for the purpose of additional inspection shall be selected by the Engineer. No inspection shall be performed on holidays or hours outside of the contract work hours without prior approval of the Engineer and reimbursement by the Contractor of all expenses for additional inspection if warranted by the Engineer. Leakage tests shall be made on completed pipelines as follows:

a) Storm Drains--Not required unless otherwise called for on Plans or in Specifications.

b) Gravity Sanitary Sewers 24 inches (600 mm) or less in diameter where difference in elevation between inverts of adjacent manholes is 10 feet (3 m) or less--Water exfiltration test or air pressure test as directed by Engineer.

c) Gravity Sewers 24 inches (600 mm) or less in diameter where difference in elevation between inverts of adjacent manholes is greater than (10 feet or 3 m) --Air pressure test.

d) Gravity Sewers greater than 24 inches (600 mm) in diameter--Air pressure test or water exfiltration test, as directed by Engineer.

e) Gravity Sanitary Sewers which are in service and a bypass system is not available: The Contractor shall perform post-installation CCTV inspection in accordance with 500-1.1.5. Pipeline cleaning shall be performed prior to CCTV inspection in accordance with 500-1.1.4.

f) Pressure Sewers (force mains) --Water pressure test at 150 percent of maximum operating pressure.

g) Water Pipelines --Water pressure test: Pipe specified by pressure classification, 50 psi (350kPa) over pressure classification. Other type of pipe, 120 percent of maximum operating pressure.

306-7.8.2.4 Air Pressure Test

***ADD THE FOLLOWING AFTER THE LAST PARAGRAPH OF SUBSECTION 306-7.8.2.4 OF THE "GREENBOOK" ***

Testing of 6-inch diameter sewer mains

For 6-inch diameter sewer mains, the final leakage test of the sewer mainline and branching sewer laterals shall be conducted in the presence of the Engineer and in the following manner:

Air shall be introduced into the pipeline until 10 pounds per square inch gauge pressure has been reached, at which time the flow of air shall be reduced and the internal air pressure shall be maintained within plus or minus 0.5 psi (3 kpa) gauge pressure for at least 2 minutes to allow internal air temperature to reach equilibrium. Pressure in the pipeline shall be constantly monitored by a gage and hose arrangement separate from hose used to introduce air into the line. A blowoff valve shall be provided on the test apparatus to prevent over pressurizing the pipeline.

After the temperature has stabilized and no air leaks at the plugs have been found, the air pressure shall be permitted to drop and, when the internal pressure has reached 3.5 psi (27 kpa) gauge pressure, a stopwatch or sweep-second-hand watch shall be used to determine the time lapse required for the air pressure to drop to 1.0 psi (7 kpa) gauge pressure.

If the time (T) in seconds required for the air pressure to decrease the additional 1.0 psi (7kPa) exceeds that shown in the Table below, titled 'Low Pressure Air Test for 6-inch Sewers', the pipe shall be presumed to be within acceptance limits for leakage.

If the time lapse is less than that shown in the table, the Contractor shall make the necessary corrections to reduce the leakage to acceptance limits without additional compensation.

Reference to pipe diameter is to the nominal diameter. In the case of slip-liner or inversion-liner, pipe diameter refers to the nominal diameter of the existing pipe.

LOW PRESSURE AIR TEST FOR 6 INCH SEWERS

Minimum allowable time (sec) for a 1 psi pressure drop.

Total footage of 6-inch diameter main	Total footage of 4-inch diameter lateral										
	0	50	100	150	200	250	300	350	400	450	500
0	0	9	18	26	35	44	53	62	70	79	88
100	40	49	58	66	75	84	93	102	110	119	127
150	60	69	78	85	95	104	113	122	130	132	131
200	79	88	97	105	114	123	132	149	137	135	134
250	99	108	117	125	134	143	145	144	141	139	138
300	119	128	137	145	152	150	147	146	143	141	140
350	139	148	157	157	154	151	149	148	145	143	142
400	158	165	161	159	156	153	151	150	147	145	144
450	170	165	162	159	157	154	152	151	149	147	145
500	171	167	164	161	159	156	154	153	151	149	147

***ADD SUBSECTION 306-7.8.2.6 OF THE "GREENBOOK" TO READ AS FOLLOWS

306-7.8.2.6 Mandrel Test of Plastic Pipe. Following the placement and densification of backfill by at least 30 days, and prior to the placing of permanent pavement, all reaches of new mainline pipe constructed of plastic materials (PVC, ABS, PE, HDPE) shall be cleaned and then mandrelled to measure for obstructions and pipe deflections. All material dislodged through cleaning shall be removed at the nearest downstream manhole and disposed of per Subsection 312-1.8. A standard, commercially manufactured, rigid, odd-numbered-leg (nine legs minimum) mandrel shall be used. Mandrel diameter shall be listed in the table provided or shall be at least 95 percent of the average sewer diameter. The minimum length of the circular portion of the mandrel shall be equal to the nominal diameter of the pipe.

Nominal diameter (in.)	Average pipe inside diameter (in.)	Mandrel diameter (in.)
6	6.115	5.809
8	7.961	7.563
10	9.924	9.428
12	11.770	11.182
18	16.616	15.785
24	22.154	21.046
30	27.692	26.307
33	31.980	31.020

All material, equipment and labor to perform the test shall be provided by the Contractor at no cost to the Agency.

Proof rings for verification of mandrel diameters shall be available at all times during mandrel tests. Rings shall be a standard product of the mandrel manufacturer.

Obstructions encountered by the mandrel shall be corrected by the Contractor at no cost to the Agency. The method employed by the Contractor to correct obstructions shall be subject to the Engineer's approval prior to its implementation.

The use of a re-rounder to force pipe into round is prohibited. Any pipe that has been re-rounded shall be removed and replaced at the Contractor's expense.

306-12 BACKFILL.

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306-12.3 Mechanically Compacted Backfill

306-12.3.1 General

***REPLACE FOURTH PARAGRAPH, OF
SUBSECTION 306-12.3.1 OF THE "GREENBOOK" WITH THE FOLLOWING***

Unless otherwise approved by the Engineer, material for mechanically compacted backfill shall be placed in lifts which, prior to compaction, shall not exceed a thickness of 1 foot.

306-12.3.2 Compaction Requirements

REPLACE SUBSECTION 306-12.3.2 OF THE "GREENBOOK" WITH THE FOLLOWING

Unless otherwise specified in the Special Provisions, mechanically compacted trench backfill shall be compacted to the following minimum relative compaction:

a) 90 percent relative compaction:
    1) In the bedding zone.
    2) Outside the traveled way and other paved areas (or areas to receive pavement).
    3) Under sidewalks.
    4) Between the pipe zone and the upper 1 foot measured from the bottom of the pavement section (or finished grade where there is no pavement), within the existing or future traveled way, shoulders, and other paved areas (or areas to receive pavement).
b) 95 percent relative compaction:
    1) In the upper 1-foot measure from the bottom of the aggregate base or concrete base within the existing or future traveled way, shoulders, and other paved areas (or areas to receive pavement).
    2) Within engineered embankments.
    3) Where lateral support is required for existing or proposed structures.

ADD NEW SUBSECTION 306-12.6 TO READ AS FOLLOWS

306-12.6 Conditioning of Backfill Materials. At no time shall the street be utilized as a backfill materials drying or moisture conditioning area for a period longer than the time that the sewer trench is open each day. All excavated trench material shall either be returned to the trench or removed from the site at the end of each day's work. The Contractor's backfill moisture conditioning operations shall at no time interfere with traffic or cause public inconvenience.

306-13 TRENCH RESURFACING.

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*** REPLACE THE LAST SENTENCE OF THE FIRST PARAGRAPH OF SUBSECTION 306-13.1 OF THE "GREENBOOK" WITH THE FOLLOWING***

Temporary resurfacing shall be placed in the top of the trench at the end of each work day. Contractor shall at all times maintain temporary paving so as to provide a smooth and level transition with the existing pavement. Temporary resurfacing shall remain in place and be maintained until testing is completed and the Engineer has given approval for permanent resurfacing.

306-15 PAYMENT.

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REPLACE ITEM M OF SUBSECTION 306-15.1 OF THE "GREENBOOK" WITH THE FOLLOWING

m) All other work (including providing and maintaining all temporary resurfacing) necessary to install the pipe or conduit, complete in-place.

ADD ITEM N TO SUBSECTION 306-15.1 OF THE "GREENBOOK", TO READ AS FOLLOWS

n) Landscape restoration shall be included in the bid price for pipe installation, and shall cover all materials and work necessary to restore the ground surface to its original condition (including, but not limited to, fencing).

ADD NEW SUBSECTION 312-9 TO THE "GREENBOOK" TO READ AS FOLLOWS

312-9 LATERAL REHABILITATION.

312-9.1 General. This subsection covers the work to replace, rehabilitate, or abandon laterals. For this subsection, "lateral" shall mean the sewer from the sewer main to the building plumbing (typically at the cleanout) 5 feet from the building foundation. "Lower lateral" (publicly owned) shall mean the portion of the lateral from the sewer main to behind the curb line as shown on the Plans. "Upper lateral" (privately owned) shall mean the portion of lateral from the upstream end of the lower lateral to 5 feet from the building foundation.

The Contractor shall replace active lower laterals and abandon inactive lower laterals that connect to a sewer main that is rehabilitated or replaced unless otherwise indicated. Unless otherwise indicated in the scope of the contract and plans or directed by the Engineer, the Contractor shall not rehabilitate active upper laterals and leave alone inactive upper laterals. Rehabilitation of upper laterals either by slip-lining or replacement at contractor discretion and in accordance with the specifications. The Contractor shall construct two-way cleanouts at the upstream end of active lower laterals and two-way cleanouts at the upstream end of active upper laterals that are 20 feet or longer or as directed by the Engineer. The Contractor shall locate and identify illegal storm drain and other pipes connected to existing private laterals and inform the Engineer of such findings. The Contractor shall restore improvements on public and private property that he disturbs.

All work shall be carried out in an expeditious fashion so as to inconvenience residents as little as possible. Service shall not be interrupted to any businesses or institutional establishments. Service to a resident shall not be interrupted unless it is temporarily and expressly approved by the Engineer.

No temporary connections shall be made which in the opinion of the Engineer pose a human health hazard. For each temporary connection for which a human health hazard exists between the hours of 5 p.m. and 7 a.m., the Contractor will be fined $50/connection/day or the cost of the repair, whichever is greater, for as long as the problem exists. At no time shall service to a home be interrupted for more than 8 hours unless expressly approved by Engineer. Contractor shall provide bypass pumping as necessary.

Heavy equipment shall not be allowed on private property. Portable or small self-propelled equipment shall be allowed on private property for excavation, cleaning, televising, and restoration. Contractor shall plan on extensive hand digging.

All connections shall be made in such a fashion that no rock, soil, pieces of pipe, or other debris is allowed to enter the sewage collection system.

Contractor shall indicate alignment and depth of each active lower lateral, alignment and rehabilitation method of each active upper lateral, location of each two-way cleanout, and location of abandoned lower lateral on the "as-built" drawings he prepares.

312-9.2 Investigate Laterals. The exact number and location of the active laterals are not known. An active lateral is defined as a lateral which is connected to a sewer main and to a facility or extends to within 5 feet of the facility (residence or business) irrespective of whether the facility is occupied or utilized. The Contractor shall locate laterals, determine if they are active, and only reconnect active laterals to the sewer mains, unless otherwise indicated. The Agency will provide the Contractor with access to videotapes and logs of the existing sewer mains that are available, help locate laterals; however, the Agency does not guarantee the accuracy or completeness of the information supplied nor does the furnishing of the information preclude the Contractor from making an independent investigation, including television inspection. The Contractor shall have complete responsibility to determine the completeness and accuracy of the information and interpret the information and use it, as applicable, to locate laterals and determine their status.

312-9.3 Multi-service Laterals. Multi-service laterals provide service to more than one building. The Contractor shall investigate each branch of a multi-service lateral to determine if it is active or inactive. The Contractor shall abandon inactive branch lower laterals and shall leave alone inactive branch upper laterals. The Contractor shall reroute active branch laterals as necessary so that each active branch lateral has its own connection to the sewer main. Each active branch lateral shall have a two-way cleanout at 5 feet from the building foundation and a two-way cleanout near the curb as shown on the drawings.

312-9.4 Lower Lateral Replacement. Active lower laterals shall be replaced with high density polyethylene pipe (HDPE SDR-17). Laterals shall be 4-inch minimum diameter or shall match the size of the existing lateral, whichever is larger.

After replacement, the laterals shall be reconnected to the main sewer line and connected to new cleanouts. Connections to new cleanouts shall be made with mechanical joints or as otherwise directed by the Engineer.

Construction of laterals shall conform to Subsection 306. Maximum deflection with one fitting shall not exceed 22-1/2 degrees. Long-radius bends shall be used for changes in direction except as otherwise allowed by the Engineer.

The Engineer shall determine the line and grade of replacement laterals. Replacement laterals shall be constructed with minimum number of changes in grade and direction possible, regardless of the alignment of the existing lateral. Unless otherwise directed, Contractor shall lay the pipe on a uniform grade between the sewer main and the upstream end of the lateral. Minimum slope shall be ¼ inch per foot unless otherwise permitted by the Engineer.

312-9.5 Upper Lateral Rehabilitation. The Contractor shall replace active upper laterals less than 4 inches in diameter. The Contractor shall at his discretion replace or slipline active upper laterals 4 inches or larger in diameter except as noted below:

1) No access agreement.

2) Required work is shown on the Plans.

3) Engineer directs rehabilitation method at least 1 week prior to scheduled rehabilitation.

4) Lateral is a multi-service lateral.

312-9.5.1 Access Agreements. The Agency has obtained access agreements for rehabilitating some upper laterals. The Contractor shall only rehabilitate active upper laterals for which the Agency has obtained an access agreement within 1 week of the scheduled rehabilitation and filed it with the Engineer. The Contractor shall verify with the Engineer that an access agreement is in effect before rehabilitating an upper lateral.

312-9.5.2 Replace Upper Laterals. Replacement of upper laterals shall conform to Subsection 312-9.4.

312-9.5.3 Slip-line Upper Lateral. Slip-lining of laterals smaller than 4 inches in inside diameter is not permitted. Any such lateral shall be replaced with 4-inch pipe in accordance with Subsection 312-.4.

The installation of the polyethylene solid wall sewer pipe liner shall conform to Subsection 500-1.3 and to ASTM Specifications F585, D2657, and D2321. No payment shall be made for point repairs, cleaning, or television inspection. Unless otherwise specified or approved, the outside diameter of the liner shall not be less than 85 percent of the inside diameter of existing pipes. The Contractor shall submit shop drawings of proposed materials.

The Contractor shall brace or otherwise protect the lateral, if necessary, to withstand forces generated by equipment used while installing the liner.

After slip-lining, the Contractor shall connect the upper lateral to the lower lateral and the cleanouts, backfill and restore surface improvements and perform acceptance tests.

1) Liner Material. Polyethylene solid wall pipe lines shall be SDR-26.

2) Liner Handling. The liner shall be handled with care to minimize the possibility of it being cut, kinked, gouged, or otherwise damaged. Ropes, fabric, or rubber-protected slings and straps may be used when handling the liner. The use of cables, chains, or hooks will not be permitted. Liners shall be stored on level ground or surface, free of sharp objects which could cause damage. Sections of the liner damaged, cut or gouged shall be repaired by cutting out the section of pipe containing the damaged areas and then rejoining the liner sections as specified herein.

3) Liner Installation. The Contractor shall insert the liner into the pipe in accordance with ASTM F585 and the liner manufacturer's recommendations. Pounding on the liner is not an acceptable insertion method.

4) Joining Systems.

a) Butt Fusion. Sections of the liner shall be joined into continuous lengths on the job site at ground level above the trench. Joining shall be accomplished by butt fusion performed in accordance with the liner manufacturer's recommendations and pertinent sections of ASTM D2657.
Butt fusion shall be accomplished by aligning the sections to be joined in a fixture, softening the ends by heat and then joining them together under controlled pressure. All fusion must be done by personnel trained by the pipe supplier and using tools recommended by the pipe supplier and approved by the Engineer. Joints between pipe sections shall be smooth and internal fusion beads in no case shall be greater than 0.10 inch.

Two joints, selected at random by the Engineer from the first total of 1000 linear feet shall be tested in compliance with ASTM D638 to assure that the tensile strength of the joints equals or exceeds that of the material joined. The specimens to be tested shall be obtained by cutting the liner pipe at least 12 inches on each side of the field-made joint. The ends may then be rejoined and work may proceed. One additional test shall be made for each additional 1000 linear feet of line or portion thereof.

b) Mechanical Joints. Where the polyethylene liner is reconnected to the sewer main stub-out and to the cleanout, and where the liner must be joined in the trench as approved by the Engineer, the polyethylene pipe shall be joined together with a stainless steel full encirclement clamp.

Clamps shall be 316 stainless steel with a rubber sleeve and shall be of adequate length to protect against pullout. Minimum lengths of clamps are listed below.

Approximate Outside Diameter of the Liner Pipe (Inches)	Minimum Length of Clamp (Inches)
3.5	7.5
4.5	10
5.5	10
6.5	15
7.0	15

5) Insertion of Liner Pipe. The top of the lateral shall be exposed to the spring-line for the full length of the access pit prior to the removal of the crown portion. ALL sharp edges shall be removed from the exposed pipe opening.

6) Stress and Strain Relief of Polyethylene Liner Pipe. Stress and strain relief shall be provided for as part of lateral slip-lining as specified in Subsection 500-1.3.8

7) Bedding. Cement-stabilized backfill or concrete shall be placed to a minimum thickness of 6 inches around all exposed portions of the slip-liner.

312-9.6 Abandoned Laterals. The Contractor shall be responsible for investigation and identification of inactive laterals. If the Contractor finds a permanent plug or finds that the lateral is inactive, then the lateral shall be abandoned.

Abandonment shall include capping the sewer main stub-out with a watertight and airtight mechanical plug, removal of the abandoned lateral pipe from the sewer main to a distance of at least 1 foot from the sewer main, and removal of the cleanout frame and cover. The lower end of the abandoned lateral shall be plugged with concrete for a length at last 6 inches.

312-9.7 Cleanout Installation. All upper laterals that are rehabilitated and all lower laterals that are replaced shall have two-way cleanouts as shown on the Plans. Existing cleanouts shall be removed and shall be replaced with new cleanouts.

Temporary reconnection or pumping shall be made as necessary to maintain service during rehabilitation of laterals. Cleanouts shall not be installed until laterals have been rehabilitated.

If the lateral is slip-lined, the cleanout shall be either PVC pipe or polyethylene liner pipe as approved by the Engineer. All cleanout plumbing shall have an inside diameter within 15 percent of the liner inside diameter. Transition from house plumbing to the cleanout fitting shall be made with a ductile iron or polyethylene fabricated reducer.

Cleanouts shall be constructed as shown in the Standard Details. If the lateral is replaced, the cleanout shall be the same dimension and material as the replacement sewer pipe. All joints shall be made watertight and airtight. The Contractor shall submit to the Engineer shop drawings of all materials used in constructing cleanouts.

312-9.8 Air Test. Where directed by the Engineer, Contractor shall perform an air test on either a lower lateral, upper lateral, or entire lateral before replacement or rehabilitation. Testing shall be in accordance with Subsection 306-7.8.2.4. This testing shall not replace acceptance testing.

312-9.9 Acceptance Testing. Acceptance testing of laterals and branch connections shall conform to Subsection 312-10.

312-9.10 Payment. All items will be measured and paid as listed in the Bid Schedule. Payment for the various items of work enumerated shall be included in the various items of work, and no additional compensation will be allowed therefore. Bid items shall also include payment for record drawings of locations and compensation for any coordination with property owners necessary to locate, investigate, and rehabilitate or replace laterals.

ADD NEW SUBSECTION 312-10 TO THE "GREENBOOK" TO READ AS FOLLOWS

312-10 ILLEGAL STORM DRAIN CONNECTIONS.

The Contractor shall notify the Agency immediately upon discovery of illegal storm drain and other pipes connections to the sanitary sewer system.

ADD NEW SECTION 313 TO "GREENBOOK" TO READ AS FOLLOWS

SECTION 313 – RESTORATION OF IMPROVEMENTS

313-1 RESTORATION OF IMPROVEMENTS.

313-1.1 Protection of Public and Private Property. Contractor shall protect, shore, brace, support, and maintain all underground pipes, conduits, drains, and other underground construction uncovered or otherwise affected by his construction operations. All pavement, surfacing, driveways, curbs, walks, buildings, utility poles, guy wires, fences, and other surface structures affected by construction operations, together with all sod, plantings, and shrubs, shall be restored to match their original condition. All replacements shall be made with new materials.

Contractor will be held responsible for any damage to existing structures, work, materials, or equipment because of his operations and shall repair or replace any damaged structures, work, materials, or equipment to the satisfaction of, and at no additional cost to, the Agency.

313-1.2 Document Pre-construction Condition. Contractor shall provide pre-construction and audio-video surveys to document the condition of existing improvements. The Contractor shall supplement the digital audio-video files and summary report and other necessary documentation in digital formats. The Contractor shall be responsible to adequately document the condition for size, kind, quantity and the extent of existing improvements. In addition, the Contractor shall provide not less than one digital imagery of each upper lateral location, with date and address associated to the digital imagery file. The digital imagery shall be for the purpose of documenting the pre-existing condition at the site of work. All digital imagery and audio-video surveys shall be delivered to the Construction Manager prior to commencing work on any given upper lateral.

313-1.3 Tree and Plant Protection. No trees or cultured plants shall be removed or damaged, unless the Contractor obtains the written permission of the property owner and Engineer. Whenever practicable, Contractor shall tunnel beneath trees when on or near the line of trench. Hand excavation shall be employed as necessary to prevent injury to trees and other plants.

All trees and other vegetation that are removed shall be disposed of by the Contractor as approved by the Engineer. All trees and plants not removed shall be protected against injury from construction operations.

Each tree injured beyond repair or removed shall be replaced with a similar tree of the nearest size possible, up to a maximum of 15-gallon plantings.

All trimming, repair, and replacement of trees and plants shall be performed by qualified landscape contractor or horticulturists.

313-1.4 Sodding. All lawn areas that have been disturbed by sewer rehabilitation, by sewer replacement, by point repairs, by parking of equipment, or by any other construction activities shall

be restored using sod removed from the original lawn or resodded with a comparable grass mixture. The top surface elevation of the new sod shall match the pre-construction elevation.
The soil used in the repair work shall be commercially available processed topsoil. Sod shall be cut in strips or rectangular sections which may vary in length but shall be of equal width and of a size that will permit the sections to be lifted and rolled without breaking. All sod shall be cut to a thickness of 1/2 to 3/4 inch.

Fertilizer shall be pelleted or granulated or granulated and shall have an analysis of equal parts of available nitrogen, phosphorus, and potassium in percent by weight in order to supply the number of pounds of the pure chemicals per square foot recommended by the manufacturer. Water shall be free from any substances harmful to the growth of grass and shall be from a source approved by the Engineer prior to use.

Sod shall be placed after the soil has been adequately prepared and after the fertilizer has been applied as recommended by the manufacturer. Sod shall be laid smoothly, edge to edge, and with staggered joints.

All sodded areas shall be maintained until final acceptance of the project. Maintenance shall include watering, resodding, repair of erosion damage, and all other operations necessary to obtain an acceptable grass cover. Watering shall be required if natural rainfall is not sufficient to maintain the sod bed in a thoroughly moist condition. Contractor shall provide water for watering. Sodded areas that have turned brown prior to final acceptance of the project shall be resodded. Original grades of the grass-covered areas shall be maintained after commencement of sodding operations and during the maintenance period.

313-1.5 Fences. All existing fences affected by the work shall be maintained by the Contractor until completion of the work. Fences which interfere with construction operations shall not be relocated or dismantled until written permission is obtained from the Engineer and owner of the fence and the period the fence may be left relocated or dismantled has been agreed upon. Where fences must be maintained, adequate gates shall be installed. Gates shall be kept closed and locked at all times when not in use.

On completion of the work across any tract of land, Contractor shall restore all fences to their original or to a better condition and to their original location.

313-1.6 Restoration of Driveways, Sidewalks, Retaining Walls, Curbs, and Gutters. The Contractor shall observe the following requirements.

To the extent possible, laterals shall be installed or rehabilitated without disturbing concrete driveways. All concrete curbs, gutters, aprons, patios, walls, driveways, and sidewalks which are broken, crushed, or damaged by the installation of the improvements shall be reconstructed by and at the expense of the Contractor. All restoration shall be of the same kind of material and of the same dimensions as the original work. The minimum thickness for concrete slabs, etc., shall match existing adjoining pavement in thickness, or as indicated on the Drawings, or as specified, whichever is the

greater. The repairs shall be made by removing the damaged portions between joints by concrete saw and by replacing the entire portions. Refinishing the damaged part is not allowed. All work shall match the appearance of the existing improvements as nearly as practicable.

A power-driven pavement saw shall be used to cut existing Portland cement concrete sidewalk, driveway, curb and gutter where it is necessary to remove the concrete. Sidewalk shall be saw-cut at existing score marks. Driveway aprons shall be removed and replaced as a whole without saw-cutting. The kerf shall be a minimum of 1-1/2 inches and straight; and, if two cuts are made, they shall be parallel. The kerf shall be deep enough to permit complete breakage of the concrete without ragged edges.

All edges of concrete shall be edged with a cement edger of the size 2-3/4 inches in width with a 3/16-inch radius. All joints or grooves that are indicated on the Plans or required by the Engineer shall be marked with cement groovers or jointers 4 inches in width and having a groove 3/8 inch wide at the top and a depth of ¼ inch to 12 inches.

All new or previously existing concrete surfaces shall be left neat, clean and free from concrete droppings. The Contractor shall be responsible for preventing vandals or others from disfiguring or defacing the finished surfaces. Any new concrete surfaces disfigured due to pouring late in the day, or due to the failure on the part of the Contractor to provide adequate protection or covering to the new surfaces, shall be replaced at the Contractor's expense.

313-1.7 Payment. All costs to the Contractor for protecting, removing, and restoring existing improvements on public and private property shall be included in his Bid. Bid prices shall include restoration of surface as well as subsurface features to their before construction function and appearance as determined by the Engineer. Restoration shall include surface conditions such as street, curb, gutter, sidewalk, retaining walls, patios, driveways, fences, gravel, lawn, dirt, and driveways; underground service utilities such as water, phone, power, gas, cable TV, television; and underground property improvements such as sprinklers and drain pipe.

PART 5 – PIPELINE SYSTEM REHABILITATION

SECTION 500 – PIPELINE, MANHOLE AND STRUCTURE REHABILITATION

Page 32 of Regional Standards -
- Page 467 of Greenbook -

SECTION 500-1 PIPELINE REHABILITATION.

500-1.1 Requirements

500-1.1.4 Cleaning and Preliminary Inspection

REPLACE SUBSECTIONS 500-1.1.4.b, AND 500-1.1.4.c OF THE "GREENBOOK" WITH THE FOLLOWING

b) **High-Velocity Hydraulic (Hydro-Cleaning) Equipment.** High-velocity hydraulic cleaning equipment have above ground operating controls and shall have at a minimum have a 1,000-gallon water tank, auxiliary engines, pumps, and a hydraulically driven hose reel with at least 700 feet of high pressure hose. The equipment shall have a selection of 2 or more high velocity nozzles capable of producing a scouring action from 10 to 45 degrees in all size lines designated to be cleaned. The cleaning units shall have high-velocity nozzles for washing and scouring manhole walls and floors. The nozzles shall be capable of producing flows from a fine spray to a solid stream.

c) **Mechanically Powered Equipment.** Bucket machines shall be used in pairs with sufficient power to perform the work in an efficient manner. Machines shall be V-belt for power transmission or have an overload device. Machines with a direct drive that could cause damage to the pipe will not be allowed. Bucket machines shall not be used on any host or rehabilitated pipeline that is lined with a plastic pipe or material. A power rodding machine shall be either a sectional or continuous-rod type capable of holding a minimum of 750 feet (230 m) of rod. The rod shall be specifically heat-treated steel. The machine shall be fully enclosed and have an automatic safety clutch or relief valve.

REPLACE PARAGRAPH FOUR OF SUBSECTION 500-1.1.4 OF THE "GREENBOOK" WITH THE FOLLOWING

The designated sewer manhole sections shall be cleaned using hydraulically propelled, high-velocity jet, or mechanically powered equipment. Selection of the equipment used shall be based on the conditions of the sewer lines at the time the work commences. The equipment and methods selected shall be satisfactory to the Engineer. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the sewer lines and manholes. If cleaning of an entire section cannot be successfully performed from one manhole, the equipment shall be set up on the other manhole and cleaning again attempted. If, again, successful cleaning cannot be performed or

the equipment fails to traverse the entire manhole section, it will be assumed that a major blockage exists and the Contractor shall, with the Engineer's approval, excavate and remove the obstruction and resume cleaning. The Engineer shall determine based on the method of rehabilitation identified for the sewer reach how and if the line shall be fixed.

REPLACE THE LAST PARAGRAPH OF SUBSECTION 500-1.1.4 OF THE "GREENBOOK" WITH THE FOLLOWING PARAGRAPHS

All sludge, dirt, sand, rocks, grease and other solid or semi-solid material resulting from the cleaning operation shall be removed at the adjoining downstream manhole of the section being cleaned. Passing material to downstream sewer reaches shall not be permitted.

All solids or semi-solids resulting from the cleaning operations shall be removed from the site and disposed of at a suitable sanitary landfill site as defined by Titles 22 and 23 of the California Administrative Code. All materials shall be removed from the site no less often than the end of each workday. Under no circumstances will the Contractor be allowed to accumulate debris, etc., on the site of work beyond a single workday, except in totally enclosed containers and as approved by the Engineer.

During sewer cleaning operations, satisfactory precautions shall be taken in the use of cleaning equipment. When hydraulically propelled cleaning tools which depend upon water pressure to provide their cleaning force, or tools which retard the flow in the sewer line are used, precautions shall be taken to ensure that the water pressure created does not damage or cause flooding of public or private property being served by the sewer. Care shall be exercised to avoid pipe damage.

ADD SUBSECTION 500-1.1.4.1 TO THE "GREENBOOK", TO READ AS FOLLOWS

500-1.1.4.1 Roots. All roots shall be removed. Where shown on the Plans and as directed by the Engineer, root intrusion shall be treated with an approved herbicide.

The application of the herbicide to the roots shall be done in accordance with the manufacturer's recommendations and specifications in such a manner to preclude damage to surrounding vegetation. Any damaged vegetation so designated by the Engineer shall be replaced by the Contractor at no additional cost to the Agency. All safety precautions as recommended by the manufacturer shall be adhered to concerning handling and applications of the herbicide. Herbicide shall be handled by only qualified persons if required by law.

The herbicide and the application method shall be submitted in accordance with Part C, Section 4, Subsection 401.12 of the Specifications.

500-1.1.5 Television Inspections

INSERT THE FOLLOWING PARAGRAPH AFTER THE FIRST PARAGRAPH OF SUBSECTION 500-1.1.5 OF THE "GREENBOOK"

Where available, the Agency will provide access to the Contractor the videos of the existing sewer. The Agency does not guarantee the accuracy of the television information supplied, nor does the furnishing of the information including television inspection at his/her cost. This information will be given to the Contractor to assist in determining the nature and location of point repairs. It shall be the Contractor's responsibility to interpret the information and to use it, as applicable.

All CCTV work shall conform to current National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) standards for coding of all defects. CCTV inspections shall be submitted entirely in electronic format and shall be submitted in accordance with Part C, Subsection 401.12 of the Specifications to the Agency and the Engineer.

INSERT THE FOLLOWING AT THE END OF PARAGRAPH SEVEN OF SUBSECTION 500-1.1.5 OF THE "GREENBOOK"

In the event the section being televised has substantial flow entering the sewer between manholes, such that inspection of the sewer is impaired, then the Contractor shall coordinate with the owner of the source of flow to have such flow temporarily stopped and/or reschedule television inspection of the particular section to a time when such flow is reduced before proceeding with the television inspection. When sewer line depth of flow at the upstream manhole of the section being televised is above the maximum allowable for television inspection, the Contractor shall reduce the flow in accordance with Subsection 500-1.16 before proceeding with the television inspection.

REPLACE THE LAST TWO SENTENCES OF PARAGRAPH NINEOF SUBSECTION 500-1.1.5 OF THE "GREENBOOK" WITH THE FOLLOWING

Any rejected work shall be repaired and re-inspected by CCTV at no additional cost to the Agency. Note that if the image quality is not adequate for post-inspection coding, the Contractor shall be required to repeat the survey at no additional cost to the Agency.

REPLACE SUBSECTION 500-1.1.5 OF THE "REGIONAL STANDARDS" WITH THE FOLLOWING

Documentation of the CCTV inspection results shall be as follows:

1) The Contractor shall perform all CCTV inspections in accordance with NASSCO-PACP standards. CCTV inspections will be delivered in electronic format along with two printed copies of the reports and inspection logs. The entire survey shall be recorded in an approved electronic format submitted with electronic links between the data and the video. All television inspection reports shall be within ± two (2) feet of the measured linear footage between manholes along the existing sewer centerline from the start of pipe to end of pipe. All Agency and PACP required header information shall be fully and accurately entered on all CCTV reports. Work not following these specifications may be rejected for payment and the Contractor may be required to redo the work.

2) The Contractor shall provide a PACP certified operator on site at all times during the entire CCTV inspection. If video is to be coded separately from the actual recording, both the onsite Operator and the individual performing the PACP coding shall be PACP certified. The Contractor shall provide proof of certification prior to commencement of the work, prior to change in personnel involved in data collection, and as requested by the Agency.
3) CCTV Reports, logs, electronic reports, and worksheets shall be provided to the Agency and shall include the following information and conform to the applicable guidelines:
   a) CCTV Reports, NASSCO-PACP Certified Database, and electronic worksheets shall accompany all inspection work.
   b) All Agency and NASSCO-PACP required header information shall be fully and accurately entered on all CCTV reports.
   c) Other data of significance including the locations of buildings, proximity to property and/or fence lines, unusual conditions, storm-sewer connections, and other discernible features shall be noted in the CCTV reports.

4) The measurement of distance to defects is critical in confirming the locations of areas to be excavated shown on the Plans. It is recommended that the Contractor use the following procedure in performing the television inspection:

   a) A marker or flag shall be attached to the top of the camera yoke.

   b) The measurements recorded in the log shall be zeroed in alignment with the marker rather than the camera itself, as is the usual practice.

5) Video recording playback shall be the same speed that it was recorded. Slow motion or stop motion playback features may be supplied at the option of the Contractor. Title to the video inspections shall remain with the Agency. The Contractor shall have all necessary video playback equipment readily accessible for on-site review by the Engineer during the project.

6) Video files shall include the following information:
   a) Data view:
      i. Report No.
      ii. Date of TV inspection
      iii. Upstream and downstream manhole numbers
      iv. Current distance along reach (tape counter footage)
      v. Printed labels on tape container and tape cartridge with location information, date, format information, and other descriptive information
   b) Audio:
      i. Date of TV inspection
      ii. Verbal confirmation of upstream and downstream manhole numbers
      iii. Verbal description of pipe size, type and pipe joint length
      iv. Verbal description and location of each defect

v. Verbal description and location of each service connection

ADD SUBSECTION 500-1.1.5.1 TO THE "GREENBOOK", TO READ AS FOLLOWS

500-1.1.5.1 Payment. Payment for pre-construction video-inspection of reaches which have been previously video-inspected in included in the unit cost for the rehabilitation method performed. Payment for post-construction video-inspection of reaches is included in the unit cost for the rehabilitation method performed. Payment for pre-construction video-inspection of reaches not previously televised is based on the unit bid price per linear foot of sewer.

500-1.2 Pipeline Point Repair/Replacement

REPLACE SUBSECTION 500-1.2.1 OF THE "GREENBOOK" WITH THE FOLLOWING

500-1.2.1 General.

Point repairs (spot repairs) are work required to repair defective sections of existing sewer lines. Surface excavation is required to accomplish these necessary repairs. Generally, the work entails pipe repair at joints and service connections, sagging locations or any obstruction during pipe rehabilitation work that can be done by removal / replacement of short sections of damaged pipe. Flow control of affected reaches of sewer by plugging and/or bypass pumping, if required, shall be performed as described in Subsection 500-1.16.

All point repairs shown on the Plans, discovered through subsequent investigations, and/or directed by the Engineer, shall be completed prior to any pipe rehabilitation. Point repair locations indicated on the Plans are based upon previously conducted CCTV inspections. The Engineer will determine the exact location of the point repairs after the pipe is exposed. The location of the point repair specified or shown shall be considered accurate if it is within five feet of the actual location determined by the Engineer. All work to expose and correct the defects, and the materials and methods used shall conform to the applicable specifications, including excavation; locating all interfering utilities; temporary flow bypassing; trench dewatering; pipe repairs or replacement; placing / compacting bedding and backfill; and surface restoration.

All point repairs shall be visually inspected and measured by the Engineer prior to backfilling.

REPLACE SUBSECTION 500-1.2.5 OF THE "GREENBOOK" WITH THE FOLLOWING

500-1.2.5 Notification of Work.

The Contractor shall notify the Engineer not less than 48 hours in advance of the time he/she

plans to begin repair work at a particular project location. After the point repair is located and exposed, the Engineer will inspect the damaged pipe and confirm the required repair and methods proposed by the Contractor.

500-1.2.6 Installation and Field Inspection

*** ADD THE FOLLOWING TO THE END OF SUBSECTION 500-1.2.6 OF THE "REGIONAL STANDARDS ***

d) **Other.** Repair defects using methods as shown on the Drawings or described elsewhere in the Specifications. Contractor may suggest alternate point repair methods for consideration by the Engineer.

For mains to be rehabilitated by inversion lining, the repair method for point repairs shown on the Plans or otherwise approved by the Engineer, is described below with exception noted.

e) The Contractor shall excavate to the defect and remove the necessary length of existing pipe by cutting perpendicular to the pipe axis to leave a plain end. The section shall be replaced with new pipe of the same material and shall be installed after bedding has been prepared along the alignment and slope of the existing sewer in accordance with Subsection 306-6. Connection of the new and existing pipe shall be made using Type "D" couplings with Type 316 stainless steel bands.

   In the case of sewer offset joints and sags, the Contractor at his option may re-align the existing sewer without removal of the section of sewer. Any pipe broken during the operation shall be replaced. With this option, the repair shall conform in all other respects with paragraph 2, above.

ADD NEW SECTION 500-1.2.7 TO READ AS FOLLOWS

500-1.2.7 Measurement and Payment for Point Repairs. This item will be measured as EACH and paid for at the unit price per for each Point Repair listed in the Bid Schedule. Measurement will be made at the pipe and will be the same length (i.e. 8 feet or less) as the point repair. Payment will be independent of the pipe size upon which point repairs are to be made or the repair method to be used. Payment will include full compensation for all work and materials required to sawcut, excavate, trench shoring, removal of any obstruction object; provide and compact bedding and backfill, bypass sewage and dewater trench, install temporary and permanent resurfacing, including locating all interfering utilities, restoration of ground surface features, traffic control, temporary fencing if required, and all incidental work for one point repair regardless the depth of the excavation, complete in place. Payment will provide complete compensation for furnishing all materials, labor, and incidentals including pipe, repair clamps, couplings, and adapters, heat-shrink sleeves, wyes or tees, sewer flow control, and trench shoring necessary to repair the pipe, complete in place.

CHANGE SUBSECTION 500-1.3 OF THE GREENBOOK TO READ AS FOLLOWS

500-1.3 Polyethylene Solid Wall Liner Insertion Procedure

500-1.3.1 General. The installation of the polyethylene solid wall sewer pipe liner shall conform to this Specification and to ASTM Specifications F714, D2683, D3261, and D3350.

The Contractor shall, in accordance with Section 4, 401.12, submit shop drawings of proposed materials and construction details. The shop drawings shall include insertion pit configuration and details, including sewer flow control, to assure that the work can be accomplished as specified and without sewage spill.

Unless otherwise specified or approved, the outside diameter of the liner shall be the maximum standard size while not exceeding 90 percent of the inside diameter of existing pipe.

The Contractor shall brace or otherwise protect the manholes, of necessary, to withstand forces generated by equipment used while installing the liner.

As opposed to provision of bypass pumping, the Contractor may, at his option, utilize the annular space between the liner and the pipe to temporarily convey sewage during the time that the liner is allowed to relax to its unstressed state. The Contractor shall provide flow control for any excess sewage from upstream reaches, branch sewers, and active laterals in accordance with Subsection 312-2.1 which cannot be conveyed through the annular space. Should the annular space become plugged, the Contractor shall provide full flow control in accordance with Subsection 312-2.1. Upon completion of use of the annular space for flow conveyance, and prior to grouting, the Contractor shall thoroughly flush the annular space with potable water to remove any solids and organic material which may have become lodged or deposited in the annular space.

The Contractor shall clean each reach of sewer main to be lined as specified in Subsection 312-1, and perform all point repairs designated in the Plans in accordance with Subsection 312-7.

Prior to installation, all protruding laterals that may prevent proper insertion of the liner shall be removed. The method shall be submitted with the shop drawings for approval.

500-1.3.2 Sizing "Pig". After completing the point repairs, a sizing "pig" shall be pulled through the existing sewer to ensure that there are no obstructions.

The sizing "pig" shall comprise a pulling head made of steel, attached to a piece of pipe of the same size and material as the liner. A flexible pulling head is not acceptable. The minimum length of the pipe section shall be three joint lengths of the existing sewer. A cable shall be attached to the tail of the "pig" to allow withdrawal if necessary.

If the sizing "pig" encounters an obstruction that cannot be removed by conventional sewer cleaning

equipment, a point repair excavation shall be made to uncover and remove or repair the obstruction following procedures outlined in Subsection 312-7.

If the sizing "pig" is scored to a depth equal to or greater than 10 percent of the liner thickness, the protrusion or irregularity that is the cause shall be removed prior to insertion of the liner. In such cases, the pipe portion of the sizing "pig" shall be replaced by a new portion. Insertion of the liner shall not be permitted unless scoring of the sizing "pig" is less than 10 percent of the thickness.

500-1.3.3 Liner Handling. The liner shall be handled with care to minimize the possibility of it being cut, kinked, gouged or otherwise damaged. Damage will be assessed in accordance with ASTM F585. Ropes, fabric, rollers, or rubber-protected slings and straps may be used when handling the liner. The use of cables, chains or hooks will not be permitted. Liner shall be stored on level ground or surface, free of sharp objects which could cause damage. The liner shall be pulled on rollers, or otherwise protected from damage during pulling operation. Sections of the liner damaged, cut, or gouged shall be repaired by cutting out the section of pipe containing the damaged areas and then rejoining the liner sections as specified herein.

500-1.3.4 Liner Installation. The Contractor shall insert the liner into the pipe in accordance with ASTM F714, the manufacturer's recommendations, and the shop drawings. A thermal crayon shall be used for providing a fail-safe mechanism for the thermometer to assure proper fusion temperature.

500-1.3.5 Joining Systems.

1) Butt Fusion. Sections of the liner shall be joined into continuous lengths on the job site at ground level above the trench. Joining shall be accomplished by butt fusion performed in accordance with the liner manufacturer's recommendations and pertinent sections of ASTM D2657 and D3261.

   Butt fusion shall be accomplished by aligning the sections to be joined in a fixture, trimming, softening the ends by heat, and then joining them together under controlled pressure. All fusion must be done by personnel trained by the pipe supplier or other qualified person, and using tools recommended by the pipe supplier and approved by the Engineer. Joints between pipe sections shall be smooth and internal fusion bead in no case shall be greater than 0.10 inch.

   Two joints, selected at random by the Engineer from the first total of 1,000 linear feet in a project or from the total project length if less than 1,000 feet, shall be tested at the Contractor's cost in compliance with ASTM D638 to assure that the tensile strength of the joints equals or exceeds that of the materials joined. The specimens to be tested shall be obtained by cutting the liner pipe at least 12 inches on each side of the field-made joint. The ends may then be rejoined and work may proceed. One additional test shall be made also at the Contractor's cost for each additional 1,000 linear feet of line or portion thereof.

2) Electrofusion Coupling. Where the polyethylene liner is inserted at a point between

manholes, or in other circumstances approved by the Engineer where the liner must be joined in the trench, the polyethylene pipes shall be joined together using electrofusion couplings. Electrofusion couplings shall comply with ASTM F1055.

3) Mechanical Joints. When approved by the Engineer polyethylene pipe may be joined together with a stainless steel full encirclement clamp.

Clamps shall be 316 stainless steel with a rubber sleeve and shall be of adequate length to protect against pullout. Minimum lengths of clamps are listed below.

Approximate outside Diameter of the liner pipe (inches)	Minimum length of clamp (inches)
3.500	7.5
4.500	10
5.375	10
6.625	15
7.125	15
8.625	15
10.750	20
12.750	20
13.380	20
16.000	30
18.000	30
18.700	30
22.000	30
24.000	30
28.000	30
32.000	48
36.000	48
40.000	60
42.000	60
48.000	60

The exposed liner and clamp shall be encased in concrete not less than 6 inches thick all around the clamp.

500-1.3.6 Excavated Pits. The liner shall be installed through insertion pits and sewer laterals shall be reconnected using access pits. All pits shall be adequately shored, braced, and dewatered to ensure safe work areas.

a) Points of Insertion. An insertion pit shall be excavated at each location where polyethylene liner pipe is to be inserted into the existing sewer pipe.

The pits shall be sloped in accordance with ASTM F585 and the manufacturer's recommendations to facilitate entry of the liner without damage. Slope shall be 2-1/2:1 or flatter and shaped to permit as long a radius in the liner pipe as feasible, both where it enters the excavation and where it enters the existing sewer. This radius shall not be less than 35 times the outside diameter of the line pipe.

b) Service Connections. Access pits will be required at points of connection of the slip-lined sewer main with existing sewer lateral connections. Individual service connections shall be at least three liner pipe diameters apart.

500-1.3.7 Insertion of Liner Pipe. The top of the existing main shall be exposed below the 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 and/or edges of the pipe shall be rounded with mortar to prevent scratching or gouging of liner during the insertion operation.

A power winch shall be connected to the end of the liner pipe by a cable and pulling head or other proven and acceptable arrangement to enable the liner to be pulled into the existing sewer. The winch shall be equipped with a load gauge to read the developed winching force directly. This force shall be recorded regularly during winching, and at every start or restart. The permissible winching force is calculated by multiplying the cross sectional area of the pipe wall by the permissible short term tensile stress, as stated by pipe manufacturer. A fully rotating eye shall be used on the end of the cable to avoid problems with cable twist.

Length of the liner pipe to be pulled and the pulling speed shall be in accordance with the manufacturer's recommendations to ensure that the liner is not excessively stretched. Pulling speed shall not exceed 1 foot per second. Butt fused joints shall not be pulled until the set time recommended by the manufacturer has elapsed.

The liner shall be lubricated to reduce friction. The method and materials shall be as recommended by the liner manufacturer.

500-1.3.8 Stress and Strain Relief of Polyethylene Liner Pipe After Pulling Operations. The Contractor shall allow the liner to return to its original length and shape in the unstressed state and then trim the excess liner in the manholes. The liner pipe manufacturer's recommendations shall be followed regarding the relief and normalization of stress and strain due to temporary stretching or elongation after pulling operations are completed. Time allowed for stress and strain relief shall be not less than 24 hours. The installation of full encirclement clamps and annular space sealing procedures shall not commence until the normalization has taken place. Sewer lateral connections shall be reconnected with flexible couplings as soon as possible.

500-1.3.9 Grout Sealing. Sealing of annular spaces shall not be done until all sewer lateral connection work at the main is complete and a minimum of 24 hours has elapsed from completion of insertion of liner pipe.

a) Sealing Annular Space at Manholes. The annular space between polyethylene liner pipe and the existing sewer main shall be sealed where the liner enters or exits each manhole.

For grout sealing, the annular space shall first be caulked with an approved activated oakum. Treated activated oakum shall be placed a minimum of 6 inches (152 mm) from the inside face of the manhole and shall then be activated in accordance with the manufacturer's recommendations. The remaining annular space between the inside face of the manhole and the caulking shall then be filled with non-shrink grout made with Type V cement.
A mechanical sealing device, approved by the Engineer, may be used to seal the annular space at manholes. Sealing device shall be LINK-SEAL manufacturer by GPT, or equal.

b) Sealing Entire Annular Space Between Liner and Pipe Wall. The Contractor shall grout the entire annular apace between the liner and pipe wall with Class "E" mortar specified in Subsection 201-5. The grout shall have a water/solids ratio of 0.35 to 0.40. The workability shall be measured by the US Army Corps of Engineers test method C 611, and shall satisfy a range of 10 to 30 seconds.

Grouting procedure shall conform to Subsection 307-2.8 and Subsection 500-3.1. The grout shall be supplied to the pump continuously and shall be placed in such a manner that it will not place any undue stresses on the polyethylene liner.

The grout shall be pumped into the annular space at existing manholes and previously excavated slip-lining access excavations and point repair excavations. If additional excavations are required for the introduction of the grout to ensure uniform and complete grouting of the annular space, they shall be provided at the Contractor's expense. In such cases, the injection points shall not be greater than 100 feet apart. In any case, the distance to be pumped shall not exceed the limits recommended by the pump manufacturer.

The Contractor shall utilize special procedures including pressure relief valves on the grout pumping apparatus, as necessary, to ensure that the liner does not rise (float) off the existing sewer invert nor is deflected out-of-round during placement and curing of the grout. The use of water to fill the liner prior to grouting is an acceptable method to prevent flotation.

Grouting shall be considered complete when the quantity of grout pumped is between 90 and 120 percent of the annular space volume. There shall be no extra payment to the Contractor if the quantity exceeds the annular space volume.

A detailed plan of the equipment and procedures proposed for placing grout shall be submitted for approval by the Engineer.

500-1.3.10 Liner Testing. Test the liner and branching sewer laterals for leakage in accordance with Subsection 313-10.

500-1.3.11 Bedding. At all locations where polyethylene liner pipe is exposed, except in manholes, 2,000 psi concrete shall be placed to a minimum of 6 inches above and 12 inches on each side of the existing sewer. In locations where placement of concrete is difficult, the Contractor at his own expense, and with the approval of the Engineer, may substitute with cement stabilized backfill to a minimum of 6 inches above the existing sewer, and across the full width of trench or pit. Cement-stabilized backfill shall consist of a dry mixture of Class "E" mortar using Type V cement. The dry mixture shall be placed and suitably compacted as directed by the Engineer. Flexible connections shall not be encased in concrete.

500-1.3.12 Service Connections. It shall be the Contractor's responsibility to determine and to assure that all live service connections are reconnected to the sewer main in accordance with the provisions of Subsection 312-9.

Service connections shall be made using polyethylene saddles in accordance with procedures and with materials supplied by the manufacturer of the polyethylene pipe liner. Saddles shall be attached to the pipe liner using heat fusion. Installation of saddles shall be in accordance with pipe suppliers recommendations, and as approved by the Engineer. The saddles shall be additionally secured with Type 316 stainless steel compression bands.

The size of the stub out attached to the saddle, or the "chimney" type connection, shall not be smaller than the nominal size of the service line to which it is to be attached.

Elastomeric couplings or adaptors, equipped with Type 316 stainless steel tightening bands, shall be used to make pipe closures required between the new stub-out and the lower lateral as shown in the Plans.

The entire service connection structure, including the main, saddle, stub-out, and exposed sewer lateral shall be backfilled as specified in Subsection 500-1.3.11. For "chimney" type polyethylene lateral stubs, the ends of which are butted directly against the liner then heat fused, the use of stainless steel band shall not be required.

500-1.3.13 Liner at Manholes. The liner shall be cut out within manholes. The invert of the existing channel shall be roughened to provide bond and an epoxy mortar material applied to provide a smooth and uniform flow-line from the inlet to the outlet liner. The epoxy mortar shall not be applied to a thickness less than the manufacturer's recommendation. Where necessary, the entire existing channel shall be reconstructed so as to provide a smooth and uniform transition in width and depth from the inlet liner to the outlet liner.

500-1.3.14 Backfill and Compaction of Insertion Pits. All insertion pits shall be backfilled and compacted for their full length, width, and depth in accordance with the requirements of Section 300.

500-1.3.15 Payment. Payment for polyethylene liner insertion shall be in accordance with the unit price listed in the Bid Schedule and shall include full compensation for all labor material, equipment tools, and incidentals required to line the existing sewer with polyethylene pipe including cleaning

and sizing of the existing sewer, annular space grouting, testing, sewer flow control, excavation, backfill, sub-grade preparation, temporary resurfacing, permanent trench resurfacing, and all other work necessary to install the liner complete in place.

Payment for reconnecting sewer laterals shall be in accordance with Subsection 312-9.

Payment for point repairs shall be in accordance with Subsection 312-7.

Payment for removal of protruding laterals of inactive laterals to be abandoned shall be in accordance with Subsection 312-7, Point Repairs.

Payment for removal of protruding laterals at active laterals shall be included in the unit price paid for connection of lateral to rehabilitated main sewer.

500-1.4 Cured-In-Place Pipe Liner (CIPP)

500-1.4.1 General.

ADD THE FOLLOWING TO THE END OF SUBSECTION 500-1.4.1 OF THE "REGIONAL STANDARDS"

- Prior to commencing work, the Contractor shall provide submittals on all lining materials and resins and shall furnish manufacturer certification that the liner materials comply with the requirements stated herein. The submittals shall include information about all component materials. The Contractor shall submit in accordance with Part C, Subsection 401.12 of the Specifications, shop drawings of construction details, including complete manufacturer's recommendations for storage procedures, temperature control, removing roots and protruding laterals, liner handling, and insertion, curing details, re-establishing service connections, trimming and finishing. The shop drawings shall include placement location(s) and method(s) and bypass location(s) with sufficient detail to assure that the work can be accomplished without sewage spill. The Contractor shall also provide manufacturer's certification, field measurements and pipe-sizing calculations that demonstrate that the liner has been properly sized and designed to avoid the creation of wrinkles or folds and to avoid gaps between the liner and the host pipe. Only manufacturer-licensed and certified contractors shall install CIPP liner.

REPLACE SUBSECTION 500-1.4.2 OF THE "REGIONAL STANDARDS" WITH THE FOLLOWING

500-1.4.2 Material Composition. The fabric tubing shall consist of polyester fiber of at least five denier, with sufficient needling and cross-lapping to yield a burst strength of 1,000 pounds per square inch in transverse directions (hoop stress), free from tears, holes, cuts, foreign materials and other defects. Polyurethane or polyvinyl chloride shall be bonded to the inside layer of the fabric tube at 400 grams/square meter forming a nominal (0.010 inch) pin-

hole free-coating laying. The fabric tube shall be compatible with and capable of carrying, polyester, epoxy, or epoxy-vinyl-ester resin and be able to withstand installation pressures and curing temperatures.

The approved polyester, epoxy, or epoxy vinyl-ester shall be corrosion resistant with sufficient thixotropic properties to obtain non-draining characteristics when impregnated into the fabric tubing. When properly cured within the tube composite, the resin shall meet the requirements of ASTM F1216. The catalyst shall be compatible with the resin and other materials used in the manufacture of the liner. The non-promoted resin shall be catalyzed by the addition of sufficient catalyst to produce the required physical properties of the cured polyester fabric tube. The initiation temperature for cure shall be as recommended by the resin manufacturer and approved by the Engineer.

The CIPP liner shall comply with ASTM D5813 and shall have, as a minimum, the initial structural properties per Table 500-1.4.2 and Table 500-1.42 (A)

***ADD FOLLOWING FOOTNOTES TO "REGIONAL STANDARDS" TABLE 500-1.4.2(A), TO READ AS FOLLOWS ***

[4] The cured liner shall have a minimum impact strength of 1.9 in-lbs per ASTM D256
[5] The cured liner shall have a minimum shear strength of 5,500 psi per ASTM D732

500-1.4.5 Installation

REPLACE THE FIRST PARAGRAPH OF SUBSECTION 500-1.4.5 OF THE "REGIONAL STANDARDS" WITH THE FOLLOWING
The fiber tube shall be fabricated to tightly and neatly fit the internal perimeter of the conduit to be rehabilitated. The gap between the existing pipe inside diameter and the outside diameter of the installed liner pipe shall not exceed 0.25 inches at any point along the pipeline. The pipe shall be rejected if shrinkage exceeds this amount. Allowance for stretching during insertion shall be made. The minimum length shall be that which continuously spans the distance from the center of the field manhole to the center of the outlet manhole. The Contractor shall verify the lengths in the field before impregnation. Individual inversion runs can include one or more sewer reaches as determined by the Contractor and approved by the Engineer.

ADD THE FOLLOWING TO THE END OF SUBSECTION 500-1.4.5 OF THE "REGIONAL STANDARDS"

- The Contractor shall brace or otherwise protect the manholes, if necessary, to withstand forces generated by equipment used while installing the liner.
- The Contractor shall bypass the sewage in accordance with Subsection 500-1.16.
- If an obstruction cannot be removed by conventional sewer cleaning equipment or by other internal means approved by the Engineer, a point repair excavation shall be made to uncover and remove or repair the obstruction as specified in Subsection 500-1.2.
- When both the main sewer and sewer laterals are to be rehabilitated by inversion lining, the main

sewer lining must be completed before sewer laterals are lined.

500-1.4.6 Curing

ADD THE FOLLOWING TO THE END OF SUBSECTION 500-1.4.6 OF THE "GREENBOOK"

Contractor shall protect vegetation from damage due to heat from hot water lines and other equipment.

Untested and untreated ~~styrene contaminated~~ curing water from ~~polyester resin~~ **the** cured in place pipe liner is not allowed to be discharged to the sewer. Contractor shall obtain a Special Discharge Permit **from East Bay Municipal Utility District (EBMUD)** for the discharge of curing water ~~containing styrene~~. EBMUD requires that the water be treated prior to discharge.

ADD NEW SUBSECTION 500-1.4.6.1 TO THE "GREENBOOK", TO READ AS FOLLOWS

500-1.4.6.1 Finished and Cured Liner Properties.

a) The finished lining shall consist of an inner polyurethane or polyvinyl chloride layer and an outer polyester felt layer (or layers) impregnated with a thermosetting resin to fit tightly and neatly against the existing inside pipe wall. The liner shall be fabricated from materials which, when cured, will be chemically resistant when exposed to quantities of hydrogen sulfide, carbon monoxide, methane, petroleum hydrocarbons, moisture saturation, and diluted sulfuric acid.
b) The outside layer of the tube shall be plastic coated with a translucent flexible material that clearly allows inspection of the resin impregnation (wet out) procedure.
c) The tube shall be homogenous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers.
d) The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made.

e) Longitudinal seams in the tube shall be stronger than the unseamed felt. No circumferential seams shall be used.
f) The outside of the tube shall be marked for distance at regular intervals along its entire length, not to exceed 5 feet. Such markings shall include the manufacturer's name or identifying symbol.

500-1.4.7 Service Connections and End Seals

ADD THE FOLLOWING TO THE END OF SUBSECTION 500-1.4.7 OF THE "GREENBOOK"

Liner shall be tested for leakage prior to and after reconnection of sewer laterals in accordance with ~~Subsection 306-7.8.~~ **ASTM F1216 and ASTM F1743.**

ADD SUBSECTIONS 500-1.4.11 AND 500-1.4.12 TO THE "GREENBOOK", TO READ AS FOLLOWS

500-1.4.11 Post Lining Television Inspection. The pipe shall be inspected by closed circuit television after lining and may be accomplished in conjunction with the reinstatement of sewer lateral connections. Video tape and written log records shall be made of these inspections and copies shall be given to the Engineer for review prior to acceptance of the lining work.

500-1.4.12 Payment. Payment for inversion lining with resin impregnated polyester felt liner will be based on the unit price listed in the Bid Schedule. Payment shall include full compensation for all labor, material, tools, and incidentals for lining the existing sewer. The price per linear foot of resin impregnated polyester felt pipe lining shall include cleaning, television inspection, and sizing of the existing seer, testing, and resurfacing.

Payment for sewer laterals shall be in accordance with Subsection 312-9.

Payment for obstruction removal and sewer repair shall be in accordance with Subsection 500-1.2.

The price per linear foot of resin impregnated polyester felt pipe lining shall also include removal of all protruding laterals.

ADD NEW SUBSECTION 500-1.14 TO READ AS FOLLOWS

500-1.14 UV-Cured Resin Impregnated Fiberglass Tube

500-1.14.1 General. The following documents form a part of this specification to the extent stated herein.

- ASTM F2019 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled in Place Installation of Glass Reinforced Plastic (GRP) Cured-in-Place Resin Pipe (CIPP)
- ASTM F1216 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.
- ASTM F1743 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pull in and inflate and Curing of a Resin-Impregnated Tube.
- ASTM D543 Test Method for Resistance of Plastics to Chemical Reagents
- ASTM D578 Standard Specification Glass Fiber Strands
- ASTM D638 Standard Test Method for Tensile Properties of Plastics.
- ASTM D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

- ASTM D2122 Standard 1 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings

- ASTM D3567 Standard Practice for Determining Dimensions of "Fiberglass" (Glass-Fiber- Reinforced Thermosetting Resin) Pipe and Fittings

- ASTM D5813 Standard Specification for Cured-in Place Thermosetting Resin

500-1.14.2 Installer Qualifications. The Contractor shall demonstrate that a minimum of 25,000 ft. has been successfully performed by the Contractor's job Superintendent, who shall be assigned full time to this Project. As an alternative, the Contractor must provide a minimum of 3 manufacturer representatives to assist the contractor with installation for the duration of the project. The proposed CIPP Rehabilitation process shall be proven technology, which is defined as a minimum of 250,000 linear feet of successful sanitary sewer and/or storm water collection system installations in the U.S., documented to the satisfaction of the Engineer.

500-1.14.3 Contractor Submittals.

1. The Contractor shall submit, prior to the installation or use of any lining materials or equipment, certified test results from the manufacturers which indicate that all materials conform to the applicable requirements.

2. Chemical resistance submittals – The Contractor shall submit test results of the resin proposed that meet the chemical resistance requirements of ASTM F2019. The chemical resistance tests will be completed in accordance with Test Method D543 or the equivalent

3. CIPP Field Samples – Field sampling procedure shall be in accordance with ASTM 2019.

4. MSDS Sheets – The Contractor shall submit Material Safety Data Sheets for all resins, and other additives such as accelerants, colorants, and lubricants utilized in the pipe liner/lining process.

5. Manufacturer Protocols - The Contractor shall submit manufacturer information that describes the materials, curing speeds, curing installation processes, installation pressures, temperature limitations, and recommended post curing documentation.

500-1.14.4 Materials. Neither the CIPP product, nor its installation, shall cause adverse effects to any of the City processes or facilities. The use of the product shall not result in the formation or production of any detrimental compounds or by-products at the wastewater treatment plant or be released into the pipe after curing. This specifically includes water by-products used in curing. The Contractor shall notify the City and identify any by- products produced as a result of the operations, shall test and monitor the levels, and shall comply with any and all local waste discharge requirements including the testing of curing water before its discharge to insure all curing by-products have dissipated.

500-1.14.5 Product Storage And Handling. All materials shall be accompanied by test reports certifying that the material conforms to the ASTM standards listed herein. Materials shall be shipped, stored, and handled in a manner consistent with written recommendations of the manufacturer. All damaged materials rejected by the Engineer shall be promptly removed from the project site at the Contractor's expense and disposed of in accordance with current applicable regulations.

500-1.14.6 Liner. The fiberglass within the Liner shall be non-corrosion (E-CR Glass) material and shall be free from tears, holes, cuts, foreign materials and other surface defects. Its glass fibers must extend in a longitudinal direction to insure no longitudinal stretching during the pull-in process.

1. The Liner shall be constructed to withstand installation pressures as required by Manufacturer's recommendations.

2. The Liner shall be manufactured to a size that when installed will tightly fit the internal circumference and the length of the original pipe. The tube be able to stretch to fit irregular pipe sections and negotiate bends of up to 20 degrees and shall have sufficient strength to bridge missing pipe sections, with the use of a canvas sleeve if necessary.

3. Liner shall be constructed in accordance with ASTM F2019.This construction insures that the liner can be pulled in place using its own glass construction design without the aid of additional filler materials inserted into the liner. The tube shall consist of at least two separate tubes made of corrosion resistant (E-CR) glass fibers. The glass fibers shall extend in a longitudinal direction to ensure no longitudinal stretching during the pull-in process. The tube shall be impregnated with the aid of a vacuum process to insure no air enters the resin. A vacuum bath impregnation is prohibited.

4. Interior and exterior plastics shall be styrene resistant to protect and contain the resin used in the Liner.

5. The exterior plastic shall be ultra violet light resistant and translucent to allow visual inspection of the impregnation of the resin within the glass fibers.

6. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with CCTV inspection may be made.

7. The nominal Liner wall thickness shall be constructed to the nearest 0.5mm increment.

500-1.14.7 Resin. The resin used to impregnate the Liner shall produce a cured liner pipe resistant to shrinkage, corrosion, and abrasion and shall have a proven resistance to municipal wastewater.

1. The resin shall be a chemically resistant UV cured isophthalic polyester resin or vinyl ester resin (as determined by the Engineer). When cured the resin/liner system shall meet the structural and chemical resistance requirements of ASTM F2019. No resin fillers are to be allowed.

500-1.14.8 Structural Requirements.

1. The thickness of each Liner installed shall be determined using calculation methods that are consistent with applicable ASTM's. The Contractor shall submit stamped and signed designs prior to the installation of any Liner. The designs shall include a step by step calculation that shows all equations, defines all variables, lists all assumptions, and clearly indicates all values used for the design.

2. The long term (50 year extrapolated) Creep Retention Factor of the initial design flexural modulus as determined by ASTM D790 test method shall be set to 50%.

3. The cured in place pipe material (CIPP) shall conform to the structural properties as listed below.

   MINIMUM PHYSICAL PROPERTIES
   Wall Thickness: ASTM D2122 per ASTM F2019
   Flexural Modulus of Elasticity ASTM D-790 (short term): 725,000 psi
   Flexural Strength ASTM D-790: 6,500 psi

4. The required structural CIPP wall thickness shall be based as a minimum on the physical properties indicated above, the Design Equations in the appendix of ASTM F1216, and the following design parameters:

   Design Safety Factor: 2.0
   Creep Retention Factor: 60% (UV fiberglass liners typically tests at >65%)
   Ovality: 2%
   Modulus of passive soil reaction: 500 psi
   Groundwater Depth: Same as soil cover unless stated otherwise by the Engineer in writing.
   Soil Depth (above the crown): See Plan
   Poisson's ratio: 0.3
   Live Load: H-20 (Highway Loading)
   Soil Load: 120 lb/cu. Ft.
   Pipe Condition: Fully Deteriorated
   Minimum service life 50 years

500-1.14.9 Construction Requirements.

1. Preparatory Work.

a. The Contractor shall verify the lengths of pipe to be relined and the inside diameters.
b. The fabric tube shall be fully impregnated with resin (wet-out). The impregnation equipment shall contain devices to secure a proper distribution of the resin. Following the impregnation, the fabric tube shall be exposed to a resin thickening procedure. Certification documentation concerning date, type of resin (manufacturer, trade name and lot number), resin calculation, and volume of resin used shall be attached to the impregnated fabric tube.

2. Pipe Liner Installation.

The CIPP Liner shall be installed in the host pipe per the manufacturer's specifications as submitted in these Specifications.

CIPP installation shall be in accordance with applicable ASTM F2019 and the following:

a. Final Cleaning and Inspection -- The existing host pipe shall be cleaned just prior to insertion of the Liner. A maximum of one hour may elapse between this final cleaning/flushing pass and the insertion of the Liner. After the cleaning is complete, a recorded video inspection shall be made to verify the cleanliness of the line, shall be available to the Engineer upon request.

b. Liner protection – Prior to inserting the Liner, a plastic sheet 10 mil thick will be pulled into the host pipe to protect the Liner from damage as the Liner is pulled in.

c. Liner Insertion – The Liner shall be pulled-in through an existing manhole or approved access point and fully extend to the next designated manhole or termination point. The pulling speed shall not exceed 15 ft/min. Care shall be exercised not to damage the tube during the pulling phase.

d. Liner Inflation – The Liner shall then be inflated with air with sufficient pressure to hold the Liner tight to the host pipe wall.

e. Liner Inspection – The Contractor will video record the Liner prior to commencement of the curing process, and make the recording available to the Engineer upon request. The light-curing device must have two cameras to ensure that 100% of the liner is inspected and one camera on the front of the light train and one camera on the back of the light train.

3. Curing for Ultraviolet Light.

CIPP curing shall be in accordance with applicable ASTM F2019, with the following

modifications:

a. The ultraviolet curing lamps shall operate in a sufficient frequency range to insure the curing of the resin.

b. The light curing device must have two cameras to ensure that 100% of the liner is inspected and one camera on the front of the light train and one camera on the back of the light train.

c. Curing logs: Include liner manufacturer recommended curing citations for each submittal. Store electronically on data logger. Submit printed copy with Post CCTV. Logged data shall include, but not be limited to, the curing speed (feet per minute), light source (number of lamps, intensity and wattage), inner air pressure (psi), and curing temperatures (degrees Fahrenheit) per unit time over length of liner.

4. Finished Pipe Liner.

a. The cured Liner shall be continuous over the entire length of an installation run and be free of material defects. The lining shall be impervious and free of any leakage from the pipe to the surrounding ground or from the ground to inside the lined pipe.

b. Any defect, which will or could affect the structural integrity, strength, capacity, or future maintenance of the installed Liner, shall be repaired at the Contractor's expense, in a manner approved by the Engineer.

c. Both ends of the cured Liner shall be cut flush at the inlet and outlet points in the manhole, and sealed with an epoxy or resin mixture compatible with the Liner/resin system, providing a watertight seal. Sealing material and installation method shall be submitted and approved by the Engineer prior to start of construction. Hydraulic cements and quick-set cement products are not acceptable.

5. Internal Reinstatement of Side Sewers.

After the Liner has been properly cured, the Contractor shall internally reinstate the existing side sewer laterals. Internal reinstatement of laterals shall be performed by a qualified individual with experience in successful internal lateral cuttings. The cutting device shall produce a neat, clean and smooth opening of at least 95% of the existing side sewer lateral circumference.

6. Lateral Seals.

Because there is negligible shrinkage of UV fiberglass liners after curing, and because the liners are of such strength that roots are not able to affect them, no lateral seals are required to be made except when there is damage to the lateral itself. Only those laterals identified by the Engineer as defective and needing seals will be sealed by the contractor.

7. Final Acceptance.

   a. The Contractor shall perform a CCTV inspection in accordance with ASTM F2019, Section 7.3 after installation of the CIPP Liner and reconnection of the active side sewer laterals. The quality of the post-installation CCTV inspection shall be held to the same standards as the preinstallation CCTV inspection.

   b. The Contractor shall submit to the Engineer, for acceptance and approval, two (2) copies of unedited post-installation video with digital formats and associated curing reports for each sewer main segment within 10 working days of the Liner installation. No more than one sewer main segment shall be included on a post-installation video or curing report. Sampling and Laboratory Testing The physical properties of the installed CIPP Liner shall meet the minimum physical properties per ASTM 2019.

ADD SUBSECTION 500-1.15 TO THE "GREENBOOK", TO READ AS FOLLOWS

500-1.15 Chemical Sealing Installation

500-1.15.1 General. Joints showing visible leakage or joints that have failed the joint test as specified in Subsection 208-2.3.3 shall be sealed with chemical sealing materials as specified in Subsection 208-2.3

500-1.15.2 Equipment. All equipment required to perform the work shall be subject to approval by the Engineer. The basic equipment shall consist of a closed-circuit television system as specified in Section 500-1.1.5, necessary chemical sealant containers, pumps, regulators, valves, hoses, etc., and joint sealing packers for the various sizes of sewer pipes. The packer shall be cylindrical and have a diameter less than the pipe size and have a diameter less than the pipe size and have cables attached at each end to pull it through the line. The packer device shall be constructed in a manner to allow a restricted amount of sewage to flow. Generally, the equipment shall be capable of performing the specified operations in sewers where flows do not exceed the maximum depth of flow for joint testing/sealing as specified in Subsection 500-1.16.

500-1.15.3 Conditions Required for Joint Sealing. Sealing shall not be performed in pipe which has roots, debris on the invert, corrosion at the crown, excessive roughness, cracks, breaks, misalignments, or other conditions which prevent the inflatable sleeves of the packer from making continuous contact with sound pipe on each side of the joint.

500-1.15.4 Joint Sealing Procedure. Joint sealing shall be accomplished by forcing chemical sealing materials into or through faulty joints by a system of pumps, hoses, and sealing packers. Jetting or driving pipes from the surface that could damage or cause undermining of the pipe lines shall not be allowed. Uncovering the pipe by excavation of pavement and soil which could disrupt traffic, undermine adjacent utilities and structures, and cause further damage to the pipe lines being repaired shall not be allowed. The packer shall be positioned over the faulty joint by means of a measuring device and the closed-circuit television camera in the line. The procedure used by the Contractor for positioning the packer shall be accurate to avoid over-pulling the packer and thus not effectively sealing the intended joint. The packer ends shall be expanded using controlled pressure. The expanded ends shall seal against the inside periphery of the pipe to form a void area at the faulty joint, now completely isolated from the remainder of the pipe line. Into this isolated area, sealant materials shall be pumped through the hose system at controlled pressures which are in excess of groundwater pressures. The pumping unit, metering equipment, and the packer device shall be designed so that proportions and quantities of materials can be regulated in accordance with the type and size of the leak being sealed. Pumps, fittings and hoses shall be designed to transport a high viscosity material, shall be capable of supplying an uninterrupted continuous flow of the sealing material at rates of between one-quarter and 10 gallons per minute at a minimum pressure of 60 psi, for a continuous period of up to 10 minutes.

500-1.15.5 Joint Sealing Verification. Upon completing the sealing of a pipeline reach, all loose and residual sealing material shall be removed from the interior of the pipe using high velocity hydro-cleaning equipment. The sealed joints shall be left "flush" with the existing pipe surface. All joints sealed shall then be tested as specified Subsection 208-2.3.3. Joints that fail to meet the specified test criteria shall be resealed and retested until the test criteria can be met in order to receive payment.

500-1.15.6 Records. Complete records shall be kept of joint sealing performed in each manhole section (reach). The records shall identify the pipeline reach in which the sealing was done, the location of each joint sealed, and the joint sealing verification results as specified in Subsection 208-2.3.3.

A final "check-out" video inspection shall be performed after the completion of all grouting and pressure testing operation in the pipe."

500-1.15.7 Guarantee. All sewer pipe joint sealing work performed shall be guaranteed against faulty workmanship and/or materials for a period of one year after the completion and acceptance of the work.

Prior to the expiration of the guarantee period, but no more than 10 months after completion of work, an initial retest area consisting of specific manhole sections shall be selected by the Engineer/Owner. Manhole sections to be retested shall be randomly selected throughout the project area and shall be considered representative of the majority of the sealing work originally performed. The initial retest area shall consist of 5 percent of the linear feet contained in the original project.

Within the initial retest area, the Contractor shall retest all previously sealed joints as specified. Any

joints failing the retest shall be resealed. If the failure rate of the retested joints is less than 5 percent of the joint retested, the work shall be considered satisfactory and no future testing will be required.

If, in the initial retest area, the failure rate of the retested joints exceeds 5 percent of the joints retested, an additional retest area of equivalent size shall be selected and all previously sealed joints shall be retested. This additional testing and sealing, if necessary, will continue until a failure rate of less than 5 percent is met.

Should as much as 20 percent of the original project be retested and fail to meet the 5 percent requirement, the Contractor will be required to mobilize to provide the same number of crews as utilized in the original work in order to complete the entire project in a timely manner. In this event all joints previously sealed shall be tested and all joints failing a test shall be properly sealed.

The cost for retesting should be included in the original project pertinent bid items. No compensation shall be provided for resealing (grouting) joints that fail.

500-1.15.8 Payment.

500-1.15.8.1 Chemical Sealing Preparation. Chemical sealing preparation will be paid for at the unit price bid prepared for chemical sealing.

The unit price in the Bid shall include full compensation for furnishing all labor, materials, tools and equipment and for doing all the work involved prior to chemical sealing, including sewer-line cleaning, sewer flow control, television inspection and pipe joint testing; and doing whatever else is appurtenant to chemical sealing preparation as shown on the Plans and Specifications.

500-1.15.8.2 Chemical Sealing. Chemical sealing of pipe joint will be paid for at the unit price bid. Contract shall furnish detailed log documenting the exact location of each joint sealed and final test results. The unit price in the Bid shall include full compensation for furnishing all labor, materials, tools and equipment and for doing all the work involved in joint sealing, including sealing verification, residual sealing material removal, records keeping; compliance with guarantee requirements, and doing whatever else is appurtenant to chemical sealing preparation as shown on the Plans and Specifications.

ADD SUBSECTION 500-1.16 TO THE "GREENBOOK", TO READ AS FOLLOWS

500-1.16 Sewer Flow Control

500-1.16.1 General. When depth of flow in the pipe upstream of the manhole section being worked, is above the maximum allowable for television inspection, joint testing and/or sealing; or when necessary to accomplish the specified sewer line rehabilitation; the flow shall be reduced to the required level by plugging or blocking of the flow, and by pumping the flow around the section being worked.

Depth of flow shall not exceed that shown below for the respective pipe sizes as measured in the manhole when performing television inspection, joint testing and/or sealing.

	Maximum Depth of Flow in Inches	
Pipe Sizes in Inches	Television Inspection	Joint Testing/Sealing
6	1.20	1.50
8	1.60	2.00
10	2.00	2.50
12	3.00	3.00
15	3.75	4.50
18	4.50	5.40
21	5.25	6.30
24	6.00	7.20
27	8.10	9.45
30	9.00	10.50
33 and up	30% of Pipe Diameter	35% of Pipe Diameter

Amount of the flow allowed in sewer line to be rehabilitated by slip-lining or other rehabilitation methods shall be in accordance with the manufacturer's recommendations and as approved by the Engineer.

500-1.16.2 Plugging, Blocking, and Pumping. When sewer flow control is required, the Contractor shall furnish, install, and operate pumps, plugs, conduits, and other equipment to divert the flow of sewage around the pipeline reach in which work is to be performed. The plug shall be so designed that all or any portion of the sewage can be immediately released from the ground surface. The plug shall be provided with a tag line. The pumping system shall be of sufficient capacity of handle wet-weather flow for the project area. The Contractor may request flow data, if available, from the Agency. The Agency does not guarantee the accuracy or reliability of the data. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise to a minimum. Standby pumps shall be provided as required. Pumping shall be done by the Contractor in such a manner as will not damage public or private property or create a nuisance or health menace. Pumped sewage shall be conveyed in an enclosed hose or pipe and shall be returned to the sanitary sewer system. Sewage shall not be allowed to free flow in gutters, street or over sidewalks, etc. nor shall any sewage be allowed to flow into the storm inlets or conduits. After the work has been completed, flow shall be restored to normal.

500-1.16.3 Payment. Payment for sewer flow control will be included in the price paid for other work.

SECTION 500-2 MANHOLE AND STRUCTURE REHABILITATION.

- Page 40 of Regional Standards –
-Page 491 of Greenbook-

REPLACE SUBSECTION 500-2.1 OF THE "REGIONAL STANDARDS" WITH THE FOLLOWING

500-2.1 General. This section covers repairs and rehabilitation of existing manholes and appurtenances. Included are the sealing of manhole walls; manhole covers, and annular spaces around pipes entering and leaving manholes; repairing and rebuilding bases; elimination of leakage at junction of walls and base and at wall and frame; replacement of cast iron frames and/or covers; rebuilding manhole walls; and other related miscellaneous work.

Sewer flow control, as necessary, shall be performed in accordance with Subsection 500-1.16.

All manhole rehabilitation materials shall be submitted to the Engineer and are subject to the approval of the Engineer. The manufacturer shall provide certification that all materials proposed for use are compatible with one another. All materials that shall contact the sewer environment shall be specifically designed for chemical resistance to the sewer environment. The manufacturer shall certify that the materials are resistant to the sanitary sewer environment and to the following: 5% nitric acid, 5% sulfuric acid, 10% phosphoric acid, 100% ASTM fuel C, 100% vegetable oil, 0.1% detergent, 0.1% soap, 5% sodium hydroxide, and 1% ferric chloride.

Each manhole that is designated for rehabilitation shall be reconstructed as follows:

1) The invert channel shall be reconstructed to provide a smooth transition between different size pipes and bends. The channel width and height shall be at a minimum equal to the diameter of the largest pipe.

2) The ledge shall be sloped to prevent ponding.

3) Voids at pipe connections shall be patched.

4) Abandoned stub-outs shall be plugged.

5) Cracks and deteriorated joints in the manhole shall be sealed.

6) Manhole steps are not allowed. Existing manhole steps shall be removed (cut and ground flush to the interior wall of the manhole) prior to manhole rehabilitation.

7) The frame and cover shall be adjusted such that the cover seats properly into the frame and there is no "rocking".

8) If the manhole cover were depressed below the adjoining surface, all vent holes shall be plugged.

9) Manholes in off-road areas shall have bolt down covers with neoprene gaskets.

After performing the above work, each manhole shall be vacuum tested in accordance with Subsection 303-9.2. If the rehabilitated manhole does not pass the vacuum test, the Contractor, at no added cost to the Agency, shall perform any and all work necessary to satisfy the testing requirement. The Contractor may choose, at no additional cost to the Agency, to replace rather than rehabilitate a manhole. This is permissible on approval of the Engineer. Payment for manholes replaced in lieu of rehabilitation shall be made at the unit cost for manhole rehabilitation. All casting shall be salvaged and returned to the Agency. The manholes designated for rehabilitation are shown on the Plans.

500-2.2 Leakage at Frames and Covers

500-2.2.1 Replace Cover

ADD THE FOLLOWING TO THE END OF SUBSECTION 500-2.2.1 OF THE "REGIONAL STANDARDS"

Manholes located in off-road areas shall be drilled and taped to construct a bolt down cover with neoprene gasket similar to those specified in Subsection 303-9.12. The Contractor has the option of replacing the cover with the type specified in Subsection 303-9.12.

ADD NEW SUBSECTIONS 500-2.3 AND 500-2.4 TO THE "REGIONAL STANDARDS", TO READ AS FOLLOWS

500-2.3 Reconstructing Manhole Base. When the invert and shelf of the manhole consists of built-up mortar or grout, with or without bricks, and groundwater enters the manhole throughout around its periphery, the Contractor shall completely remove the shelf and channels. If the concrete base is found to be structurally sound, it shall be thoroughly cleaned and a new invert or floor built, complete with channels, in accordance with the requirements for new manholes in Subsection 303-9. When an existing stub-out, poorly plugged or capped outside the manhole, permits groundwater to enter, it shall be plugged by inserting a wooden bulkhead one foot up the pipe and the pipe filled with cement grout between the bulkhead and the inside face of the manhole.

Other methods and materials for sealing the joint at the junction of manhole walls and base may be used by the Contractor with prior approval by the Engineer.

500-2.4 Sealing of Joint Between Cast Iron Frame and Manhole Wall. This repair consists of removing and replacing the manhole frame and the grade rings. This shall be accomplished by excavating as necessary, lifting off the frame and grade rings, thoroughly cleaning the frame's bottom bearing surface, coating it with asphalt paint similar to the original coating, removing the old mortar

from the manhole cone, and replacing the existing frame and grade rings as specified for new manholes in Subsection 303-9.

RENUMBER SUBSECTIONS 500-2.3, 500-2.4, AND 500-2.5 OF THE "REGIONAL STANDARDS" TO SUBSECTIONS 500-2.5, 500-2.6, AND 500-2.7, RESPECTIVELY

500-2.5 Sealing Manhole Walls.

REPLACE THE SIXTH PARAGRAPH OF SUBSECTION 500-2.3 OF THE REGIONAL STANDARDS" WITH THE FOLLOWING

Epoxy Coating. Prior to sealing the maintenance hole with epoxy, the maintenance hole shall be lined with mortar, Mainstay ML-72 or ML-72F, Parson Environmental PARSON MH Liner, or other approved equal product.

The mortar shall, as a minimum, meet the following requirements:

Test	Value	Units	ASTM test number
Compressive Strength (28 days)	8,000	psi	ASTM C-109
Flexural Strength (28 days)	1,300	psi	ASTM C-293
Tensile Strength (28 days)	790	psi	ASTM C-496
Bond Strength	500	psi	ASTM C-882
Shrinkage (28 days @ 90% RH)	0.01	Percent	ASTM C-596 or ASTM C-490

Prior to applying the maintenance hole wall with mortar, the maintenance hole shall be thoroughly sandblasted or hydroblasted and cleaned as recommended by the manufacturer to ensure complete coverage and bonding. Mortar shall be applied with spray equipment at one-half to one-inch thickness. Installation shall be in conformance with the manufacturer's recommendations.
The coating shall be a high-build epoxy, Mainstay DS-5, Parson Environmental PARSONPOXY SEL-80, or other approved equal product, specifically formulated for use in the sanitary sewer system.

The epoxy coating shall, as a minimum, meet the following requirements:

Test	Value	Units	ASTM test number
Compressive Strength	13,390	psi	ASTM D-695
Flexural Strength	12,850	psi	ASTM D-790
Tensile Strength	6,820	psi	ASTM D-638
Durometer Hardness	88	unitless	ASTM D-2240

The epoxy shall be applied with spray equipment at a minimum thickness of 80 mils. Epoxy coating shall be applied in conformance with the manufacturer's recommendations.

500-2.6 Remove and Replace Existing Sewer Structure. *See Subsection 500-2.4 of "Regional Standards"*

500-2.7 Testing. *See Subsection 500-2.5 of "Regional Standards"*

ADD NEW SUBSECTION 500-2.8 TO THE "REGIONAL STANDARDS", TO READ AS FOLLOWS

500-2.8 Payment. Rehabilitation of manholes will be paid at the unit price for manhole rehabilitation listed in the Bid Schedule. Replacement where specified or shown shall be paid at the unit price for new manholes listed in the Bid Schedule. Where the Contractor replaces, by his choice, a manhole designated for rehabilitation it shall be paid at the unit price listed in the Bid Schedule for manhole rehabilitation.

SECTION 500-3 ANNULAR SPACE GROUTING.

-Page 498 of Greenbook-

500-3.1 Requirements

500-3.1.3 Planned Vents

APPEND THE FOLLOWING AFTER THE FIRST PARAGRAPH OF SUBSECTION 500-3.1.3

During grouting, the annular space shall be vented to the atmosphere by tapping the existing casing pipe at multiple locations not to exceed a maximum distance of one hundred (100) feet. Vents shall be a minimum dimension of six (6) inches diameter for purposes of releasing air and monitoring the grouting process to assure that the annular space is filled. Engineer shall approve procedure to verify that the annular space is completely filled.

If the casing pipe at the vent is filled with grout and grouting needs to continue upstream or downstream along the annular space, the Contractor shall temporarily seal the vents as required to hold the pressure and allow continued grouting. Temporary vent seals shall allow no more than one (1) cubic foot of grout to be released at any one vent.

Approved temporary methods of sealing vents include bolted plates fitting the outside dimensions of the casing pipe, or sandbags with additional weight as required to meet these requirements. Alternate methods of sealing vents are subject to the approval of the Engineer.

500-3.1.4 Materials

APPEND THE FOLLOWING TO SUBSECTION 500-3.1.4.(c)

7) Initial set will not be less than three (3) hours.
8) The slurry shall have a minimum density of 55 PCF, and a maximum of 60 PCF.
9) The material will not bleed or segregate.

500-3.1.7 Injection Procedure and Pressure

REPLACE THE FIRST SENTENCE OF THE SECOND PARAGRAPH OF SUBSECTION 500-3.1.7 AS FOLLOWS

Grouting shall not proceed without appropriate gauges in place and in working order. Provide one pressure gauge and recorder at the point of injection, and one pressure gauge at the grout pump.

500-3.1.8 Onsite Test

APPEND THE FOLLOWING AFTER THE LAST PARAGRAPH OF SUBSECTION 500-3.1.7

The following items shall be observed as part of the grouting process:

1) Notify Engineer at least 24 hours in advance of grouting operations.

2) Place grout for a given pipeline segment between bulkheads. Place bulkheads at the ends of each pipeline segment to seal the annular space from sewer flow. Do not remove bulkheads until after grout has set.

3) Equip slipliner pipes with weirs to fill the pipes with water to prevent flotation during grouting operations.

4) Remove or control standing or running water in annular spaces to maintain the correct water ratio of the grout mixture. Grout the annular space by injecting grout from one end of the pipeline segment, allowing it to flow toward the other end. Vent the annular space to assure uniform filling of the void space.

5) Limit pressure on the annular space to prevent damage to the liner; do not exceed 5 psi. Regardless of the pressure, Contractor shall be solely responsible for any damage or distortion to slipliner pipe due to grouting. At the bulkhead opposite to the point of grouting, provide and monitor an open-ended high point tap or equivalent vent.

SECTION 500-5 ACCEPTANCE TESTING.

- Page 42 of Regional Standards –

500-5.2 Leakage Testing

ADD THE FOLLOWING TO THE END OF SUBSECTION 500-5.2 OF THE "REGIONAL STANDARDS"

Groundwater levels in each sewer reach shall be measured prior to leakage testing. Measurements of groundwater will be made at the manholes and at other supplementary points as specified herein or otherwise directed by the Engineer. Hydrostatic pressure of the groundwater to be used in determining leakage test procedures will be calculated by the Contractor and approved by the Engineer.

500-5.4 Acceptance

ADD THE FOLLOWING TO THE END OF SUBSECTION 500-5.4 OF THE "REGIONAL STANDARDS"

Within the warranty period, where rehabilitation or replaced sewer, manholes and appurtenances are found leaking, or that subsequent failure of the pipeline has occurred, the Contractor shall promptly correct such failures in a manner approved by the Engineer and at no cost to the Agency.

ADD NEW SUBSECTION 500-5.5 TO THE "REGIONAL STANDARDS", TO READ AS FOLLOWS

500-5.5 Payment. Acceptance testing is incidental to the rehabilitation work. Payment, therefore, is included in the price listed in the Bid Schedule for the work to be tested. Payment will be full compensation for furnishing all labor, materials, and equipment to complete the testing work, including services provided to aid the Agency in performing miscellaneous testing.

PART E
REGIONAL STANDARDS

SPECIFICATIONS

FOR

SANITARY SEWER REHABILITATION
SANITARY SEWER REHABILITATION AND REPLACEMENT - SAN PABLO AVENUE, SACRAMENTO STREET, UNIVERSITY AVENUE, ET AL.

SPECIFICATION NO. 26-11759-C

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"2014 Consent Decree Defendants"

City of Alameda
City of Albany
City of Berkeley
City of Emeryville
City of Oakland
City of Piedmont
East Bay Municipal Utility District (EBMUD)
Stege Sanitary District

REGIONAL STANDARDS

for Sanitary Sewer System Installation, Rehabilitation and Repair

June 30, 2016

June 30, 2021 (revised)

Prepared under Consent Decree Case. Nos. C09-00186-RS & C09-05684-RS

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List of Abbreviations

AMIP	Asset Management Implementation Plan
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
BMP	Best Management Practice
CCTV	Closed Circuit Television
CD	Consent Decree
CDD	2014 Consent Decree Defendants
CIPP	Cured-In-Place Pipe
CLSM	Controlled Low Strength Material
EBMUD	East Bay Municipal Utility District
EPA	United States Environmental Protection Agency
GB	Green Book
HDPE	High Density Polyethylene
I/I	Inflow and Infiltration
LF	Linear Feet
MH	Maintenance Hole ("Manhole" in Green Book)
MWWTP	Main Wastewater Treatment Plant
PE	Polyethylene
PSL	Private Sewer Lateral
RTSP	Regional Technical Support Program
SSO	Sanitary Sewer Overflow
UPC	Uniform Plumbing Code
VCP	Vitrified Clay Pipe
WWF	Wet Weather Facility

1. Introduction

East Bay Municipal Utility District (EBMUD) and seven Satellite Agencies (the Cities of Alameda, Albany, Berkeley, Emeryville, Oakland, and Piedmont, plus Stege Sanitary District, which serves El Cerrito, Kensington, and Richmond Annex) entered into a Consent Decree in United States, et al. v. East Bay Municipal Utility District (Case Nos. CV 09-00186 and CV 09-05684, N.D. Cal.) with the United States Environmental Protection Agency (EPA), state and regional water boards, San Francisco Baykeeper, and Our Children's Earth Foundation. The Consent Decree, approved by the court on September 22, 2014, requires EBMUD and the Satellites to eliminate discharges from EBMUD's three wet weather facilities (WWFs) by 2036 in all storms not exceeding the magnitude of the storm event specified in the Consent Decree.

The Consent Decree (CD) requires EBMUD and the Satellites, jointly referred to as the 2014 CD Defendants (CDD), to create Regional Standards for sewer installation, repair, and rehabilitation, to assist inflow/infiltration (I/I) reduction in the regional wastewater collection system. The CD further states that a group report of the recommended Regional Standards is to be submitted for EPA's review and approval by June 30, 2016 and every five years thereafter.

These Regional Standards have been developed as required pursuant to the Satellites' and EBMUD's I/I Reduction Program requirements in Paragraphs 33, 43c, 54c, 64c, 73c, 83d, 96c, and 107c of the Consent Decree.

2. Background Information

EBMUD conveys and treats wastewater generated by the seven Satellites. Each Satellite owns and operates its own sanitary sewer system that collects wastewater generated in their respective communities and conveys the flows to EBMUD's Interceptor System. The Interceptor System then conveys the flows to the Main Wastewater Treatment Plant (MWWTP) where it is treated. Treated effluent from the MWWTP is discharged through an outfall located near the eastern span of the San Francisco-Oakland Bay Bridge. During significant precipitation events, excessive amounts of rain and groundwater enter the collection system through multiple avenues, such as deteriorated and defective pipes or illicit storm drain connections, causing an increase in I/I. Currently, during certain significant wet weather events, the MWWTP is relieved by, and primary treatment is provided at EBMUD's WWFs, located at Point Isabel, Oakport, and San Antonio Creek.

During wet weather events, flows related to I/I are dominant compared to flows during dry weather conditions. Peaking factors, calculated as a ratio of peak flow to dry weather flow (i.e., base sanitary flow plus groundwater infiltration), are approximately 13:1 on a system-wide average, with some locations having ratios determined to be as high as 40:1. Comparatively, designs for new separated sanitary sewer collection systems assume peaking factor ratios of 3:1, while older systems have ratios in the 7:1 range.

Figure 1 shows EBMUD's service area, the boundaries of the Satellites, and the location of conveyance and treatment facilities. EBMUD's Interceptor System includes approximately 29 miles of gravity sewers, 8 miles of force mains, and 15 pump stations; the Satellite collection systems include approximately 1,600 miles of sewers (gravity and force mains) and numerous pump stations.

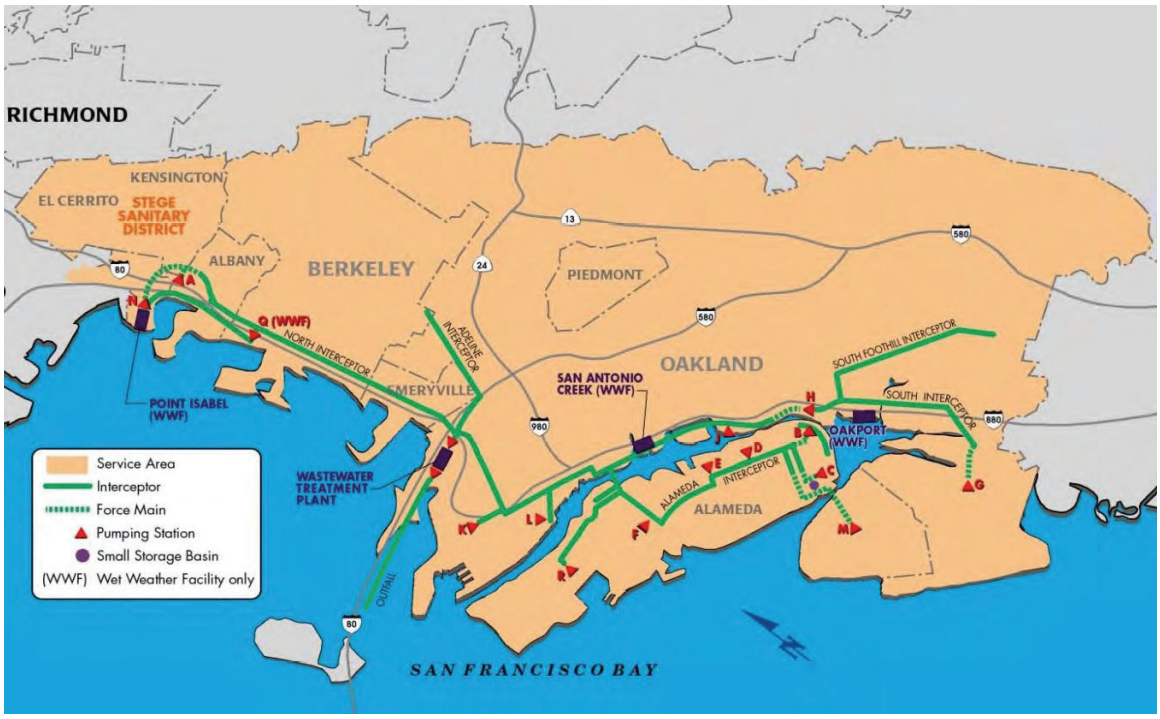


Figure 1. EBMUD Service Area, Satellite Boundaries, and Facilities

3. Regional Standards Development

These Standards have been developed as the result of a joint, collaborative effort of the 2014 CD Defendants (CDD). Meetings to review construction standards, specifications and other details were conducted between June 2015 and June 2016. A standards committee (committee), consisting of representatives from the eight agencies, attended these meetings and were active participants in the review, discussion, and decisions made regarding the standards.

Best Management Practices (BMPs)

The committee decided that in addition to construction specifications, preferred practices regarding important I/I related sewer system construction issues should be identified. The committee considered many issues and developed practices in the major categories of: maintenance holes, laterals, connections, construction and rehabilitation, and construction inspection. The developed BMPs are included in Attachment A.

Specifications

The specifications are based on the 2015 edition of the "Standard Specifications for Public Works Construction", commonly referred to as the Green Book. The Green Book was originally developed in 1967 by a 400-person task force made up of representatives of public agencies and contractors. It is now reviewed and revised every three years by a 15-person committee comprised of public works officials and contractors; more than 200 cities, counties, and special agencies have adopted it as their standards for public works construction. Revisions to the Green Book specifications have been made by the CDD standards committee in the form of an "Amendment to Green Book Standard Specifications" (Attachment B). The amendment includes additions, deletions, and revisions to the Green Book that are to be used by the CDD in their sewer system projects, and focuses on specifications that will assist in reduction of I/I. Consequently, many Green Book specification sections were not revised because they are not significantly related to or impact I/I reduction. Therefore, most General Provisions, and procedural issues in contracts such as payment details and paving have been excluded from the Amendment. As a result, this document focuses on pipe materials, maintenance holes, cleanouts, appurtenances and their installation, and rehabilitation of sewers.

Additional review of specifications and research was accomplished through numerous contacts and calls to other agencies previously surveyed during CD negotiations and manufacturers and product suppliers, as well as internet searches of related issues.

4. Future Standards Revisions and Reporting

The Consent Decree requires the CDD to submit a group report for EPA's review and approval every five years subsequent to June 30, 2016. An ongoing effort by CDD is required to address the review of current practices, materials and methods of construction, and the CD requirement for updates and revisions to these Regional Standards.

The CDD standards committee will meet quarterly to review and discuss results of construction efforts, both successes and failures, and to review current and new materials, methods, products, and techniques that may potentially benefit the CDD in their effort to reduce I/I and make the sewer systems as watertight as is feasible. Additionally, CDD agencies will pilot new products and practices that may be included as future specifications or BMPs; these results will be presented to the committee when available. Therefore, these Standards will be in a state of continuous analysis and improvement, so the CDD can adapt to an ever-changing industry regarding I/I. Some of these efforts to try new and different practices for work on collection system components such as maintenance holes, and service and maintenance hole connections will be monitored and analyzed as part of the RTSP.

As required by the CD, each CDD agency will continue to include a section in their respective annual reports that describes the extent of their compliance with the Regional Standards.

ATTACHMENT A

2014 CONSENT DECREE DEFENDANTS (CDD)
REGIONAL STANDARDS
BEST MANAGEMENT PRACTICES (BMP)

Maintenance Holes

- New, Replacement, and Rehabilitation
- Covers

Laterals

- General
- Abandoned

Connections

- Laterals to Main Lines
- Main Lines to Maintenance Holes

Lamp Holes (or Rodding Inlets)

Construction/Rehabilitation

- Prohibited Rehabilitation Methods and Materials
- Acceptance and Testing
- Contractor Licensing

Inspection Coverage

CDD
REGIONAL STANDARDS
BEST MANAGEMENT PRACTICES (BMPs)
(6/30/16)

MAINTENANCE HOLES - NEW, REPLACEMENT, AND REHABILITATION

Objective Ensure the short and long-term integrity of maintenance holes through the use of appropriate rehabilitation standards, so I/I is minimized as a result.

Explanation Maintenance holes can be a significant source of I/I and ones in poor condition can also lead to a cause of sanitary sewer overflows (SSOs). The installation of new maintenance holes and/or the use of proper materials and rehabilitation methods as part of pipeline rehabilitation projects can help to prevent future maintenance hole problems and failures that may also cause I/I.

Practices

- Maintenance holes will be replaced as a part of rehabilitation and replacement projects unless there are localized, specific conditions that dictate rehabilitation of maintenance holes is needed rather than replacement with a new maintenance hole. Maintenance holes may not necessarily need to be replaced depending upon specific circumstances - e.g., a maintenance hole may have been replaced within the recent past using materials and methods that are consistent with the Regional Standards, do not show any evidence of I/I, and therefore would not need replacement. A statistically representative sample of brick maintenance holes that have been coated with epoxy rather than replaced or lined will be inspected at a frequency not to exceed five years.

- If new maintenance holes are lined, coated, or waterproofed, it will be done with products as specified in CDD's Amendment to the Green Book (GB) (201-10.6.1).

- Testing and acceptance will be done as described in the testing and acceptance BMP and as specified in CDD's amendment to the GB (303-9.2).

- Any rehabilitation of maintenance holes will be in accordance with the CDD amendments to the GB section on Maintenance hole Rehabilitation (500-2). Epoxy coatings will usually be the means of rehabilitation, and the mortar and epoxy coatings used will be

products as specified in CDD's amendment to the GB (201-10.6 and 500-2.3).

- CDD will replace covers and frames, as needed depending upon specific conditions, as part of maintenance hole rehabilitation.

- CDD will reform maintenance hole bases and channels as part of rehabilitation, as determined necessary.

CDD
REGIONAL STANDARDS
BEST MANAGEMENT PRACTICES (BMPs)

(6/30/16)

MAINTENANCE HOLES - COVERS

Objective Ensure that maintenance hole covers in areas that are prone to flooding are watertight so that I/I is minimized as a result.

Explanation Maintenance hole covers that are prone to being submerged during storms or other events can be a significant source of I/I and can also lead to a cause of sanitary sewer overflows (SSOs). The use of proper cover types can help to prevent SSOs and excessive I/I.

Practices

- CDD will install watertight maintenance hole covers on any maintenance holes it finds that may be submerged during storms and wet weather events.

- CDD will identify maintenance holes that are prone to vandalism, or in areas where vandalism or the unauthorized removal of their covers could result in significant SSO or I/I issues, and install locking maintenance hole covers on those maintenance holes.

CDD
REGIONAL STANDARDS
BEST MANAGEMENT PRACTICES (BMPs)
(6/30/16)

LATERALS - GENERAL

Objective Ensure the short and long-term integrity of laterals through the use of appropriate standards for materials and practices used for the installation, repair, and rehabilitation of laterals, so I/I is minimized as a result.

Explanation Laterals are often a source of significant I/I and may contribute to main line sanitary sewer overflows (SSOs). The use of proper materials and construction methods can help to prevent the occurrence of defects in laterals that may compromise their integrity and lead to SSOs and I/I. Although all or some portions of laterals are privately owned, agencies should regulate them as part of their overall program for I/I and SSO control and reduction.

Practices

- All work on private laterals, or building sewers, will be done in accordance with the current versions of the Uniform Plumbing Code and California Plumbing Code (Chapter 7, Part II, Building Sewers).
- Connections to sewer mains will adhere to the GB and CDD amendments to the GB.
- Materials used for laterals will also be in accordance with the materials used for public facilities in the GB and CDD amendments to the GB.
- CDD will have the ability to inspect laterals and require replacement or rehabilitation of defective laterals.
- Testing of laterals will be done per EBMUD's PSL Program requirements for laterals. (Note: Berkeley has their own program with similar requirements)

CDD
REGIONAL STANDARDS
BEST MANAGEMENT PRACTICES (BMPs)
(6/30/16)

LATERALS - ABANDONED

Objective Ensure the short and long-term integrity of main lines and laterals through the use of appropriate acceptance testing standards after the installation, repair, and rehabilitation of collection system facilities, so I/I is minimized as a result.

Explanation Abandoned laterals that are still connected to other laterals or main lines can be a significant source of I/I & can cause sanitary sewer overflows (SSOs) due to excessive flows through voids or defects. Disconnection and capping or plugging of abandoned laterals can help to prevent SSOs and I/I.

Practices

- All abandoned laterals discovered through CCTV and video work will be plugged and capped at the main line, in accordance with the California Plumbing Code, Chapter 7 (722.0), and within five feet of the building drain.

- The approved manner of capping and plugging will include the disconnection of the abandoned lateral such that the lateral is definitely separated from the main line or other lateral to which it is connected. Low strength concrete, or CLSM (section 201-6 in CDD's amendment to the GB), may also be placed in the area of the plug or cap to ensure no connection still exists.

- Agencies will actively look for abandoned laterals as a part of construction of new pipe, rehabilitation of pipe, review of redevelopment or infill projects, or in the process of inspections in regards to lateral inspections. This may include additional video work or dye testing to verify or confirm whether or not laterals are active or abandoned.

- CDD and EBMUD will look for abandoned laterals as part of EBMUD's lateral and RTSP programs. Similarly, Berkeley will look for abandoned laterals as part of their lateral program.

CDD
REGIONAL STANDARDS
BEST MANAGEMENT PRACTICES (BMPs)

(6/3016)

CONNECTIONS - LATERALS TO MAIN LINES

Objective Provide service connections that are in accordance with common, current practices and technology that will minimize I/I, in both the near and long term time frames.

Explanation Service connections, or the connections of laterals to main lines, are often a significant source of I/I. The use of current, common practices and technology can help to prevent connection problems and failures that may cause SSOs and I/I.

Practices

- Rehabilitation projects - Re-establishment of external service connections will be made with the use of polyethylene saddles and stainless steel bands, and flexible couplings, according to CDD amendments to the GB (500-1.1.7(a)). Alternatively, shear-band couplings, TapTite and Inserta-Tee connections may be used.

- Rehabilitation projects - The materials used for service connections to main lines when HDPE pipe is used for rehabilitation will be according to CDD amendments to the GB (500-1.6.6), use of electrofusion saddles.

CDD
REGIONAL STANDARDS
BEST MANAGEMENT PRACTICES (BMPs)
(6/30/16)

CONNECTIONS - MAIN LINES TO MAINTENANCE HOLES

Objective Provide maintenance hole connections that are in accordance with current, common practices and technology that will minimize I/I, in both the near and long term time frames.

Explanation Maintenance hole connections are often a significant source of I/I. The use of current, common practices and technology can help to prevent connection problems and failures that may cause SSOs and I/I.

Practices

- Connection to existing maintenance holes - connections will be made per CDD amendments to the GB (303-9.1.o in CDD's amendment to the GB).

- Rehabilitation projects - connections will be made in accordance with CDD amendments to the GB, either by waterstop gasket and grout or HDPE thermal-fused pipe restraints (500-1.6.7 in CDD's amendment to the GB).

- This BMP also pertains to larger diameter lateral lines that may be connected directly to manholes (City of Oakland).

CDD
REGIONAL STANDARDS
BEST MANAGEMENT PRACTICES (BMPs)
(6/30/21)

LAMPHOLES or RODDING INLETS

Objective Provide for the integrity of lampholes or, alternatively, for the integrity of what is utilized to replace them so I/I is minimized as a result.

Explanation Lampholes can be a contributing cause of sanitary sewer overflows (SSOs) and a significant source of I/I. The use of proper materials and methods for their replacement or removal can help to prevent SSOs and I/I. Rodding inlets which utilize a 45-degree connection to the main line places less impact on the connection to the main line and should be used when replacing with rodding inlets.

Practices

- Lampholes will be replaced as part of rehabilitation work by either small maintenance holes, terminating the main line, or by new "rodding inlets", depending upon their location, accessibility, and need in future operations as determined by the local agency. They may also be replaced independent of rehabilitation efforts when there's a need to do so, as determined by the local agency.

- Lamphole replacements will be done in accordance with EBC's amendments to the GB, the GB, and other EBC BMPs. Lampholes replaced by rodding inlets in Stege Sanitary District will be done in accordance with Stege's standard detail for rodding inlets.

CDD
REGIONAL STANDARDS
BEST MANAGEMENT PRACTICES (BMPs)
(6/30/16)

CONSTRUCTION/REHABILITATION - PROHIBITED REHABILITATION METHODS AND MATERIALS

Objective Ensure the short and long-term integrity of sewer infrastructure through the use of appropriate rehabilitation methods and materials standards, so I/I is minimized as a result.

Explanation Rehabilitation methods and materials used in sewer rehabilitation projects vary, have changed significantly since the 1980s, and there very likely will be developments and changes in the future. The use of proper materials and rehabilitation methods can help to prevent future mainline problems and failures that may also cause SSOs and increased I/I. Consequently, certain methods and materials should be prohibited for use by CDD.

Practices

- **Materials** that shall not be used -
  Non-reinforced concrete pipe
  Cast iron soil pipe
  Corrugated steel pipe and arch pipe
  Structural steel plate pipe and arch
  Corrugated aluminum pipe and pipe arch
  Structural aluminum plate pipe and arch
  ABS pipe

- **Methods** that should not be used -
  PVC Pipe lining systems
  External in-place wrap
  Folded and re-formed PVC pipe liner
  PVC closed profile liner pipe
  Machine spiral wound PVC pipe liner

CDD
REGIONAL STANDARDS
BEST MANAGEMENT PRACTICES (BMPs)

(6/30/16)

CONSTRUCTION/REHABILITATION - ACCEPTANCE AND TESTING

Objective

Ensure the short and long-term integrity of main lines and laterals through the use of appropriate acceptance and testing standards after the installation, repair, and rehabilitation of collection system facilities, so I/I is minimized as a result.

Explanation

Inadequate construction can be a cause of sanitary sewer overflows (SSOs) and a significant source of I/I. The use of proper acceptance and testing standards can help prevent substandard construction that may lead to SSOs and I/I.

Practices

- All new installations of gravity main lines will be pressure and leak tested (either water or air) in accordance with Green Book specifications (306-7.8.2 in CDD's amendment to the GB).
- All new and rehabilitated gravity lines will be cleaned prior to acceptance (500-1.1.4 in CDD's amendment to the GB).
- All pipeline rehabilitation and replacement work will undergo leakage testing and acceptance standards as established in the CDD amendments to the GB for pipeline rehabilitation (500-5).
- All new and rehabilitated maintenance holes will be vacuum tested as specified in the CDD amendments to the GB (303-9.2).
- All pipe installed by pipe bursting will be inspected by CCTV or video inspection prior to acceptance, per CDD amendments to the GB for pipe bursting (500-1.6.13).
- Completion, acceptance, and warranty items will be handled according to the GB (Part 1, 6-8 in CDD's amendment to the GB).

CDD
REGIONAL STANDARDS
BEST MANAGEMENT PRACTICES (BMPs)
(6/30/16)

CONSTRUCTION/REHABILITATION - CONTRACTOR LICENSING

Objective Enhance the likelihood that there is a high quality of all work on sanitary sewer facilities by requiring licensing of contractors that will perform the work.

Explanation California law and code sections require that contractors performing certain work shall be licensed by the state in regards to the specific type of work to be performed. The use of contractors with the applicable licenses enables conformance with California law as well as helping to ensure that work will be of good quality and help the CDD attain the I/I reductions required by the CD and help attain the required I/I reductions.

Practices

- CDD will use or permit contractors to perform sewer infrastructure work that have at least one or more of the following State contractors licenses, depending upon the type of work to be done:

  A General Engineering
  C-34 Pipeline
  C-36 Plumbing
  C-42 Sanitation System

- The work that that a C-36 licensed contractor may perform is restricted to laterals, excluding the connections to public main lines.

CDD
REGIONAL STANDARDS
BEST MANAGEMENT PRACTICES (BMPs)
(6/30/16)

INSPECTION COVERAGE

Objective Ensure that work on pipeline projects is of high quality and in accordance with specifications by providing adequate construction management, inspection, and oversight.

Explanation Poor construction and construction that doesn't conform to specifications can occur if proper construction inspection and oversight is not provided. This can result in facilities that degrade and perhaps even fail earlier than their expected useful life, and significant I/I may result. Proper inspection will help to prevent pipeline, maintenance hole, and other problems and failures that may cause SSOs and I/I.

Practices

- CDD will assign construction inspectors to every sewer infrastructure project under their respective jurisdictions.
- CDD inspectors will witness as many main line connections to maintenance holes and lateral reconnections to newly installed main lines in sanitary sewer or I/I projects as is practically possible.
- An inspector will witness acceptance testing processes that include the extent of the entire project.
- A record or log of witnesses, inspections, and acceptance testing on sewer infrastructure projects will be maintained.

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ATTACHMENT B

2014 CONSENT DECREE DEFENDANTS AMENDMENT TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREEN BOOK)

2015 edition (6/30/16)

For Collection System Construction, Rehabilitation and Repair in Agencies Located in Special District No. 1, East Bay Municipal Utility District (EBMUD)

This Amendment to the Standard Specifications for Public Works Construction applies to the construction, rehabilitation, and repair of the Consent Decree Defendants (CDD) wastewater collection and transmission systems, including agency sewer mains and interceptors, laterals, force mains, and maintenance holes. This amendment is the "Regional Standards" referred to in the 2014 Consent Decree (CD) - the CD defines them thusly: Regional Standards shall mean a collection of details, specifications, and practices prescribing how the Work on Sewer Mains, Maintenance holes and Sewer Laterals is to be performed so as to optimize the I&I reductions resulting from the Work. This Amendment was developed for the on-going asset management construction and activities ("Work") of the East Bay Communities. The amendment was prepared for the Cities of Albany, Alameda, Berkeley, Emeryville, Oakland, Piedmont, the Stege Sanitary District, and EBMUD (individually referred to as "Agency" in CDD's amendment to the GB specifications). This Amendment modifies the Standard Specifications for Public Works Construction (Green Book), 2015 Edition, and its provisions take precedence over those Standard Specifications. This Amendment incorporates only the amended sections and not the entire Green Book.

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Part 1 – GENERAL PROVISIONS

Section 2 – Scope and Control of Work

REPLACE SUBSECTION 2-5.2 WITH THE FOLLOWING:

2-5.2 Precedence of Contract Documents.

The principal contract specifications for this project are the "Standard Specifications for Public Works Construction, 2015 edition", commonly referred to as the Green Book. The Contractor shall note that the Green Book is not reproduced in this document, but is self-contained under separate cover and the Contractor shall obtain it separately.

The East Bay Communities Amendment to the Standard Specifications for Public Works Construction, 2015 edition contains modifications and additions to the Green Book that are specific to collection system work. These provisions shall take precedence over the Green Book.

If there is a conflict between any of the Contract Documents, the document highest in the order of precedence shall control. The order of precedence from highest to lowest, shall be as follows:

a) Permits issued by jurisdictional/regulatory agencies
b) Change Orders and Supplemental Agreements; whichever occurs last
c) Contract/Agreement
d) Addenda
e) Bid/Proposal
f) Special Provisions
g) Plans (Project)
h) East Bay Communities Amendment to the Standard Specifications for Public Works Construction, 2015 edition (Green Book) and 2015 edition of the Green Book (if Agency uses the Green Book as its Standards specifications)
i) Standard Plans and Details (Agency)
j) Standard Specifications (Agency)
k) Reference Specifications

Part 2 – CONSTRUCTION MATERIALS

REPLACE SECTION 201-6 WITH THE FOLLOWING:

201-6 CONTROLLED LOW STRENGTH MATERIAL (CLSM).

201-6.1 General and Quality Assurance.

201-6.1.1 Cementitious Material. CLSM shall be composed of a cementitious material, water and suitable native or imported soils as described in this section.

The cementitious materials shall be Portland cement. Fly ash may be substituted for cement provided the requirements of this section are met.

201-6-1.2 Mix Proportions. The appropriate CLSM mix proportions shall be determined by preparing test batches and testing trial cylinders in accordance with 201-6.2.

201-6.1 Strength and Density. CLSM shall have an unconfined compressive 28 day strength from 50 psi to a maximum of 150 psi and a density of 110 to 130 pounds per cubic foot.

201-6.1.4 Mixture. The mixture shall have a consistency such that the CLSM completely fills the space between the pipe and the excavated trench walls without bleeding or segregation of soil materials.

The CLSM mixture shall contain no particles larger than 3 inches.

201-6.1.5 Native and Imported Soils:

The soil shall be free of organic impurities.

The amount of material passing a #200 sieve shall not exceed 30 percent.

The plasticity index of the soil shall not exceed 3. The sand equivalent of the soil shall be at least 15. For native material with a sand equivalent between 10 and 15, approval shall be dependent on production and successful testing of a sample batch of CLSM.

During full-scale CLSM placement, the Engineer will take samples and perform tests to determine compliance with the specified unconfined compressive strength requirements.

201-6.2 Mix Design. The design of the CLSM mix shall be the responsibility of the Contractor, and shall be subject to review and approval by the Engineer before a full-scale field mix is used. Mix shall result in a final product that meets the requirements of this section.

201-6.2.1 Submittals - Mix Design and Testing. CLSM mix shall be designed, in accordance with ASTM D4832-02 Standard Test Method for Preparation and Testing of Controlled Low Strength Material Test Cylinders. The CLSM used in test cylinders shall be prepared using the same equipment proposed for full-scale batching and mixing.

The testing laboratory shall submit certified copies of all laboratory trial mix reports to the Engineer.

CLSM shall not be used prior to the Engineer's review of test reports and approval of the mix design.

The minimum cement content for the mix design shall be 3 percent by dry mass of the soil.

Cementitious fly ash (Class C or F) may be used in the mix provided the strength and consistency requirements in 201-6.1 are met.

Air entraining admixtures may be used in the mix provided the strength and consistency requirements in 201-6.1 are met.

The CLSM shall be sampled according to ASTM D5971.

The following tests shall be conducted on the native soils proposed for use in preparing CLSM: ASTM D422 and ASTM D4318.

The following tests shall be conducted for each CLSM trial batch: ASTM D4832, ASTM D6023, ASTM D6024.

The Contractor shall submit the results of the laboratory testing program and the selected design mix for full-scale field production for review and approval by the Engineer. After

acceptance, the batch and mix process or native soil source material shall not be changed without submitting new test information.

The Contractor shall provide a submittal showing the proposed methods to support the pipe during CLSM placement.

The Contractor shall provide a submittal showing the proposed methods to prevent pipe flotation during CLSM placement.

The Contractor shall provide a submittal detailing the proposed batching and mixing process including the following:

The proposed equipment and methods to process native soils into source material in compliance with 201-6.1.

The proposed staging and batch plant mixing areas relative to the work areas where the CLSM will be placed.

The proposed means of transport for mixed CLSM material from the batching and mixing area to the work where the CLSM will be placed.

201-6.3 Materials.

Cement shall conform to ASTM C150, Type II.

Cementitious fly ash (Class F or C) may be used in the mix provided that the strength and consistency requirements in 201-6.1 are met. The fly ash shall conform to ASTM C618 and shall not contain more than 3% carbon (low).

Air entraining admixtures may be used in the mix provided that the strength and consistency requirements in 201-6.1 are met.

Native soils used in the CLSM mix shall be predominantly granular and meet the requirements of 201-6.1.

Water shall be free from oil, salts and other impurities that would have an adverse effect on the quality of the CLSM.

201-6.4 Execution - Batching and Mixing, and Installation.

201-6.4.1 Batching and Mixing: Batch and mix the CLSM in the field with the processed native soils similar to that used in the trial mix program.

201-6.4.2 Installation:

Use sufficient shores or other supports to prevent soil from caving onto pipe. Remove soil fallen into trench before placing CLSM.

CLSM shall be placed on one side of the pipe and allowed to flow under until it is seen on the other side.

The CLSM shall be brought uniformly to the elevation as shown on the drawings.

Place CLSM between the trench bottom and 0.15 D above the bottom of the pipe as part of a single lift, where D is the diameter of the pipe.

The CLSM shall be placed so there is complete contact between the pipe and excavated pipe trench walls.

Prevent CLSM from entering bell holes before joint coating and testing are complete.

If CLSM is placed near a joint before application and testing of joint coating, place a blanket or cover over joint to prevent CLSM spatter onto joint area.

The support materials used to haunch the pipe and contain the CLSM during placement shall not exceed the compressive strength of the CLSM.

The Contractor shall take the necessary measures to prevent flotation of the pipe during CLSM placement.

CLSM shall not be placed when the air temperature is below 4°C (40°F).

Allow CLSM to set before placing backfill above CLSM.

No equipment or traffic shall be allowed on the CLSM until the surface of the CLSM will withstand the weight of the equipment or traffic without displacement or damage. Suitability for load applications shall be determined by ASTM D6024.

If necessary to prevent displacement or damage, provide steel trench plates that span the trench or other means that prevent equipment or traffic contact with CLSM.

ADD NEW SUBSECTION 201-10 TO READ AS FOLLOWS:

201-10 MAINTENANCE HOLES, CLEANOUTS AND APPURTENANT MATERIALS.

Material quality, the manufacture process, and the finished sections shall be subject to the Engineer's inspection and approval. Such inspection may be made at the manufacture place and/or on the job site after delivery. The materials shall be subject to rejection at any time for failure to meet any of the Specification requirements even though samples may have been accepted as satisfactory at the manufacture place. Materials rejected after delivery to the job site shall be marked for identification and shall be removed at once from the job site. All materials damaged after delivery and prior to project acceptance by City shall be rejected, even if installed. The Engineer's judgment on the materials shall be final. The Contractor may attempt to make acceptable repairs on installed material(s), if the Engineer so agrees. However, the Engineer's judgment on the repairs' acceptability will be final. Unsatisfactory material shall be removed and replaced with satisfactory material entirely at the Contractor's expense. The Engineer may accept a certification indicating compliance with the specifications in lieu of inspection.

201-10.1 Materials.

201-10.1.1 Rock Base. Rock base shall conform to the requirements of 200-1.2 and shall be the ¾" inch mix according to Table 200-1.2 (A).

201-10.1.2 Cement Mortar. Cement mortar shall conform to the requirements of 201-5.

201-10.2 Maintenance holes

201-10.2.1 Cast-In-Place Concrete Maintenance holes. Materials used in cast-in-place concrete maintenance holes shall be as shown on the plans and in accordance with the applicable requirements of 201.

201-10.2.2 Pre-cast Maintenance hole Sections. Pre-cast maintenance hole sections, where not otherwise modified in the Plans, shall conform to ASTM C478 and meet the following requirements:

a. The wall thickness shall not be less than 5 inches.
b. All sections shall be fully cured and shall not be shipped nor subjected to loading until the design compressive strength has been reached.
c. Pre-cast base sections shall have the base slab integral with the sidewalls. Pre-cast base sections may only be used if the invert plan and base alignment of the sewer connections exactly match the field-measured angles between the connecting sewers.

201-10.2.3 Maintenance hole Bases. Materials used in cast-in-place concrete maintenance hole bases shall be in accordance with the applicable requirements of Section 201. At the Contractor's option and with the Engineer's approval, pre-cast base sections with integral floor conforming to ASTM C478 may be used.

201-10.2.4 Pipe Connections. Pipe connections to maintenance holes shall have a rubber waterstop tightly banded to the pipe and cast into the maintenance hole base. Banding materials shall be 316 stainless steel or other approved corrosion resistant materials secured with Type 316 stainless steel nuts and bolts. See Section 500-1.6.7, Sealing Connections at Maintenance holes, for HDPE pipe.

201-10.2.5 Maintenance hole Extensions. Concrete grade rings for extensions shall be a maximum of six inches thick. In general, maintenance hole extensions will be used on all maintenance holes in roads, streets or other locations where a subsequent change in existing grade may be likely. Extensions will be limited to a maximum height of 12inches.

201-10.2.6 Jointing Maintenance hole Sections. Male and female joints of maintenance hole sections shall be sealed with a round rubber "O" ring gasket or a preformed flexible joint sealant. The "O" ring shall conform to ASTM C443. The preformed flexible joint sealant shall conform to Federal Specifications SS-S00210, and shall be Kent Seal No. 2 as manufactured by Hamilton-Kent; Ram-Nek as manufactured by K. T. Snyder Company; or equal. The size of the preformed joint sealant shall be as recommended by the manufacturer of the pre-cast maintenance hole sections

201-10.3 Cleanouts. Cleanouts shall be as shown on the Plans or the Standard Details and shall be the same material type as approved for use in main or building sewer construction.

201-10.4 Lampholes. Lampholes shall be as shown on the Plans or the Standard Details and shall be the same material type as approved for use in main sewer or building connection sewer construction.

201-10.5 Appurtenant Materials.

201-10.5.1 Pipe and Fittings. Pipefittings, including material for drop connections at the maintenance hole, shall be the type and dimensions as shown on the Plans or Agency Standard Details, as applicable, or as specified in these specification amendments.

201-10.5.2 Pipe Stubouts for Future Sewer Connections. Pipe stubouts shall be the same type as approved for use in lateral, main, or trunk sewer construction. Strength classifications shall be same class as in adjacent trenches. Where there are two different pipe classes at a maintenance hole, the higher strength pipe will govern strength classification. Rubber-gasketed watertight plugs shall be furnished with each stub-out and shall be adequately braced against all hydrostatic or air pressures.

201-10.6.1 Sealing Maintenance hole Walls. Maintenance hole walls shall be sealed where shown or specified, or as directed by the Engineer. Sealing of the maintenance hole walls shall be accomplished by any of the methods specified below:

201-10.6.1.a Cement-Epoxy Mixtures. Openings, cracks, and deteriorated joints in maintenance hole walls shall be repaired and sealed by utilizing cement-epoxy mixtures manufactured for this purpose, such as those manufactured and/or supplied by Standard Dry Wall Products; Water-Wastewater Products & Systems, Inc.; IPA Systems, Inc.; Stonehard, Inc.; or approved equal.

201-10.6.1.b Chemical Grout. Openings, cracks, and deteriorated joints in maintenance hole walls shall be repaired and sealed using chemical grout and applicable procedures specified for sewer system rehabilitation.

201-10.6.1.c Polyurethane Coatings. Sprayable polyurethane coating shall be used to seal maintenance hole walls. The coating shall be a high-build polyurethane specifically formulated for use in a sewer system environment. The minimum thickness of the dry coating shall be 125 mils.

201-10.6.1.d Modified Polyester/Polymorphic Coatings. Spray-applied modified polyester/polymorphic resin shall be used to seal maintenance hole walls. The coating shall be a two-component, 100% solids system. Prior to applying the prime coat, the maintenance hole surface shall be sandblasted or hydroblasted and properly dried.

201-10.6.1.e Epoxy Coating. Sprayable or brushable epoxy coatings may be used to seal maintenance hole walls. The coating shall be a high-build epoxy, Mainstay DS-5 or approved equal, specifically formulated for use in the sewer system and applied in accordance with manufacturer's recommendations and guidelines and at 50-125 mils thickness in one or two coats. Prior to coating, the maintenance hole walls shall be thoroughly sandblasted or hydroblasted and cleaned as recommended by the manufacturer to ensure complete coverage and bonding. Openings and cracks larger than 1/8 inch in the maintenance hole walls shall be filled with mortar, Mainstay ML-72 or ML-72F, or approved equal, at one-half to one inch thickness, prior to trimming and applying the epoxy coating.

201-10.6.1.f Fiberglass Liners. Existing maintenance hole walls shall be thoroughly sandblasted and cleaned or primed as recommended by the materials manufacturer to ensure complete coverage and bonding. Openings and cracks larger than 1/8 inch in the maintenance hole walls shall be filled with mortar prior to priming and applying the fiberglass.

i) Factory-Manufactured Fiberglass Liners. Maintenance hole liners shall be made of fiberglass reinforced plastic (FRP), having an inside diameter of not less than 42 inches. Maintenance hole liners shall meet the requirements of ASTM D3753. The liner shall be installed in accordance with manufacturer's recommendations including removal of the existing cone, grouting of the annular space between the liners and existing maintenance hole walls, rebuilding or replacing the cones, backfilling, installing steps, and installing cast iron frames and covers.

ii) Field-Fabricated Fiberglass Liners. Maintenance hole liners shall be field-fabricated by applying glass fibers and resin to the maintenance hole walls. The completed lining thickness shall be not less than 1/4 inch at any location.

201-10.6.1.g HDPE Liners. Lining manufacturer shall be GSE "Studliner", GU-International AGRU "Suregrip" or equal. Polymer mortar shall consist of a primer if recommended by the manufacturer and a liquid binder and a dry aggregate mixed together to make a mortar of consistency as required for the application. The mortar shall be designed for application to vertical or overhead surfaces and must be accepted by the lining manufacturer. The liquid binder shall be chemical and oil resistant, stress relieved, low modulus, moisture insensitive, two-component epoxy-resin compound. The consistency shall be similar to lightweight oil for proper mixing with aggregate. Material shall conform to ASTM C881, type 3, Grade 1, Sika Corporation Sikadur 22 Lo-Mod Series or equal.

i) HDPE lining, joint strips and angle strips (hereinafter collectively referred to as "lining") shall be made from minimum 97 percent virgin high density polyethylene (HDPE). Color shall be gray.

ii) Lining shall be impermeable to sewage gases and liquids and shall be nonconductive to bacterial or fungal growth. All linings shall be factory checked to ensure freedom from porosity.

iii) Lining shall have good impact resistance, shall be flexible, and shall have elongation sufficient to bridge up to ¼ inch settling crack.

iv) Once cast into the concrete of the maintenance hole wall, lining shall be permanently and physically attached to the concrete by the lining studs and shall not rely on an adhesive bond unless otherwise specified at a specific location.

v) Locking studs shall be made of the same material as the lining and integrally extruded with the sheet. Stud spacing shall be on approximately 1.25-inch centers, such that there are approximately 110 studs per square foot.

vi) Plasticizer shall not be added to the resin formation.

vii) Lining shall be free of holes, pinholes, bubbles, blisters, excessive contamination by foreign matter, and nicks and cuts on roll edges.

viii) Adhesive to bond HDPE lining to metal shall be in accordance with the recommendations of the HDPE lining manufacturer.

ix) All work shall be in strict conformity with all applicable specifications, instructions, and recommendations of the lining manufacturer.

x) Prior to shipping lined precast maintenance hole sections and then again after field welding is complete, the lining shall be spark tested in the presence of the Engineer. The spark test shall be done with an approved electrical holiday detector (Turnhert Rasor, model AP-W with power pack or equal) with the instrument set at a minimum of 20,000 volts. Any imperfection shall be repaired in accordance with the manufacturer's recommendations and with the approval of the Engineer.

201-10.6.1.h Cementitious Crystalline Waterproofing. Waterproofing manufacturer shall be Xypex Chemical Corporation, Xypex Concentrate, Modified, Patch'n Plug or equal. Application shall be in accordance with Xypex recommended specifications.

i) For use in new maintenance holes, the Xypex materials Admix C-500, Admix C-1000, Admix C-2000 or equal shall be used.

207-19 POLYETHYLENE (PE) SOLID WALL GRAVITY PIPE.

207-19.1 General.

ADD THE FOLLOWING TWO SENTENCES TO THE END OF THE SUBSECTION:

HDPE pipe used for direct burial shall be a minimum of SDR 17. HDPE pipe used for the pipe-expanding method of Subsection 500-1.6 shall be SDR 17.

ADD NEW SUBSECTION 207-25 TO READ AS FOLLOWS:

207-25 POLYETHYLENE (PE) LARGE DIAMETER (36 INCH DIAMETER OR GREATER) PROFILE WALL PIPE.

207-25.1 General. Polyethylene (PE) profile wall pipe and fittings for use in gravity flow sanitary sewers and storm drains, and for use as liners for sanitary sewers shall comply with ASTM F894.

207-25.2 Material Composition. Pipe fittings shall be made from a plastic compound meeting the requirements of type III, class C, category 5, grade P 34 as defined in ASTM D1248 and with established hydrostatic design basis (HDB) of not less than 1250 psi for water at 73.4 degrees F determined in accordance with method ASTM D2837. Materials meeting the requirements of cell classification PE 334433 C or higher cell classification in accordance with ASTM D3350 are also suitable.

Materials other than those specified above may be used as part of the profile construction (for example, as a core tube to support the shape of the profile during the processing, provided that these materials are compatible with the PE material, are completely encapsulated in the finished product, and in no way compromise the performance of the PE pipe product in the intended use.

Materials shall meet the chemical resistance tests of 210-2.3.3.

207-25.3 Test Requirements. Pipefittings shall meet the requirements of the section titled "Requirements" of ASTM F894. The Engineer will require certification by the manufacturer that the test results comply with specifications requirements. Sampling and inspection shall meet the requirements of the section titled "Sampling, Inspection, and Retest" of ASTM F894.

207-25.4 Marking. Each standard and random length of pipe shall be clearly marked with the following information: the nominal pipe size (in inches); the legend “PE sewer and drain pipe”; the RSC classification; the material designation: P-34 grade or cell classification; the manufacturer's name; the production code and plant location; and manufacture date.

207-25.5 Dimensions. Pipe dimensions shall comply with dimensions given in Table I of ASTM F894. Pipe shall have a RSC as shown on the Plans. RSC is defined in ASTM F894.

Part 3 – CONSTRUCTION METHODS

ADD NEW SUBSECTION 303-9 TO READ AS FOLLOWS:

303-9 INSTALLATION OF MAINTENANCE HOLES, CLEANOUTS AND APPURTENANCES.

303-9.1 General.

303-9.1.a Structure Excavation and Backfill. Structure excavation and backfill shall conform to the applicable requirements of 300-3 and 306-1.

303-9.1.b Rock Base. Prior to placing the concrete maintenance hole base, a minimum of six inches of rock base or crushed rock approved by the Engineer shall be placed upon the earth subgrade and compacted to 90 percent (90%) relative compaction by mechanical means.

303-9.1.c Concrete Maintenance hole Base. Concrete maintenance hole base shall be constructed as shown on the Plans and Agency Standard Details, as applicable, and shall conform to the applicable requirements of Section 303. The concrete shall be vibrated to density and screened so that the first precast maintenance hole section will be placed on a level uniform bearing surface for the full circumference. An approved metal forming ring shall be used to form a level joint groove in the fresh concrete of the maintenance hole base to receive the first precast maintenance hole section. Sufficient mortar or Ram-Nek shall be deposited on the base to assure a watertight seal between base and maintenance hole wall or the first precast maintenance hole section shall be placed on the concrete base before the concrete has set. The first section shall be properly located and plumbed.

303-9.1.d Placing Precast Maintenance hole Sections. Precast maintenance hole sections shall be carefully inspected prior to installation. Sections with chips or cracks in the tongue shall not be used. The ends of precast maintenance hole sections shall be cleared of foreign materials.

The precast sections shall be installed in a manner that will result in a watertight joint. Rubber "O" Ring gaskets or preformed flexible joint sealant shall be installed in strict conformance with the manufacturer's recommendations. Only pipe primer furnished by the gasket manufacturer shall be used. If leaks appear in the maintenance holes, the inside joint shall be caulked with non-shrink epoxy mortar to the satisfaction of the Engineer.

303-9.1.e Maintenance hole Channels. Maintenance hole channels shall be constructed as shown on the Plans and Agency Standard Details, as applicable, and with smooth transitions to ensure unobstructed flow through the maintenance hole. All sharp edges or rough sections that tend to obstruct flow shall be removed. Where a full section of pipe is laid through a maintenance hole, a neatly cut half pipe shall be laid to form the channel. The exposed edge of the pipe shall be completely covered with mortar. All mortar surfaces shall be troweled smooth. Breaking out the top half section of pipe after installation is not acceptable.

303-9.1.f Drop Maintenance holes/Drop Connection Maintenance holes. Drop maintenance holes and drop connection maintenance holes shall be constructed at locations indicated and as shown on the plans. The drop assembly shall be connected to the sewer pipe with an adapter approved by the Engineer. The lower elbow shall be supported by concrete poured monolithically with the maintenance hole base.

303-9.1.g Flexible Joints. Flexible joints shall be provided not more than 1-1/2 feet from maintenance hole walls. Pipes entering maintenance holes shall be installed on firmly compacted base rock or crushed rock approved by Engineer.

303-9.1.h Pipe Stubouts for Future Sewer Connections. Maintenance hole stubouts for future sewer connections shall be installed as shown on Plans or required by the Engineer. Maximum and minimum length outside the maintenance hole wall shall be as shown on the Agency's Standard Details, as applicable. Pipes in precast walls or maintenance hole base shall be constructed in accordance with details shown on the Plans. Compacted base rock or crushed rock approved by Engineer as specified herein before shall be placed upon the earth under all stubouts.

Semi-permanent plugs shall be installed in the stubout ends with gasket joints similar to the sewer pipe being used. Plugs shall be capable of withstanding all internal or external pressures without leakage and remain watertight. All plugs shall be adequately braced to prevent blowoffs.

303-9.1.i Permanent Plugs. Interior contact surfaces of all pipes to be cut off or abandoned shall be cleaned. Concrete plugs shall be constructed in the end of all pipe 18 inches or less in diameter. Minimum length of concrete plugs shall be 8 inches. All plugs shall be watertight and capable of withstanding all internal and external pressures without leakage, as approved by the Engineer.

303-9.1.j Maintenance hole Extensions. Extensions shall be installed in conformance with the details shown on the Plans and to a height to match finished grade. Grade rings shall be lined in mortar with the sides plumb and tops level. Joints shall be sealed as specified for maintenance hole sections. Extensions shall be watertight.

303-9.1.k Maintenance hole Frames and Covers. Frames and covers shall be installed on top of maintenance holes to prevent all infiltration of surface water or groundwater into maintenance holes. Frames shall be set in a bed of mortar with mortar carried over the flange of the ring as shown on the Plans. Frames shall be set so cover tops are flush with surface of adjoining pavement or ground surface, unless otherwise shown or directed. Concrete maintenance hole collars shall be provided and installed as shown on the Plans and Agency's Standard Details, as applicable. Maintenance hole covers and frames for maintenance holes identified as ones likely to be periodically submerged in wet weather events shall be prevented from blowing off during sewer surcharging by installation of maintenance hole frames with bolted lids, and bearing surfaces shall be sealed with a neoprene gasket, if shown on plans.

303-9.1.l Maintenance hole over Existing Sewers. Maintenance holes shall be constructed over existing operating sewer lines at locations indicated. Excavation shall be as specified. Flow through existing sewer lines shall be maintained at all times. New concrete and mortar work shall be protected for a period of seven days after concrete has been placed. The Contractor shall advise Engineer of plans for diverting sewage flow and obtain the Engineer's approval before starting. The Engineer's approval shall not relieve the Contractor of the responsibility for maintaining adequate flow capacity at all times and adequately protecting new and existing work.

The new maintenance hole base shall be constructed under and around the existing sewer as specified herein. The top half of the existing pipe shall be neatly removed within the new maintenance hole, the edges covered with mortar, and troweled smooth.

303-9.1.m Connection to Existing Maintenance holes. Sewers shall be connected to existing maintenance holes at locations indicated. The Contractor shall provide all diversion facilities and perform all work necessary to maintain sewage flow in existing sewers during connection to the maintenance holes. The Contractor shall break out existing maintenance hole bases or grouting as necessary and regrout to provide smooth flow into and through existing maintenance holes.

303-9.1.n Special Maintenance holes. Special maintenance holes shall be constructed in conformance with the applicable requirements of Section 303 and as shown on the Plans.

303-9.1.o Sewer Cleanouts. Cleanout construction shall be as shown on the Plans and Agency's Standard Details, as applicable. The cleanout shall be the same material as the main line sewer unless approved otherwise by the Engineer.

303-9.2 Structure Testing.

303-9.2.a Vacuum Testing. All project maintenance holes shall be vacuum tested. The Contractor shall furnish all materials, equipment and labor for making a vacuum test. Vacuum test procedures and requirements shall be as follows:

1. All maintenance hole openings shall be sealed with plugs and a rubber ring "donut" type plug inserted inside the cone opening.
2. A small vacuum pump shall be attached to a hose connected to the plug and 4 psi of vacuum shall be applied.
3. The vacuum shall be permitted to stabilize at 3.5 psi for one minute; then the test shall begin. The maintenance hole must maintain vacuum such that no greater then 0.5-psi of vacuum shall be lost during the specified test period.
4. The specified test period is as follows:

Maintenance hole Depth (Ft.)	Test Period (Min.)
0-5	4.5
5-10	5.5
10-15	6.0
Greater than 15	6.5

6. Maintenance holes failing the test shall be patched as required and re-tested.
7. A vacuum regulator shall be provided on the vacuum pump such that no pressure greater than 10 psi can be applied to the maintenance hole during the test. All maintenance holes not meeting the leakage test or are unsatisfactory from a visual inspection shall be repaired to the Engineer's satisfaction.

303-9.2.b Hydrostatic Testing. At the Contractor's option and with the Engineer's approval, hydrostatic testing may be substituted for vacuum testing. The test shall consist of plugging all inlets and outlets and filling the maintenance hole with water to a height determined by the Engineer. Leakage in each maintenance hole shall not exceed 0.1 gallon per hour per foot of head above the invert. All maintenance holes that do not meet the leakage test or are unsatisfactory from a visual inspection shall be repaired to the Engineer's satisfaction. Contractor is responsible for supplying water for testing.

306-3 TRENCH EXCAVATION.

306-3.1 General.

ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 306-3.1:

Where directed to pothole to verify the depths of underground utility crossings, the Contractor shall excavate to locate said underground utility crossings and relay this depth information to the Engineer.

REPLACE SUBSECTION 306-3.5 WITH THE FOLLOWING:

306-3.5 Maximum Length of Open Trench. Except with the Engineer's written permission, the maximum length of open trench at any one time shall be 300 feet (91 meters).

306-7 PREFABRICATED GRAVITY PIPE.

306-7.4 Vitrified Clay Pipe (VCP).
ADD NEW SUBSECTION 306-7.4.4 TO READ:
306-7.4.4 Special Joints. Type "D" joints shall be used to join sections of pipe of dissimilar material.

306-7.8.2.1(e) Pressure Testing and Leakage Inspection.
ADD THE FOLLOWING TO THE END OF SUBSECTION 303-7.8.2.1(e)
Pipeline cleaning shall be performed prior to CCTV inspection in accordance with 500-1.1.4.

ADD NEW SUBSECTION 306-16 TO READ:

306-16 BUILDING SEWERS.

306-16.1 General. Building sewer work shall consist of reconnecting existing building sewers to the new pipe or rehabilitated sewer main in accordance with 500-1.1.7(a), the Standard Specifications, and as specified herein.

The two uppermost lateral connections on a sewer main below a cleanout, lamphole or maintenance hole with no upstream sewer shall be connected with a wye-connection.

306-16.1.1 Records to be Kept. The Contractor shall maintain a list of the active/inactive building sewers showing:

1. Approximate distance from upstream maintenance hole on public sewer
2. Building sewer status: active or inactive
3. Address being served by active building sewer

The Contractor shall deliver to the Engineer two copies of the completed logs prior to acceptance of work. Logs shall be provided in an electronic format, acceptable for incorporation with existing geospatial information systems.

306-16.2 Material. Pipe for building sewers shall be vitrified clay, high density polyethylene, cast iron, or any other material approved by the Engineer. Connections of building sewers to public sewer mains shall be made only by using a Wye branch, a Tee branch, a drilled tap or saddle as approved by the Engineer.

The size of any building sewer shall be at least as large as the existing building sewer to which it connects, but in no case less than four inches (102 mm).

When an existing five-inch (127 mm) building sewer is encountered, the Contractor shall install a six-inch (152 mm) connection to the main and construct six-inch (152 mm) building sewer to the reconnection point. At the reconnection point, a five-inch to six-inch increaser shall be used.

PART 5 – PIPELINE SYSTEM REHABILITATION

500-1 PIPELINE REHABILITATION.

500-1.1.5 Television Inspection.
ADD THE FOLLOWING TO THE END OF THE SUBSECTION:

All inspections shall be documented with written reports that include a NASSCO Pipeline Assessment Certification Program (PACP) coding of all defects, or the Agency's standard coding of defects if different than NASSCO. The PACP coding shall be accomplished by an operator or worker who holds current PACP certification.

500-1.1.6 Sampling, Testing and Installation.
ADD THE FOLLOWING THREE PARAGRAPHS TO THE END OF THE SUBSECTION:

Prior to beginning work, Contractor shall clean sewer pipe of any obstruction and debris including roots in accordance with 500-1.1.4. The Contractor shall provide pre-rehabilitation CCTV inspection in accordance with 500-1.1.5. Point Repairs, if required, shall be performed as specified in 500-1.2.

All insertion processes shall be carried out in compliance with all applicable Cal-OSHA requirements. The installation Contractor shall have the necessary Cal-OSHA licenses before the work commences. Special attention shall be paid to the safety requirements involving work in confined spaces and work with steam.

The Contractor shall remove all protruding laterals that may prevent proper liner insertion. The removal method for protruding laterals shall be submitted with the shop drawings for approval.

500-1.1.7 Miscellaneous.

500-1.1.7 a) Service Connections.

ADD THE FOLLOWING TO THE END OF SUBSECTION 500-1.1.7a).

External Service Reconnections. The Contractor shall expose the building sewer and make arrangements with the occupant and/or owner to access all the plumbing fixtures in each building and perform dye tests to determine if the exposed building connection sewer is active. If the occupant or owner denies access to the building, the exposed building connection sewer shall be assumed active unless otherwise directed by the Engineer and shall be reconnected in accordance with these specifications.

If the service connection is to be re-established with an external reconnection, the existing service connections shall be excavated and disconnected at the joint. The existing sewer (now the host or carrier pipe for the liner) shall be carefully broken/removed to expose the liner to the extent necessary without damaging the liner. The liner pipe shall be allowed to normalize to ambient temperature and to cool down before a hole is drilled out. This (and any other) “coupon” shall be retrieved and handed over to the Engineer for inspection of liner integrity, if requested by the Engineer. A pre-fabricated polyethylene saddle equipped with a neoprene gasket and a protruding stub-out shall be installed onto the exposed liner with an epoxy-bonding agent over the cut out. The saddle's attached stub-out must protrude into the liner a distance equal to the liner's wall thickness. The strap-on saddle shall then be tightened with two Type 301 stainless steel or higher-grade bands, one on each side. The nuts and bolts shall be Type 305 stainless steel. The new stub-out, or lateral, shall be connected to the existing service line with a flexible coupling. The stubout attached to the saddle shall not be smaller than the nominal size of the service line to which it is to be attached. All exposed liner shall be encased in concrete. The entire connection structure, including the main, saddle, stub-out, and exposed building connection sewer shall be backfilled as specified in 500-1.3.6.3.

For service reconnection locations in the street, all CIPP lined sewers shall have service connections reconnected externally. The Contractor may elect to temporary reconnect the lateral by internal method, but no additional payment shall be made for the temporary connection.

Internal Service Reconnections. For service reconnections locations in the sidewalks and in easements where CIPP lined sewers are installed, Internal service reconnections shall be. Internal service reconnections use a remote-control cutting device operating within small diameter pipe or directly for man-entry pipe. A color, pivot head CCTV camera shall be attached to the cutting device for precise location of service connections and inspection of the liner pipe. The CCTV inspection shall be performed in the same direction as the CCTV inspection performed before liner insertion.

The Contractor shall have a fully operation backup device for the remote-control cutting device. If the Contractor is unable for any reason to re-establish remotely the service connections, the Contractor shall re-establish each service connection by open excavation at no additional cost.

The remote-control cutting device must provide nearly full-diameter holes, free from burrs or projections, each hole providing a minimum of 95% and a maximum of 100% of the original service connection diameter and area. The new hole edges shall be smooth and crack free with no loose material. The service connection invert shall match the bottom of the reinstated service opening.

REPLACE SUBSECTION 500-1.2.6 WITH THE FOLLOWING**:**

500-1.2.6 Installation and Field Inspection. The installation of the replacement pipe and/or repair work shall conform to Section 306. One or a combination of the following three point repair methods shall be used. The selected method shall be subject to the Engineer's approval prior to implementation.

a) **Repair Clamp.** Install full circle repair clamps as recommended by the manufacturer and approved by the Engineer. All full circle repair clamps shall be of Type 316 stainless steel fastened with Type 305 stainless steel nuts and bolts.
b) **Heat-Shrink Sleeve.** Install in accordance with manufacturer's recommendations.
c) **Remove and Replace Pipe or Fittings.** Remove defective pipe or fittings to the nearest joint or by cutting perpendicular to the pipe axis to leave a plain end. Prepare a replacement section of like pipe material (or as otherwise approved by the Engineer or shown on the drawings). Make connections using shielded couplings, or heat-shrink sleeves.

500-1.3 High Density Polyethylene (HDPE) Solid Wall Liner.

REPLACE SUBSECTION 500-1.3.1 TO READ:

500-1.3.1 General. HDPE solid-wall liner pipe shall comply with ASTM D3350 and ASTM F714. Fittings shall comply with ASTM D2683 or ASTM D3261. Fittings fabricated by mitered, butt fusions are also permitted. Unless otherwise specified or approved, the outside diameter of the line shall not be less than 90 percent of the inside diameter of existing pipes, and the standard dimension ratio (SDR) of the liner for sliplining shall be equal to 26.

500-1.4 Cured-in-Place Pipe Liner (CIPP) Liner.

REPLACE THE WORDS "epoxy or epoxy vinyl-ester resin" WITH "epoxy, or epoxy vinyl-ester resin" WHEREVER THEY APPEAR IN SUBSECTION 500-1.4.

500-1.4.1 General.

REPLACE SUBSECTION 500-1.4.1 WITH THE FOLLOWING:

500-1.4.1 General.

- CIPP liner for pipeline rehabilitation shall be either of two types:
  Type A – inversion process in compliance with ASTM F1216 or
  Type B – pull-in-place process in compliance with ASTM F1743.
- The CIPP liner shall use an approved epoxy, or epoxy vinyl-ester resin-impregnated flexible fabric tube.
- **The minimum liner thickness shall be 0.236 inch (6.0 mm).**

- Prior to commencing work, the Contractor shall provide submittals on all lining materials and resins and shall furnish manufacturer certification that the liner material complies with the requirements stated herein. The submittals shall include information about all component materials. In accordance with 2-5.3, the Contractor shall submit shop drawings of construction details, including complete manufacturer's recommendations for storage procedures, temperature control, removing roots and protruding laterals, liner handling and insertion, curing details, re-establishing service connections, trimming and finishing. The shop drawings shall include placement location(s) and method(s) and bypass location(s) with sufficient detail to assure that the work can be accomplished without sewage spill. The Contractor shall also provide manufacturer's certification, field measurements and pipe-sizing calculations that demonstrate that the liner has been properly sized to avoid the creation of wrinkles or folds and to avoid gaps between the liner and the host pipe. Only manufacturer-licensed and certified contractors shall install CIPP liner.

500-1.4.2 Material Composition and Testing.

REPLACE THE WORDS "epoxy or epoxy vinyl-ester resin" WITH "epoxy, or epoxy vinyl-ester resin" WHEREVER THEY APPEAR IN SUBSECTION 500-1.4.2.

ADD THE FOLLOWING TO THE END OF THE SECOND PARAGRAPH OF SUBSECTION 500-1.4.2:

The certified test results shall be from liner samples that have undergone the same curing process, formulation, size and thickness as that proposed to be installed. All material testing shall be performed at the Contractor's expense by a registered, independent, third party laboratory approved by the Engineer. A certificate of compliance and certified test results from an independent third-party laboratory shall also be provided for long-term flexural modulus.

ADD TABLE 500-1.4.2 (A) TO READ:

TABLE 500-1.4.2 (A)

CIPP Liner Minimum Flexural Requirements for Polyester Resin			
Type of Polyester Resin [1]	Flexural Modulus (E) (Initial[2], psi)	Flexural Modulus (E_L) (Long Term[3], psi)	Flexural Strength (psi)
Enhanced	400,000	200,000	4,000
Standard	300,000	150,000	4,500

[1] Only one type of resin shall be used for this project.
[2] The initial flexural modulus is defined in ASTM D790.
[3] The long-term flexural modulus is defined as fifty years and is determined by ASTM D2990 Test Method.

The Engineer may, at any time prior to installation, direct the Contractor to obtain cured samples and test them in accordance with the appropriate ASTM standards.

REPLACE SUBSECTION 500-1.4.4 WITH THE FOLLOWING:

500-1.4.4 Chemical Resistance.

The CIPP liner furnished shall meet the chemical resistance requirements of ASTM D5813. The CIPP liner shall also meet the chemical resistance requirements of ASTM F1216 or ASTM F1743, depending upon the installation method. The Contractor shall submit to the Engineer verification that the CIPP liner complies with the ASTM testing requirements. This verification of compliance shall be in written form of a finalized, signed, and dated independent laboratory report. The date on this report shall constitute the compliance date.

REPLACE SUBSECTION 500-1.4.5 WITH THE FOLLOWING:

500-1.4.5 Installation

- The outer diameter of the tube shall be properly sized to allow for expansion to ensure that the CIPP can fit snugly against the host pipe. The installed CIPP liner shall tightly fit the internal circumference and length of the original pipe. The gap between the existing pipe ID (inside diameter), and the OD (outside diameter) of the installed liner pipe shall not exceed 0.25 inches at any point along the pipeline. The pipe shall be rejected if shrinkage exceeds this amount.
- The CIPP shall be installed in accordance with the manufacturer's recommendations as approved by the Engineer and ASTM F1216 or ASTM F1743. Immediately prior to installation, the CIPP liner tube shall be saturated with resin (on or off the job site) and stored / transported at a cool temperature as recommended by the resin manufacturer.
- Before tube installation, the manufacturer shall provide data on the tube's maximum allowable stresses and elongation. The exterior of the manufactured tube shall be marked along its length at regular intervals not exceeding five feet. These marks shall be used as a gauge to measure elongation during installation. Any tube length experiencing overall elongation greater than five percent shall be rejected and replaced at the Contractor's expense.
- If the cured pipe does not fit tightly against the host pipe at its termination point(s), the void shall be sealed by filling with a resin mixture compatible with the CIPP Liner.
- Wrinkles in the finished liner pipe that cause a backwater, reduce the pipe's hydraulic capacity or structural stability, or create voids between the liner and pipe wall are unacceptable and shall be removed and repaired at the Contractor's expense.
- Measurements to confirm that the liner's outside diameter is within the acceptable tolerance shall be made at the lateral connections, maintenance holes and terminal ends after liner stabilization has occurred and prior to re-establishing the service connections.
- Laterals shall be reconnected the same day of the liner installation.

REPLACE SUBSECTION 500-1.4.8 WITH THE FOLLOWING:

500-1.4.8 Repair and Rejection. The Contractor shall replace the pipeline in any reaches that the liner samples fail to meet the standard specifications.

ADD SUBSECTION 500-1.4.9 TO READ:

500-1.4.9 Material Testing. The Contractor shall provide certified test results of the short term structural properties of the cured lining material from the actual installed liner at a minimum of one location per each liner insertion setup as part of the acceptance requirements. All material testing shall be performed by a registered, independent, third party laboratory approved by the Engineer at the Contractor's expense.

The cured liner shall be sampled and tested for flexural strength and flexural modulus (short term) in accordance with the requirements of ASTM F1216 or ASTMF1743 and ASTMD790. The liner shall be in conformance with the structural properties specified in 500-1.4.2.

In addition, the Contractor shall furnish all liner ends for each installation to the Engineer for inspection and thickness verification. These samples shall be used to confirm the liner's thickness meets the specified requirement.

The Contractor shall replace the pipeline in any reach that the liner samples fail to meet the project specifications.

ADD NEW SUBSECTION 500-1.4.10 TO READ:

500-1.4.10 Spill Prevention in Curing Process. In addition to the Spill Prevention and Control in section 7-8.6, the Contractor is required to submit a plan for review by the Engineer to prevent and contain any water leak/spill during curing process. No water from the boiler is allowed to spill into street, gutters, storm drains or creek.

500-1.5 Polyvinyl Chloride (PVC) Pipe Lining Systems.

DELETE THE SUBSECTION.

500-1.6 Pipe-Bursting Method.

500-1.6.1 General. The pipe bursting method is a type of trenchless construction in which a bursting tool splits/fractures the existing pipe while simultaneously installing a new polyethylene pipe of the same size or larger using a static or pneumatic pipe bursting technique. The Contractor shall furnish all labor, equipment, materials, tools, and appurtenances necessary or proper for the performance and completion of pipe bursting work.

500-1.6.1.1 Preliminary Surface Inspection. The Contractor shall make a careful preliminary surface inspection of the site along which the operation is run. Special note shall be taken and a photographic record shall be kept of the following:

1) Signs of surface cracks in roadways, sidewalks, and other paved areas;
2) Evidence of cracks and misalignments in boundary walls and structure walls near the trench;
3) Evidence of recent road work;
4) Current work in progress by other contractors;
5) Signs of possible leakage from water or gas mains; and
6) Other relevant features present before operations commence.

The preliminary surface inspection work shall be considered part of the sewer installation work and no separate payment will be made.

500-1.6.2 Contractor Qualifications. The Pipe Bursting Contractor shall have experience and qualifications in the installation of pipe using pipe bursting as required by the Agency.

500-1.6.2.1 Field Supervisory Qualifications. Field supervisory personnel employed by the pipe bursting contractor shall have at least three (3) years of documented experience in the performance of the work and tasks as stated in contract documents.

500-1.6.3 Contractor Submittals.

500-1.6.3.1 Contractor Qualifications. The Contractor shall submit, with other bid documents, documentation of their project and personnel experience with other projects similar in size and nature to the project specified in the contract documents.

500-1.6.3.2 Drawings and Documents. Shop drawings, catalog data, and manufacturer's technical data showing complete information on material composition, physical properties, and dimensions of new pipe and fittings shall be submitted prior to installation. A manufacturer's compliance certificate for these specifications shall be provided by the Contractor for all material furnished under this specification. Prior to beginning pipe installation the Contractor shall provide a certificate of conformance to the applicable ASTM specifications.

500-1-6-4 Materials.

500-1.6.4.1 High Density Polyethylene (HDPE) Pipe. Polyethylene pipe shall be high density polyethylene pipe (HDPE) and meet applicable requirements of ASTM F714 and ASTM D3035. HDPE pipe and fittings shall be used in accordance with the material specifications. All additional appurtenances (maintenance holes, tees, gaskets, etc.) shall meet the material specifications.

Pipe Joining. All pipe installed by pipe bursting shall be joined by butt fusion, electro fusion (per ASTM F2620), or full circle clamp as detailed in 500-1.6.5, Pipe Joining.

Pipe Production. HDPE pipe shall be produced from resins meeting the requirements of ASTM D1248, designation PE3408, ASTM D3350 cell classification PE345444C, and will meet the requirements of AWWA C901 and C906. HDPE pipe shall meet the minimum stability requirements of ASTM D3350.

Pipe Markings. Pipe shall be legibly marked at intervals of no more than five (5) feet with the manufacturer's name, trademark, pipe size, HDPE cell classification, appropriate legend such as SDR 17, ASTM D3035, AWWA C901 or C906, date of manufacture and point of origin.

Pipe Material. All pipe shall be made of virgin material. No rework material except that obtained from the manufacturer's own production of the same formulation shall be used. The pipe shall be homogeneous throughout and shall be free of visible cracks, holes, foreign material, blisters, or other deleterious faults.

Pipe Color and Quality. For CCTV inspection purposes, the HDPE pipe shall have a light-colored interior achieved with a homogeneous, light-colored material throughout or with a fully-bonded light-colored interior meeting the above specifications.
Liner Pipe Dimensions. The minimum wall thickness shall conform to Standard Dimension Ratio (SDR) of 17 when measured in accordance with ASTM D2122. The minimum inside diameter (ID) of new pipe to be installed shall be as specified in the plans. Depending on the availability of pipe product, the nearest size to the specified pipe shall be required, upon the Engineer's approval.
Pipe - General. All HDPE pipe without an ultraviolet inhibitor shall not be stored uncovered outside. The Contractor shall exercise care during the unloading, handling, and storage of all polyethylene pipe to ensure that the pipe is not cut, gouged, scored, or otherwise damaged.

500-1.6.5 Pipe Joining for Sections of HDPE Pipe. The polyethylene pipe shall be assembled and joined at the site using the butt-fusion method to provide a leak-proof joint, and in conformance with ASTM D2620. Insertion of pipe shall be in accordance with ASTM F585. Threaded or solvent-cement joints and connections are not permitted. All equipment and procedures used shall be in strict compliance with the manufacturer's recommendations. Fusing shall be accomplished by personnel certified as fusion technicians by a manufacturer of polyethylene pipe and/or fusing equipment.
Terminal Sections. Terminal sections may also be joined by Electrofuse Couplings, Friatec, or approved equal. Terminal sections may also be joined by full circle repair clamps by Smith Blair, JCM, or approved equal.

500-1.6.6 Service Connection Materials. The preferred method of sewer service connections to the HDPE sewer main shall be the use of electrofusion saddles by Central Plastics, Friatec, or equal as approved by the Engineer. Mechanical taps, Inserta Tees made by Fowler Manufacturing or approved equal, may also be used for sewer service connections if approved by the Engineer. Depending upon site conditions and if approved by the Engineer, sewer service connections to the HDPE main may be made by plastic saddles with stainless steel straps, by GPK, or approved equal, or rubber saddles with stainless steel straps by Fernco Company, DFW, or approved equal.

500-1.6.7 Sealing Connections at Maintenance holes. The annular space at each maintenance hole may also be sealed with a waterstop gasket by Fernco Company or approved equal, and finished with a quick setting grout. Pipe shall be allowed to relax in accordance with 506-1.6.11.d.

500-1.6.8 Pipe Bursting Equipment. The pipe bursting unit shall be designed and manufactured to force its way through the existing line by fracturing the pipe and compressing the broken pieces into the surrounding soil as the equipment progresses. The bursting unit shall generate sufficient force to burst and compact the existing pipeline. In each case the pipe bursting unit shall pull the polyethylene pipe with it as it moves forward.

500-1.6.9 Execution of Work - General. Bypass pumping shall be accomplished when and where necessary. The Contractor shall provide flow diversion with pumps adequate in size and capacity to handle all flows generated during the pipe bursting process. All costs for bypass pumping shall be incidental unless specific pay items for this work are included in the bid and pay schedule. Excavation of insertion pits shall be at locations determined by the Contractor. Insertion pits shall be of sufficient length to allow the bursting head and new HDPE pipe to enter the host pipe at an angle that will maintain the grade of the existing sanitary sewer.

500-1.6.10 Preparation of Work. All sewer service connections shall be located prior to pipe bursting the main, by pre-CCTV inspection, and then exposed prior to pipe bursting. If the pre-inspection reveals obstructions or pipe materials that will prevent the existing pipe from being pipe burst properly and cannot be removed by conventional cleaning equipment, a point repair will be made by the Contractor, with approval from the Engineer. If the pre-CCTV inspection reveals a sag or hump, sag or hump removal shall be made by the Contractor, with approval from the Engineer.

500-1.6.11 Insertion of the HDPE Pipe.

500-1.6.11.a. The polyethylene pipe shall be assembled and joined at the site using the butt-fusion method to provide a leak-proof joint. Threaded or solvent-cement joints and connections are not permitted. All equipment and procedures used shall be in compliance with the manufacturer's recommendations. Fusing shall be accomplished by personnel certified as fusion technicians by a manufacturer of HDPE pipe and/or fusing equipment.

500-1.6.11.b. Insertion shall be in accordance with ASTM F585. The butt-fused joint shall be in true alignment and shall have uniform rollback beads resulting from the use of proper temperature and pressure. The joint shall be allowed adequate cooling time before removal of pressure. The fused joint shall be watertight and shall have tensile strength equal to that of the pipe. All defective joints shall be cut out and replaced at the expense of the Contractor. The inside weld bead shall be removed by cutting the bead away without scoring the inside wall of the pipe, to the satisfaction of the Engineer.

500-1.6.11.c. Service connections to the HDPE pipe shall be made with materials submitted and approved in accordance with 500-1.6.6.

500-1.6.11.d. A relaxation period shall be allowed prior to making service connections and connections to maintenance holes. The relaxation period shall be appropriate with and dependent upon site conditions, but not less than eighteen (18) hours unless otherwise determined by the Contractor.

500-1.6.11.e. If concrete encasements are encountered, a point repair shall be performed, with the approval of the Owner, to excavate and break out concrete prior to the pipe bursting operation to allow the steady and free passage of the pipe bursting head.

500-1.6.11.f. The new HDPE pipe shall be inserted immediately behind the pipe bursting head in accordance with the manufacturer's recommended procedures. The bursting tool shall be specifically designed and manufactured for the type of insertion process being used. It shall be utilized to guide and assist the bursting head during the operation. A pushing machine may be utilized to aid pipe insertion from the rear.

500-1.6.11.g. New HDPE pipe shall extend into each maintenance hole, a maximum of two inches after pipe relaxation and prior to installation of any restraints. The annular space shall be sealed in accordance with 500-1.6.7.

500-1.6.12 Service Reconnections. Service connections to the HDPE pipe shall be made with materials submitted and approved in accordance with 500-1.6.6. After the new HDPE pipe has been installed and tested, the Contractor shall be responsible for reconnecting existing sewer services in accordance with 500-1.1.7.a. All service lines shall be the size indicated in the plans and specifications.

500-1.6.13 Testing and Acceptance. After the new HDPE pipe is installed and all services are reconnected, the pipe shall be inspected by CCTV. Post-CCTV video shall be submitted to the Engineer for approval and acceptance of the new pipe. Leakage testing will also be performed and both this testing and CCTV inspection shall be in accordance with 500-5, Acceptance Testing.

500-1.7 Deformed/Reformed HDPE Liner.

ADD THE FOLLOWING TWO PARAGRAPHS TO SUBSECTION 1.7.1:

Only manufacturer-licensed and certified contractors shall install Deformed/Reformed HDPE Liner.

The HDPE liner minimum wall thickness shall conform to the Standard Dimension Ratio (SDR) of 26 when measured in accordance with ASTM D2122.

500-1.9 External In-Place Wrap.
DELETE THE SUBSECTION.

500-1.10 Folded and Re-formed PVC Pipe Liner.
DELETE THE SUBSECTION.

500-1.12 Polyvinyl Chloride (PVC) Closed Profile Liner Pipe.
DELETE THE SUBSECTION.

500-1.13 Machine Spiral Wound Polyvinyl Chloride (PVC) Pipe Liner.
DELETE THE SUBSECTION.

REPLACE SUBSECTION 500-2 WITH THE FOLLOWING:

500-2 MAINTENANCE HOLE AND STRUCTURE REHABILITATION.

500-2.1 General.

- The section covers repair and rehabilitation of existing maintenance holes, lampholes, cleanouts, and appurtenances. Rehabilitation methods include sealing of walls, covers, pipes entering and leaving maintenance holes; replacing cast iron frames and/or covers; replacing maintenance hole steps; rebuilding maintenance hole walls; removing and replacing the entire structure; and other related miscellaneous work. Sewer flow control, as necessary, shall be performed in accordance with 500-1.1.4c.
- All maintenance hole rehabilitation materials shall be submitted to the Engineer and are subject to the approval of the Engineer. The manufacturer shall provide certification that the materials proposed for use are compatible with one another. All materials that shall contact the sewer environment shall be specifically designed for chemical resistance to the sewer environment. The manufacturer shall certify that the materials are resistant to the sanitary sewer environment and to the following: 5% nitric acid, 5% sulfuric acid, 10% phosphoric acid, 100% ASTM fuel C, 100% vegetable oil, 0.1% detergent, 0.1% soap, 5% sodium hydroxide, and 1% ferric chloride.

500-2.2 Leakage at Frames and Covers. Leakage at cast iron frames and covers shall be eliminated by one of the following methods of this subsection, or as directed by the Engineer.

500-2.2.1 Replace Cover. When an existing frame is in good, sound condition but the cover is broken or otherwise determined to be unusable (for example because of vent holes which allow infiltration), it shall be removed and replaced as shown or specified. It shall be replaced with a new cast iron maintenance hole cover of approximately the same thickness and weight conforming to 206-7. The seating surface shall be machined to permit it to rest tightly against the surface of the frame without "rocking " under vehicular traffic. The cover's configuration must be such as to mate closely with that of the frame.

500-2.2.2 Adjust Frame and Cover. Structure frames and covers shall be adjusted where shown or specified. This repair consists of removing and replacing the maintenance hole frame and the grade rings. This shall be accomplished by excavating as necessary, lifting off the frame and grade rings as directed, thoroughly cleaning the frame's bottom bearing surface, removing the old mortar from the maintenance hole cone and grade rings, and replacing the existing frame and rings to the new grade as specified for new maintenance holes in 303-9.

500-2.2.3 Replace Frame and Cover. When shown of specified, or when the condition of the frame is satisfactory but a replacement cover meeting the requirements described above is not available, the Contractor shall remove and replace the entire assembly with a new frame and cover in accordance with 201-8 and 303-9.

500-2.3 Sealing Maintenance hole Walls. Maintenance hole walls shall be sealed where shown or specified, or as directed by the Engineer. Sealing of the maintenance hole walls shall be accomplished by any of the methods specified in sections 201-10.6.1, including:

Cement-Epoxy Mixtures. Openings, cracks, and deteriorated joints in maintenance hole walls shall be repaired and sealed by utilizing cement-epoxy mixtures manufactured for this purpose, such as those manufactured and/or supplied by Standard Dry Wall Products; Water-Wastewater Products & Systems, Inc.; IPA Systems, Inc.; Stonehard, Inc.; or approved equal.

Chemical Grout. Openings, cracks, and deteriorated joints in maintenance hole walls shall be repaired and sealed using chemical grout and applicable procedures specified for sewer system rehabilitation.

Polyurethane Coatings. Sprayable polyurethane coating shall be used to seal maintenance hole walls. The coating shall be a high-build polyurethane specifically formulated for use in a sewer system environment. The minimum thickness of the dry coating shall be 125 mils.

Modified Polyester/Polymorphic Coatings. Spray-applied modified polyester/polymorphic resin shall be used to seal maintenance hole walls. The coating shall be a two-component, 100% solids system. Prior to applying the prime coat, the maintenance hole surface shall be sandblasted or hydroblasted and properly dried.

Epoxy Coating. Sprayable or brushable epoxy coatings may be used to seal maintenance hole walls. The coating shall be a high-build epoxy, Mainstay DS-5, Sewer Guard 210, or approved equal, specifically formulated for use in the sewer system and applied in accordance with manufacturer's recommendations and guidelines and at 50-125 mils thickness in one or two coats. Prior to coating, the maintenance hole walls shall be thoroughly sandblasted or hydroblasted and cleaned as recommended by the manufacturer to ensure complete coverage and bonding. Openings and cracks larger than 1/8 inch in the maintenance hole walls shall be filled with mortar, Mainstay ML-72 or ML-72F, or approved equal, at one-half to one inch thickness, prior to trimming and applying the epoxy coating.

Fiberglass Liners. Existing maintenance hole walls shall be thoroughly sandblasted and cleaned or primed as recommended by the materials manufacturer to ensure complete coverage and bonding. Openings and cracks larger than 1/8 inch in the maintenance hole walls shall be filled with mortar prior to priming and applying the fiberglass.

i) Factory-Manufactured Fiberglass Liners. Maintenance hole liners shall be made of fiberglass reinforced plastic (FRP), having an inside diameter of not less than 42 inches. Maintenance hole liners shall meet the requirements of ASTM D3753. The liner shall be installed in accordance with manufacturer's recommendations including removal of the existing cone, grouting of the annular space between the liners and existing maintenance hole walls, rebuilding or replacing the cones, backfilling, installing steps, and installing cast iron frames and covers.

ii) Field-Fabricated Fiberglass Liners. Maintenance hole liners shall be field-fabricated by applying glass fibers and resin to the maintenance hole walls. The completed lining thickness shall be not less than 1/4 inch at any location.

HDPE Liners. Lining manufacturer shall be GSE "Studliner", GU-International AGRU "Suregrip" or equal. Polymer mortar shall consist of a primer if recommended by the manufacturer and a liquid binder and a dry aggregate mixed together to make a mortar of consistency as required for the application. The mortar shall be designed for application to vertical or overhead surfaces and must be accepted by the lining manufacturer. The liquid binder shall be chemical and oil resistant, stress relieved, low modulus, moisture insensitive, two-component epoxy-resin compound. The consistency shall be similar to lightweight oil for proper mixing with aggregate. Material shall conform to ASTM C881, type 3, Grade 1, Sika Corporation Sikadur 22 Lo-Mod Series or equal.

i) HDPE lining, joint strips and angle strips (hereinafter collectively referred to as "lining") shall be made from minimum 97 percent virgin high density polyethylene (HDPE). Color shall be gray.

ii) Lining shall be impermeable to sewage gases and liquids and shall be nonconductive to bacterial or fungal growth. All linings shall be factory checked to ensure freedom from porosity.

iii) Lining shall have good impact resistance, shall be flexible, and shall have elongation sufficient to bridge up to ¼ inch settling crack.

iv) Once cast into the concrete of the maintenance hole wall, lining shall be permanently and physically attached to the concrete by the lining studs and shall not rely on an adhesive bond unless otherwise specified at a specific location.

v) Locking studs shall be made of the same material as the lining and integrally extruded with the sheet. Stud spacing shall be on approximately 1.25-inch centers, such that there are approximately 110 studs per square foot.

vi) Plasticizer shall not be added to the resin formation.

vii) Lining shall be free of holes, pinholes, bubbles, blisters, excessive contamination by foreign matter, and nicks and cuts on roll edges.

viii) Adhesive to bond HDPE lining to metal shall be in accordance with the recommendations of the HDPE lining manufacturer.

ix) All work shall be in strict conformity with all applicable specifications, instructions, and recommendations of the lining manufacturer.

x) Prior to shipping lined precast maintenance hole sections and then again after field welding is complete, the lining shall be spark tested in the presence of the Engineer. The spark test shall be done with an approved electrical holiday detector (Turnhert Rasor, model AP-W with power pack or equal) with the instrument set at a minimum of 20,000 volts. Any imperfection shall be repaired in accordance with the manufacturer's recommendations and with the approval of the Engineer.

Cementitious Crystalline Waterproofing. Waterproofing manufacturer shall be Xypex Chemical Corporation, Xypex Concentrate, Modified, Patch'n Plug or equal. Application shall be in accordance with Xypex recommended specifications.

i) For use in new maintenance holes, the Xypex materials Admix C-500, Admix C-1000, Admix C-2000 or equal shall be used.

500-2.4 Remove and Replace Existing Sewer Structure. Where specified or shown, or directed by the Engineer, existing sewer structures shall be removed and new structures built in their place in conformance with the applicable specifications and details.

500-2.5 Testing. After rehabilitation work at each maintenance hole has been completed, the maintenance hole shall be tested for leakage in accordance with 303-9.2. Maintenance holes rehabilitated only from the cover to the top of the cone will not require testing. Replaced lampholes and cleanouts shall be tested for leakage as an integral part of the sewer pipe system.

ADD NEW SUBSECTION 500-5 TO READ:

500-5 ACCEPTANCE TESTING.

500-5.1 General. The Contractor shall perform acceptance tests on all repaired, rehabilitated, or new facilities. Unless otherwise noted, no separate compensation will be paid for testing; the testing cost is to be included in the related pay items. If the work should fail to pass the tests, it is the Contractor's responsibility to correct the work and re-test with no additional compensation.

If, within the warranty period, any section of the sewer system is not acceptable due to subsequent excessive leakage or any other defects, although originally accepted, the Contractor shall repair or replace the affected portion at no cost to the Agency. It is understood that if the Contractor fails to do such work as required, the Surety shall be liable for said costs of repair or replacement.

500-5.2 Leakage Testing. All new sewers and those sewers rehabilitated by pipe expanding and cured-in-place lining methods shall be tested for leakage in accordance with 306-7.8.2. Sewer mains and building connection sewers in each reach shall be tested for leakage together, as an integral system, except as otherwise specified herein.

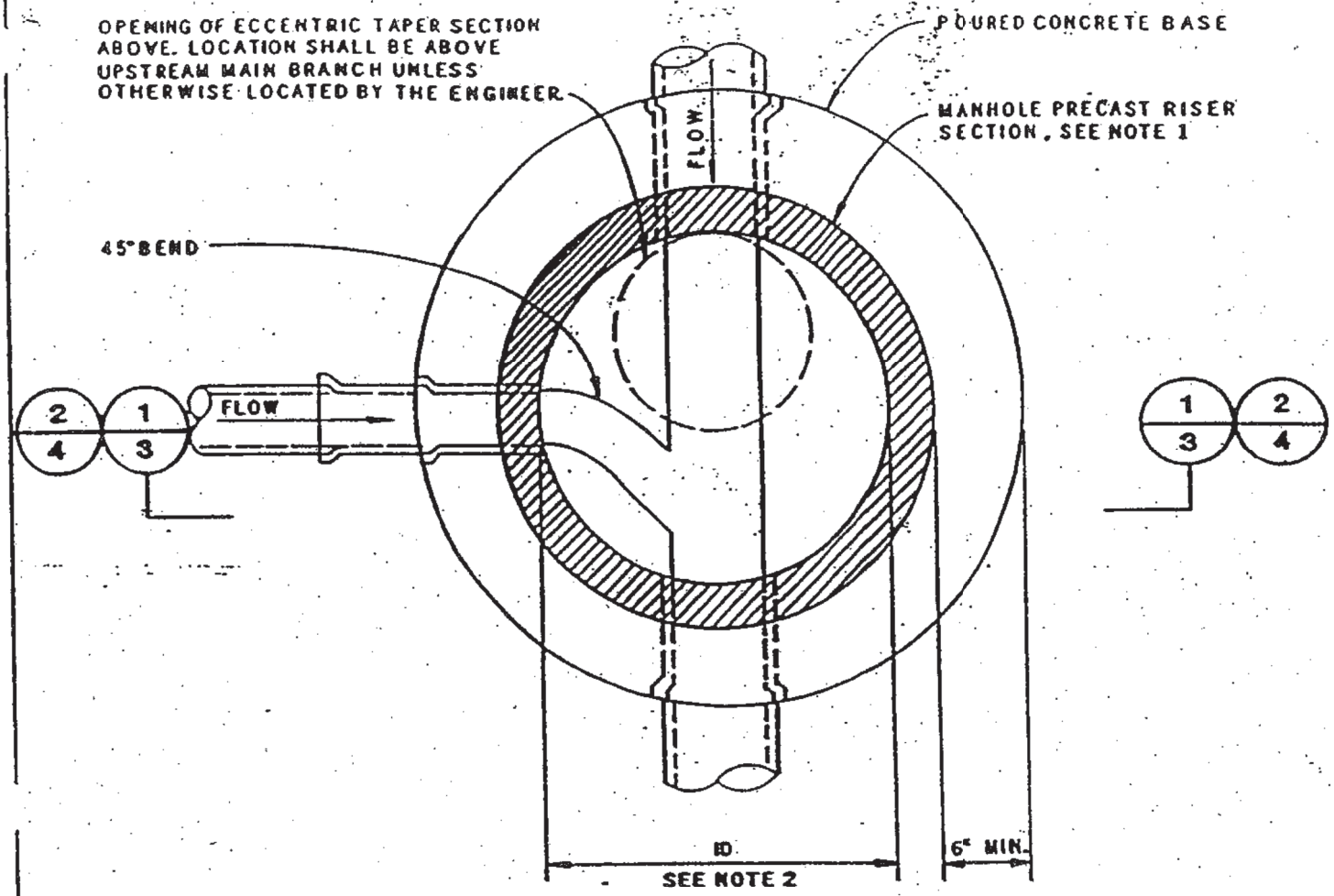
500-5.3 Miscellaneous Testing. The Agency, at its discretion, may perform tests to check compliance with the specifications as they pertain to backfill compaction, concrete strength, and other such items where test performance is not specified as the Contractor’s responsibility. The Contractor shall cooperate with the Agency by providing samples, making necessary excavations, and other related services necessary to carry out the testing, at no cost to the Agency. In the event of failed tests, the Contractor shall bear the cost of correction and re-testing.

500-5.4 Acceptance. Prior to the Engineer's final acceptance of the sewer system, the Contractor shall flush and clean all system parts. The Contractor shall remove all accumulated construction debris, rocks, gravel, sand, silt, and other foreign material from the sewer system at or near the closest downstream maintenance hole. If necessary, the Contractor shall use mechanical rodding or bucketing equipment. A collection basket shall be used to capture all debris.

Following completion of the work, including cleaning and testing, the Contractor shall conduct a CCTV inspection of the sewers as specified in 500-1.1.5. The Contractor shall correct all defects discovered by this procedure before the work under the contract will be considered for final acceptance.

STANDARD DETAILS
AND
DETAIL SPECIFICATIONS

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PLAN
NTS

NOTES

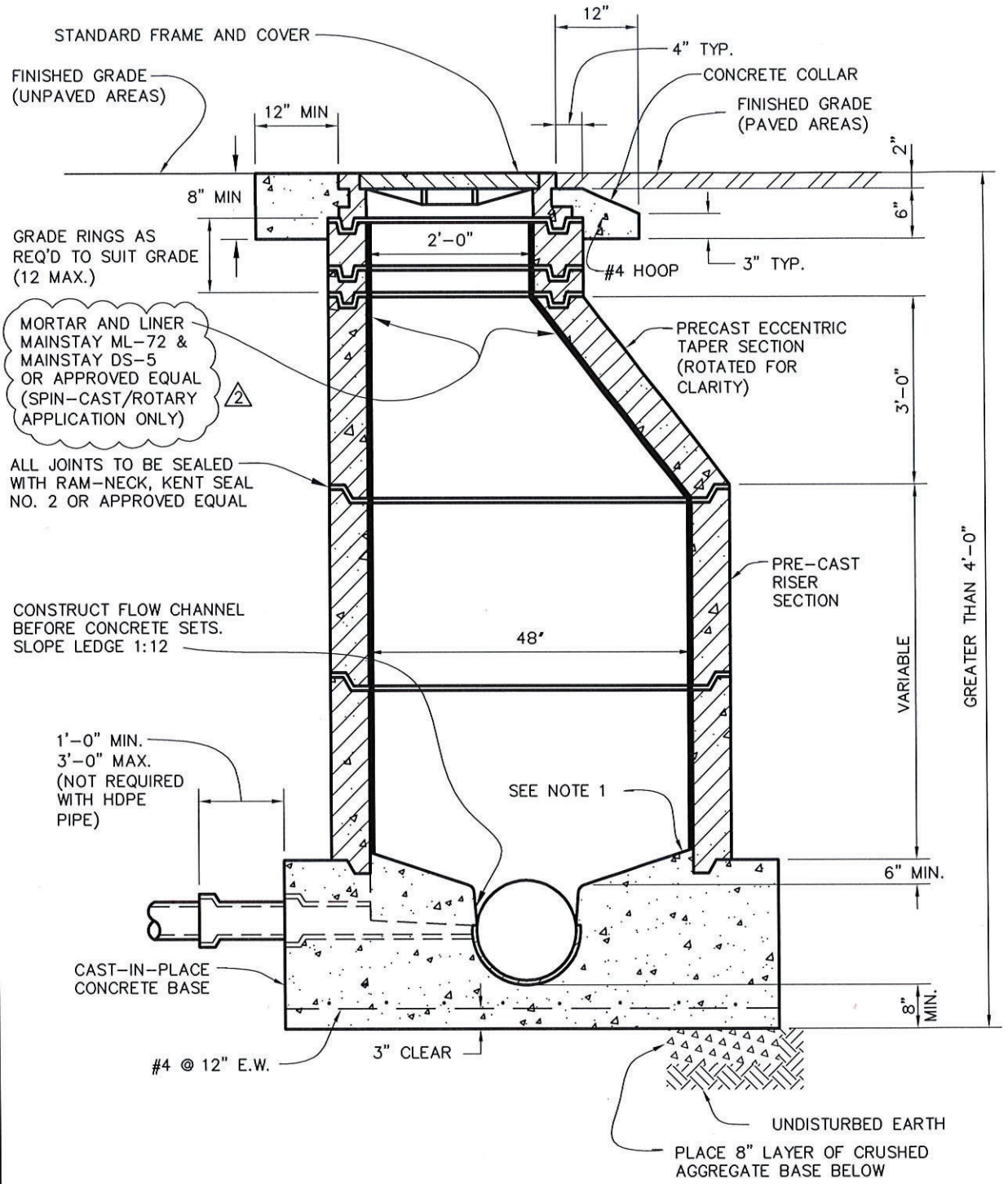
1. PRECAST CONCRETE GRADE RINGS, RISER SECTIONS AND CONE SECTIONS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C478, SEE DWGS. 3 & 4.
2. FOR SEWER PIPES 30 INCHES AND LESS: 60-48 INCHES: FOR SEWER PIPES 33 INCHES AND GREATER USE CONCRETE MANHOLE DETAILS AS SHOWN IN DWGS. 11 TO 12.
3. ALL MANHOLES SHALL BE PROVIDED WITH STEPS UNLESS OTHERWISE NOTED.
4) ALL MANHOLES FOR SEWER PIPE 33 INCHES AND GREATER SHALL BE 60 ID.

EAST BAY INFILTRATION/INFLOW CORRECTION PROGRAM

STANDARD DETAIL

MANHOLE BASE

DATE:	RECOMMENDED:	APPROVED:	RCE	DWG NO. 2



NOTES

1. SET RISER SECTION IN 1:3 MORTAR MIX AND IN GROOVE FORMED IN BASE, OR POUR MONOLITHICALLY WITH BASE.
2. CAST-IN-PLACE CONCRETE FOR MANHOLE BASES AND CONCRETE COLLARS SHALL CONFORM TO SPEC. SECTION 201-1.1.2 AND BE CLASS 560-B-3250.

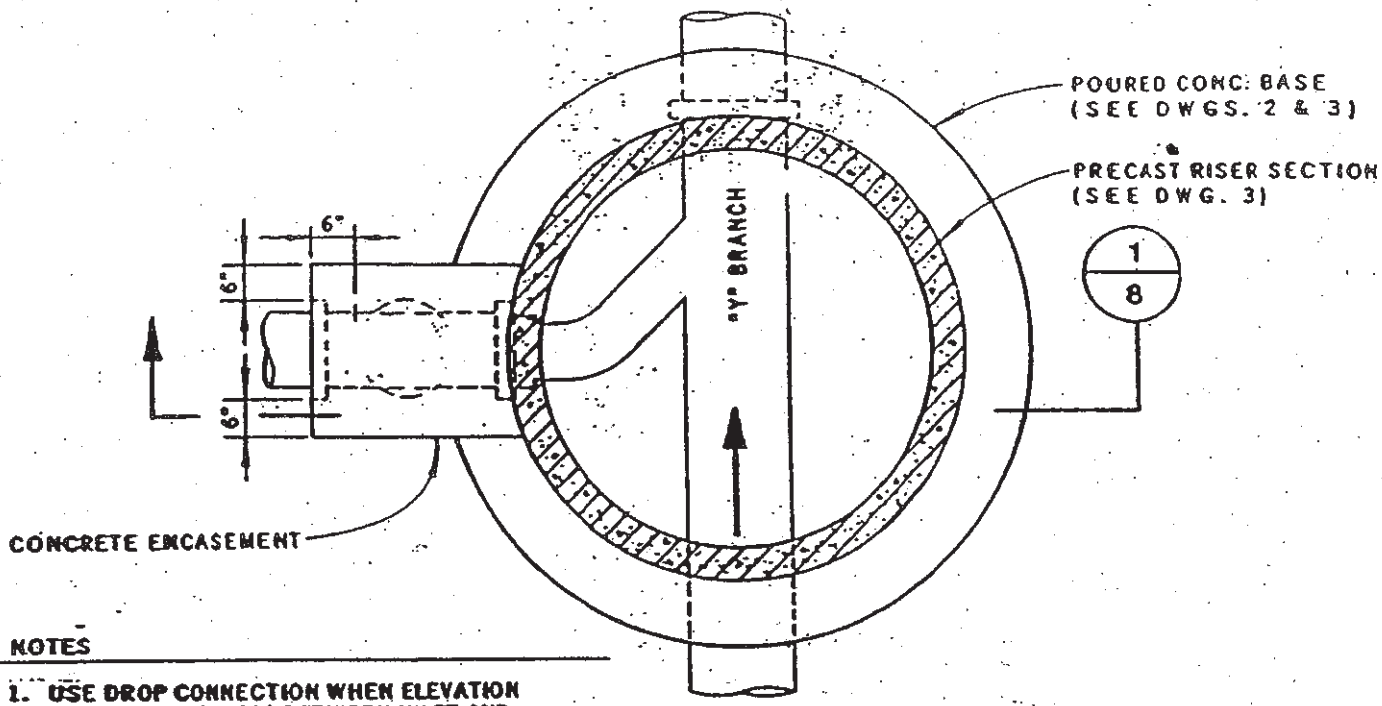
2 4/21/15 ADDED MORTAR & LINER
1 10/8/08 UPDATE AND REVISED TITLE BLOCK

PMHEC

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

STANDARD DETAIL
PRECAST MANHOLE ECCENTRIC CONE

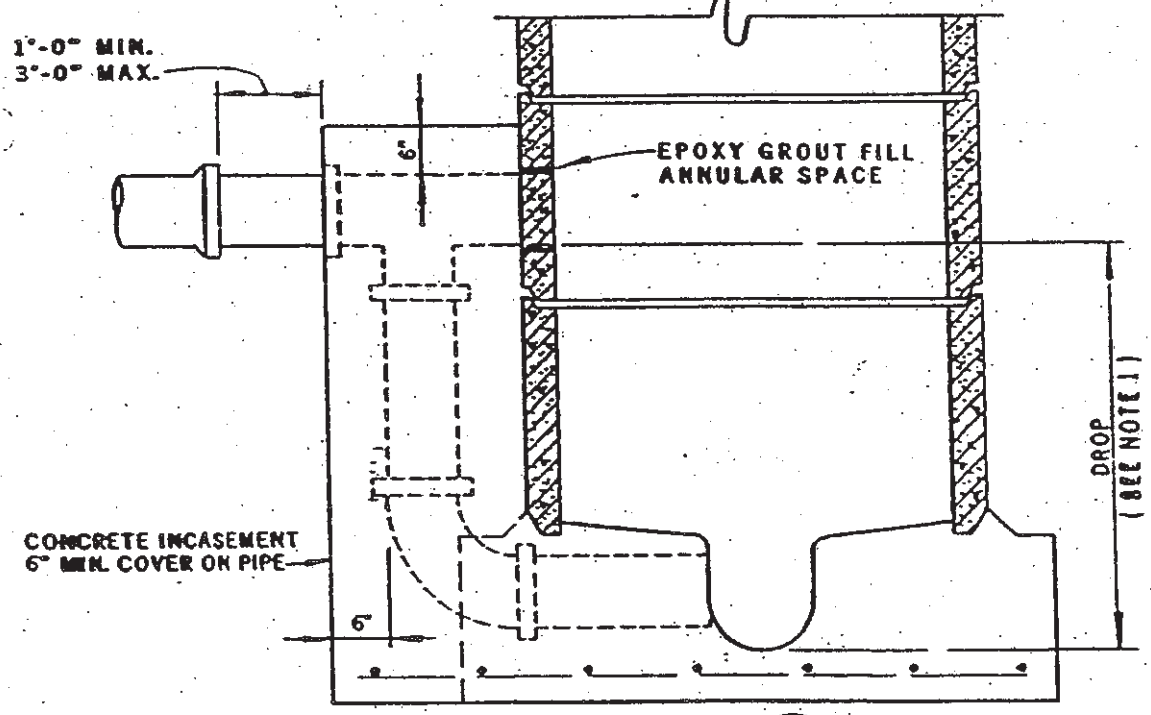
SUBMITTED: _____ SUPERVISING CIVIL ENGINEER	DATE: 5/12/15 R.C.E. 54937 EXP. 6/30/16				
APPROVED: _____ MANAGER OF ENGINEERING	DATE: 5/12/15 R.C.E. 64314 EXP. 6/30/15	DESIGN: JR DRAWN: MS CHECK:	DATE: 1/02 SCALE: N.T.S. BOOK:	PLAN: 7895 FILE: 20-B-147	



PLAN
N.T.S.

NOTES

1. USE DROP CONNECTION WHEN ELEVATION DIFFERENCE (DROP) BETWEEN INLET AND OUTLET SEWERS AT MANHOLES IS AT LEAST THE DISTANCE FOR THE REQUIRED FITTINGS AND THE DROP IS 1'-6" OR GREATER.



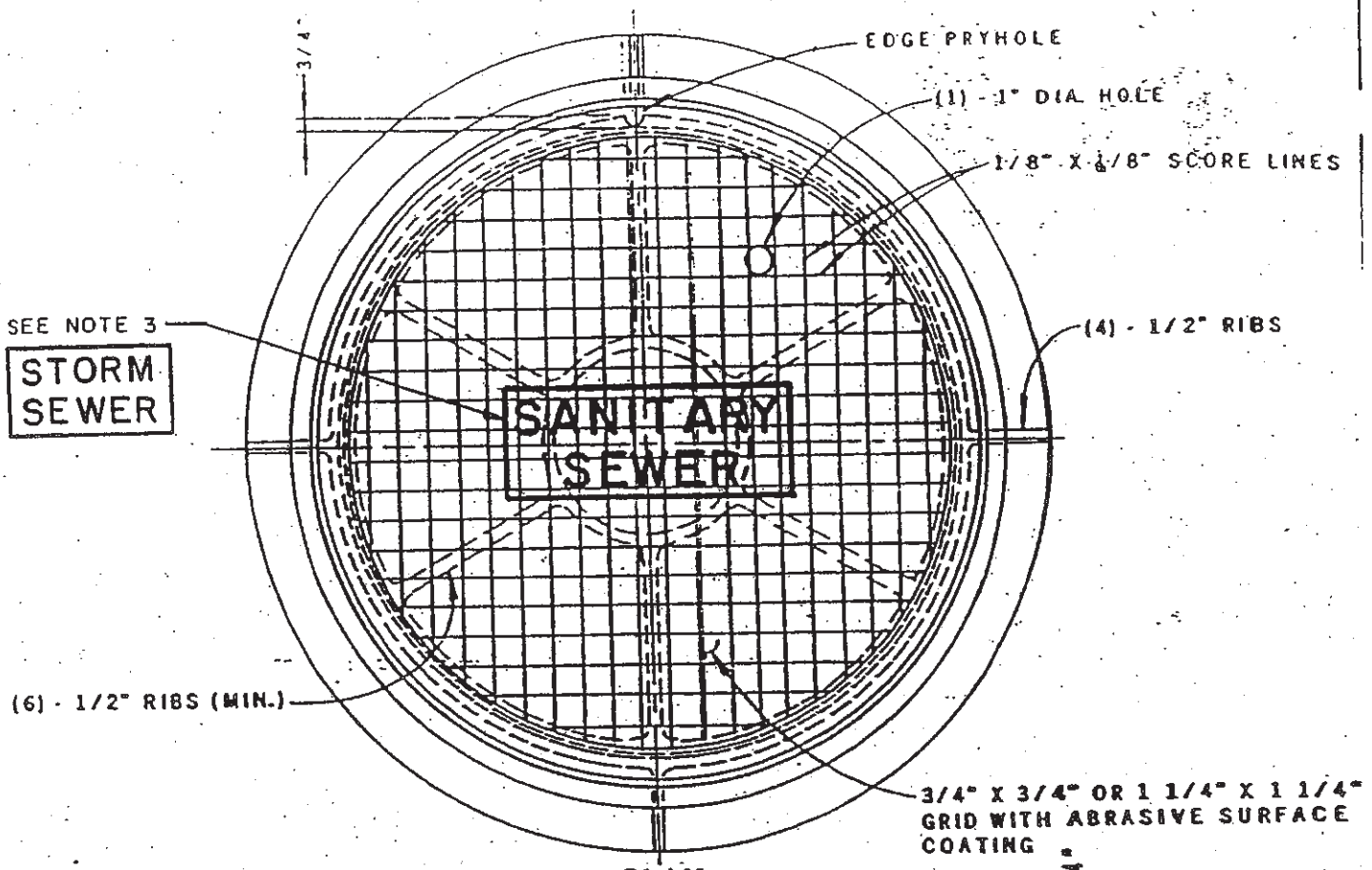
SECTION 1/8
N.T.S.

EAST BAY INFILTRATION/INFLOW CORRECTION PROGRAM

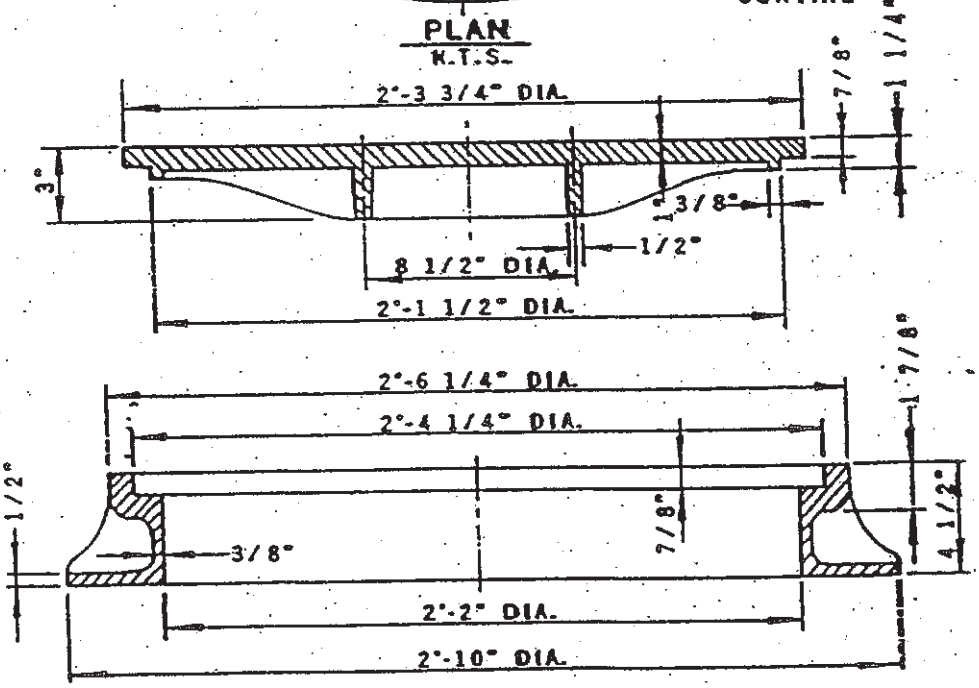
STANDARD DETAIL

OUTSIDE DROP CONNECTION - CONCRETE ENCASED

DATE:	RECOMMENDED:	APPROVED:	RCE	DWG NO. 8



PLAN
N.T.S.



SECTIONS
N.T.S.

NOTES

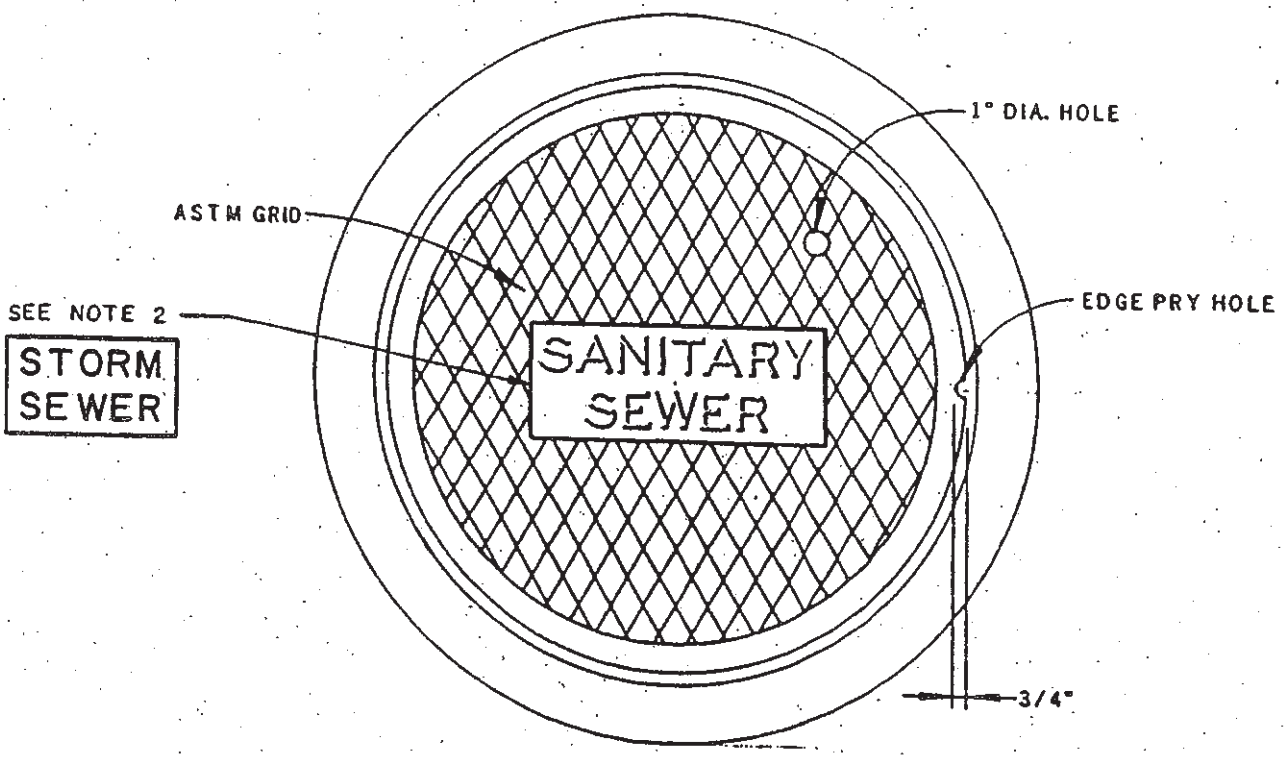
1. CONTACT AND BEARING SURFACES OF FRAME AND COVER SHALL BE MACHINED TO FIT ACCURATELY.
2. SHAFT OPENING OF MANHOLES SHALL BE 2'-0".
3. COVER TO BE MARKED IN RAISED LETTERS: "SANITARY SEWER" OR "STORM SEWER".
4. ALL MANHOLE COVERS SHALL HAVE CLOSED PICK-HOLES.

EAST BAY INFILTRATION/INFLOW CORRECTION PROGRAM

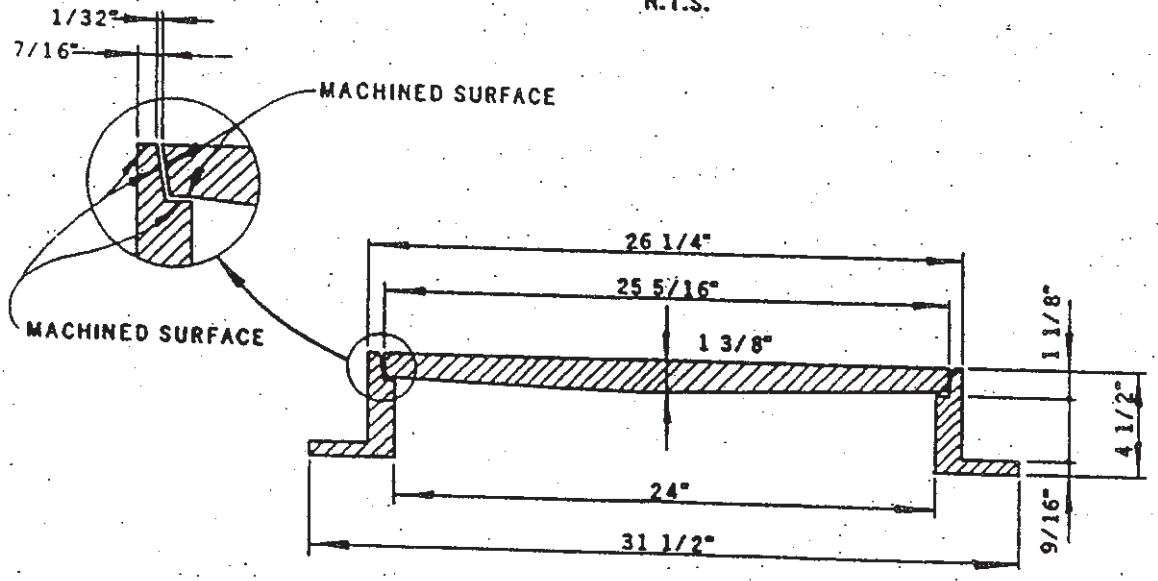
STANDARD DETAIL

MANHOLE COVER AND FRAME - TYPE A

DATE: | RECOMMENDED: | APPROVED: | RCE | DWG NO. 14



PLAN
N.T.S.



SECTION
N.T.S.

NOTE:
USE LIMITED TO PARKS, EASEMENTS AND OTHER AREAS

NOTES:

1. FRAME AND COVER DESIGN CONFORMS TO: AB & 1 NO. AB15005 OR AB 15007, PHOENIX NO P-1090, PINKERTON NO. A-64(
   OLYMPIC NO. 58222M, SOUTH BAY NO. 1900, OR OTHER APPROVED EUQAL.
2. COVER TO BE MARKED IN RAISED LETTERS: " SANITARY SEWER " OR "STORM SEWER".
3. ALL MANHOLE COVERS SHALL HAVE CLOSED PICK-HOLES.

EAST BAY INFILTRATION/INFLOW CORRECTION PROGRAM

STANDARD DETAIL

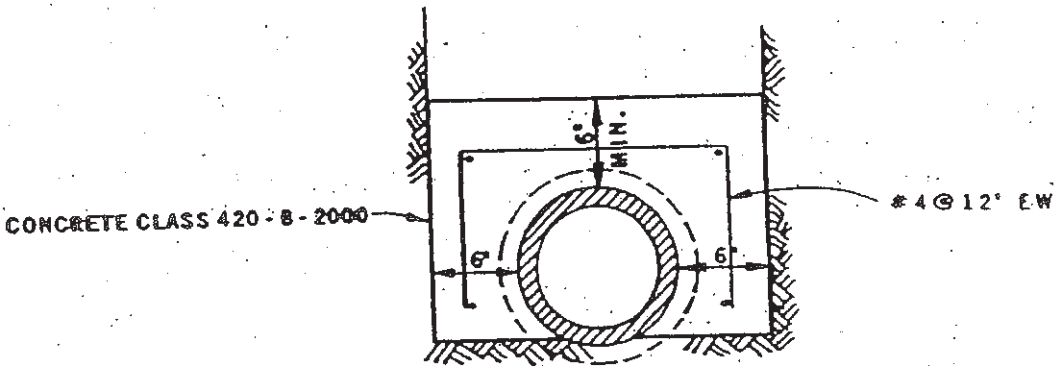
MANHOLE COVER AND FRAME - TYPE B

DATE:

RECOMMENDED:

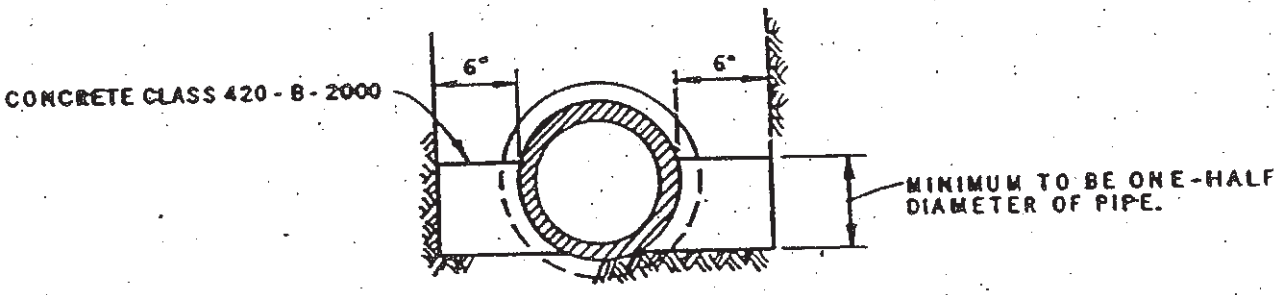
APPROVED: -- RCE

DWG NO. 15



CONCRETE ENCASEMENT

TO BE USED WHERE PIPE COVER IS 3 FT. OR LESS
OR WHERE SPECIFIED ON PLAN.



CONCRETE BEDDING

TO BE USED WHERE COVER IS 13' - 6" OR GREATER
OR WHERE SPECIFIED ON PLAN.

EAST BAY INFILTRATION/INFLOW CORRECTION PROGRAM

STANDARD DETAIL

CONCRETE ENCASEMENT AND BEDDING

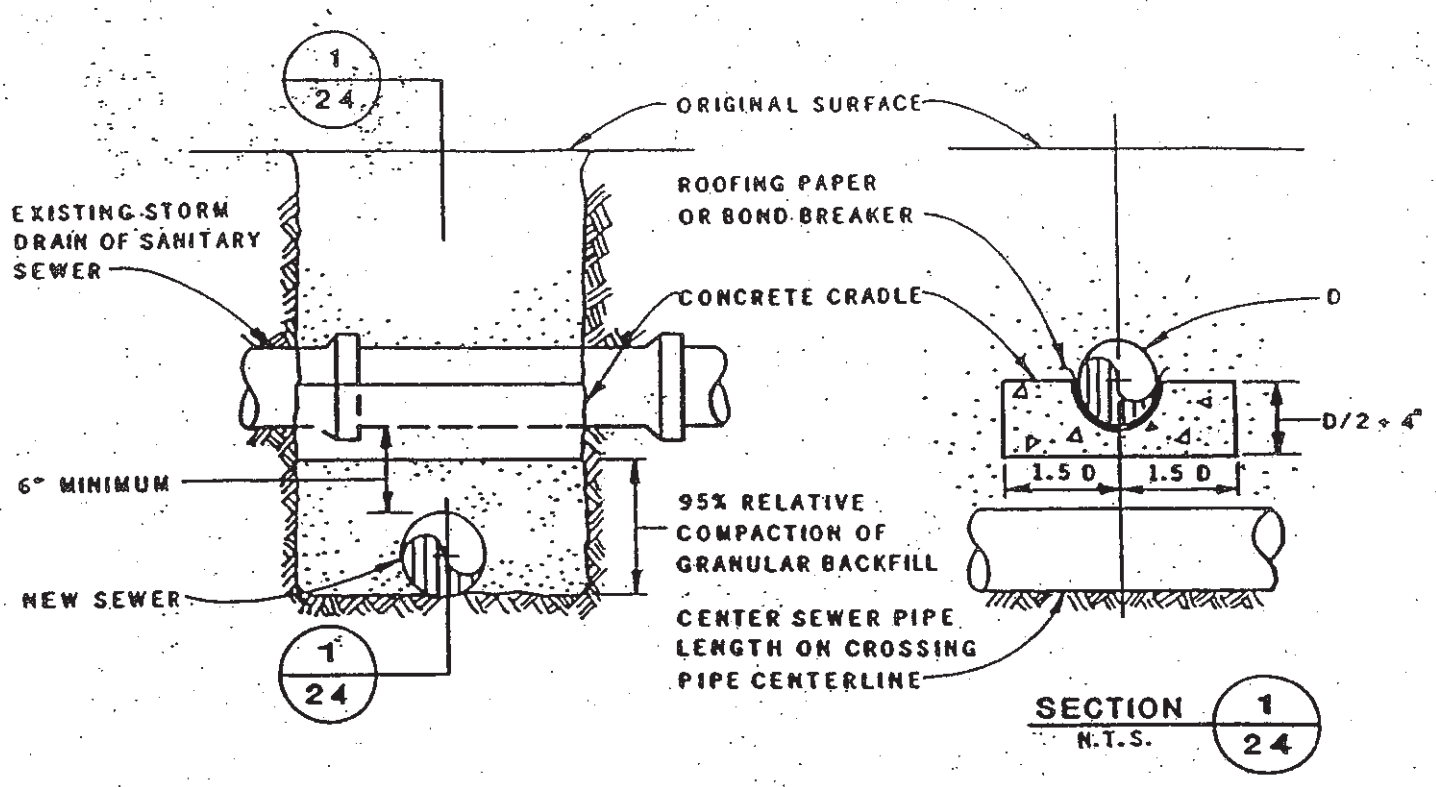
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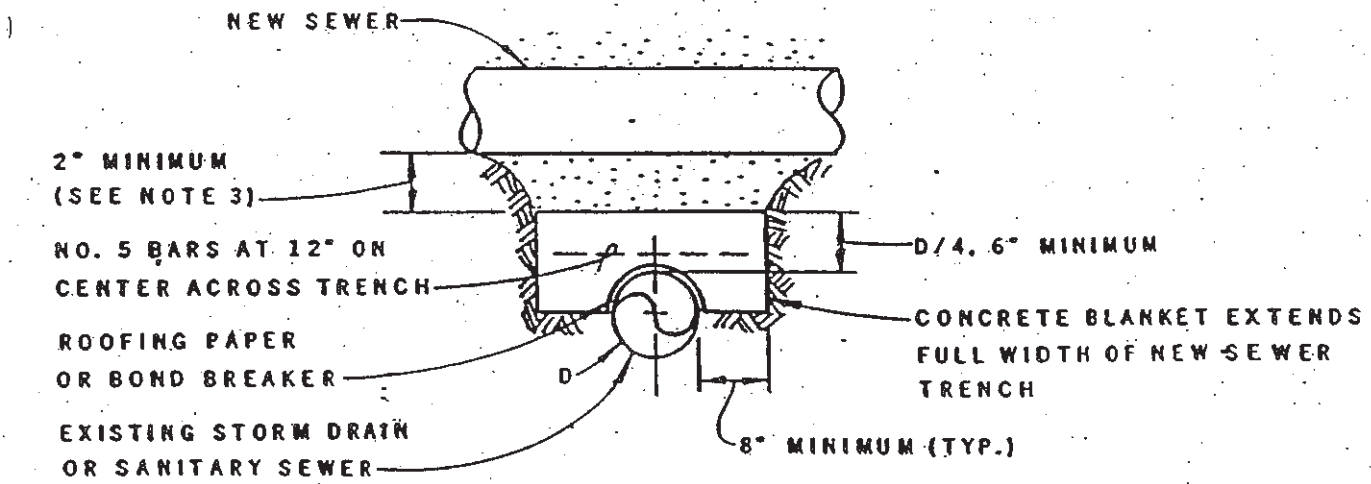
APPROVED:

RCE

DWG NO. 23



SANITARY SEWER CROSSING UNDER EXISTING STORM DRAIN OR SANITARY SEWER



SANITARY SEWER CROSSING OVER EXISTING STORM DRAIN OR SANITARY SEWER

N.T.S.

NOTES

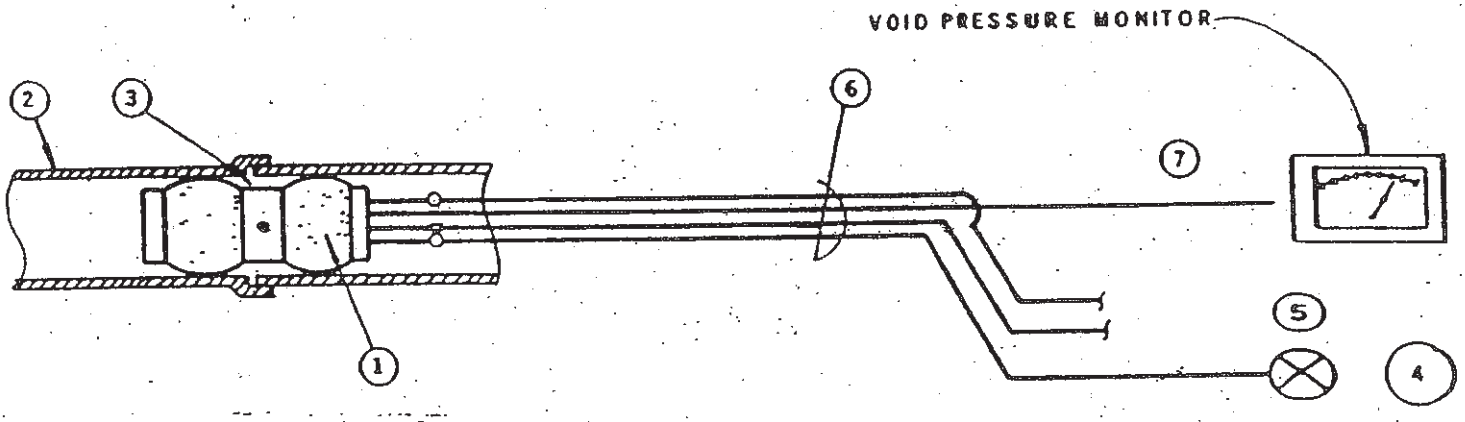
1. SANITARY SEWERS CROSSING WATER MAINS: SEPARATION, CONSTRUCTION, AND PIPE MATERIAL CRITERIA SHALL BE AS REQUIRED BY THE CALIFORNIA DEPARTMENT OF HEALTH SERVICES.
2. MINIMUM CLEARANCE BETWEEN CROSSING PIPELINES SHALL BE 6".
3. IF LESS THAN 2" BEDDING MATERIAL, RAISE CONCRETE BLANKET TO CONTACT LOWER HALF OF SEWER PIPE. PROVIDE ROOFING PAPER OR BOND BREAKER BETWEEN SEWER PIPE AND CONCRETE.

EAST BAY INFILTRATION/INFLOW CORRECTION PROGRAM

STANDARD DETAIL

CLOSE CROSSING DETAIL

DATE:	RECOMMENDED:	APPROVED:	RCE	DWG NO. 24



PIPE JOINT AIR TEST SCHEMATIC

AIR TEST EQUIPMENT - LEGEND

1. JOINT TESTING DEVECE (e.g.: PACKER).
2. SEWER WITH JOINT TO BE TESTED.
3. VOID BETWEEN EXPANDED ENDS OF TESTING DEVECE.
4. AIR SUPPLY (PRESSURIZED).
5. AIR SHUT-OFF VALVE.
6. AIR / WATER / SEALANT HOSES AND ELETRICAL TRANSMISSION LINES.
7. ELECTRICAL TRANSMISSION OF VOID PRESSURE FROM THE VOID.

EAST BAY INFILTRATION/INFLOW CORRECTION PROGRAM

STANDARD DETAIL

PIPE JOINT AIR TEST SCHEMATIC

DATE:	RECOMMENDED:	APPROVED:	RCE	DWG NO. 29

GENERAL NOTES FOR CONCRETE FLAT WORK

1. CURB RAMPS SHALL CONFORM TO THE LATEST EDITION AND REVISED STANDARD PLAN (RSP) OF THE (CALIFORNIA DEPARTMENT OF TRANSPORTATION) STANDARD SPECIFICATIONS AND STANDARD PLAN A88A AND A[illegible]

2. PORTLAND CEMENT CONCRETE FOR SIDEWALK, CURB, DRIVEWAY, GUTTER AND VALLEY GUTTER SHALL BE MINOR CONCRETE CONFORMING TO THE REQUIREMENTS OF SECTION 90-2 "MINOR CONCRETE" OF THE (CALIFORNIA DEPARTMENT OF TRANSPORTATION) STANDARD SPECIFICATIONS. NO BAGGED MIX IS PERMITTED.

3. BUS PAD CONCRETE SHALL BE DESIGNED WITH A MINIMUM COMPRESSIVE STRENGTH OF 3,500 PSI AND SHALL BE SAMPLED (3 CYLINDERS REQ'D) AND TESTED.

4. EXISTING SUBGRADE SURFACE SHALL BE RE-GRADED (IF NECESSARY) AND RE-COMPACTED (MIN 95% RELATIVE COMPACTION) TO CONFORM TO THE GRADES SHOWN ON THE PLANS.

5. NEW CONCRETE WORK SHALL MATCH EXISTING IN FINISH, SCORE PATTERN, AND COLOR, OR AS SHOWN ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
   a) ROSE COLORED CONCRETE SHALL CONTAIN 6 POUNDS OF DAVIS #160 (ROSE) PER CUBIC YARD.
   b) ALL OTHER CONCRETE SHALL CONTAIN 1.5 POUND OF LAMPBLACK PER CUBIC YARD.

6. NO ADMIXTURES SHALL BE USED WITHOUT APPROVAL OF THE ENGINEER.

7. CURBS, SIDEWALKS, DRIVEWAYS, AND CURB RAMPS SHALL HAVE FORMS REMOVED AND BE BACKFILLED WITHIN 3 DAYS AFTER PLACING CONCRETE. CONCRETE SHALL BE ALLOWED TO CURE FOR AT LEAST 48 HOURS PRIOR TO BACKFILLING.

8. MAXIMUM SLUMP OF FRESH CONCRETE PERMITTED IN THESE ITEMS SHALL BE 4 INCHES. SLUMP SHALL BE DETERMINED BY EITHER ASTM C-143 OR CALIFORNIA TEST METHOD NO. 520 AT THE ENGINEER'S DISCRETION. CONCRETE SHALL BE TRANSPORTED IN TRUCK MIXERS OR AGITATORS AND DISCHARGED WITHIN 70 MINUTES OF LEAVING THE PLANT.

9. WEAKENED PLANE JOINTS AT LEAST 1-1/2 INCHES DEEP AND 1/8 INCHES WIDE SHALL BE PLACED AT 10 FEET MAXIMUM SPACING.

10. EXPANSION JOINT FILLER FOR CONCRETE (BITUMINOUS TYPE) MUST BE IN COMPLIANCE WITH ASTM D 994.

11. ALL NEW CURB, SIDEWALK, VALLEY GUTTER AND DRIVEWAYS CONSTRUCTED ADJACENT TO EXISTING CONCRETE CURB OR SIDEWALK SHALL BE DOWELLED TO THE EXISTING CONCRETE. THE DOWELS SHALL BE #4 REBAR, 18 INCHES LONG AT 18 INCHES MAXIMUM SPACING. DOWELS SHALL BE EMBEDDED A MINIMUM OF 8-INCHES IN A 5/8 INCH DRILLED HOLE (EXIST. CONC.).

12. SIDEWALK SHALL BE CONSTRUCTED WITH EXPANSION JOINTS AT EACH BEGINNING OF CURVE (BC) AND END OF CURVE (EC).

13. CURB AND GUTTER, SIDEWALKS AND DRIVEWAYS SHALL BE GIVEN A MEDIAN BROOM FINISH. THE SURFACE SHALL FIRST BE GIVEN A FLOATED FINISH AND FINAL TROWELING SHALL BE DONE WITH A STEEL TROWEL. THE FINISHED SURFACE SHALL BE FREE OF ALL TROWEL MARKS AND SHALL BE UNIFORM IN TEXTURE AND APPEARANCE, BROOM TEXTURE SHALL BE IN THE LONGITUDINAL DIRECTION.

14. CLASS 2 AGGREGATE BASE (CL 2 AB) SHALL CONFORM TO THE CALTRANS STANDARD SPECIFICATIONS (LATEST EDITION) AND SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% RELATIVE COMPACTION.

15. EXISTING ASPHALT CONCRETE SHALL BE SAWCUT, REMOVED AND RECONSTRUCTED FOR A MINIMUM OF 2-FEET WITHIN EDGES OF CONCRETE WORK. HOT MIX ASPHALT SHALL BE A MINIMUM THICKNESS OF 8" AND CL 2 AB SHALL MATCH EXISTING THICKNESS. AS APPROVED BY THE CITY ENGINEER. SEE PLAN 8148 "CURB AND GUTTER RETROFIT" FOR ADDITIONAL REQUIREMENTS.

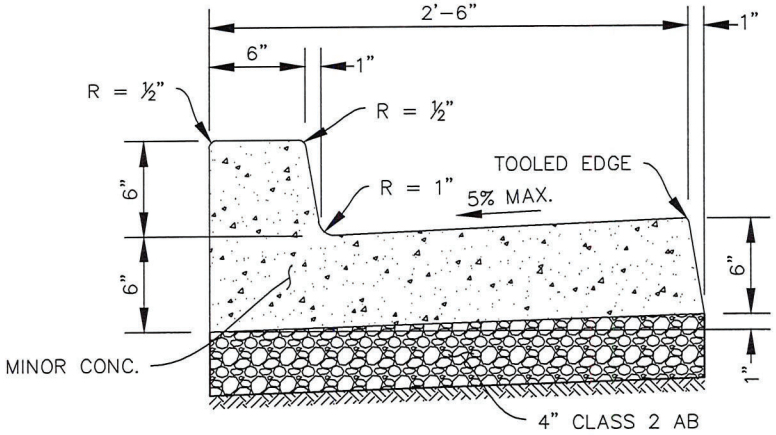
CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

STANDARD DETAIL
CONCRETE WORK NOTES

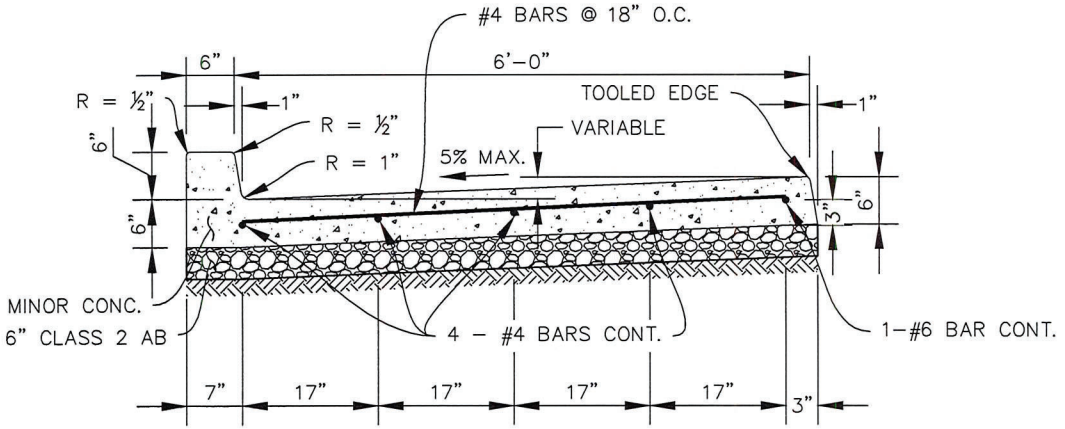
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SUPERVISING CIVIL ENGINEER R.C.E. 64582

APPROVED: [signature] DATE: 2/28/17
MANAGER OF ENGINEERING R.C.E. 66014

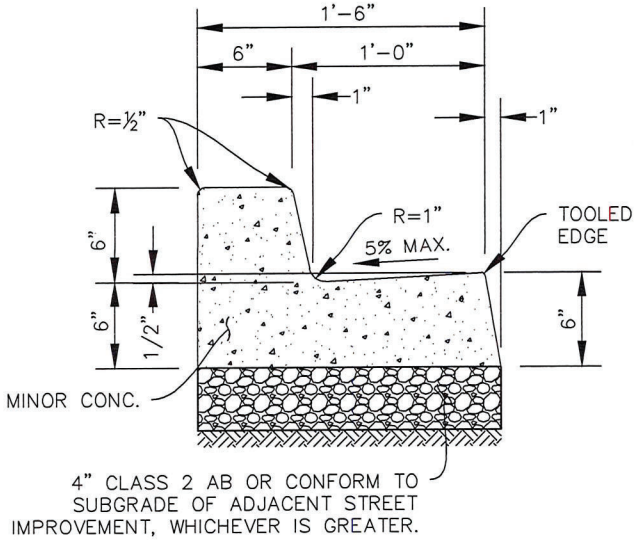
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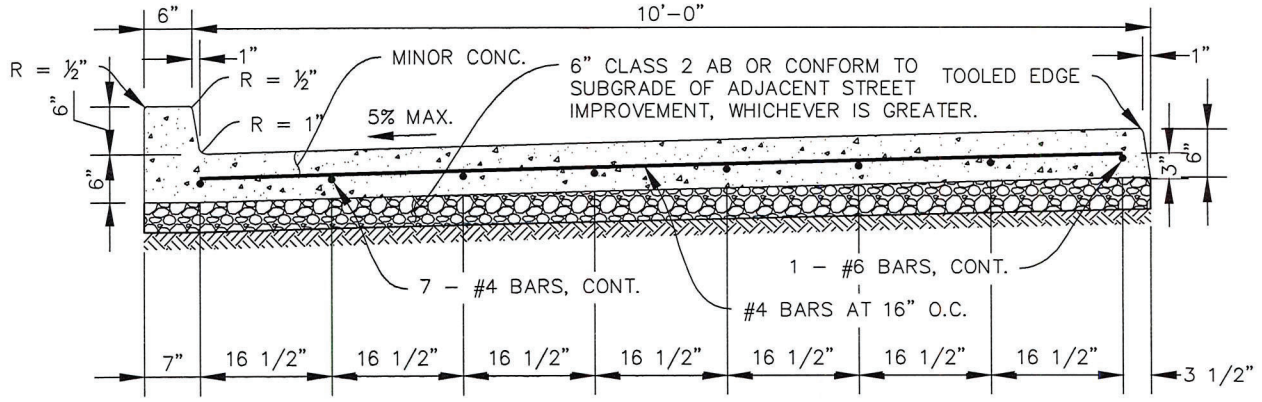
STANDARD CURB AND GUTTER DETAIL



CURB AND 6 FOOT GUTTER DETAIL



CURB AND 1 FOOT GUTTER DETAIL



CURB AND 10 FOOT GUTTER DETAIL

NOTE:
1. FOR ADDITIONAL REQUIREMENTS, SEE PLAN 8144, "CONCRETE WORK NOTES."

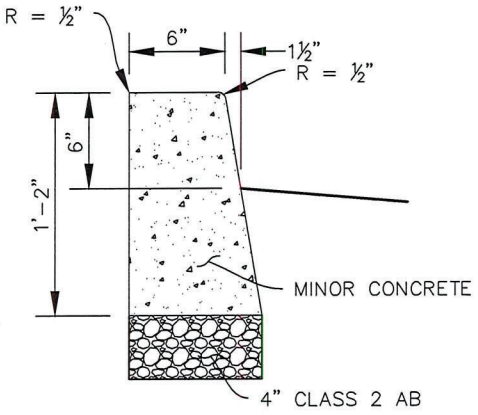
STANDARD DETAIL
CURB AND GUTTER

SUBMITTED: Don Ruby — DATE: 2/27/17
SUPERVISING CIVIL ENGINEER — R.C.E. 64582

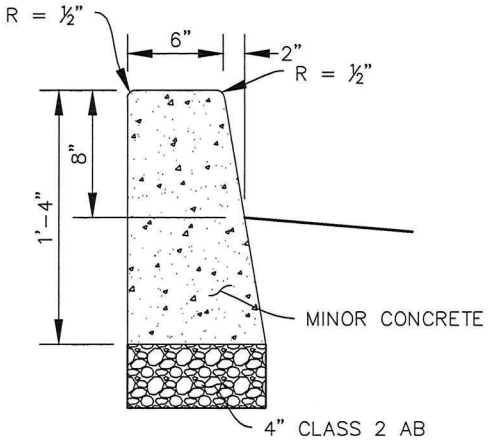
APPROVED: — DATE: 2/28/17
MANAGER OF ENGINEERING — R.C.E. 66014

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

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STANDARD 6" VERTICAL CURB DETAIL



STANDARD 8" VERTICAL CURB DETAIL

NOTE:
1. FOR ADDITIONAL REQUIREMENTS, SEE PLAN 8144, "CONCRETE WORK NOTES."

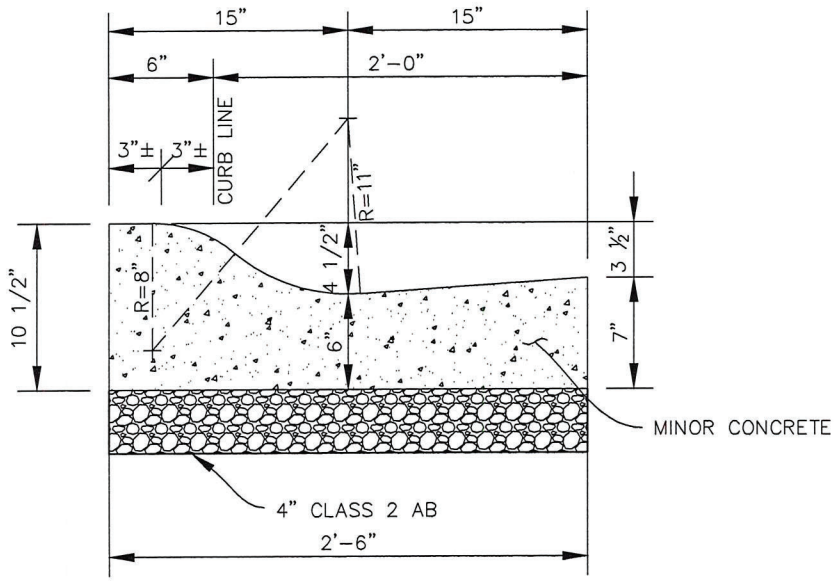
STANDARD DETAIL
VERTICAL CONCRETE CURB

SUBMITTED: Don Zerby — SUPERVISING CIVIL ENGINEER — DATE: 2/27/17 — R.C.E. 64582

APPROVED: — MANAGER OF ENGINEERING — DATE: 2/28/17 — R.C.E. 66014

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

DESIGN:	HEI	DATE:	01/26/17	PLAN:	8146
DRAWN:	HEI	SCALE:	N.T.S.	FILE:	20B-158
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ROLL TYPE DETAIL

NOTE:
1. TO BE USED ONLY WITH SPECIAL PERMISSION FROM THE CITY ENGINEER.
2. FOR ADDITIONAL REQUIREMENTS, SEE PLAN 8144, "CONCRETE WORK NOTES."

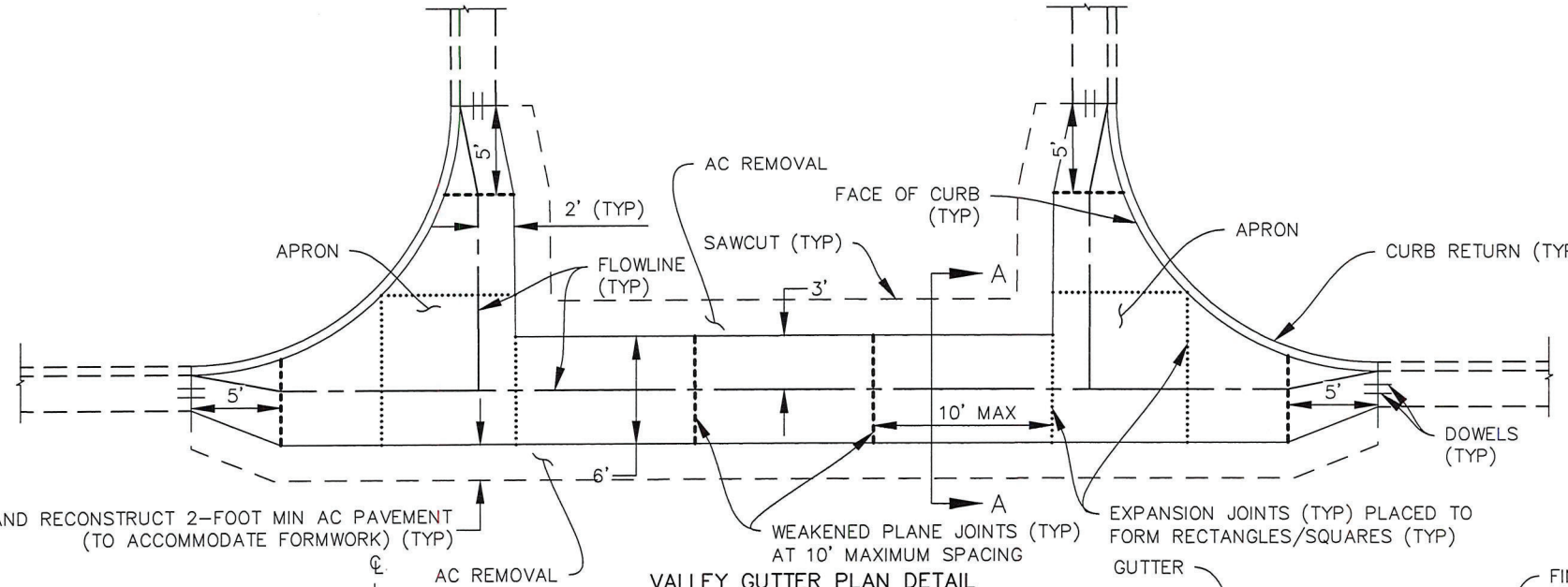
STANDARD DETAIL
ROLLED CURB

SUBMITTED: Don Irby — SUPERVISING CIVIL ENGINEER — DATE: 2/27/17 — R.C.E. 64582

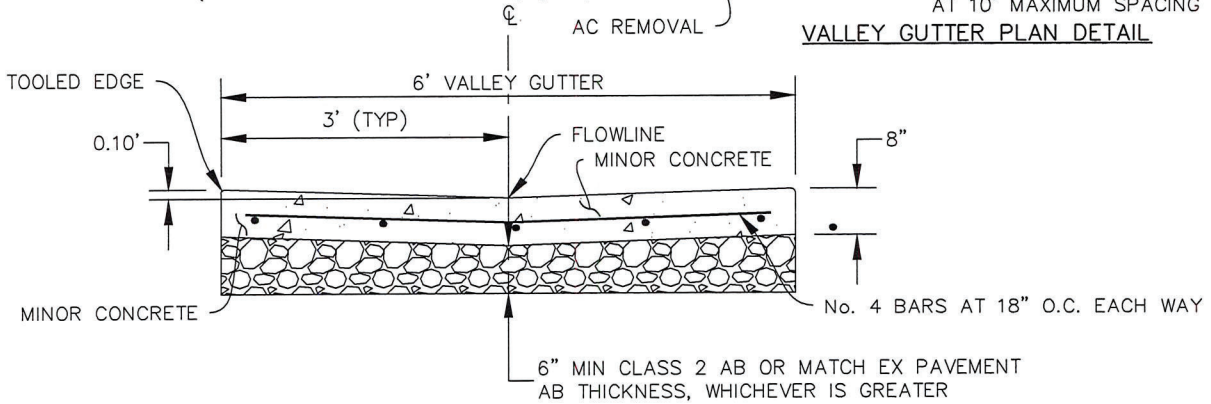
APPROVED: — MANAGER OF ENGINEERING — DATE: 2/28/17 — R.C.E. 66014

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

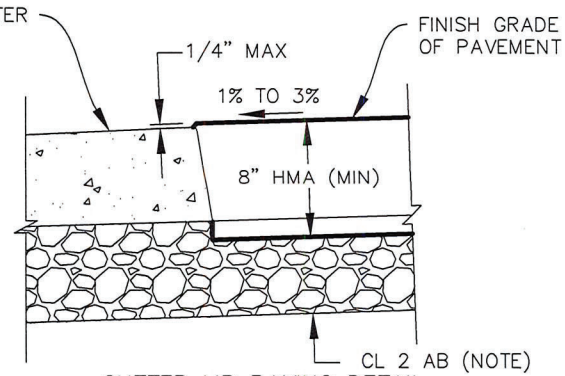
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DRAWN:	HEI	SCALE:	N.T.S.	FILE:	20B-159
CHECK:	MS	BOOK:		SHEET:	1 OF 1



VALLEY GUTTER PLAN DETAIL



SECTION A-A



GUTTER LIP PAVING DETAIL

NOTE:
1. FOR ADDITIONAL REQUIREMENTS, SEE PLAN 8144, "CONCRETE WORK NOTES."

NOTE:
1. PAVEMENT SECTION SHALL BE AS APPROVED BY THE CITY ENGINEER. LAYERS SHALL NOT BE LESS THAN THE EXISTING THICKNESS.

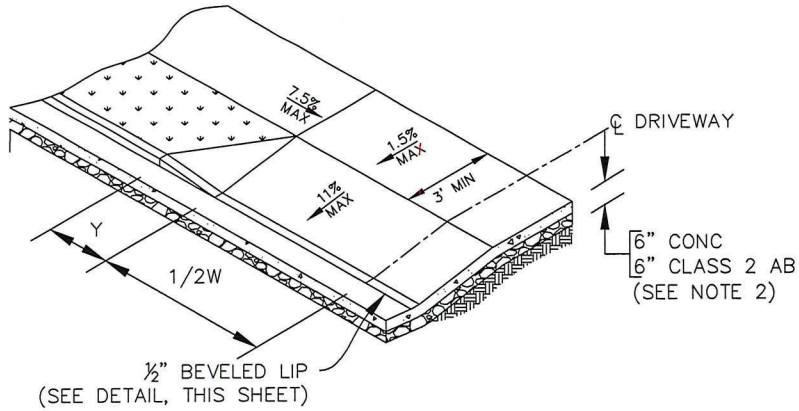
STANDARD DETAIL
VALLEY GUTTER

SUBMITTED: Dan Ruby — DATE: 2/27/17
SUPERVISING CIVIL ENGINEER — R.C.E. 64582

APPROVED: — DATE: 2/28/17
MANAGER OF ENGINEERING — R.C.E. 66014

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

DESIGN: HEI	DATE: 01/26/17	PLAN: 8149
DRAWN: HEI	SCALE: N.T.S.	FILE: 20B-161
CHECK: MS	BOOK:	SHEET: 1 OF 1

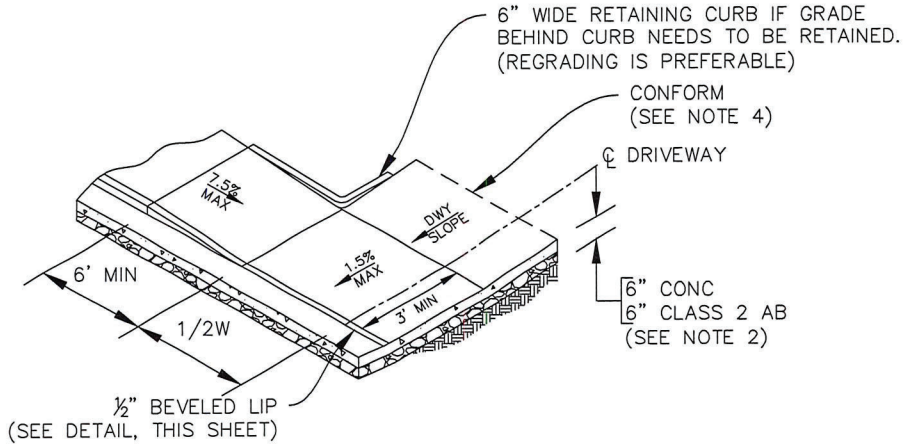


DRIVEWAY WITH SEPARATED SIDEWALK

W=DRIVEWAY WIDTH (SEPARATED SIDEWALK)

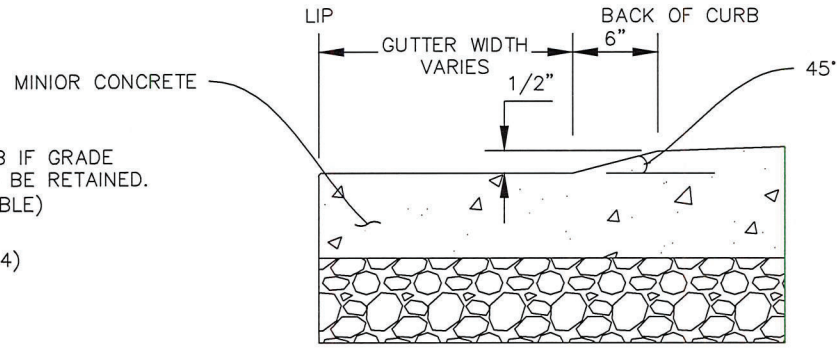
NOTES:

1. REFER TO GENERAL NOTES FOR CONCRETE WORK.
2. RESIDENTIAL DRIVEWAYS SHALL BE 6 INCHES THICK PORTLAND CEMENT CONCRETE (PCC). COMMERCIAL AND INDUSTRIAL DRIVEWAYS SHALL BE 6 INCHES THICK REINFORCED CONCRETE. REINFORCEMENT SHALL BE 6"X6" WELDED WIRE FABRIC, #10 GAUGE MESH OR #4 BARS AT 18 INCH O.C. EACH WAY. THE REQUIRED STRUCTURAL SECTION FOR ANY DRIVEWAY SHALL BE CONTINUOUS FROM THE CURB TO THE BACK OF SIDEWALK.
3. DEPTH OF GUTTER FLOWS SHALL BE CALCULATED AND COMPARED TO PROPOSED SIDEWALK ELEVATIONS DURING DESIGN TO ENSURE GUTTER FLOWS ARE CONTAINED AND RUNOFF WITHIN THE PUBLIC RIGHT OF WAY DOES NOT DRAIN ONTO PRIVATE PROPERTY.
4. RETAINING CURBS AND DRIVEWAY CONFORMS AS REQUIRED.
5. FOR ADDITIONAL REQUIREMENTS, SEE PLAN 8144, "CONCRETE WORK NOTES."



DRIVEWAY WITH MONOLITHIC SIDEWALK

W=DRIVEWAY WIDTH (MONOLITHIC SIDEWALK)



BEVELED LIP

TABLE OF DRIVEWAY DIMENSIONS		
Dimension	Commercial & Industrial	Residential
Y	5' MIN	2' MIN
W	12' MIN	8' MIN

STANDARD DETAIL
DRIVEWAY

SUBMITTED: Dan Zarb — SUPERVISING CIVIL ENGINEER — DATE: 2/27/17 — R.C.E. 64582

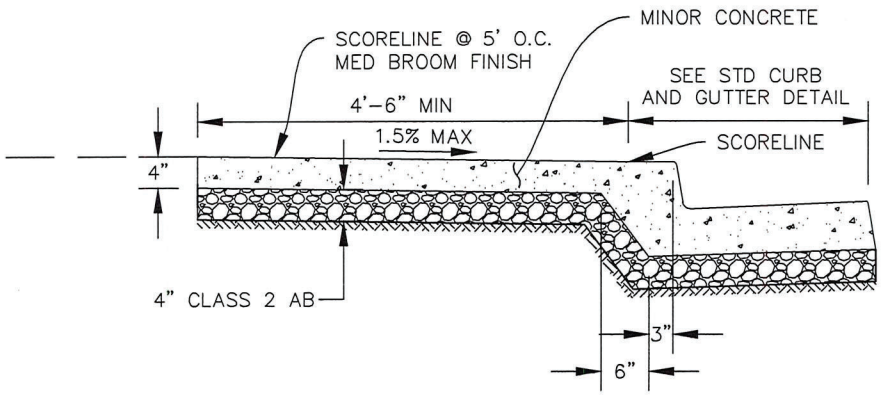
APPROVED: — MANAGER OF ENGINEERING — DATE: 2/28/17 — R.C.E. 66014

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

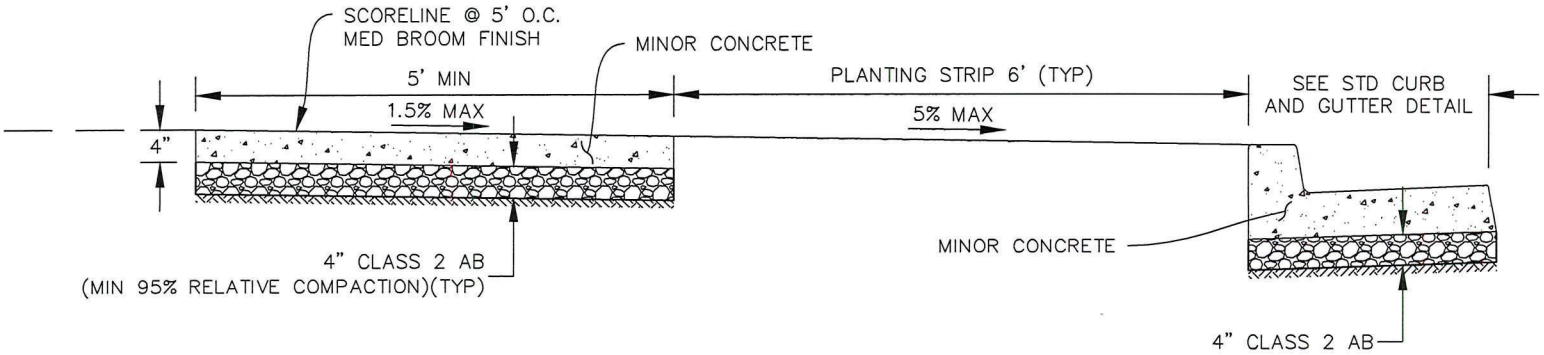
DESIGN: HEI
DRAWN: HEI
CHECK: MS

DATE: 01/26/17
SCALE: N.T.S.
BOOK:

PLAN: 8151
FILE: 20B-163
SHEET: 1 OF 1



STANDARD SIDEWALK DETAIL



STANDARD SIDEWALK WITH PLANTING STRIP DETAIL

NOTE:
1. FOR ADDITIONAL REQUIREMENTS, SEE PLAN 8144, "CONCRETE WORK NOTES."

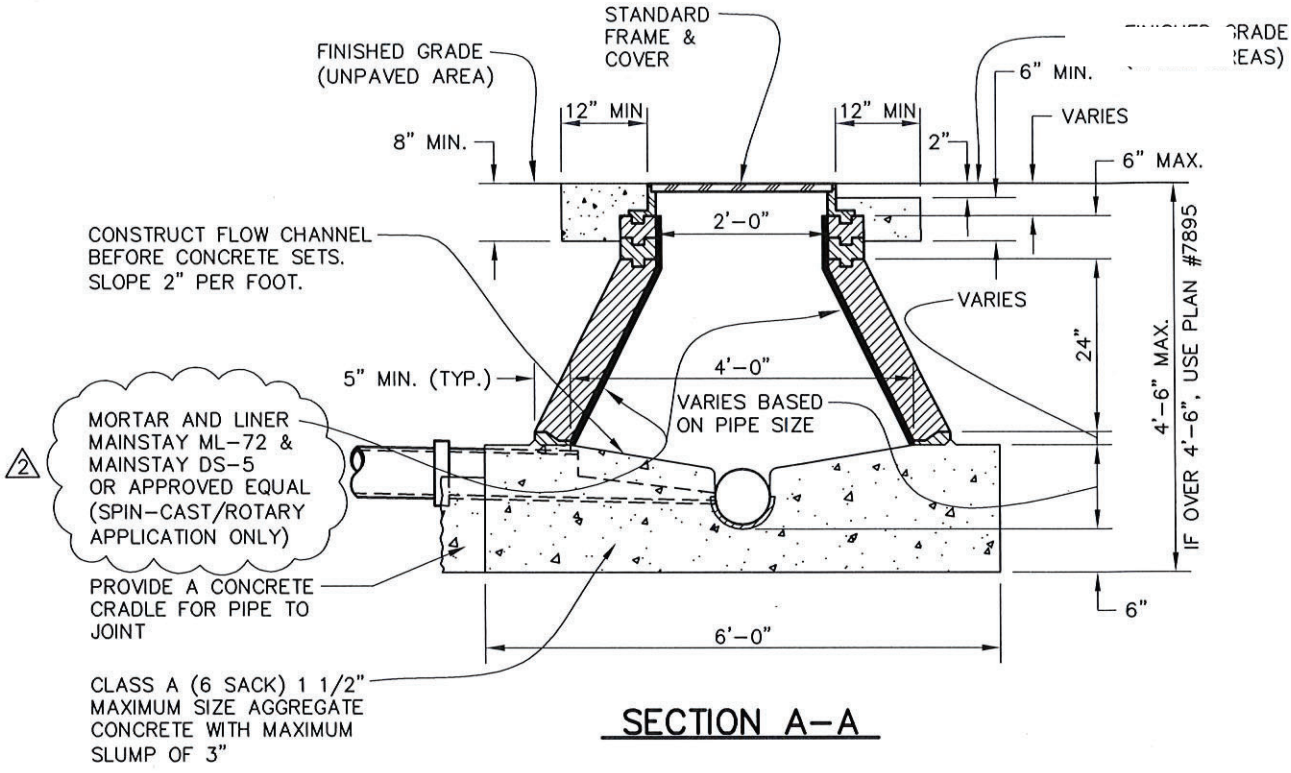
STANDARD DETAIL
SIDEWALK

SUBMITTED: Don Dod — SUPERVISING CIVIL ENGINEER — DATE: 2/27/17 — R.C.E. 64582

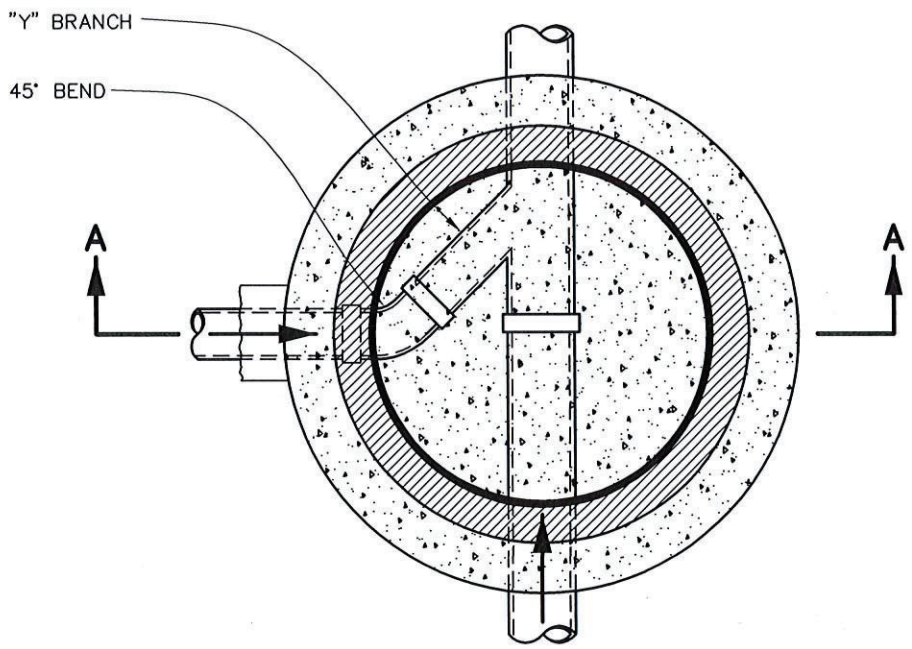
APPROVED: — MANAGER OF ENGINEERING — DATE: 2/28/17 — R.C.E. 66014

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

DESIGN:	HEI	DATE:	01/26/17	PLAN:	8153
DRAWN:	HEI	SCALE:	N.T.S.	FILE:	20B-165
CHECK:	MS	BOOK:		SHEET:	1 OF 1



SECTION A-A



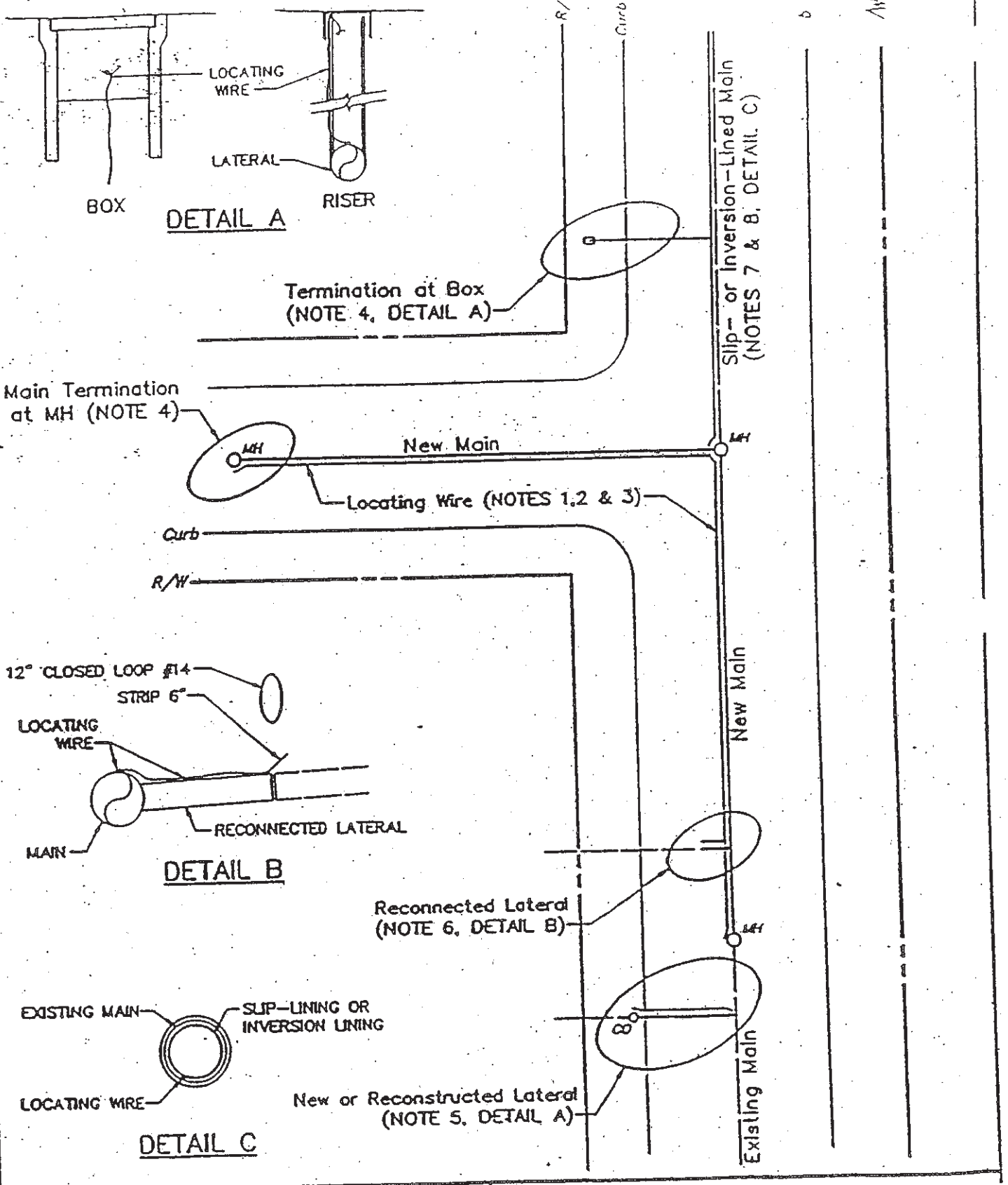
PLAN

2 4/20/15 ADDED MORTAR & LINER
1 10/8/08 UPDATE AND REVISED TITLE BLOCK

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

STANDARD DETAIL SHALLOW PRECAST CONCRETE MANHOLE

SUBMITTED: _____ SUPERVISING CIVIL ENGINEER	DATE: 5/12/15 R.C.E. 54937 EXP. 6/30/16				
APPROVED: _____ MANAGER OF ENGINEERING	DATE: 5/12/15 R.C.E. 64314 EXP. 6/30/15	DESIGN: JR DRAWN: MS CHECK:	DATE: 2/97 SCALE: N.T.S. BOOK:	PLAN: 6653 FILE: 20-B-110	



CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

LOCATING WIRE FOR SANITARY SEWER AND STORM DRAIN SYSTEMS

SUBMITTED:	DATE:	DESIGN: WOH	DATE: 4/68	PLAN: 6905
ASSISTANT CITY ENGINEER	R.C.E. 23,818 EXP. 12/31/89	DRAWN: lfm	SCALE: none	
APPROVED:	DATE:			
	26,573			

LOCATING WIRE FOR SANITARY SEWER AND STORM DRAIN SYSTEMS

GENERAL NOTES

1. FOR LATERALS USE AVG. NO. 14 COPPER WIRE TW, BLUE. FOR MAINS USE AVG. NO. 10 COPPER WIRE TW, RED.

2. ALL WIRE SPLICES WILL BE SOLDERED AND WRAPPED WITH TAC-TAPE OR AQUA SEAL OR EQUAL. SPLICES SHALL THEN BE WRAPPED WITH ELECTRICAL TAPE. COMPRESSION FITTING MAY BE USED IN PLACE OF SOLDERING.

3. THE LOCATING WIRE SHALL BE STRAPPED TO THE TOP OF THE MAIN AND LATERALS AT INTERVALS SUFFICIENT TO ENSURE THAT THE LOCATING WIRE REMAINS ON TOP OF THE PIPE.

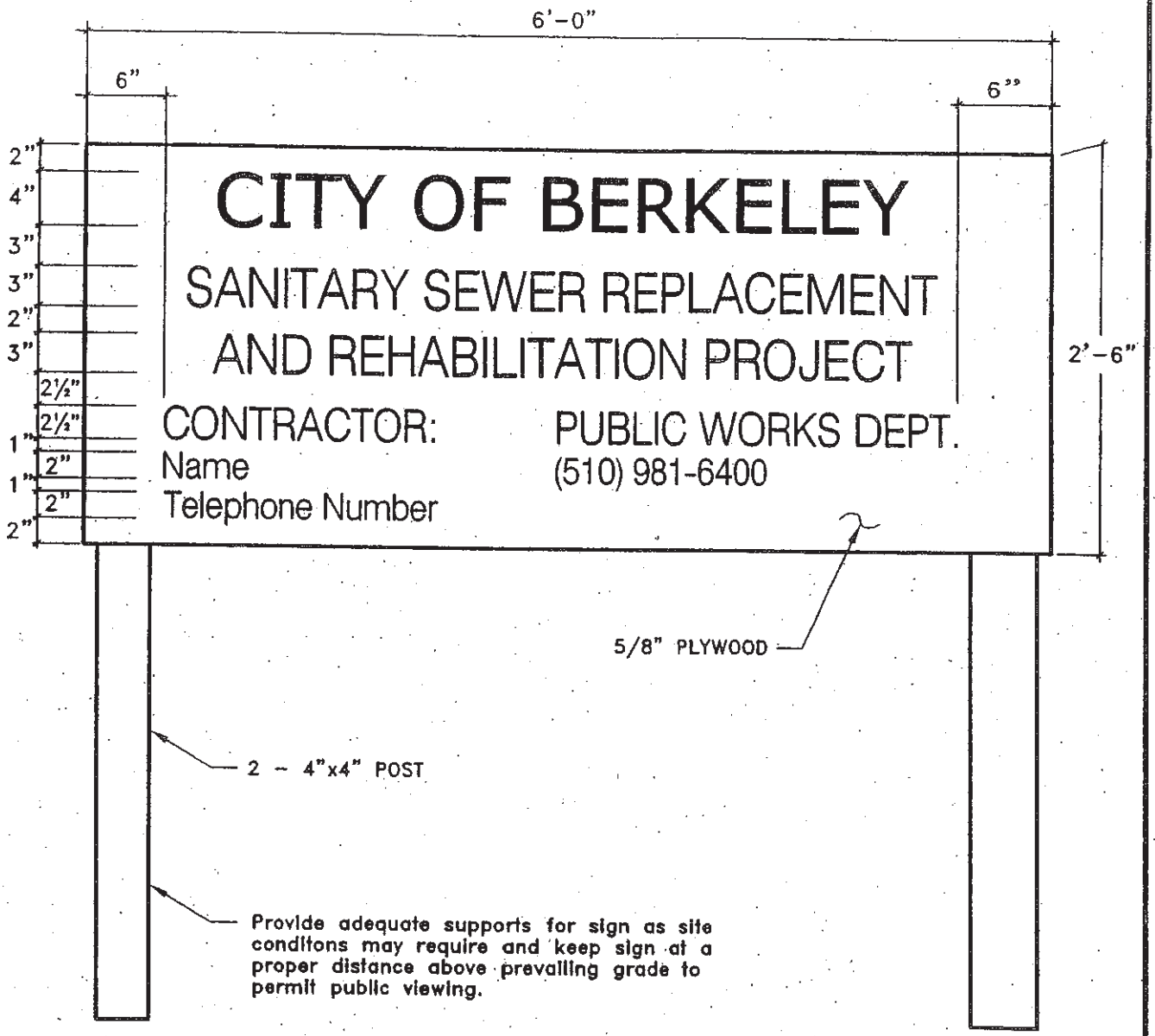
4. TERMINATE LOCATING WIRES FOR ALL NEW SANITARY SEWER AND STORM SYSTEMS IN A BOX OR AT A CLEANOUT RISER AT LOCATIONS SHOWN ON PROJECT DRAWINGS OR AS DIRECTED BY THE RESIDENT ENGINEER (SEE DETAIL A). THERE SHALL BE A MINIMUM OF ONE STATION PER BLOCK. THE LOCATING WIRE AT A MANHOLE AT THE END OF A MAIN SHALL BE STRIPPED 6 INCHES AND TERMINATED IN THE SOIL.

5. WHEN A NEW SANITARY SEWER LATERAL IS INSTALLED OR WHEN AN EXISTING LATERAL IS RECONSTRUCTED BY A CONTRACTOR OR CITY CREW, A LOCATING WIRE SHALL BE INSTALLED. THE END OF THE WIRE AT THE MAIN SHALL BE STRIPPED 6 INCHES AND TERMINATED IN THE SOIL. TERMINATE THE END LOCATED AT THE RISER AS SHOWN IN DETAIL A.

6. WHERE A LATERAL IS TO BE RECONNECTED TO A MAIN, A LOCATING WIRE SHALL BE TERMINATED AT THE END OF THE LATERAL RECONNECTION (SEE DETAIL B). IN ADDITION, INSTALL A SEPARATE 12-INCH CLOSED LOOP OF NO. 14 WIRE AT THE END OF THE STUB AND ABOUT A FOOT ABOVE IT; THIS LOOP CAN BE LOCATED USING A PIPE LOCATOR.

7. WHEN SLIP-LINING IS TO BE USED THE LOCATING WIRE IS SECURED TO THE LEADING END OF THE LINER. LOCATING WIRE SHALL THEN BE INSERTED SIMULTANEOUSLY WITH THE SLIP-LINER.

8. WHEN AN INVERSION LINING IS TO BE USED THE LOCATING WIRE SHALL BE PLACED INTO THE EXISTING MAIN PRIOR TO THE INSERTION OF THE LINER.



NOTES:

1. LETTERS ARE TO BE PRINTED BLACK ACRYLIC LATEX FLAT AND ARE TO BE UNIFORMLY APPLIED.
2. BACKGROUND AND ALL OTHER SIGN COMPONENT NOT DESIGNATED ARE PAINTED WHITE ACRYLIC EMULSION LATEX FLAT.

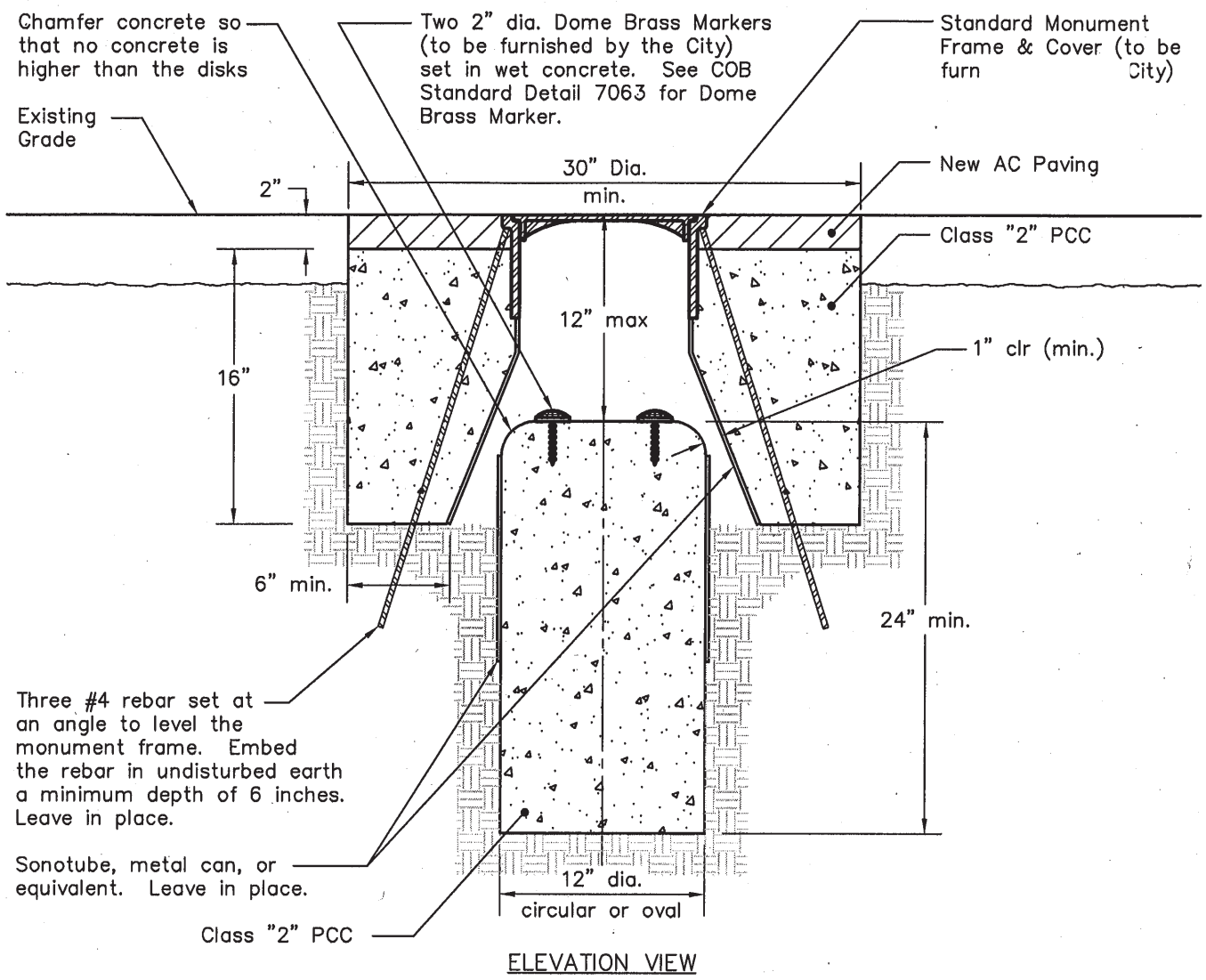
CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

SUBMITTED: DATE: R.C.E.
MANAGER OF ENGINEERING EXP.
APPROVED: DATE: R.C.E.

CONSTRUCTION SITE SIGN
SANITARY SEWER PROJECT

DESIGN: JR | DATE: 8/99
DRAWN: INC | SCALE: N.T.S.
PLAN: 7129

Autodesk\VRC-Proto\SIGN1.dwg [Model] 7-17-02 01:37:13 PM INC1

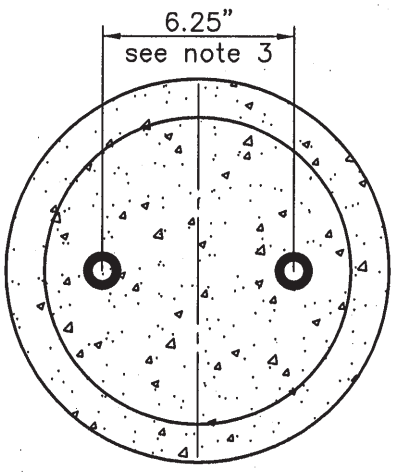


ELEVATION VIEW

NOTES:

1. The existing frame & cover shall be salvaged and returned to the City of Berkeley Corporation Yard.
2. Disks shall be precisely placed in wet concrete from straddler points set by the City Surveyor or his/her designee.
3. This double pin monument is located at the intersection of Haskell Street and Mabel Street, COB Monument No. B0030 and No. B0057.

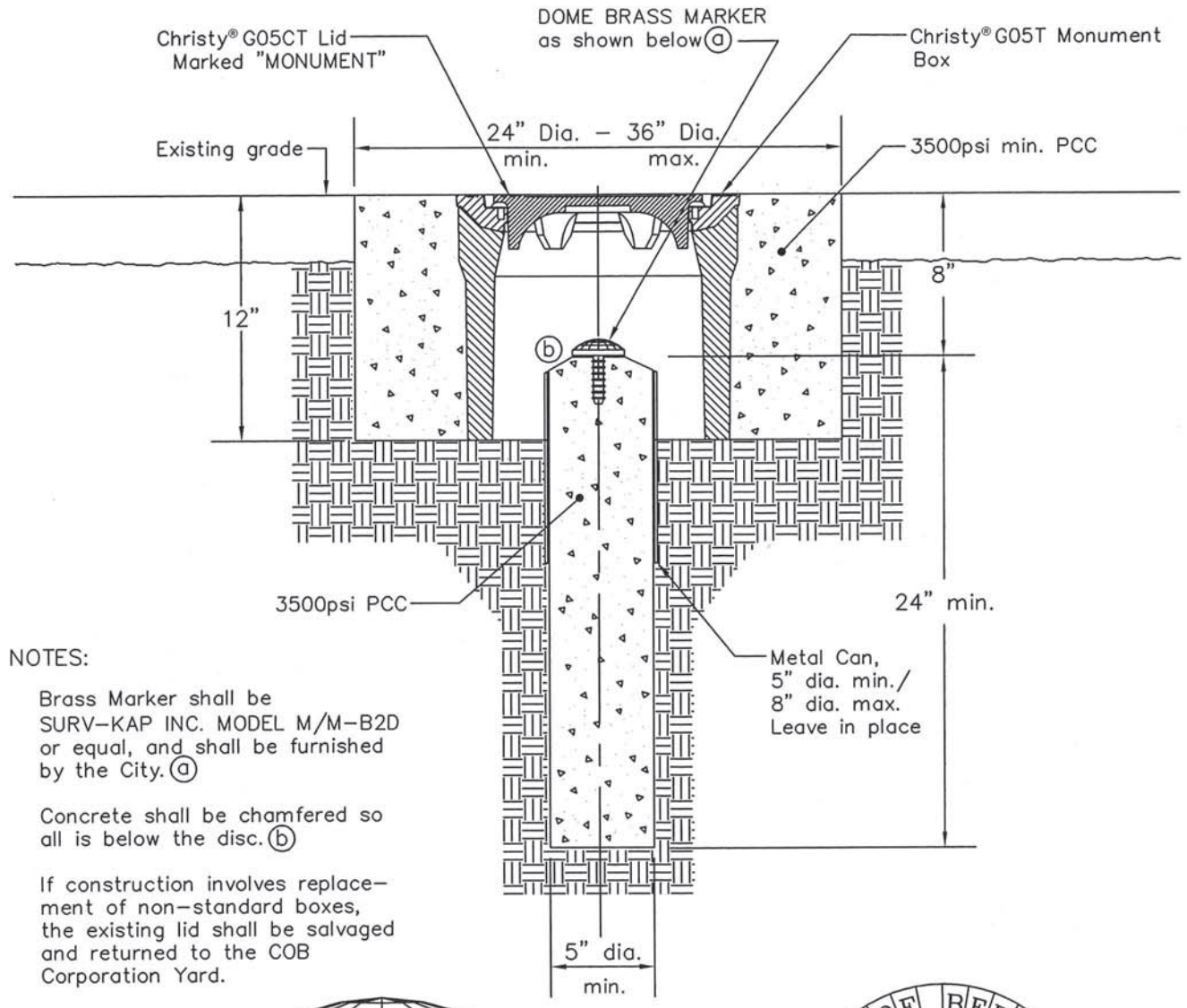
PLAN VIEW



CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

STANDARD DETAIL
DOUBLE PIN CITY MONUMENT

SUBMITTED: K Ewing SUPERVISING CIVIL ENGINEER	DATE: 12/4/09 R.C.E. 54937 EXP. 06/30/10				
APPROVED: MANAGER OF ENGINEERING	DATE: 12/04/09 R.C.E. 23818 EXP. 12/31/09	DESIGN: EC/BB/AK DRAWN: EC CHECK: KE	DATE: 12/09 SCALE: N.T.S. BOOK:	PLAN: 7940 FILE: 20 B-149	

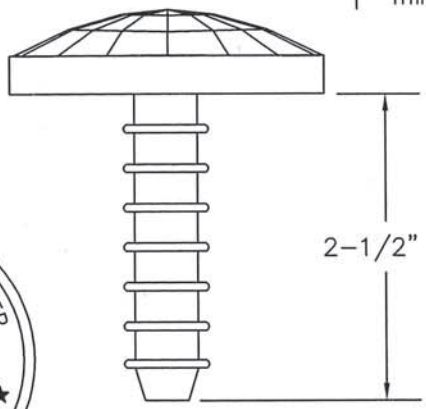


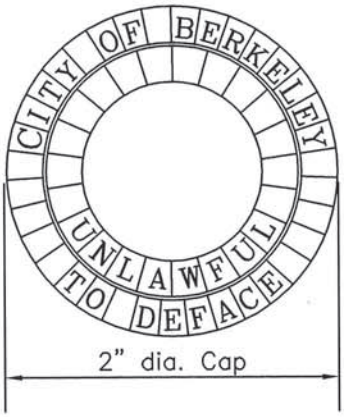
NOTES:

Brass Marker shall be SURV–KAP INC. MODEL M/M–B2D or equal, and shall be furnished by the City. ⓐ

Concrete shall be chamfered so all is below the disc. ⓑ

If construction involves replacement of non–standard boxes, the existing lid shall be salvaged and returned to the COB Corporation Yard.





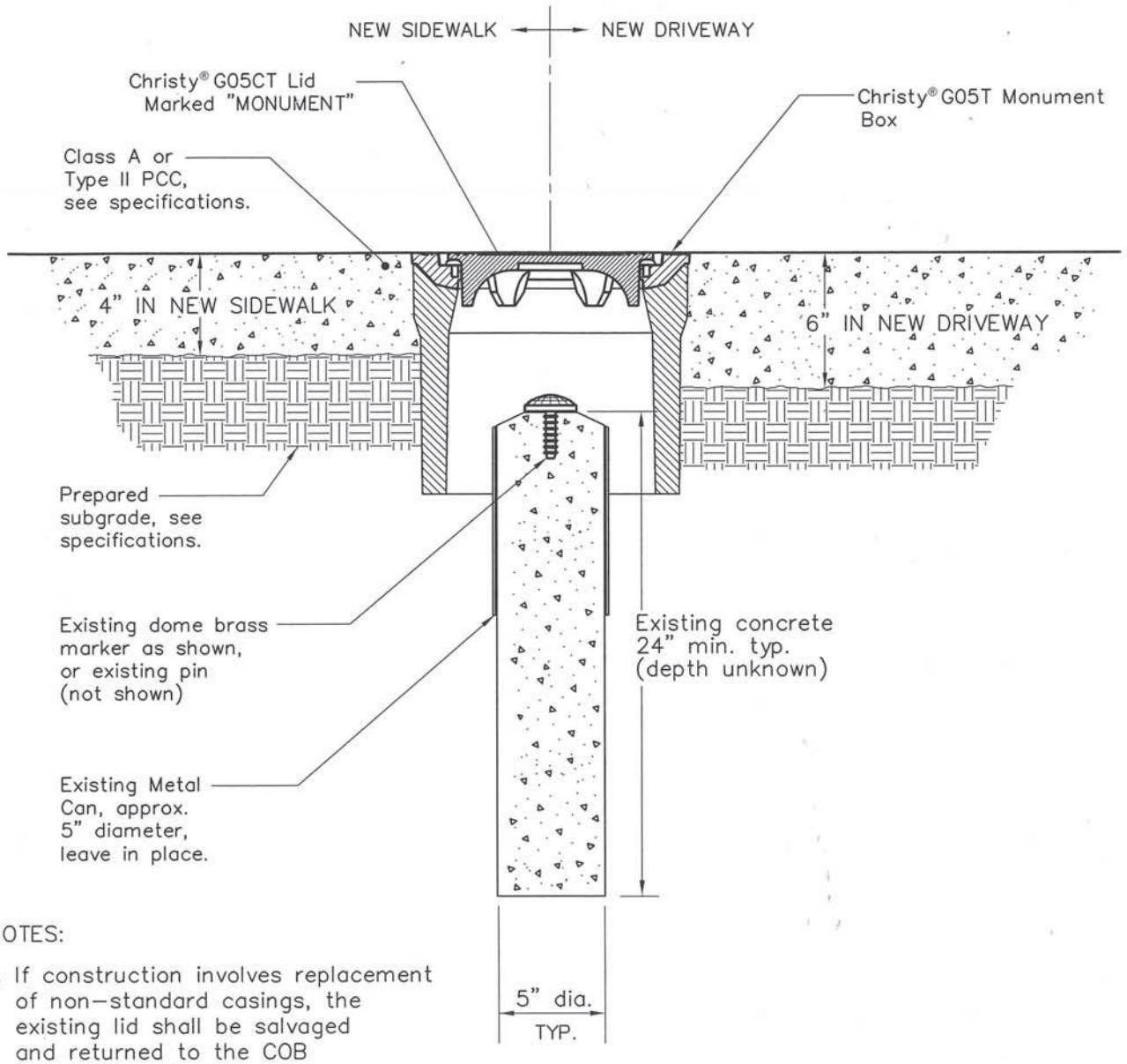


DOME BRASS MARKER

NOTE: This Drawing Supersedes COB Plan 7063, File: 20 B–120 MCT–12/2013

1	DOME BRASS MARKER TO BE FURNISHED BY THE CITY	DATE: 11/2010
2	REVISED DETAIL TO INCLUDE NEW STANDARD CHRISTY® G05T BOX & LID	DATE: 12/2013
3	UPDATE STANDARD SETTING AND REVISED TITLE BLOCK	DATE: 12/2015
4	REVISED STANDARD SETTING TO FULL CONCRETE COLLAR FLUSH w/EX. GRADE	DATE: 11/2017

DESIGN: MCT DRAWN: MCT CHECK: NAP	DATE: 11/2017 SCALE: N.T.S.	PLAN: 8090 FILE: 20–B–153	CITY OF BERKELEY DEPARTMENT OF PUBLIC WORKS STANDARD DETAIL
APPROVED: 11-17-17 CITY ENGINEER	DATE:		STANDARD CITY MONUMENT



NOTES:

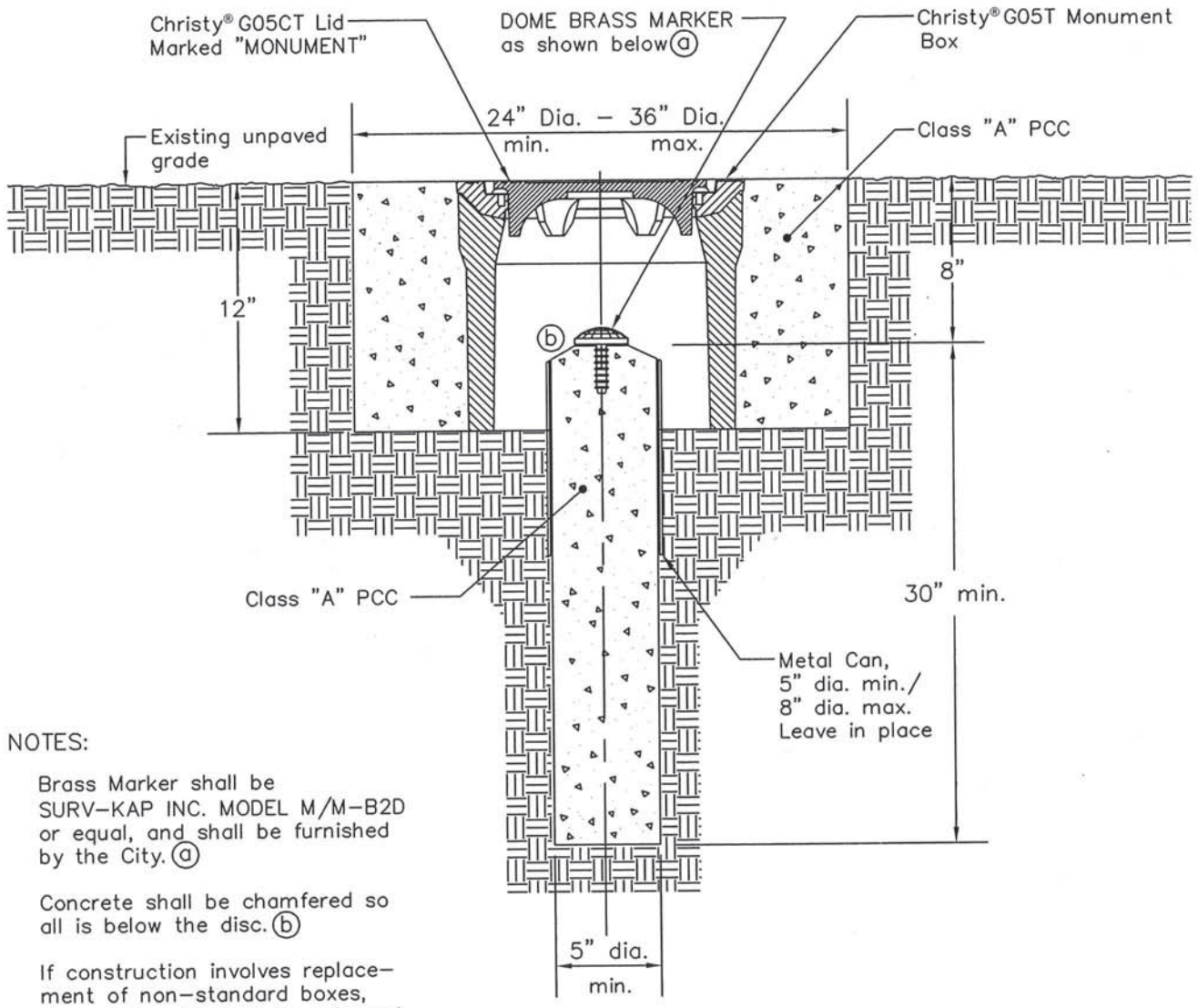
1. If construction involves replacement of non-standard casings, the existing lid shall be salvaged and returned to the COB Corporation Yard.

PROFESSIONAL ENGINEER
SEAN R. ROSE
C64314
EXP. 06/30/17
CIVIL
STATE OF CALIFORNIA

NOTE: This Drawing Supersedes COB Plan 7987, File: 20 B-150 MCT-12/2013

1	DOME BRASS MARKER TO BE FURNISHED BY THE CITY	DATE: 11/2010
2	REVISED DETAIL TO INCLUDE NEW STANDARD CHRISTY® G05T BOX & LID	DATE: 12/2013
3	UPDATE STANDARD SETTING AND REVISED TITLE BLOCK	DATE: 12/2015

DESIGN: EC/MCT DRAWN: EC/MCT CHECK: SRR	DATE: 12/2015 SCALE: N.T.S.	PLAN: 8091 FILE: 20-B-154	**CITY OF BERKELEY** **DEPARTMENT OF PUBLIC WORKS** **STANDARD DETAIL**
APPROVED: _____ 12/23/15 CITY ENGINEER DATE:			**CITY MONUMENT REHAB IN NEW SIDEWALK OR DRIVEWAY**

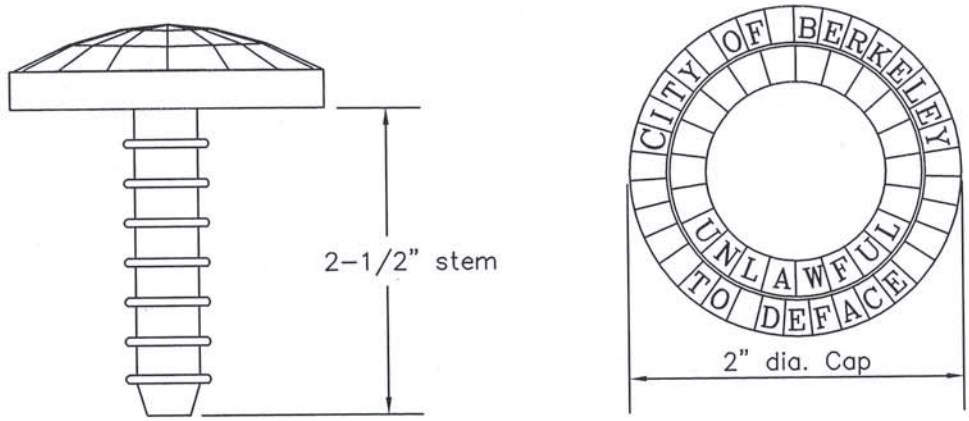


NOTES:

Brass Marker shall be SURV–KAP INC. MODEL M/M–B2D or equal, and shall be furnished by the City. ⓐ

Concrete shall be chamfered so all is below the disc. ⓑ

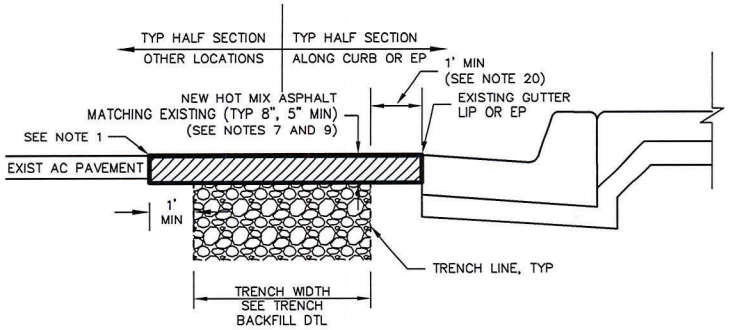
If construction involves replacement of non–standard boxes, the existing lid shall be salvaged and returned to the COB Corporation Yard.



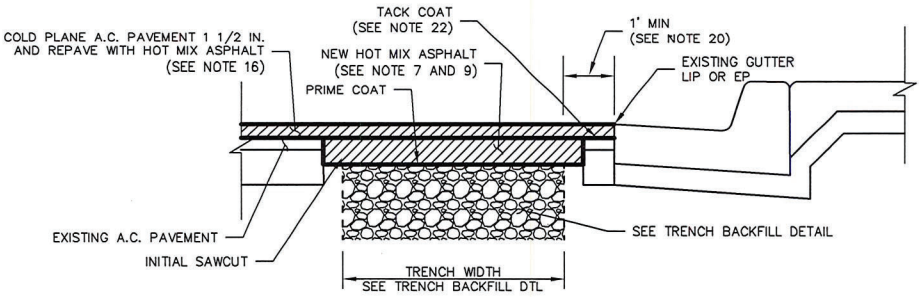
DOME BRASS MARKER

PROFESSIONAL ENGINEER
NISHA A. PATEL
C72491
CIVIL
STATE OF CALIFORNIA

DESIGN: MCT DRAWN: MCT CHECK: NAP	DATE: 11/2017 SCALE: N.T.S.	PLAN: 8179 FILE: 20–B–167	CITY OF BERKELEY DEPARTMENT OF PUBLIC WORKS STANDARD DETAIL
APPROVED: 11-17-17 CITY ENGINEER	DATE:		CITY MONUMENT INSTALLATION IN UNPAVED SURFACE

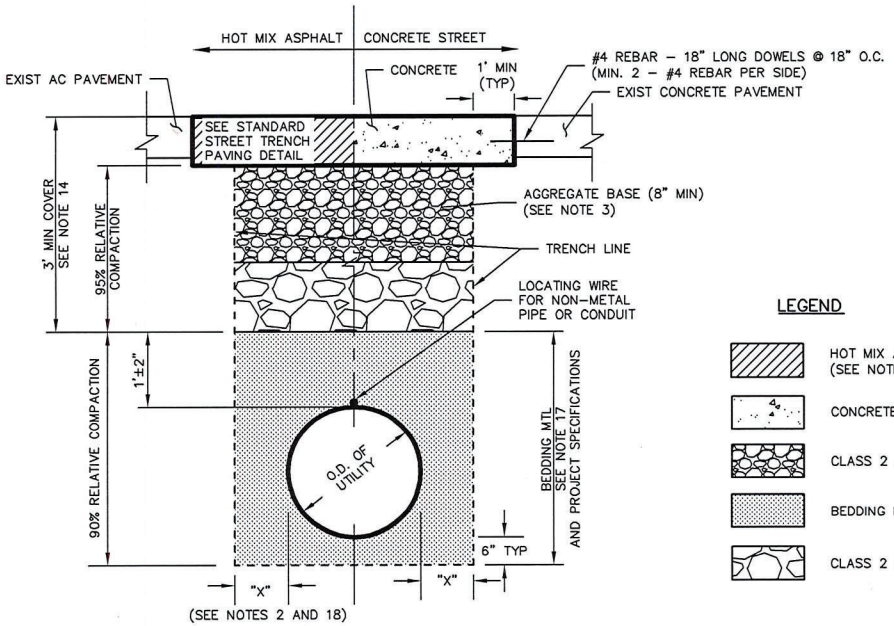


STANDARD STREET TRENCH PAVING DETAIL



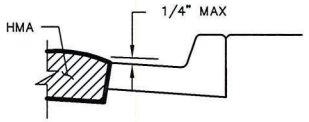
MORATORIUM STREET TRENCH PAVING DETAIL

(SEE NOTE 13 AND 16 FOR MORATORIUM STREETS)



TRENCH BACKFILL DETAIL

TYPICAL HALF SECTIONS



DETAIL A

GUTTER LIP PAVING

LEGEND

- HOT MIX ASPHALT (HMA) PAVING (SEE NOTE 9)
- CONCRETE PAVEMENT
- CLASS 2 AGGREGATE BASE (AB)
- BEDDING MATERIAL (SEE NOTE 17)
- CLASS 2 AGGREGATE BASE (AB)

STANDARD DETAIL
TRENCH EXCAVATION AND SURFACE RESTORATION

SUBMITTED: _____ DATE: 7/6/16
SUPERVISING CIVIL ENGINEER — R.C.E. 64582

APPROVED: _____ DATE: 7/6/16
MANAGER OF ENGINEERING — R.C.E. 66014

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

DESIGN: HEI	DATE: 06/2016	PLAN: 81	
DRAWN: HEI	SCALE:	FILE: 20-B-155	
CHECK:	BOOK:	SHEET: 1 OF 2	

NOTES:

1. TRENCH EXCAVATION IN THE PUBLIC RIGHT OF WAY SHALL CONFORM TO THE CITY OF BERKELEY GENERAL REGULATIONS FOR TRENCH E RFACE RESTORATION IN THE PUBLIC RIGHT OF WAY. CUT THROUGH THE FULL DEPTH OF EXISTING SURFACING TO A NEAT STRAIGHT LINE AT ITSIDE THE TRENCH LINE. RECUT PAVEMENT EDGES DAMAGED DURING CONSTRUCTION TO NEAT LINES PRIOR TO PAVING. APPLY PAINT BINDER (TACK COAT) TO ALL VERTICAL SURFACES IN ACCORDANCE WITH THE LATEST EDITION OF CALTRANS STANDARD SPECIFICATIONS.

2. MINIMUM WIDTH OF TRENCH SHALL BE IN ACCORDANCE WITH THE DIMENSION SHOWN ON THE TRENCH BACKFILL DETAIL. DIMENSIONS "X" IS SHOWN BELOW FOR THE UTILITY "O.D."

UTILITY O.D.	"X" MIN
UNDER 1.0'	0.5'
1.0' TO 4.5'	1.0'
OVER 4.5'	2.0'

3. CLASS 2 AGGREGATE BASE (AB) SHALL BE INSTALLED IMMEDIATELY BELOW THE PAVEMENT SECTION TO BE REPLACED. THE AB QUALITY, GRADATION AND THE METHOD OF INSTALLATION SHALL BE IN CONFORMANCE WITH SECTION 26 OF THE CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION. THE DEPTH OF THE AB SHALL BE IN ACCORDANCE WITH THE TRENCH BACKFILL DETAIL. 95% RELATIVE COMPACTION IS REQUIRED.

4. RELATIVE COMPACTION SHALL BE DETERMINED BY CALIFORNIA TEST NUMBER 231 (NUCLEAR GAUGE) OR APPROVED EQUAL. PERMITTEE SHALL ARRANGE AND PAY FOR THE TEST FOR RELATIVE COMPACTION WHEN ORDERED BY THE ENGINEER. THE TEST SHALL BE PERFORMED BY A QUALIFIED MATERIAL TESTING LABORATORY AND TEST RESULTS BE SUBMITTED TO ENGINEERING FORTY-EIGHT (48) HOURS IN ADVANCE OF PERMANENT PAVING OPERATION.

5. PERMITTEE SHALL PLACE TEMPORARY BITUMINOUS RESURFACING TWO (2) INCHES IN THICKNESS OVER THE COMPACTED BACKFILL AREAS. GREATER THICKNESS MAY BE REQUIRED FOR MAJOR INTERSECTIONS AND OTHER CRITICAL AREAS BY THE ENGINEER AS NECESSARY. STEEL PLATES MAY BE USED AS AN ALTERNATIVE IF APPROVED BY ENGINEER.

6. TEMPORARY BITUMINOUS RESURFACING (CUT-BACK) SHALL BE MECHANICALLY COMPACTED IN PLACE TO A UNIFORM, EVEN SURFACE AND SHALL BE TRUE TO STREET GRADE AND CROSS SECTION. THE PERMITTEE SHALL REGULARLY INSPECT AND MAINTAIN THE TEMPORARY BITUMINOUS RESURFACING UNTIL THE EXCAVATION IS PERMANENTLY PAVED. THE SURFACING SHALL NOT VARY TO MORE THEN 1/2" FROM THE EDGE OF A 10 FOOT STRAIGHT EDGE. UPON NOTIFICATION, THE PERMITTEE SHALL CORRECT THE SURFACE DEFICIENCY WITHIN 48 HOURS. LOOSE ROCKS AND OTHER DEBRIS GENERATED FROM TEMPORARY RESURFACING OPERATIONS SHALL BE IMMEDIATELY REMOVED FROM THE WORKSITE.

7. TEMPORARY BITUMINOUS RESURFACING SHALL BE REMOVED BEFORE PLACEMENT OF FINAL PAVING. FINAL PAVING SHALL BE MINIMUM FIVE (5) INCHES THICK OR SAME AS THE EXISTING PAVEMENT, WHICHEVER IS GREATER. THE PAVEMENT SHALL BE PLACED ON UNDISTURBED PREVIOUSLY COMPACTED BACKFILL AREAS.

8. PAVEMENT OUTSIDE OF THE FINAL CUT LINE DAMAGED BY THE PERMITTEE'S OPERATIONS SHALL BE REMOVED BY SAW-CUTTING IN LINES PERPENDICULAR OR PARALLEL TO THE ORIGINAL TRENCH LINES. NO DIAGONAL CUTS WILL BE PERMITTED.

9. HOT MIX ASPHALT (HMA) SHALL BE TYPE A IN CONFORMANCE WITH SECTION 39 OF THE CALIFORNIA DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS, UNLESS OTHER WISE SPECIFIED IN THE ENCROACHMENT PERMIT CONDITIONS OR AS DIRECTED BY THE PUBLIC WORKS DEPARTMENT. HMA SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.

10. THE TOP 1 1/2" OF HMA SHALL HAVE A MAXIMUM AGGREGATE SIZE OF 1/2" UNLESS OTHERWISE SPECIFIED. THE HMA BENEATH THE TOP LAYER SHALL HAVE A MAXIMUM AGGREGATE SIZE OF 3/4".

11. UPON COMPLETION OF PAVING OPERATIONS THE PERMITTEE SHALL IMMEDIATELY REPLACE ALL PAVEMENT MARKING AND TRAFFIC STRIPING DAMAGED OR REMOVED BY HIS OPERATIONS. PAVEMENT MARKINGS AND TRAFFIC STRIPINGS SHALL BE REPLACED IN KIND OR WITH SUBSTITUTE MATERIAL APPROVED BY THE ENGINEER.

12. WHEN ANY PORTION OF THE CURB AT A LEGAL PEDESTRIAN CROSSWALK OR ANY PORTION OF THE SIDEWALK IN IMMEDIATE CONTACT WITH SUCH CURB IS REMOVED BY THE PERMITTEE OPERATIONS, THE PERMITTEE SHALL CONSTRUCT, AS PART OF HIS REPLACEMENT OPERATIONS, A CURB RAMP AS SHOWN IN CITY OF BERKELEY STANDARD DETAIL NO. 6780.

13. EXCAVATION ON STREETS RECONSTRUCTED OR RESURFACED WITHIN THE LAST 5 YEARS WILL NOT BE PERMITTED EXCEPT FOR CONDITIONS ENUMERATED IN THE CITY OF BERKELEY GENERAL REGULATIONS AND FOR TRENCH EXCAVATION AND SURFACE RESTORATION IN THE PUBLIC RIGHT OF WAY.

14. MINIMUM COVER OVER UTILITIES IS GOVERNED BY THE CALIFORNIA PUBLIC UTILITIES COMMISSION. UTILITY OWNERS SHALL CONSIDER PLACING THEIR UTILITY LINE AT A GREATER DEPTH TO AVOID FUTURE RELOCATION DUE TO STREET/ROAD RECONSTRUCTION. THE INCREASED DEPTH SHOULD INCLUDE SUFFICIENT CLEARANCE BETWEEN THE UTILITY AND PAVEMENT STRUCTURAL SECTION UPGRADE TO PREVENT DAMAGE BY CONSTRUCTION EQUIPMENT. THE PUBLIC WORKS DEPARTMENT RECOMMENDS A MINIMUM OF 36 INCHES OF COVER BELOW THE PAVEMENT SURFACE IN ROADWAYS AND 24 INCHES BELOW FINISH GRADE IN SIDEWALKS AND OTHER PUBLIC RIGHT OF WAY.

15. RESTORATION OF THE TRENCH EXCAVATION ON CALTRANS RIGHT OF WAY (SAN PABLO AVE., ASHBY AVE., AND TUNNEL RD.) SHALL BE IN ACCORDANCE WITH CALTRANS ENCROACHMENT PERMIT.

16. RESTORE PAVEMENT AS FOLLOWS: FOR TRENCHES PARALLEL WITH THE CENTERLINE OF THE STREET, COLD PLANE AND REPAVE THE LANE IN WHICH THE TRENCH LIES. FOR TRANSVERSE TRENCHES, COLD PLANE AND REPAVE 1/2 LANE WIDTH ON EACH SIDE OF THE TRENCH. FOR BELL HOLES, COLD GRIND AND PAVE 1 LANE WIDTH ON EACH SIDE OF THE EXCAVATION. PRIOR TO COLD PLANING, THE TRENCH SHALL BE PAVED IN 3 INCH MAXIMUM LIFTS TO THE ORIGINAL SURFACE GRADES OR TO WITHIN 1 1/2 INCHES OF THE EXISTING SURFACE. IF THE CONTRACTOR ELECTS TO PAVE WITHIN 1 1/2 INCHES OF THE EXISTING SURFACE, THE REMAINING 1 1/2 INCHES MUST BE PAVED WITH CUT BACK ASPHALT UNTIL THE SURFACE IS PLANED. FINAL PAVING SHALL COMMENCE WITHIN 3 DAYS AFTER COLD GRINDING. ALL LOOSE MATERIAL SHALL BE REMOVED FROM THE AREA TO BE REPAVED PRIOR TO REPAVING.

17. BEDDING MATERIAL SHALL BE CLASS 2 AB OR CRUSHED ROCK PER 2015 GREENBOOK, TABLE 200-1.2.1(A), 3/4" SIEVE SIZE. ALTERNATIVE MATERIALS SHALL BE APPROVED BY THE PUBLIC WORKS DEPARTMENT. IN NO CASE SHALL "PEA" GRAVEL BE ALLOWED. A MAXIMUM OF 6 INCHES OF SAND MAY BE USED AS A BEDDING MATERIAL FOR COMMUNICATION, GAS AND ELECTRIC CONDUITS ONLY.

18. FOR GAS, ELECTRIC AND COMMUNICATION CONDUITS WITH AN OUTSIDE DIAMETER EQUAL TO OR LESS THAN 4 INCHES, THE TRENCH WIDTH MAY BE REDUCED TO NO LESS THAN 12 INCHES.

19. UNSUITABLE NATIVE MATERIAL SHALL BE EXCAVATED BELOW THE LIMIT OF EXCAVATION AND REPLACED WITH SUITABLE BACKFILL MATERIAL WHEN DIRECTED BY THE PUBLIC WORKS DEPARTMENT.

20. WHERE THE TRENCH PARALLELS CURB AND THE NEAREST TRENCH LINE IS LESS THAN 3 FEET FROM THE GUTTER LIP, ALL EXISTING HMA SHALL BE REPLACED TO THE GUTTER LIP.

21. SLURRY CEMENT BACKFILL SHALL COMPLY WITH SECTION 19-3.02E OF THE CALIFORNIA DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS.

22. APPLY PAINT BINDER (TACK COAT) TO ALL EXISTING AC AND CONCRETE SURFACES IN ACCORDANCE WITH THE LATEST EDITION OF CALIFORNIA DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS

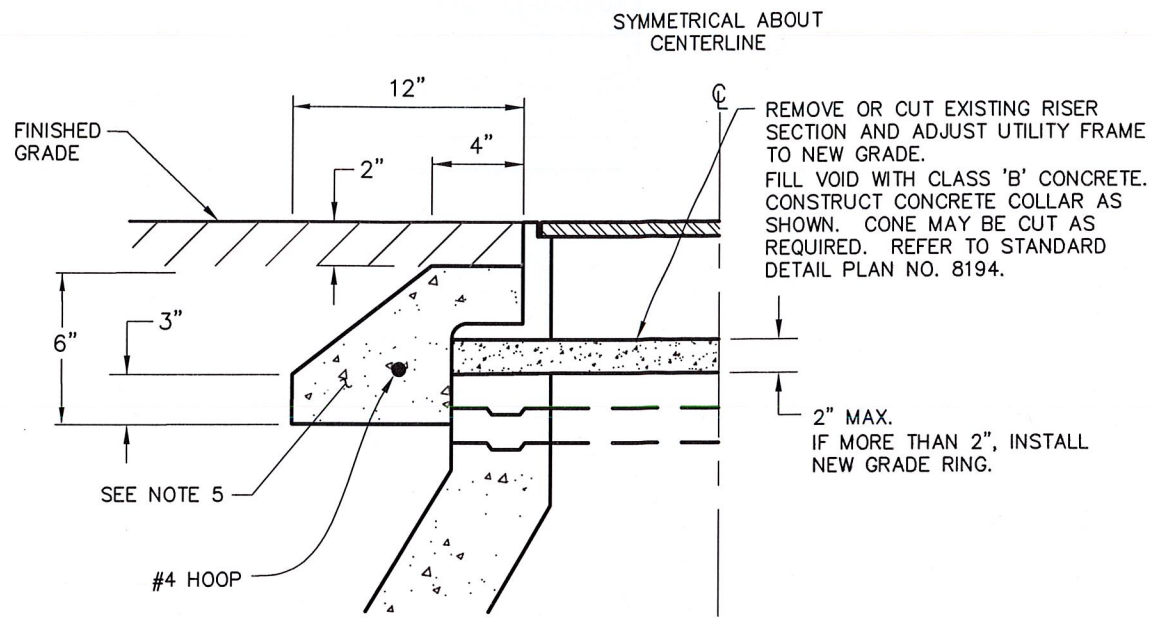
CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

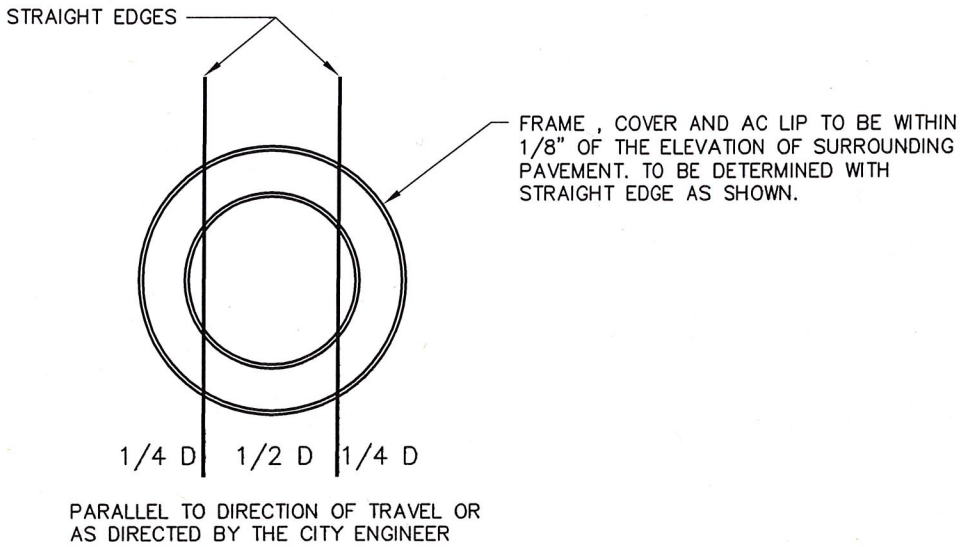
STANDARD DETAIL
TRENCH EXCAVATION AND SURFACE RESTORATION

SUBMITTED: Dan Ruby — DATE: 7/6/16
SUPERVISING CIVIL ENGINEER — R.C.E. 64582

APPROVED: — DATE: 7/6/16
MANAGER OF ENGINEERING — R.C.E. 66014

DESIGN:	HEI	DATE:	06/2016	PLAN:	8136
DRAWN:	HEI	SCALE:		FILE:	20-B-155
CHECK:		BOOK:		SHEET:	2 OF 2

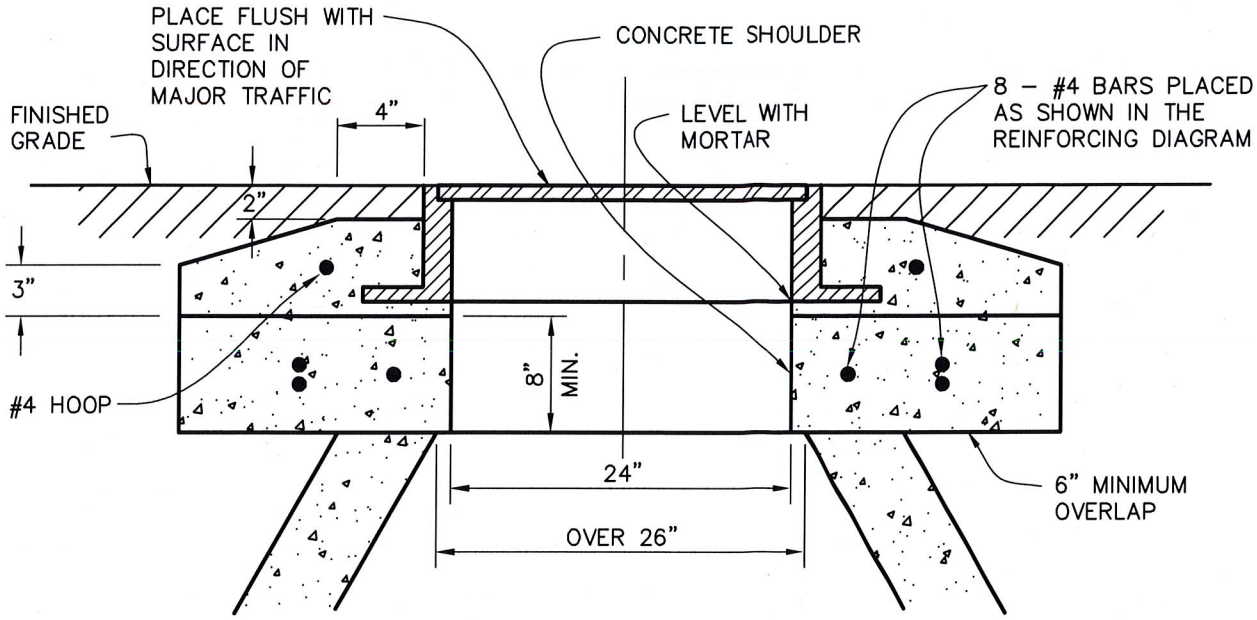




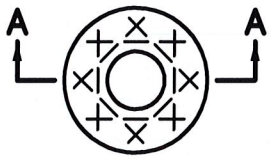
NOTES:

1. ALL SURFACE STRUCTURES EXTENDING 2" ABOVE THE NEW SUBGRADE OR MILLING PLANE SHALL BE LOWERED BY CONTRACTOR OR UTILITY OWNER TO THE NEW SUBGRADE BEFORE PAVING. STRUCTURES PROJECTING LESS THAN 2" ABOVE THE SUBGRADE MAY BE PAVED OVER AND LATER ADJUSTED TO GRADE.
2. ADJUST FRAME AND COVER TO FINISHED GRADE AFTER FINAL LIFT OF PAVING.
3. TRAFFIC CONTROL APPROVAL IS REQUIERED PRIOR TO ANY TRAFFIC LANE OBSTRUCTION.
4. PLACE TEMPORARY AC (CUT BACK) AROUND UTILITY FRAME UNTILL PERMANENT PAVING IS IN PLACED.
5. CAST-IN-PLACE CONCRETE COLLARS SHALL CONFORM TO STANDARD SPECIFCATIONS (GREENBOOK) SECTION 201-1.1.2 AND BE CLASS 560-B-3250.

DESIGN: TP DRAWN: LG CHECK: KE	DATE: 5/23 SCALE: N.T.S.	PLAN: 8193 FILE: 20B-169	**CITY OF BERKELEY** DEPARTMENT OF PUBLIC WORKS STANDARD DETAIL
APPROVED: 5-23-18 CITY ENGINEER DATE:			**MANHOLE FRAME & COVER ADJUSTMENT**



SECTION A–A

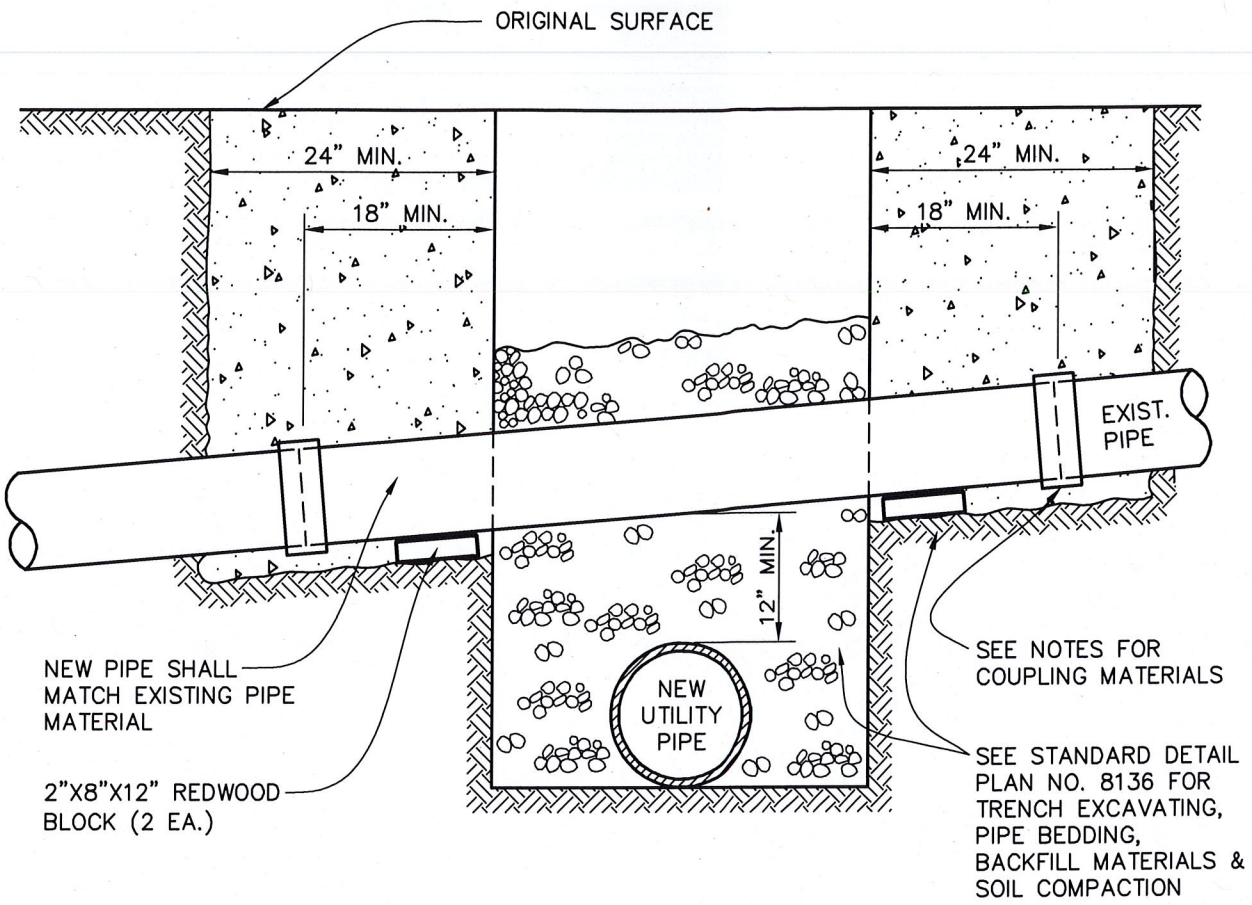


REINFORCING DIAGRAM

NOTES:

1. WHEN THE MANHOLE HAS TO BE CUT DOWN SO THAT THE TAPERED SECTION AT THE TOP OF THE EXISTING MANHOLE EXCEEDS 26 INCHES, A CONCRETE SHOULDER MUST BE CONSTRUCTED AS SHOWN ABOVE.
2. WHEN DIRECTED BY THE ENGINEER, THE EXISTING FRAME AND COVER SHALL BE SALVAGED AND RETURNED TO THE CITY CORPORATION YARD, 1326 ALLSTON WAY.
3. CAST–IN–PLACE CONCRETE COLLARS SHALL CONFORM TO SPECIFICATIONS (GREENBOOK) SECTION 201–1.1.2 AND BE CLASS 560–B–3250.

DESIGN: TP DRAWN: MS CHECK: KE	DATE: 5/18 SCALE: N.T.S.	PLAN: 8194 FILE: 20B–170	CITY OF BERKELEY DEPARTMENT OF PUBLIC WORKS STANDARD DETAIL
APPROVED: 5-23-18 CITY ENGINEER DATE:			MANHOLE FRAME & COVER ADJUSTMENT – LOWERING



NOTES:

1. FOR HDPE PIPE USE ELECTROFUSION COUPLING.
2. FOR PIPE MATERIALS OTHER THAN HDPE USE FERNCO COUPLING STRONG BACK (RC) 5000 SERIES OR APPROVED EQUAL.
3. SEWER LATERAL SHALL REMAIN IN SERVICE AT ALL TIMES.

DESIGN: TP DRAWN: MS CHECK: NP	DATE: 4/2019 SCALE: N.T.S.	PLAN: 8214 FILE: 20B-174	CITY OF BERKELEY DEPARTMENT OF PUBLIC WORKS STANDARD DETAIL
APPROVED: [signature] CITY ENGINEER	4-29-19 DATE:		SEWER LATERAL REPAIR

G:\ENGINEER\StandardDetails\Sanitary Sewer\SewerLateralRepair-8214.dwg

SUBMITTAL TRANSMITTAL FORM

SUBMITTAL NO.: _____ Date: _____

To: City of Berkeley
Department of Public Works
Engineering Division
1947 Center Street, 4th Floor
Berkeley, CA 94704-1155
Attn.: _____

From: _____

PROJECT NAME: SS Rehab - _____

SPECIFICATION NO.: _____

☐ Original Submittal ☐ 2nd Submittal ☐ 3rd Submittal Copies Sent: _____

ITEM DESCRIPTION: _____

SPECIFICATION SECTION – PAGE NUMBER/PARAGRAPH: _____

We have verified that the material transmitted herein is in compliance with the contract specifications:

☐ With no exceptions

☐ Except for the following deviations:

_____

_____

_____
Contractor's Signature

City Use Only:

Remarks:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

REVIEW OF SHOP DRAWINGS
AND SUBMITTALS

☐ NO EXCEPTIONS TAKEN
☐ EXCEPTIONS AS NOTED
☐ SUBMIT SPECIFIED ITEM
☐ REVISE AND RESUBMIT
☐ REJECTED

Review is only for general conformance with the design concept, dimensions, equipment, and materials as presented in the Plans and Specifications. Markings or comments made during the review do not relieve the Contractor of his/her responsibility to comply with the requirements of the Contract Documents. The Contractor is responsible for the details and dimensions of fabrication and manufacture, the means, methods, techniques, sequences, or procedures of construction, and performing the work in a safe and satisfactory manner.

By: _____
Date: _____

CITY OF BERKELEY

Oppressive States Compliance Statement for Personal Services

The undersigned, an authorized agent of_____(hereafter "Vendor"), has had an opportunity to review the requirements of Berkeley City Council Resolution Nos. 59,853-N.S., 60,382-N.S., and 70,606-N.S., (hereafter "Resolutions"). Vendor understands and agrees that the City may choose with whom it will maintain business relations and may refrain from contracting with those Business Entities which maintain business relationships with morally repugnant regimes. Vendor understands the meaning of the following terms used in the Resolutions:

"Business Entity" means "any individual, firm, partnership, corporation, association or any other commercial organization, including parent-entities and wholly-owned subsidiaries" (to the extent that their operations are related to the purpose of the contract with the City).

"Oppressive State" means: **Tibet Autonomous Region, the provinces of Ado, Kham, and U-Tsang; and Burma (Myanmar)**

"Personal Services" means "the performance of any work or labor and shall also include acting as an independent contractor or providing any consulting advice or assistance, or otherwise acting as an agent pursuant to a contractual relationship."

Contractor understands that it is not eligible to receive or retain a City contract if at the time the contract is executed, or at any time during the term of the contract it provides Personal Services to:

a. The governing regime in any Oppressive State.
b. Any business or corporation organized under the authority of the governing regime of any Oppressive State.
c. Any person for the express purpose of assisting in business operations or trading with any public or private entity located in any Oppressive State.

Vendor further understands and agrees that Vendor's failure to comply with the Resolution shall constitute a default of the contract and the City Manager may terminate the contract and bar Vendor from bidding on future contracts with the City for five (5) years from the effective date of the contract termination.

The undersigned is familiar with, or has made a reasonable effort to become familiar with, Vendor's business structure and the geographic extent of its operations. By executing the Statement, Vendor certifies that it complies with the requirements of the Resolution and that if any time during the term of the contract it ceases to comply, Vendor will promptly notify the City Manager in writing.

Based on the foregoing, the undersigned declares under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Printed Name: _____Title:_____

Signature: _____ Date:_____

Business Entity: _____

I am unable to execute this Statement; however, Vendor is exempt under Section VII of the Resolution. I have attached a separate statement explaining the reason(s) Vendor cannot comply and the basis for any requested exemption.

Signature: _____ Date:_____

Contract Description/Specification No.:_____

Attachment D

PEDESTRIAN ACCESS DURING CONSTRUCTION PROJECTS

- **The purpose of these standards for construction in the public right-of-way is to ensure pedestrian safety and access**
- **Standards apply to City of Berkeley crews, Contractors with the City, and all others working in the right-of-way**
- **Each project is unique and requires thorough review to ensure complete, safe, usable and accessible paths of travel**

MAINTENANCE OF A CLEAR AND ACCESSIBLE PEDESTRIAN CORRIDOR

The Contractor or permittee shall maintain an accessible corridor that provides at least one safe path of travel for all pedestrians at all times for the duration of the project.

- Pedestrian corridor shall be a nominal width of 6' whenever feasible, and shall conform to ADAAG guidelines. It shall not be less than 48" wide at single point of contact or obstruction.
- Accessible pedestrian corridor shall connect with facilities throughout the project area.
- Equipment, debris, construction materials or vehicles shall not obstruct the corridor.
- No parked vehicles can obstruct blue curb parking spaces unless permitted by the City.
- Temporary closure of designated pedestrian routes and crossings shall be allowed only when flaggers are present and safely directing pedestrians around hazards.

TEMPORARY RAMPS CONFORMING TO ACCESSIBLITY STANDARDS

The Contractor or permittee shall install and maintain temporary concrete, asphalt or wood ramps to provide a safe path of travel for mobility-impaired pedestrians at all locations where ramps have been temporarily removed OR needed to route pedestrians.

- Temporary ramps shall be constructed so installation and removal will not damage existing pavement, curb and/or gutter.
- Ramps shall have a minimum 4' wide walking surface and a slope not to exceed 8%.
- Ramps shall snugly meet existing surfaces without gaps. When required for drainage
- Schedule 40 PVC pipe minimum 2" diameter shall be installed through ramp.
- Transitions between ramps and the street surface shall be smooth such that no lip exists at the base of the ramp.
- Sides of a ramp shall be protected where there is any drop-off.

CONSTRUCTION OF SIGNPOSTS, BARRICADES AND FENCING

Barricades that are impenetrable shall be used to separate pedestrians from hazards on all sides of excavations that may be exposed to pedestrians. Use materials and methods suitable to site conditions. Signs and fencing material shall not protrude into the clear pathway.

- A-frames used for defining path of travel (not barricading trenches) shall be placed end-to-end without spacing, shall be connected and maintained to ensure stability to help a person who is blind negotiate a safe path while using a cane.
- Caution Tape shall NOT be used by itself to delineate the path of travel or create a barricade.
- Fencing material requires a minimum 3" height, solid, uninterrupted toe-board.
- Signposts, scaffolding and fencing supports shall be placed entirely outside the pedestrian path of travel, minimum 4' wide and 80" high without obstruction.
- Construction barriers shall be maintained in a sound, neat and clean condition.

IDENTIFICATION OF SAFE PATH OF TRAVEL

If a portion of the pedestrian way is rerouted due to construction, the path of travel shall be clearly defined. Traffic Engineer shall review any pedestrian access limitations and notification requirements for pedestrians with mobility or vision impairments.

- Paths of travel that DO NOT continue to the next corner or to a safe crosswalk shall be closed to pedestrian traffic. Signs a minimum of 36" x 36" must be posted stating the sidewalk is closed and detour pedestrians to accessible sidewalk.
- Pedestrian access corridors shall be clearly delineated with cones or barricades, as approved by the Engineer.
- If a crosswalk is closed, curb ramps leading into that crosswalk must be barricaded in such a manner that walkways that are not closed remain accessible to use.
- Caution Tape shall NOT be used by itself to delineate the path of travel or create a barricade

SURFACING OF PEDESTRIAN CORRIDORS

During construction, tripping hazards and barriers for people with mobility impairments must be removed to maintain an accessible pedestrian corridor.

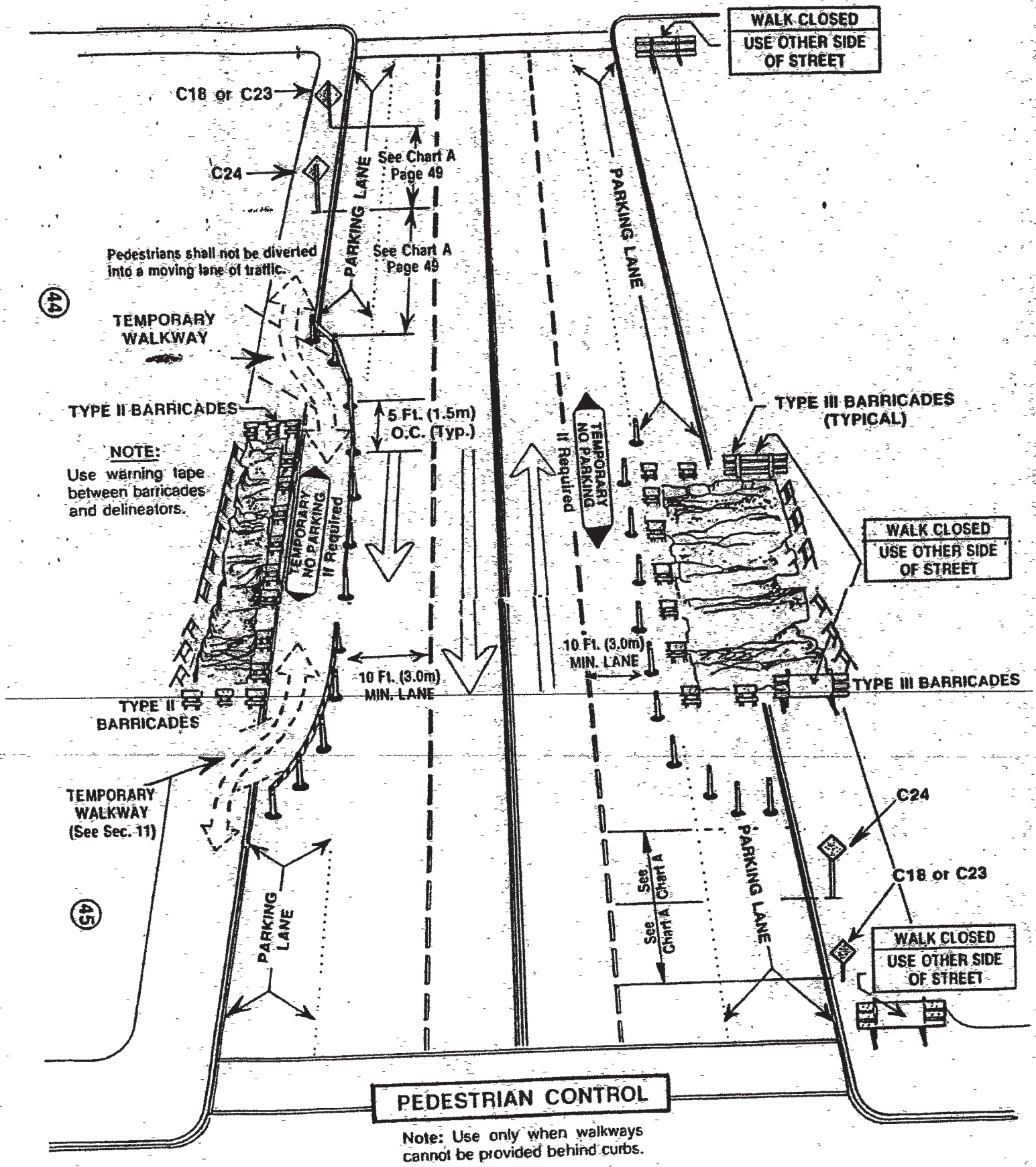
- Any change of level, which exceeds 1/4" height, must be beveled at 45°.
- Closed trenches, temporary paving surfaces, walking surfaces, steel plates; etc. shall have a smoothly finished, firm walking surface made even w/surrounding walkways.
- Aisle or loading area adjacent to a parking space is part of the pedestrian corridor.

RESTORATION OF PEDESTRIAN ROUTES

After construction, the site shall be returned to its former condition, or new condition as required.

- Temporary ramps shall be removed as soon as construction and approval of permanent ramp is completed.
- After work is completed, surface of the pedestrian path shall be restored free fr all ridges, gaps, bumps and rough edges.
- Construction that affects existing curb ramp shall include replacement or repai the curb ramp to meet current City standards.

PLEASE NOTE: City of Berkeley Engineers may stop work when any hazardous conditions are present.


WALK CLOSED
USE OTHER SIDE OF STREET
C18 or C23
C24
See Chart A Page 49
PARKING LANE
Pedestrians shall not be diverted into a moving lane of traffic.
44
TEMPORARY WALKWAY
TYPE II BARRICADES
NOTE:
Use warning tape between barricades and delineators.
5 Ft. (1.5m) O.C. (Typ.)
TEMPORARY NO PARKING If Required
TYPE III BARRICADES (TYPICAL)
WALK CLOSED
USE OTHER SIDE OF STREET
10 Ft. (3.0m) MIN. LANE
TYPE III BARRICADES
TYPE II BARRICADES
TEMPORARY WALKWAY (See Sec. 11)
45
C24
C18 or C23
WALK CLOSED
USE OTHER SIDE OF STREET
PEDESTRIAN CONTROL
Note: Use only when walkways cannot be provided behind curbs.

ASPHALT CONCRETE

DETAIL SPECIFICATION NO. 16

1601 DESCRIPTION

1601.1 DESCRIPTION Asphalt concrete shall be designated as Type A, B, or Open Graded and shall conform to the general and specific requirements specified herein. The type of asphalt to be used and the thickness of the courses to be placed will be designated in the special provisions or on the plans.

1602 MATERIALS

1602.1 ASPHALTS

1602.11 Asphalt Cement (paving asphalt) to be mixed with mineral aggregate in the manufacture of asphalt concrete shall be steam refined paving asphalt having a RTFC AR 4000 or AR 8000. Generally, the RTFC AR 4000 will be designated for light to medium traffic and RTFC AR 8000 will be designated for heavy traffic. The range of the AR value will be designated in the Special Provisions or by the Engineer. Asphalt cement shall conform to the provisions of subsections 92-1.01, 92-1.02, and 92-1.03 of the CALTRANS Standard Specifications and the following provisions.

1602.12 Prime Coat shall be used on non-asphalt base course prior to placement of asphalt concrete. Prime coat shall be liquid asphalt, Grade SC-70, conforming to provisions of subsections 93-1.01, 93-1.02 and 93-1.03 of the CALTRANS Standard Specifications and to the following provisions. When approved by the Engineer, Asphaltic Emulsion Grade SS-1 conforming to the provisions of subsection 94-1.01 through subsection 94-1.06 of the CALTRANS Standard Specifications, may be substituted for the said Grade SC-70 liquid asphalt. When an asphaltic emulsion is used, it must be mixed into the base material by a motor grader, rotary mixer, or other type of equipment as approved by the Engineer.

1602.13 Tack Coat shall be used on existing asphalt concrete prior to placement of an additional asphalt concrete course. Tack coat shall be emulsified liquid asphalt grade SS-1 conforming to provisions of subsections 94-1.01 through subsection 94-1.06 of the CALTRANS Standard Specifications. Bituminous base used on Manufacturing SS-1 type emulsion shall be paving asphalt, with RTFC AR value of 8000, conforming to provisions of subsection 92-1.02 of the CALTRANS Standard Specifications.

1602.2 Types A and B Asphalt Concrete

1602.21 Mineral Aggregate. Mineral aggregate for Type A or B asphalt concrete shall consist of a mixture of coarse and fine aggregates and if required, a filler material conforming to the following requirements.

1602.22 Coarse Aggregate. Coarse aggregate shall consist of broken stone, crushed gravel, or both. If crushed gravel is used, not less than ninety (90) percent by weight of the individual pieces shall have at least one (1) fractured face. The aggregate shall be clean, tough, durable and sound; and shall be of uniform quality and free from disintegrated materials, lumps or

coatings of clay, vegetable matter and other deleterious substances.

1602.23 Fine Aggregate. Fine aggregate shall consist of material containing not less than 70 percent by weight of crushed particles in the portion passing the No. 4 sieve and retained in the No. 8 sieve.

1602.24 Filler Material. If the crushed material is deficient in fines, commercial filler material may be added. Such filler material shall consist entirely of crushed material and the final combination of materials shall conform to all the quality and grading requirements herein specified.

1602.25 Gradings. The combined mineral aggregate shall be of such size that the percentage composition by weight as determined by laboratory sieves, shall conform to one of the following gradings:

TYPE A AND B
Percentage Passing Sieves

SIEVE SIZE	3/4" Max.	1/2" Max.	3/8" Max.	No. 4 Max.
1	100	-	-	-
3/4"	95 - 100	100	-	-
1/2"	-	95 - 100	100	-
3/8"	65 - 80	85 - 95	95 - 100	100
No. 4	45 - 60	55 - 72	65 - 85	95 - 100
No. 8	30 - 45	38 - 55	50 - 70	70 - 80
No. 30	15 - 25	18 - 33	28 - 40	35 - 50
No. 200	3 - 8	3 - 8	7 - 14	7 - 16

The grading limits specified are based on materials having a specific gravity of 2.65. Corrections shall be made to compensate for variations in specific gravity.

The grading limits are master ranges and the component materials shall be so proportioned that when the combined sieve analysis is plotted on semi-log paper, a uniform concave curve results, which has the same general shape as the proposed limits and falls within the limits at all points.

1602.26 Tests. The combined mineral aggregate shall conform to all of the quality requirements designated in subsection 39-2.02 of the CALTRANS Standard Specification.

1602.3 Open Graded Asphalt Concrete

1602.31 Mineral Aggregate. Mineral aggregate for open graded asphalt concrete shall consist of broken stone, crushed gravel or both. If crushed gravel is used, not less than 90 percent, by weight, of the individual pieces shall have at least one fractured face.

The material shall be tough, durable and sound, and shall be of uniform quality and free from disintegrated materials, adobe, vegetable matters and other deleterious materials.

1602.32 Grading. The combined mineral aggregate shall be of such size that the percentage composition by weight, as determined by laboratory sieves, shall conform to the following grading:

Sieve Sizes	Percentage Passing Sieves
1/2"	100
3/8"	90 - 100
1/4"	55 - 75
No. 4	30 - 50
No. 8	15 - 32
No. 16	0 - 15
No. 200	0 - 3

1602.33 Tests. The combined mineral aggregate shall conform to all of the quality requirements designated in subsection 39-2.02 of the CALTRANS Standard Specifications.

1603 PROPORTIONING AND MIXING

1603.1 Storage and Drying. Aggregates shall be stored in accordance with subsection 39-3.01 and dried in accordance with subsection 39-3.02 of the CALTRANS Standard Specifications.

1603.2 Proportioning. After being dried and in advance of mixing with asphalt cement, the mineral aggregate shall be separated into sizes, stored in separate bins and proportioned in accordance with the provisions of subsection 39-3.03 of the CALTRANS Standard Specifications.

1603.21 If the mineral aggregate is deficient in fines, filler material conforming to the requirements specified Section 1602.2 for Mineral Aggregate shall be added in sufficient quantity to provide aggregate conforming to the specified gradings. The filler material shall be thoroughly dry and shall be added to the aggregate at the mixing plant by thoroughly pre-mixing it with the other fine aggregate or by feeding it separately into either the hot or cold elevator. Spreading filler material over the tops of the aggregate pits or dumping it indiscriminately into the hopper at crushing plants will not be permitted.

1603.22 In placing materials in storage or in moving them from storage to the plant, bulldozers or other similar equipment which may cause the segregation of the material of any grading, or the combining of materials of different gradings, will not be permitted.

1603.23 The amount of asphalt cement to be added to Type A or B asphalt concrete shall be between four (4) percent and six (6) percent, by weight, of the dry mineral aggregate. The amount of asphalt cement to be added to open graded asphalt concrete shall be between six (6) percent and six and one-half (6 1/2) percent by weight, of the dry mineral aggregate. The exact amount of asphalt cement to be added to the mineral aggregate will be determined by the Engineer, at the time of mixing.

1603.24 The Contractor shall advise the Engineer in writing not less than 21 calendar days prior to placement of asphalt concrete of the retail source of supply of the mixture to be used and of the sources of its constituents. The Engineer will obtain samples of the mixture to be used and will prepare laboratory samples for correlation of field measurements to be made during production and placement. Once the Contractor has designated the mixture supplier, the supplier and sources shall not be changed without written approval of the Engineer.

1603.3 Mixing. Aggregates and Asphalt Cement shall be mixed in accordance with subsection 39-3.04 and one of the following appropriate subsections of the CALTRANS Standard Specifications: 39-3.04A, 39-3.04B and 39-3.04C.

1603.31 The temperature of the mineral aggregate at the time of adding the asphalt cement shall not be in excess of three hundred twenty-five (325) degrees F.

Asphalt cement shall be added to the mineral aggregate at a temperature of not less than two hundred seventy-five (275) degrees F., nor more than three hundred twenty-five (325) degrees F.

1603.32 All scales shall be certified as to accuracy by the California State Department of Agriculture, Bureau of Weights and Measures, or by the Alameda County Sealer of Weights and Measures, or by other organizations acceptable to the Engineer. The Contractor shall, at his own expense, furnish for use in testing scales one standard 50-pound weight for each 500 pounds of batch scale capacity for each individual installation.

The City reserves the right to order the use of any drying, proportioning, and mixing equipment discontinued which, in the opinion of the Engineer, fails to properly dry and proportion the aggregate or fails to produce a satisfactory mixture.

1604 CONSTRUCTION METHODS

1604.1 Prime Coat and Tack Coat. In advance of spreading the surfacing material, a prime coat of liquid asphalt or a tack coat of asphaltic emulsion shall be applied to the areas to be surfaced in accordance with the provisions of section 1602.1 and the following provisions:

1604.11 Prime coat shall be spread on non-asphaltic base at the approximate total rate of 0.25 gallon per square yard of surface covered. The exact rate and number of applications will be determined by the Engineer.

1604.12 Tack Coat shall be applied on asphaltic base in one application at a rate of from 0.02 to 0.10 gallon per square yard of surface covered. The exact rate of application will be determined by the Engineer.

1604.13 Non-asphalt bases to receive prime coat should not have a moisture content in the upper three inches in excess of 4% as determined by either California Test Method 226 or ASTM test designation C-70.

1604.14 Immediately before applying a prime coat or tack coat, the area to be surfaced shall be cleaned of all loose material by means of power brooms supplemented by hand-brooming if necessary. Prime coat or tack coat shall not be applied until subgrade preparation has been completed, and only so far in advance of placing the surfacing as is ordered by the Engineer.

1604.15 Liquid asphalt prime coat and asphaltic emulsion tack coat shall be applied at the appropriate following listed temperatures:

Grade	Application Temperatures	
	Min. °F	Max. °F
SC-70 Liquid Asphalt	105	175
MC-250 Liquid Asphalt	140	225

1604.16 After the prime coat or tack coat has penetrated the surface, and if, and only if, ordered by the Engineer, the primed area shall be covered with an approved sandy material. All loose sand shall be completely removed before placing any asphalt concrete thereon.

1604.17 Asphaltic emulsion tack coat shall be applied to all vertical surfaces of existing pavement, curbs, gutters and construction joints in the surfacing against which additional asphalt concrete is to be placed, and to other surfaces designated by the Engineer.

1604.18 Immediately in advance of placing asphalt concrete, additional prime coat or tack coat shall be applied as directed to areas where the priming has been damaged, and loose or extraneous material shall be removed, and no additional compensation will be allowed for such work and materials.

1604.2 Spreading and Compacting Equipment. Spreading equipment shall conform to the provisions of subsection 39-5.01 of CALTRANS Standard Specifications.

1604.21 All rolling equipment shall be self-propelled and reversible. Rollers used for initial or breakdown rolling shall be equipped with wheels having a diameter of 40 inches or more.

1604.22 Pneumatic-tired rollers shall have a minimum width of 6 feet and be equipped with pneumatic tires of equal size and diameter having treads satisfactory to the Engineer. Tires shall have a minimum outside diameter of 40 inches and inflation pressure of 90 p.s.i.g. Tires shall be so spaced that the gap between adjacent tires shall be covered by the tread of the following tire. Operating weight shall be not less than 2,000 pounds per tire and be not less than nine (9) tons total weight.

1604.23 Two-axle steel-tired tandem rollers shall weigh not less than eight (8) tons.

1604.24 Three-wheel steel-tired rollers shall weigh not less than 12 tons with a compression of the rear wheels of not less than 325 pounds per linear inch of tire width.

1604.25 Three-axle steel-tired tandem rollers shall weigh not less than 12 tons.

1604.26 The Contractor shall supply a public weighmaster certificate which identifies and establishes the true operating weight on each axle of each and every roller used on the work.

1604.27 The Contractor shall furnish a minimum of one 9-ton pneumatic-tired roller and one 8-ton 2-axle tandem roller for each asphalt paver laying Type A asphalt concrete and furnish a minimum of one 8-ton 2-axle tandem roller for each paver laying Open Graded asphalt concrete.

1604.28 When, in the opinion of the Engineer, production rate exceeds the compactive capacities of the rollers and operators provided, additional rolling equipment of a type to be designated by the Engineer shall be supplied by the Contractor or production rate shall be reduced or stopped.

1604.29 Asphalt concrete areas which, in the opinion of the Engineer, are inaccessible and cannot be compacted satisfactorily with the above specified

rollers shall be compacted with a ramming or impact type of compactor having minimum impact power of 900 ft. lbs. per second and energy of 1500 ft. lbs. per blow exerted on a ramming shoe of 248 square-inch area.

1604.3 Spreading and Compacting. All types of Asphalt Concrete shall be spread only when the weather is satisfactory to the Engineer. Tarpaulins shall be furnished and used to cover all loads during transportation. Types A or B asphalt concrete shall be spread at a minimum temperature of 275 degrees F., and when the atmospheric temperature is above 40 degrees F. Open Graded asphalt concrete shall be spread at a minimum temperature of 225 degrees F and when the atmospheric temperature is above 60 degrees F.

1604.31 Longitudinal joints in the top course shall coincide with the edges of proposed traffic lanes, unless excepted by the Engineer. Longitudinal joints in all courses shall be offset not less than 0.5-foot alternately so that no joint is coincident with the joint in the underlying course.

Before placing the top course adjacent to cold transverse construction joints, such joints shall be neatly trimmed to a vertical face in a neat line transverse to the surfacing. Top joints shall be tested with a 10-foot straight-edge and cut back as required if the surface varies more than one-eighth (1/8) inch from the lower edge of the straight-edge. All longitudinal and transverse joints shall be fully compressed and where the asphaltic surfacing is placed adjacent to an existing pavement, the roller on the initial pass shall be supported by the new surface high enough that the roller will ride just clear of the old surface. Transverse joints in the top course shall be offset from joints in the base course by at least six (6) feet. Wherever the wearing surface is brought to a thin edge (feather edge) the existing surface shall be thinly tack coated and the coarse aggregate shall be raked out of the mixture.

Unless specifically approved by the Engineer, the surface course shall be placed so that no longitudinal joints remain after the end of a normal operating day.

1604.32 All layers, except as otherwise provided in section 1604.33 or in the Special Provisions, shall be spread with an asphalt paver. Asphalt paver shall be operated in such a manner as to insure continuous and uniform movement of the paver. The paver shall not start any single pass until sufficient hot material is on the job site to lay down a minimum length of pass of 100 feet in one continuous motion of the paver.

1604.33 In advance of placing asphalt concrete over an existing base or surfacing or pavement, and after the base or surfacing or pavement has been prepared as hereinbefore specified, and, if ordered by the Engineer, surfacing mixture shall be spread as directed to level irregularities, dips, depressions, sags, and excessive crown and to provide a smooth base of uniform grade and cross-section, in order that subsequent layers of surfacing will be of uniform thickness. This leveling course may be placed either by hand or by blade. No additional compensation will be allowed for placing asphalt concrete as above specified and full compensation for all work incidental to such operations shall be considered as included in the contract price or prices paid for the surfacing material.

1604.34 Initial or breakdown rolling shall consist of one complete coverage of asphalt mixtures and shall be performed with a pneumatic-tired roller on base or leveling courses and with a steel-tired roller on top courses. Rolling

shall commence at the lower edge and shall progress toward the highest portion. Under no circumstances shall the center be rolled first. Rollers shall be operated so that the driving axle is the first axle to pass over the uncompacted material. The movement of the roller shall be slow and uniform to secure maximum compression. Each movement of the roller shall lap the path of the preceding one by half the width of the roller. The roller shall operate in a straight line with a minimum of turning, stopping and starting. Turning shall be done on the compacted surface. After the initial pass on the uncompacted material, the roller shall retrace its path over compacted material back to previously compacted areas before starting the next pass.

1604.35 The minimum length of pass for breakdown roll shall be 100 feet, unless excepted by the Engineer. The breakdown pass shall be made in one smooth and continuous motion of the roller with reversal of direction to be made once near the paver. Direction reversal shall not be made more than once at the same place on the mat.

1604.36 Pneumatic-tired rollers shall operate immediately after the paver, and the tires shall remain dry and be allowed to attain the temperature of the hot mixture. The use of water on pneumatic tires will not be allowed. Pneumatic-tired rollers shall not be used on Open-Graded asphalt concrete.

1604.37 Rollers shall be used continuously on the hot mat until the temperature of the mat has dropped below 200 degrees F. or until the compacted density is determined satisfactory by the Engineer.

1604.38 The porosity of each compacted course of Type A Asphalt Concrete may be measured immediately after rolling and while the fresh mat is still above 200 degrees F and compactable. The acceptable void content shall be between 5% and 9% and will be correlated with the compacted laboratory samples of the mix. The desired compacted-in-place void content of each course will be determined by the Engineer.

1604.39 Any ridges, indentations, or other objectionable marks left in the surfacing shall be eliminated either by rolling or some other approved means. The surfacing shall have the average thickness specified and shall not vary more than one-quarter (1/4) inch from the specified thickness. The surface of the pavement shall be true to grade, have a uniform and smooth contour, and be free from depressions exceeding one-quarter (1/4) inch as measured from a 10-foot straight-edge.

1604.40 Obstructions. After placing the final lift of asphalt concrete, the Contractor shall be required to reset, in a workmanlike manner, all metal frames and covers, sewer manholes, lampholes, catch basins, junction boxes, storm water inlets, monuments and sewer cleanouts along the line of the work which are not now at the required grade and line. Concrete around these facilities shall be six (6) sack concrete with 2% calcium chloride added. All manholes within the limits of the construction shall be kept clean of earth materials. Frames and covers broken or damaged by the Contractor shall be replaced by him, at no extra expense to the City, with the present City of Berkeley standards. The Engineer may require that any sewer frame and cover to be reset by the Contractor be replaced with a new frame and cover to be furnished by the City. The size, number and location of metal covers, sewer manholes, lampholes, catch basins, junction boxes, storm water inlets, monuments and sewer cleanouts as shown on the plans are from the best information available, but not guaranteed by the City.

1604.41 Frames and covers belonging to the Utilities will be adjusted by t The Contractor shall be responsible for notifying the utility companies.

1604.42 As part of the asphalt concrete surfacing work, the Contractor shall restore all property affected by the Contractor's operations to a condition approved by the Engineer.

1605 METHOD OF MEASUREMENT

1605.1 Measurement. The weight of asphalt concrete shall be determined as provided in applicable portions of subsection 9-1.01 "Measurement and Payment" of the CALTRANS Standard Specifications, except as herein noted:

The City reserves the right to appoint a weigher compensated by the City, to weigh all materials weighed on scales furnished by the Contractor.

A maximum tonnage will be allowed based on 12.5 pounds of asphalt concrete surfacing for each square foot of one (1) inch thick pavement placed. The thickness of pavement shall be as designated on the plans and specification plus the thickness tolerance of one-quarter (1/4) inch allowed in paragraph 1604.39, and the area shall be measured in a horizontal plane in square feet. An increase of density will be allowed if the Contractor can establish by approved testing procedures that the density is greater.

1606 BASIS OF PAYMENT

1606.1 Basis of Payment. Asphalt concrete will be paid for at the unit price bid per ton, which price shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all the work necessary in constructing the pavement complete in place, including traffic control and incidental work. No payment will be made for tonnage over the maximum as defined above, except that asphalt concrete used in leveling irregularities as directed by the Engineer and described in section 1604.33 will not be totaled into or used with the maximum tonnage figure. Payment for asphalt cement, prime coat, and tack coat will be included in the price bid for asphalt concrete.

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APPENDICES

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APPENDIX 1

CRITERIA FOR THE SEPARATION OF WATER MAINS AND SANITARY SEWERS

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CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board
Division of Drinking Water

December 14, 2017

Separation of Water Mains and Non-Potable Pipelines – Requests for Alternatives to the Waterworks Standards

Dear Public Water System Owners and Operators:

This letter supersedes prior guidance regarding the separation of water mains and non-potable pipelines, including Guidance Memo 2003-02, dated October 16, 2003. Guidance Memo 2003-02 and previous versions should be discarded.

The California Waterworks Standards (California Code of Regulations (CCR), Title 22, Division 4, Chapter 16, Section 64572) establish criteria for the separation of new water mains from non-potable pipelines. Public water systems should ensure that these distances are met, whenever feasible, for all new construction. The Division of Drinking Water (Division) recognizes that certain conditions may call for the installation of pipelines with less separation distance than what is required by the regulations. In these situations, the water system may propose an alternative pursuant to CCR, Title 22, Section 64551.100:

§64551.100. Waivers and Alternatives.

(a) A water system that proposes to use an alternative to a requirement in this chapter shall:
(1) Demonstrate to the State Board that the proposed alternative would provide at least the same level of protection to public health; and
(2) Obtain written approval from the State Board prior to implementation of the alternative.

In proposing an alternative to the Waterworks Standards, water systems should observe the following:

- The water system must accept responsibility for the adequacy of the proposed alternative. The Division may require a written statement, signed by the water system's management, certifying that the proposed alternative adequately protects public health.
- In most circumstances, the Division cannot offer technical assistance with pipeline or infrastructure design. The water system proposing an alternative must demonstrate adequate expertise on the part of its own personnel or its hired consultants.
- The water system should describe how the proposed alternative provides at least the same level of protection to public health as the minimum separation distances prescribed in the regulation.
- While exorbitant cost may present a hardship in meeting the regulatory separation requirements and can be considered, public health must be prioritized above construction costs in determining an acceptable alternative.

The Division has prepared an application checklist that may be used by water systems in proposing an alternative to the Waterworks Standards (Enclosure). The purpose of the checklist is to ensure that the Division has sufficient information to evaluate the proposal. **The water system may submit the information in a different format from the checklist, provided that the submittal provides adequate information.** The checklist may also be used to provide written certification that the proposed alternative adequately protects public health.

If you have any questions, please contact the Division office that oversees your water system.

Sincerely,

Darrin Polhemus, P.E.
Deputy Director
Division of Drinking Water

Enclosure: Waterworks Standards Main Separation Alternative Request Example Checklist

STATE WATER RESOURCES CONTROL BOARD
Division of Drinking Water
Waterworks Standards Main Separation Alternative
Request Checklist

Water System Name/Number: Click here to enter text.

Name of Applicant: Click here to enter text.

Phone Number and Email Address: Click here to enter text.

Project Name and Location: Click here to enter text.

Attach plans or field drawings to show the standard installation and the proposed installation for which the alternative is being requested. (e.g. vertical profile and horizontal alignment, specifications, and other exhibits, as appropriate).

The Waterworks Standards in the California Code of Regulations (CCR) Title 22, Chapter 16, Section 64572 provide separation criteria for new construction. When buried water mains are in close proximity to non-potable pipelines, the water mains are vulnerable to contamination that can pose a risk of waterborne disease outbreaks.

Per CCR Title 22, Chapter 16, Section 64551.100, a water system that proposes to use an alternative to a requirement in Chapter 16 shall: 1) demonstrate to the State Board that the proposed alternative would provide at least the same level of protection to public health; and 2) obtain written approval from the State Board prior to implementation of the alternative. Requests for alternatives to the Waterworks Standards must consist of information outlined in at least four of the attachments below. Information contained in Attachments A, B and E will be required for all alternative requests. Information contained in Attachments C and/or D will also be needed depending on your particular situation. Please review all the attachments and submit the information for your specific project. The information must be submitted to your local Division of Drinking Water District Office for review and approval prior to construction.

Attachment A represents the standard pipe material and construction that would be used if the standard separation criteria can be met by the utility.

Attachment B represents information on the current pipe in the ground that is being crossed by a new pipeline or being paralleled by a new pipeline.

Attachments C and **D** represent information on the new pipeline being installed. Attachment C is for parallel construction and Attachment D is for crossings.

Attachment E is certification language that is needed to consider the Waterworks Standard alternative application.

Please Note: <u>The information may be submitted using this checklist or another format, but all relevant information must be provided to the Division of Drinking Water District Office for consideration.</u> If multiple crossings or parallel pipelines in multiple locations are part of the application, please indicate in the comments field of the applicable attachment or submittal. Alternatively, the applicant can provide an attachment or separate submittal for each location.

Attachment A
(All Cases)

Water System's Standard Pipe Material and Construction Details

Attach the water system's standard pipe specification and construction details to this as Exhibit 1 and describe below.

Liquid Conveyed By New Pipeline:

☐ Domestic Water ☐ Raw Water ☐ Recycled Water

☐ Sewer ☐ Force Sewer ☐ Storm Drain

☐ Other (describe) Click here to enter text.

Nominal Size: Click here to enter text. inches

Operating Pressure: Click here to enter text. psi or ☐ Gravity flow/atmospheric

Pipe Material: ☐ Ductile Iron ☐ Cast Iron ☐ Welded Steel

☐ HDPE ☐ PVC ☐ Concrete ☐ Clay

☐ Other describe Click here to enter text.

AWWA Material Designation Code: Click here to enter text.

Pressure Class/Thickness/Coating Click here to enter text.

Joint Type Construction: ☐ Push On ☐ Restrained ☐ Welded Joints ☐ Fused

☐ Other describe Click here to enter text.

Depth of Cover: Click here to enter text.

Comments:
Click here to enter text.

Attachment B
(All Cases)

Existing Pipeline Material – Paralleling or Crossing the Proposed Pipe

List the condition of the existing pipeline being paralleled or crossed.

Liquid Conveyed By Existing Pipeline:

☐ Domestic Water ☐ Raw Water ☐ Recycled Water

☐ Sewer ☐ Force Sewer ☐ Storm Drain

☐ Other (describe) Click here to enter text.

Nominal Size: Click here to enter text. inches

Operating Pressure: Click here to enter text. psi or ☐ Gravity flow/atmospheric

Pipe Material: ☐ Ductile Iron ☐ Cast Iron ☐ Welded Steel

☐ HDPE ☐ PVC ☐ Concrete ☐ Clay

☐ Other (describe) Click here to enter text.

AWWA Material Designation Code: Click here to enter text.

Pressure Class/Thickness/Coating Click here to enter text.

Joint Type Construction: ☐ Push On ☐ Restrained ☐ Welded Joints ☐ Fused

☐ Other (describe) Click here to enter text.

Length of Project: Click here to enter text.

Age/Condition: Click here to enter text.

Depth of Cover: Click here to enter text.

Separation from proposed pipeline

Note: all distances are measured from the outside walls of both pipelines.

Vertical: Click here to enter text.

Horizontal: Click here to enter text.

Have there been many repairs on the existing pipeline in this area? ☐Yes ☐ No

If yes, explain: Click here to enter text.

COMMENTS:

Click here to enter text.

Attachment C
Proposed Parallel Pipeline Material and Construction Information

Where the Waterworks Standards cannot be met, it is the responsibility of the water system proposing an alternative to demonstrate that its proposed construction will have at least the "same level of protection to public health" as the minimum separation distances prescribed in the regulations.

Intended Use of New Pipeline: ☐ Distribution ☐ Transmission ☐ Storage

☐ Other (describe) Click here to enter text.

Liquid Conveyed:

☐ Domestic Water ☐ Raw Water ☐ Recycled Water

☐ Sewer ☐ Force Sewer ☐ Storm Drain

☐ Other (describe) Click here to enter text.

Nominal Size: Click here to enter text. inches Flow rate: Click here to enter text. gpm
Operating Pressure: Click here to enter text. psi or ☐ Gravity flow/atmospheric

Pipe Material: ☐ Ductile Iron ☐ Cast Iron ☐ Welded Steel

☐ HDPE ☐ PVC ☐ Concrete ☐ Clay

☐ Other describe Click here to enter text.

AWWA Material Designation Code: Click here to enter text.

Pressure Class/Thickness/Coating Click here to enter text.

Joint Type Construction: ☐ Push On ☐ Restrained ☐ Welded Joints ☐ Fused

☐ Other describe Click here to enter text.

Length of Project: Click here to enter text.

Depth of Cover: Click here to enter text.

Separation From Existing Non- Potable Pipeline

Note: all distances are measured from the outside walls of both pipelines.

Vertical: Click here to enter text.

Horizontal: Click here to enter text.

Is this a temporary installation? ☐ Yes ☐ No

If yes, how long will it be in place? Click here to enter text.

Can the new pipeline be installed in accordance with the Waterworks Standards? If not explain below:

Click here to enter text.

Proposed additional protective measures (*material construction methods, operational considerations, etc.*):

Attachment C

Click here to enter text.

Attach additional exhibits as necessary

Attachment D
Proposed Pipeline Crossing Material and Construction Information

Where the Waterworks Standards cannot be met, it is the responsibility of the water system proposing an alternative to demonstrate that its proposed construction will have at least the "same level of protection to public health" as the minimum separation distances prescribed in the regulations.

Intended Use of New Pipeline: ☐ Distribution ☐ Transmission ☐ Storage

☐ Other (describe) Click here to enter text.

Liquid Conveyed:

☐ Domestic Water ☐ Raw Water ☐ Recycled Water

☐ Sewer ☐ Force Sewer ☐ Storm Drain

☐ Other (describe) Click here to enter text.

Nominal Size: Click here to enter text. inches
Operating Pressure: Click here to enter text. psi or ☐ Gravity flow/atmospheric

Pipe Material: ☐ Ductile Iron ☐ Cast Iron ☐ Welded Steel

☐ HDPE ☐ PVC ☐ Concrete ☐ Clay

☐ Other describe Click here to enter text.

AWWA Material Designation Code: Click here to enter text.

Pressure Class/Thickness/Coating Click here to enter text.

Joint Type Construction: ☐ Push On ☐ Restrained ☐ Welded Joints ☐ Fused

☐ Other describe Click here to enter text.

Length of Project: Click here to enter text.

Depth of Cover: Click here to enter text.

Number of Crossings: Click here to enter text.

Angle of Crossings: Click here to enter text.

Description of crossing pipelines:
Click here to enter text.

Attachment D

Can the new pipeline be installed in accordance with the Waterworks Standards? If not explain below:

Click here to enter text.

Proposed additional protective measures (*material construction methods, operational considerations, etc.*):

Click here to enter text.

Attach additional exhibits as necessary

Attachment E
Certification

CERTIFYING SIGNATURE:

For consultants, contractors, and developers: attach written concurrence from the governing water system and pipeline owners stating that the selected project alternative is the preferred alternative.

Attached concurrence?: ☐ YES ☐ NO ☐ N/A

I certify that the forgoing information is true and correct to the best of my ability, and that I believe this alternative would provide at least the same level of protection to public health as the minimum separation distances prescribed in the California Waterworks Standards (CCR, Title 22, Section 64572)..

_____

Signature

Name and Title Click here to enter text.
Date Click here to enter a date.

APPENDIX 2

RESOLUTION NO. 59,853 – N.S.

REFERENCE TO OPPRESSIVE STATES STATEMENT

RESOLUTION NO. 60,382 – N.S.

AMENDMENT TO APPENDIX A OF RESOLUTION NO. 59,853 – N.S.

RESOLUTION NO. 70,606 – N.S.

AMENDMENT TO APPENDIX A OF RESOLUTION NO. 59,853 – N.S.

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RESOLUTION NO. 59,853-N.S.

EXPRESSING SUPPORT FOR A NATIONAL FOREIGN POLICY WHICH PLACES PARAMOUNT IMPORTANCE ON HUMAN RIGHTS BY PROHIBITING THE EXPENDITURE OF PUBLIC FUNDS FOR PERSONAL SERVICES OR FOR THE PROCUREMENT OF GOODS OR FOR DEPOSIT OR INVESTMENT IN ACCORDANCE WITH THE STANDARDS ENUMERATED IN THIS RESOLUTION AND REPEALING RESOLUTION NOS. 57,881-N.S., 59,009-N.S. AND 59,107-N.S.

WHEREAS, the Council of the City of Berkeley finds as follows:

SECTION I. PREAMBLE

A. The citizens of the City of Berkeley, believing that their quality of life is diminished when peace and justice are not fully present in the world, adopted Ordinance No. 5985-N.S. to promote universal respect for human rights and fundamental freedoms, and to stimulate public debate regarding the paramount importance of the rule of law and the need to end injustices and egregious violations of human rights wherever they may occur.

B. The citizens of the City of Berkeley believe that the foreign policy of the United States of America should be grounded upon equality, respect for human rights and the abhorrence of exploitation and all forms of oppression. However, the foreign policy of the United States of America with regard to particular countries, or governments, fails to accord sufficient importance to promoting equality, respect for human rights and the abhorrence of exploitation and all forms of oppression.

C. The citizens of the City of Berkeley believe that the expenditure, and the withholding, of public funds derived from their taxes constitutes an expression of their civic conscience regarding a subject of legitimate public debate and, therefore, can influence the views of their fellow American citizens.

D. The citizens of the City of Berkeley believe that effective advocacy of both public and private points of view is undeniably enhanced by group association, including their association as electors and taxpayers in the City of Berkeley.

E. The citizens of the City of Berkeley reaffirm that the right of the people peaceably to assemble for the purpose of petitioning Congress for a redress of grievances, or for anything else connected with the powers and duties of the national government, is an attribute of American citizenship, and, as such, under the protection of, and guaranteed by, the United States.

F. The citizens of the City of Berkeley are cognizant of the fact that in the global marketplace the City's expenditures for services, goods, deposits and investments subject to this Resolution are not substantial enough to have even an indirect coercive effect on foreign governments and, therefore, the policies established herein represent principally a symbolic gesture rather than an economic threat, a regulatory action or an act to change the domestic policies of any foreign country.

G. The citizens of the City of Berkeley desire to establish the policies herein for the purposes of stimulating public discussion, influencing the views of their fellow American citizens, and affecting the formulation and implementation of foreign policy by the United States Congress.

H. The procurement of personal services and commodities, and the deposit and investment of public funds are municipal affairs of the City of Berkeley and the policies established herein are not established for the benefit of contractors submitting bids, but for the benefit of the Citizens of the City of Berkeley.

I. The citizens of the City of Berkeley believe that like any participant in the global marketplace, the City of Berkeley possesses the right to consider the moral character of its business partners in determining with whom it seeks to maintain business relations and therefore to refrain from contracting with those entities which maintain business relationships with morally repugnant regimes.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Berkeley as follows:

SECTION II. DEFINITIONS

"City" or "City of Berkeley" shall mean the City of Berkeley, or any entity acting under the direction of the City Council of the City of Berkeley.

"City Manager" shall mean the City Manager of the City of Berkeley, or any authorized representative of the City Manager.

"Peace and Justice Commission" shall mean the City of Berkeley's Peace and Justice Commission established pursuant to Chapter 3.68 of the Berkeley Municipal Code.

"Commodities" shall include, but not be limited to, any tangible supplies, goods, vehicles, machinery, or equipment.

"Oppressive State" shall mean the territory, or any portion of the territory, of a foreign government designated in the Oppressive States List.

"Business Entity" shall mean any individual, firm, partnership, corporation, association, or any other commercial organization, and including parent-entities and wholly-owned subsidiaries to the extent that their operations are related to the purpose of its contract with the City. The term "Business Entity" does not include not-for-profit community based organizations, the United States of America, any State, municipality or other public corporation or agency.

"Personal Services" shall mean the performance of any work or labor and shall also include acting as an independent contractor or providing any consulting advice or assistance, or otherwise acting as an agent pursuant to a contractual agreement.

"Oppressive States List" shall mean Appendix A to this Resolution, as amended from time to time, and consisting of a compilation of Oppressive States and their respective Delisting Criteria.

"Delisting Criteria" shall mean the standard or standards which must be met in order for a government to be removed from the Oppressive States List.

"Remote Transaction" shall mean a sale of Commodities initiated and consummated completely by means of postal or Internet service and not exceeding the sum of $10,000 U.S. Dollars to a single purchaser in a 12 month period.

"Loan" shall mean purchasing securities, investing in assets, lending monies, making interest-bearing deposits, extending lines of credit, or any other such transaction that is anticipated to result in a return, directly or indirectly, of assets.

All terms used in the Resolution shall be construed in a manner consistent with the intent of this Resolution.

SECTION III. PROVISION OF PERSONAL SERVICES

A. General Prohibited Transactions

The City is prohibited from entering into any contractual agreement for the provision of Personal Services with any Business Entity that is providing or is willing to provide personal services to:

(i) the governing regime in any Oppressive State;

(ii) any business or corporation organized under the authority of the governing regime of any Oppressive State;

(iii) any person for the express purpose of assisting in business operations or trading with any public or private entity located in any Oppressive State.

B. Contract Stipulation

Any Business Entity contracting with the City for the provision of Personal Services shall be required as a material condition of any such contract to represent and certify that said Business Entity has reviewed this Resolution, that said Business Entity does not provide Personal Services to any entity described in Section III.A. and will not provide Personal Services to any such entity during the term of said contract; and that in the event of violation of the terms of this Resolution, the Business Entity will be subject to the remedies provided in Section VIII. The provisions of this section shall apply to renewals of existing contracts as well as to new contracts.

C. Disclosure Statement Required

Before any contract for the provision of Personal Services is awarded by the City pursuant to a formal or informal bid or proposal solicitation, the City Manager shall obtain from the prospective supplier of Personal Services a statement disclosing information sufficient for the City Manager to ascertain whether said supplier maintains any of the relationships described in Section III.A or is otherwise exempt from requirements of this Resolution pursuant to Section VII. The statement shall be signed and certified by an employee of the prospective supplier of Personal Services with sufficient legal authority to obligate the prospective supplier under the laws of the State of California. The Statement shall require the prospective supplier of Personal Services to notify the City Manager by written communication if the information disclosed in the statement is subsequently materially changed.

SECTION IV. SELECTIVE PURCHASE OF COMMODITIES

A. General Prohibited Transactions

1. The City shall not purchase any Commodity that is manufactured, assembled, extracted, harvested or refined in any Oppressive State;

2. The City shall not purchase any Commodity that is manufactured, assembled, extracted, harvested or refined by any Business Entity that buys, sells, leases or distributes Commodities in the conduct of business with, or who provides or is willing to provide Personal Services to:

   (i) the governing regime in any Oppressive State;

   (ii) any business or organization organized under the authority of the governing regime in any Oppressive State;

   (iii) any Business Entity for the purpose of assisting in business operations or trading with any public or private entity located in an Oppressive State.

3. For the purposes of this Section only, a Remote Transaction(s) shall not be deemed selling, leasing, or distributing Commodities in the conduct of business.

B. Disclosure Statement Required

Each prospective supplier of Commodities that submits a formal or informal bid or proposal for a contract to supply Commodities shall include with its bid or proposal documents a statement disclosing information sufficient for the City Manager to ascertain whether or not said supplier of Commodities complies with the requirements of this Resolution or is exempt under Section VII. The statement shall be signed and certified by an employee of the prospective supplier of Commodities with sufficient legal authority to obligate the prospective supplier of Commodities under the laws of the State of California. The statement shall require the prospective supplier of Commodities to notify the City Manager by written communication if the information disclosed in the statement is subsequently materially changed.

C. Contract Stipulation

Any Business Entity contracting with the City for the provision of Commodities shall be required as a material condition of any such contract to represent and certify that said Business Entity has reviewed this Resolution; that the Commodities it provides to the City comply with the standards set forth in Section IV.A above; that the Business Entity will continue to comply with this Resolution during the term of said contract; and that in the event of violation of the terms of this Resolution, the Business Entity will be subject to the remedies provided Section VIII. The provisions of this section shall apply to renewals of existing contracts as well as to new contracts.

D. Selective Purchasing Process

The ability of a bidder to comply with the requirements of this Resolution is a material term of every bid solicited by the City pursuant to City Charter Section 67 or Ordinance No. 6420-N.S. Therefore, if the Commodity offered thereunder is manufactured, extracted, harvested or refined in any Oppressive State, or by an entity having any of the relationships described in Section IV.A above, said bid shall be deemed "non-responsive."

SECTION V. DEPOSIT AND INVESTMENT OF CITY FUNDS

A. General Prohibited Transaction

1. No City funds shall be deposited or remain deposited in any bank or financial institution which has any outstanding Loan to:

(i) the governing regime in any Oppressive State;

(ii) any business or entity organized under the authority of the governing regime of any Oppressive State;

(iii) any person for the express purpose of assisting in business operations or trading with any public or private entity located in any Oppressive State.

2. No City funds shall be invested or remain invested in the stocks, bonds, securities, notes, debentures, certificates of indebtedness, or other obligations of any bank or financial institution which has any outstanding Loan to:

(i) the governing regime in any Oppressive State;

(ii) any business or entity organized under the authority of the governing regime of any Oppressive State;

(iii) any person for the express purpose of assisting in business operations or trading with any public or private entity located in any Oppressive State.

3. The prohibitions of this Section shall not apply to City funds invested under a trust indenture or investment agreement or otherwise invested by the City under a pre-existing contractual obligation, provided that such funds, if invested or deposited in non-compliance with this Resolution, shall be withdrawn or divested at the earliest possible maturity date.

B. Disclosure Statement Required

1. Before any City funds can be deposited or invested in any bank or financial institution, the City Manager shall obtain from each bank or financial institution a statement certifying that it does not have any outstanding loan of the type listed in subsection A of this Section, or, in the alternative, the City Manager shall obtain from each bank or financial institution a statement stating that the policy of the bank or financial institution is to not make any such future loans during the period that it holds City funds. The statement shall require the bank or financial institution to notify the City Manager if it subsequently enters into any loan described in this subsection, or if the policy prohibiting such loans is changed.

2. The requirements of this Section shall be satisfied by ensuring that no City funds are invested or deposited by banks or financial institutions which fail to submit the Statements required by this Section.

C. Compliance

1. The withdrawal or divestiture required by this Section shall be completed within one hundred twenty (120) days after the effective date of this Resolution.

2. When the City Manager determines that City funds must be withdrawn or divested from banks or financial institutions for noncompliance with the provisions of this Resolution, the City Manager shall advise the bank or financial institution that the withdrawal or divestiture of City funds is required by this Resolution.

3. If the City Manager determines that City funds have been deposited or invested in a bank or financial institution which subsequently fails to comply with this Resolution, the City Manager shall require the withdrawal or divestment of those funds within one hundred twenty (120) days after the date of determination of noncompliance.

D. The prohibitions of Subsection V.A.1. and V.A.2 shall not apply if the City Manager finds that:

1. no bank or financial institution is available which is capable of performing the desired function, or

2. the City will incur a significant financial loss as a consequence of said prohibitions.

SECTION VI. CITY REAL PROPERTY MANAGEMENT

To the maximum extent permitted by law, it shall be the policy of the City of Berkeley that the City Manager shall not sell, rent, or dispose of any real property including, but not limited to, granting the right to lay, construct, maintain, or operate pipelines through, over, across, or under land, water, park, reservation or highway of the City of Berkeley, to any entity which meets the criteria set forth in Sections III.A and IV.A of this Resolution. For the purposes of City Charter Section 76, the City Council will determine in each individual case whether the public interest is served by applying the terms of this Resolution to the grant of a franchise. The City Manager may sell, rent, or dispose of said property or grant said rights to said entity only if he or she finds such action is essential to protect the health, safety and welfare of the public.

SECTION VII. WAIVERS AND EXEMPTIONS

A. The prohibitions of this Resolution shall not apply if the City Manager makes one or more of the following findings:

1. The special characteristics of the particular Personal Services or Commodities offered by the Business Entity are necessary for the efficient operation of the City or the health, safety, and welfare of the City, or no comparable Personal Service or Commodity is available without financial loss occurring. The City Manager shall periodically report to the City Council his or her exercise of the waiver authority granted pursuant to this subsection.

2. The Business Entity offering the particular Personal Services or Commodities to the City is operating in an Oppressive State exclusively for the one or more of the following purposes :

(i) providing medical goods or services; or

(ii) providing emergency or humanitarian goods or services; or

(iii) news reporting or publishing.

SECTION VIII. REMEDIES

A. Upon a finding by the City Manager that a person has violated the terms of this Resolution, the City Manager shall be authorized to terminate said contract and bar the Business Entity from bidding on future contracts with the City for five years from the effective date of the contract termination. The City Council may, in its discretion, waive or modify such punitive action if the Business Entity can demonstrate to the City Council's satisfaction that the person did not knowingly violate the contract stipulation and has taken appropriate steps to prevent future violations.

B. In addition to the above, the City Council or City Manager may take any such actions as deemed necessary to recover damages resulting from the violations of contractual agreements as specified in Sections IV.C or V.C above.

SECTION IX. RULES AND REGULATION

The City Manager shall be authorized to promulgate any rules and regulations not in conflict with the purposes of this Resolution.

SECTION X. EFFECTIVE DATE

This Resolution shall take effect and apply to all bids and proposals due to the City, and contracts executed, on or after March 1, 1999. Any contract already executed at the effective date of this Resolution shall remain in full force and effect and not be subject to the provisions of this Resolution until such a time as the existing contract is renewed. At the time of the renegotiation, extension, or other similar action to effect the continuation or renewal of any existing contract, all provisions of this Resolution shall apply to such contract.

SECTION XI. AMENDMENT PROCESS

The City Council may alter the Oppressive States List only by amendment to this Resolution. Said amendment shall identify the country or territory to be added to, or removed from, the Oppressive States List, the basis for said action, and the applicable Delisting Criteria.

SECTION XII. PUBLIC AWARENESS

In furtherance of the purposes of this Resolution, the City Clerk shall distribute copies of the text of this Resolution, and any amendments thereto: (1) on or about the Independence Day holiday as observed each year; and (2) whenever the Council adopts an amendment to this Resolution. Copies shall be distributed by mail to the following officials: California's U.S. Senate delegation, the member(s) of the U.S. House of Representatives from the congressional district(s) representing the citizens of the City of Berkeley, the President of the United States, the U.S. Secretary of State, to a local newspaper of general circulation, and to a newspaper of national circulation.

SECTION XIII. SEVERABILITY

This Resolution shall be enforced to the full extent of the authority of the City of Berkeley. If any section, subsection, clause, sentence, paragraph or word of this Resolution or the application thereof to any entity or circumstances is deemed to be invalid or beyond the authority of the City of Berkeley by any court or agency of competent jurisdiction, such invalidity shall not affect the validity of the remaining sections, subsections, clauses, sentences, paragraphs or words of this Resolution, and the applications thereof; and to this end, the sections, subsections, clauses, sentences, paragraphs and words of this Resolution are declared to be separate, distinct, independent, and severable.

SECTION XIV. OVERSIGHT

A. Public Hearing and Reports

Pursuant to Section 3.68.070(L) of the Berkeley Municipal Code, the Peace and Justice Commission is directed to review the implementation of this Resolution on a regular basis as described below. One month prior to each public hearing, the City Manager shall provide a written report to the Peace and Justice Commission on the implementation of this Resolution.

B. Schedule of Hearings

The Peace and Justice Commission shall hold public hearings at least annually on the implementation of the Resolution with the first public hearing taking place at the first Peace and Justice Commission meeting in May after the effective date of the Resolution.

SECTION XV. REPEAL.

The following resolutions are hereby repealed upon the effective date of this Resolution: Resolution No. 57,881-N.S., Resolution No. 59,009-N.S., Resolution No. 59,107-N.S. However, the repeal of said resolutions is not intended to amend or modify the terms of any existing City contract and the terms of the such contracts will remain enforceable according to the resolutions in effect at the date of their execution.

* * * * * * * * * * * * * * *

The foregoing Resolution was adopted by the Berkeley City Council on January 12, 1999 by the following vote:

Ayes: Councilmembers Breland, Maio, Olds, Shirek, Spring, Woolley, Worthington and Mayor Dean.

Noes: None.

Abstain: Councilmember Armstrong.

Absent: None.

Shirley Dean, Mayor

Attest: _____
Sherry M. Kelly, City Clerk

Section 2.64
Appendix A
RESCINDED BY
RES. # 60,382

APPENDIX A

OPPRESSIVE STATES LIST

1. Country/Region: **Union of Myanmar (Burma).**

Delisting Criteria: The Citizens of the City of Berkeley, acting through the City Council, determine that the foreign policy of the United States regarding the Union of Myanmar embodies an effective strategy for bringing about democratic government for the People of Burma.

2. Country/Region: **Federal Republic of Nigeria.**

Delisting Criteria: The Citizens of the City of Berkeley, acting through the City Council, determine that the foreign policy of the United States regarding the Federal Republic of Nigeria embodies an effective strategy for bringing about democratic government for the Nigerian People.

3. Country/Region: **Tibet Autonomous Region and the provinces of Ado, Kham, and U-Tsang.**

Delisting Criteria: The Citizens of the City of Berkeley, acting through the City Council, determine that the foreign policy of the United States regarding the Tibet Autonomous Region and the provinces of Ado, Kham, and U-Tsang embodies an effective strategy for bringing about democratic government for the Tibetan People.

4. Country/Region: **Republic of Indonesia**

Delisting Criteria: The Citizens of the City of Berkeley, acting through the City Council, determine that the foreign policy of the United States embodies an effective strategy for bringing about East Timorese self-determination and independence in a referendum agreeable to, and supervised by, the United Nations, as called for in United Nations General Assembly Resolutions 31/53 of 1 December 1976, 32/34 of 28 November 1977, 33/39 of 13 December 1978, 34/40 of 21 November 1979, 35/27 of 11 November 1980, 36/50 of 24 November 1981, and 37/30 of 23 November 1982, as well as in United Nations Security Council Resolutions 384 of 22 December 1975 and 389 of 22 April 1976, which, together with United Nations Human Rights Commission Resolution 1997/63 of 16 April 1997, co-sponsored by the United States, must be fully complied with by the Republic of Indonesia.

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RESOLUTION NO. 60,382-N.S.

AMENDING APPENDIX A OF RESOLUTION NO. 59,853-N.S. TO REMOVE THE FEDERAL REPUBLIC OF NIGERIA AND THE REPUBLIC OF INDONESIA FROM THE OPPRESSIVE STATES LIST

WHEREAS, the Council of the City of Berkeley adopted Resolution No. 59,853-N.S. to express support for a national foreign policy which places paramount importance on human rights by prohibiting the expenditure of public funds for personal services or for the procurement of goods or for deposit or investment; and

WHEREAS, the Peace and Justice Commission has determined that the foreign policy of the United States regarding the Federal Republic of Nigeria embodies an effective strategy for bringing about the democratic government for the people of Nigeria; and

WHEREAS, the Peace and Justice Commission has determined that the foreign policy of the United States embodies an effective strategy for bringing about East Timorese self-determination and independence in a referendum agreeable to, and supervised by, the United Nations, as called for in United Nations General Assembly Resolutions 31/53 of December 1, 1976, 32/34 of November 28, 1977, 33/39 of December 13, 1978, 34/40 of November 21, 1979, 35/27 of November 11, 1980, 36/50 of November 24, 1981, and 37/30 of November 23, 1982, as well as in United Nations Security Council Resolutions 384 of December 22, 1975 and 389 of April 22, 1976, which, together with United Nations Human Rights Commission Resolution 1997/63 of April 16, 1997, co-sponsored by the United States, must be fully complied with by the Republic of Indonesia.

NOW THERFORE, BE IT RESOLVED by the Council of the City of Berkeley that Appendix A of Resolution No. 59,853-N.S. is hereby amended to remove the Federal Republic of Nigeria and the Republic of Indonesia from the Oppressive States List.

The foregoing Resolution was adopted by the Berkeley City Council on January 11, 2000 by the following vote:

Ayes: Councilmembers Breland, Maio, Olds, Shirek, Spring, Worthington and Mayor Dean.

Noes: None.

Absent: Councilmembers Armstrong and Woolley.

Shirley Dean, Mayor

Attest: _____
Sherry M. Kelly, City Clerk

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RESOLUTION NO. 70,606-N.S.

RESOLUTION TO REINSTATE BURMA (MYANMAR) ON BERKELEY'S OPPRESSIVE STATES LIST

WHEREAS, the Peace and Justice Commission advises the City Council on all matters relating to the City of Berkeley's role in issues of peace and social justice (Berkeley Municipal Code Chapter 3.68.070); and

WHEREAS, the Peace and Justice Commission mandate, as amended in 1990, includes Function K of BMC section 3.68.070: "Advise the City Council on matters relating to the responsible investment of public funds in accordance with the responsible investment policy established by Resolution No. 55,141A-NS;" and

WHEREAS, in 1990 the Berkeley City Council passed the Oppressive States Contract Prohibition (Res. 59,853-N.S.), banning contracts with companies doing business in several countries including Burma (Myanmar);[1] and

WHEREAS, in 2003 President George W Bush signed the Burma Freedom and Democracy Act (BFDA) into law, including a ban on all imports from Myanmar and imposed other sanctions; and.

WHEREAS, the Berkeley City Council therefore removed Burma from the Oppressive States list in deference to the federal action; and

WHEREAS, on June 10, 2008, the Berkeley City Council approved a series of resolutions proposed by the Peace and Justice Commission commending the people of Burma for 46 years of struggle against dictatorship, honoring the 20th anniversary of the 1988 popular uprising and declaring August 8 as "Burma Day," to be marked by raising Burmese freedom flags at Berkeley City Hall every August 8;[2] and

WHEREAS, in July 2012, the U.S. formally eased sanctions on Myanmar in response to a perceived democratization process, but between 2017 and 2021 the situation in Myanmar deteriorated, with 600,000 Rohingya refugees displaced, and finally State Counsellor Aung San Suu Kyi was overthrown and imprisoned in a military coup in February 2021, whereupon the U.S. gradually resumed aspects of the former sanctions regime; and

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[1] https://en.wikipedia.org/wiki/Myanmar%E2%80%93United_States_relations#:~:text=The%20political%20relationship%20between%20the,2007%2C%20further%20strained%20the%20relationship.

[2] "US City Declares August 8 'Burma Day,"
https://www2.irrawaddy.com/article.php?art_id=12680Day','https://www2.irrawaddy.com/article.php?art_id=12680.

WHEREAS, the renewed sanctions grant an exception for investment in the Myanmar Oil and Gas Enterprises (MOGE), a partner of Chevron Corporation, prompting criticism from human rights groups including Human Rights Watch, which stated, "By allowing deals with Myanmar's state-owned oil company, the U.S. looks like it caved to industry pressure and undercut Aung San Suu Kyi and others in Myanmar who are promoting government accountability;"[3] and Chevron and Total own a majority controlling interest in a huge oil project that has generated billions of dollars for the regime;[4] and

WHEREAS, since its 2021 coup that toppled Burma's democratic government, the terrorist Myanmar military council has killed more than 2,000 civilians including trade unionists and children, arrested more than 14,000, and displaced more than 1 million people; and

WHEREAS, in 2022, in a new wave of violence and impunity, the military council has publicly executed four democracy activists, and is planning to execute 41 more political prisoners; the dictatorship has also sentenced State Counsellor Aung San Suu Kyi to ten years in prison at hard labor and dismissed the international community's demand for peace talks, including what it has committed to under the ASEAN's five-point consensus;[5] and

WHEREAS, credible allegations of crimes documented in the present and previous reports represent only a fraction of the violations and abuses that the people of Myanmar have had to endure since February 1, 2021. Patterns of arbitrary arrest and detention, of torture and other cruel, inhuman or degrading treatment or punishment and of killings, particularly in Yangon, Mandalay, Sagaing, Bago, Magway and Tanintharyi Regions, seem to indicate that individuals have been targeted for their political or professional affiliation or for exercising their political rights;[6] and

WHEREAS, Burmese civil society is calling for the UN Credential Committee to re-elect U Kyaw More Tun the Ambassador from Burma to the UN;[7] and.

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[3] "US to Invest in Burma's Oil," https://www.rfa.org/english/news/myanmar/sanctions-07112012185817.html

[4] "Chevron, in partnership with Total, PTT, and Myanmar Oil and Gas Enterprise (MOGE), holds equity in one of the largest investment projects in Myanmar (Burma): the Yadana gas field and pipeline that has generated billions of dollars for the Myanmar military junta. Together, Total and Chevron have a majority controlling interest in the Yadana project. Since it seized power in the February 2021 coup d'etat, the Myanmar military now holds total control over MOGE," Human Rights Watch, https://www.hrw.org/news/2022/04/22/myanmar-aseans-failed-5-point-consensus-year

[5] "UN Security Council Calls For Five-point ASEAN Consensus To Cease Myanmar Crisis," https://www.republicworld.com/world-news/rest-of-the-world-news/un-security-council-calls-for-five-point-asean-consensus-to-cease-myanmar-crisis.html#:~:text=The%20ASEAN%20five-point%20consensus%20states%20that%20there%20should,peaceful%20solution%20in%20the%20interests%20of%20the%20people

[6] "Press briefing notes on Myanmar," UN Office of the High Commissioner on Human Rights, March 16, 2021, https://www.ohchr.org/en/taxonomy/term/762?page=16

[7] https://specialadvisorycouncil.org/2022/09/united-nations-general-assembly-accept-credentials-nug/; https://actionnetwork.org/petitions/myanmar-for-u-kyaw-moe-tun;

WHEREAS, the UN Human Rights Council recently called on the international community to "Take immediate action to prevent the supply of arms to the military of Myanmar or other armed parties in the country, in accordance with the call made by the General Assembly, and apply other targeted sanctions on military and economic interests, as appropriate."[8]

THEREFORE, BE IT RESOLVED by the Council of the City of Berkeley that the Council urges the U.S. Congress to require and President Joe Biden to extend sanctions to Myanmar's state-owned oil company, Myanmar Oil and Gas Enterprises (MOGE), and any other state-owned companies in Myanmar; and to provide support for and recognize the Burma National Unity Government (NUG), formed by the representatives rightfully chosen in the 2020 elections.

BE IT FURTHER RESOLVED by the Council of the City of Berkeley that Council urge the U.S. Ambassador to the United Nations to ensure the continued representation of Burma by U Kyaw More Tun.

BE IT FURTHER RESOLVED by the Council of the City of Berkeley that the country of Burma (Myanmar) be reinstated on Berkeley's Oppressive States list and be fully subject to the City's Oppressive States Ordinance.

BE IT FURTHER RESOLVED that the City Clerk send a copy of this resolution to Berkeley's congressional delegation, Senator Dianne Feinstein, Senator Alex Padilla, and Representative Barbara Lee, Representatives Jackie Speier and Ro Khanna, Secretary of State Antony Blinken, and U.S. Ambassador to the United Nations Linda Thomas-Greenfield.

The foregoing Resolution was adopted by the Berkeley City Council on November 15, 2022 by the following vote:

Ayes: Bartlett, Droste, Hahn, Harrison, Kesarwani, Robinson, Taplin, Wengraf, and Arreguin.

Noes: None.

Absent: None.

Jesse Arreguin, Mayor

Attest:
Mark Numainville, City Clerk

https://www.passblue.com/2022/09/13/the-un-general-assembly-must-fix-myanmars-muddled-representation-and-send-a-profound-message-to-the-junta/;
https://burmacampaign.org.uk/civil-society-calls-on-un-to-retain-myanmars-ambassador-u-kyaw-moe-tuns-accreditation-to-the-un/

[8] https://www.ohchr.org/en/press-releases/2022/09/un-report-calls-urgent-action-halt-access-revenue-and-arms-supplies-myanmar

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APPENDIX 3

ORDINANCE NO. 6623 – N.S.
CHAPTER 13.29
PROVISION OF EQUAL BENEFITS TO EMPLOYEES OF CITY CONTRACTORS

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ORDINANCE NO. 6623-N.S.

AMENDING BERKELEY MUNICIPAL CODE TITLE 13 BY ADDING CHAPTER 13.29 ESTABLISHING A REQUIREMENT THAT SPECIFIED CITY CONTRACTORS PROVIDE EQUAL BENEFITS TO EMPLOYEES WITH SPOUSES AND EMPLOYEES WITH DOMESTIC PARTNERS AND TO THE SPOUSES AND DOMESTIC PARTNERS OF SUCH EMPLOYEES, INCLUDING PROCEDURE FOR ADMINISTRATION AND ENFORCEMENT, AND AUTHORIZING THE CITY MANAGER TO PROMULGATE REGULATIONS CONSISTENT HEREWITH

BE IT ORDAINED by the City Council of the City of Berkeley as follows:

Section 1. That Chapter 13.29 is hereby added to the Berkeley Municipal Code to read as follows:

Chapter 13.29

PROVISION OF EQUAL BENEFITS TO EMPLOYEES OF CITY CONTRACTORS

Sections:

13.29.010 Title and Purpose.
13.29.020 Definitions.
13.29.030 Contractors Subject to the Requirements of this Chapter.
13.29.040 Non-discrimination in Provision of Benefits Under this Chapter.
13.29.050 Required Contract Provisions.
13.29.060 Waivers and Exemptions.
13.29.070 Retaliation and Discrimination Prohibited.
13.29.080 Employee Complaints to City.
13.29.090 Remedies.
13.29.100 Effective Date.
13.29.110 Severability.

13.29.010 Title and Purpose.

This Ordinance shall be known as the "Berkeley Equal Benefits Ordinance." The purpose of this Ordinance is to protect the public health, safety and welfare by requiring that public funds be expended in such a manner as to prohibit discrimination in the provision of employee benefits by City contractors between employees with spouses and employees with domestic partners, and/or between domestic partners and spouses of such employees.

13.29.020 Definitions.

The following definitions shall apply throughout this Ordinance:

A. "Contractor" shall mean any person or persons, firm, partnership, corporation, or combination thereof, who enters into a contract with the City.

B. "Domestic Partner" shall mean any person who has a currently registered domestic partnership with a governmental body pursuant to state or local law authorizing such registration or with his or her employer or his or her domestic partner's employer.

C. "Non-profit " shall mean a non-profit organization described in Section 501c(3) of the Internal Revenue Code of 1954 which is exempt from taxation under Section 501(c)(3) of that code, or any nonprofit educational organization qualified under Section 23701(d) of the Revenue and Taxation Code.

13.29.030 Contractors Subject to the Requirements of this Chapter.

A. The following Contractors are subject to this Chapter:

1. For-profit entities which enter into an agreement with the City for public works or improvements to be performed, or for goods or services to be purchased, for an amount of $25,000 or more; and

2. Non-profit entities which enter into an agreement with the City for public works or improvements to be performed, or for goods or services to be purchased, for an amount of $100,000 or more; and

3. Entities which generate $350,000 or more in annual gross receipts and which occupy City property pursuant to a written agreement for the exclusive use or occupancy of said property for a term exceeding 29 days in any calendar year; and

4. Entities which receive a grant agreement for an amount of $100,000 or more.

B. The requirements of this Chapter shall only apply to those portions of a Contractor's operations that occur (i) within the City; (ii) on real property outside the City if the property is owned by the City or if the City has a right to occupy the property, and if the Contractor's presence at that location is connected to a contract with the City; and (iii) elsewhere in the United States where work related to a City contract is being performed. The requirements of this Chapter shall not apply to subcontracts or subcontractors of any contract or Contractor.

13.29.040 Non-discrimination in Provision of Benefits Under this Chapter.

A. No Contractor subject to this Chapter pursuant to Section 13.29.030 shall discriminate in the provision of bereavement leave, family medical leave, health benefits, membership or membership discounts, moving expenses, pensions and retirement benefits or travel benefits or in the provision of any benefits other than bereavement leave, family medical leave, health benefits, membership or membership discounts, moving expenses, pensions and retirement benefits or travel benefits between employees with domestic partners and employees with spouses, and/or between the domestic partners and spouses of such employees, except as set forth in subsections 13.29.040(A)(1) and (2), below:

1. In the event that the Contractor's actual cost of providing a particular benefit for the domestic partner of an employee exceeds that of providing it for the spouse of an employee, or the Contractor's actual cost of providing a particular benefit for the spouse of an employee exceeds that of providing it for the domestic partner of an employee, the Contractor shall not be deemed to discriminate in the provision of employee benefits if the Contractor conditions providing such benefit upon the employee agreeing to pay the excess costs.

2. The Contractor shall not be deemed to discriminate in the provision of employee benefits if, despite taking reasonable measures to do so, the Contractor is unable to extend a particular employee benefit to domestic partners, so long as the Contractor provides the employee with a cash equivalent.

B. Provided that a Contractor does not discriminate in the provision of benefits between employees with spouses and employees with domestic partners, a Contractor may:

1. Elect to provide benefits to individuals in addition to employees' spouses and employees' domestic partners;

2. Allow each employee to designate a legally domiciled member of the employee's household as being eligible for spousal equivalent benefits; or

3. Provide benefits neither to employees' spouses nor to employees' domestic partners.

C. A Contractor will not be deemed to be discriminating in the provision of benefits where the implementation of policies ending discrimination in benefits is delayed following the first award of a City contract to a Contractor after the effective date of this Chapter:

1. Until the first effective date after the first open enrollment process following the date the contract with the City is executed, provided that the Contractor submits evidence that it is making reasonable efforts to end discrimination in benefits. This delay may not exceed two (2) years from the date the contract with the City is executed and only applies to benefits for which an open enrollment process is applicable.

2. Until administrative steps can be taken to incorporate nondiscrimination in benefits in the Contractor's infrastructure. The time allotted for these administrative steps shall apply only to those benefits for which administrative steps are necessary and may not exceed three (3) months. An extension of this time may be granted at the discretion of the City Manager upon the written request of a Contractor, setting forth the reasons that additional time is required.

3. Until the expiration of a Contractor's current collective bargaining agreement(s) where all of the following conditions have been met:

a. The provision of benefits is governed by one or more collective bargaining agreement(s); and

b. The Contractor takes all reasonable measures to end discrimination in benefits by either requesting that the Union(s) involved agree to reopen the agreement(s) in order for the Contractor to take whatever steps are necessary to end discrimination in benefits or by ending discrimination in benefits without reopening the collective bargaining agreement(s); and

c. In the event that the Contractor cannot end discrimination in benefits despite taking all reasonable measures to do so, the Contractor provides a cash equivalent to eligible employees for whom benefits are not available. Unless otherwise authorized, in writing by the City Manager, this cash equivalent payment must begin at the time the Union(s) refuse to allow the collective bargaining agreement(s) to be reopened, or in any case no longer than three (3) months from the date the contract with the City was executed. This cash equivalent payment shall not be required where it is prohibited by federal labor law.

D. Employers subject to this Chapter pursuant to Section 13.29.030 shall give written notification to each current and new employee of his or her potential rights under this Chapter in a form specified by the City. Such notice shall also be posted prominently in areas where it may be seen by all employees.

13.29.050 Required Contract Provisions.

Every contract subject to this Chapter shall contain provisions requiring it to comply with the provisions of this Chapter as they exist on the date when the Contractor entered the contract with the City or when such contract is amended. Such contract provisions may include but need not be limited to the Contractor's duty to promptly provide to the City documents and information verifying its compliance with the requirements of this Chapter and sanctions for non-compliance.

13.29.060 Waivers and Exemptions.

A. The City may waive the requirements of this Chapter where the City Manager makes one or more of the following findings:

1. Award of a contract or amendment is necessary to respond to an emergency;

2. The Contractor is a sole source;

3. No compliant Contractors are capable of providing goods or services that respond to the City's requirements;

4. The Contractor is a public entity;

5. The requirements of this Chapter are inconsistent with a grant, subvention or agreement with a public agency;

6. The City is purchasing through a cooperative or joint purchasing agreement;

7. The contract involves specialized litigation requirements such that it would be in the best interests of the City to waive the requirements of this Chapter, as determined by the City Attorney;

8. The contract involves investment of trust moneys or agreements relating to the management of trust assets, City moneys invested in U.S. government securities or under pre-existing investment agreements, or the investment of City moneys where no person, entity or financial institution doing business with the City which is in compliance with this Chapter is capable of performing the desired transactions or the City will incur a financial loss if the requirements of this Chapter are enforced;

9. After taking all reasonable measures to find an entity that complies with this Chapter, the City may waive any or all requirements of this Chapter for any contract or bid package advertised and made available to the public, or any competitive or sealed bids received by the City as of the effective date of this Ordinance under the following circumstances:

a. There are no qualified responsive bidders or prospective contractors who comply with this Chapter and the contract is for goods, a service or a project that is essential to the City or City residents; or

b. The requirements of this Chapter would result in the City's entering into a contract with an entity that was set up, or is being used for the purpose of evading the intent of this Chapter.

B. The requirements of this Chapter shall not be applicable to contracts executed or amended prior to the effective date of this Chapter, or to bid packages advertised and made available to the public, or any competitive or sealed bids received by the City prior to the effective date of this Chapter, unless and until such contracts are amended after the effective date of this Chapter and would otherwise be subject to this Chapter.

13.29.070 Retaliation and Discrimination Prohibited.

A. No employer shall retaliate or discriminate against an employee in his or her terms and conditions of employment by reason of the person's status as an employee protected by the requirements of this Chapter.

B. No employer shall retaliate or discriminate against a person in his or her terms and conditions of employment by reason of the person reporting a violation of this Chapter or for prosecuting an action for enforcement of this Chapter.

13.29.080 Employee Complaints to City.

A. An employee who alleges violation of any provision of the requirements of this Chapter may report such acts to the City. The City Manager may establish a procedure for receiving and investigating such complaints and take appropriate enforcement action.

B. The City shall have the power to examine Contractors' benefit programs covered by this Chapter.

C. Any complaints received shall be treated as confidential matters, to the extent permitted by law. Any complaints received and all investigation documents related thereto shall be deemed exempt from disclosure pursuant to California Government Code Sections 6254 and 6255.

13.29.090 Remedies.

A. Upon a finding by the City Manager that a Contractor has violated the requirements of this Chapter, the City shall have the rights and remedies described in this Section, in addition to any rights and remedies provided at law or in equity.

1. The City Manager shall be authorized to terminate said contract and bar the Contractor from bidding on future contracts with the City for five (5) years from the effective date of the contract termination; and

2. In the City Manager's sole discretion, a Contractor found to have willfully violated the requirements of this Chapter may be required to pay liquidated damages.

3. Reasonable attorneys' fees and costs.

B. An employee claiming violation of this Chapter may bring an action in the appropriate division of the Superior Court of the State of California against an employer and obtain the following remedies:

1. Reinstatement, injunctive relief, compensatory damages and punitive damages.

2. Reasonable attorneys' fees and costs.

C. Notwithstanding any provision of this Ordinance or any other ordinance to the contrary, no criminal penalties shall attach for any violation of this Chapter.

D. No remedy set forth in this Chapter is intended to be exclusive or a prerequisite for asserting a cause of action to enforce any rights hereunder in a court of law. This Chapter shall not be construed to limit an employee's right to bring a common law cause of action for wrongful termination.

E. Nothing in this Chapter shall be interpreted to authorize a right of action against the City.

13.29.100 Effective Date.

The provisions of this Chapter shall apply to any contract awarded on or after July 1, 2001.

13.29.110 Severability.

In the event any court of competent jurisdiction holds any provision of this Ordinance invalid or unenforceable, such holding shall not invalidate or render unenforceable any other provisions hereof.

13.29.120 Reserved.

Section 2. Copies of this Ordinance shall be posted for two days prior to adoption in the display case located near the walkway in front of Old City Hall, 2134 Martin Luther King, Jr. Way. Within fifteen (15) days of adoption, copies of this Ordinance shall be filed at each branch of the Berkeley Public Library and the title shall be published in a newspaper of general circulation.

At a regular meeting of the Council of the City of Berkeley, held on April 17, 2001 this Bill was passed to print and ordered published by posting by the following vote:

Ayes: Councilmembers Armstrong, Breland, Hawley, Maio, Olds, Shirek, Spring, Worthington and Mayor Dean.

Noes: None.

Absent: None.

At a regular meeting of the Council of the City of Berkeley held on April 24, 2001 this Ordinance was adopted by the following vote:

Ayes: Councilmembers Armstrong, Breland, Hawley, Maio, Olds. Shirek, Spring, Worthington and Mayor Dean.

Noes: None.

Absent: None.

Shirley Dean, Mayor

ATTEST: Sherry M. Kelly, City Clerk

In effect: May 24, 2001

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APPENDIX 4

CITY OF BERKELEY
MONUMENT REFERENCING GUIDELINES

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City of Berkeley
Monument Reference Guidelines

A guide to Monument Referencing in the City of Berkeley as required by the Professional Land Surveyors' Act (Business and Professions Code) Section 8771 et. seq.

City of Berkeley Monument Reference Guidelines

May 13, 2019

GENERAL

City Monuments consist of many different kinds of physical objects but regardless of the specific description of the object deemed to be a City Monument, the actual physical location must be accurately preserved.

STANDARD PRACTICE

Standard Practices detailed below are to be followed when referencing a City of Berkeley Monument.

FIELD PRACTICES

Whenever a monument appears to be threatened with removal or disturbance, the monument must be referenced, both horizontally and vertically, by or under the direction of a licensed land surveyor or civil engineer legally authorized to practice land surveying in the State of California. For each monument referenced, a minimum of four (4) reference points must be set and tagged with the appropriate license number of the land surveyor or civil engineer. All reference points shall be durable and have a known location relative to the monument so that the monument can be accurately replaced from the references. When available, sound concrete is the best site for setting reference points. Brass or bronze disks, Mag Nails (or similar concrete nail) with washers, surveyor's nails & tags, etc., should be used in those cases where the reference can be set on sound concrete curb, gutter, sidewalk, wall, etc. In no case shall lead be used as any part of the reference point. The important criteria are that any concrete structure meets the following basic tests:

1. Good condition (not cracked, lowered or raised as compared to the adjacent concrete, or otherwise damaged);

2. Accessible for setup, not blocking traffic and preferably on public right of way. If a reference point must be set outside the public right of way, permission to do so must be acquired by the surveyor performing the referencing. The City of Berkeley, by promulgation of these standards, is not giving permission to perform any task on private property;

3. Positioned to survive the conditions that put the original monument at risk, such as a street rehabilitation

project, a sanitary sewer rehabilitation project, etc.;

4. Positioned to survive any foreseeable (as evidenced by a visual inspection of the site) construction such as curb ramp construction/replacement, curb replacement, sidewalk replacement, utility relocation, etc. The City of Berkeley has a strong commitment to insuring accessibility throughout the City. Existing curb ramps are frequently replaced with code compliant curb ramps with truncated domes. Damaged sidewalks and curbs are replaced as well. Additionally the City commonly installs curb ramps at crosswalks where none currently exist, therefore those locations shall be avoided when placing reference points;

5. The primary consideration in choosing the placement of a reference point shall be to assure its safety and stability in perpetuity. For example, no reference point should be set near any trees with roots likely to raise or damage the surface upon which the reference point has been set.

If no suitable concrete is available, a metal bar or pipe, with a tagged cap or plug, may be used provided that it is set flush in sound soil or pavement. Setting metal bars or pipes has the possibility of damaging subsurface infrastructure. It shall be the duty of the surveyor performing the referencing to assure that the site is properly evaluated for subsurface infrastructure. Sole responsibility for any resulting damage thereto shall be borne by the surveyor responsible for the damage. No reference point shall be set on private property without the surveyor performing the referencing first obtaining permission from the property owner.

DOCUMENTATION

Within two (2) weeks of the completion of any monument referencing, a Corner Record for each monument referenced shall be filed with Alameda County, and copies of the signed sealed submittals of the Corner Record(s) shall be provided to the City of Berkeley, Public Works Department, Engineering Division, Survey Section.

CORNER RECORD MONUMENT AND REFERENCE POINT CONDITIONS AND DESCRIPTIONS

Corner Records shall include a detailed description of the monument referenced and reference points set:

1. Description of monument character and setting (2" brass disc stamped CITY OF BERKELEY UNLAWFUL TO DEFACE in monument well, 3/4" brass pin in monument well, 1" square iron bar in monument well, 1-1/2" iron pipe in soil, etc.);

2. Description of monument reference point character and setting (1" brass disc stamped LS #### in concrete, mag nail & washer stamped LS #### in top of curb, nail & tag LS #### in concrete walk, rebar & cap LS #### in asphalt pavement, etc.);

3. Labeled with the official City of Berkeley monument designation (B####);

4. North arrow and graphic scale;

5. Note pertaining to the method used for establishing the reference point elevations.

UNACCEPTABLE REFERENCE POINTS

In no case will lead, or any other material that may cause harm, be used in any portion of the referencing process. Sole responsibility for the removal of such products and any harm they cause will be borne by the surveyor responsible for using the product in the referencing process.

Cut crosses, scribed lines, permanent marker, paint, wood hubs, etc., due to their limited lifecycle, may not be used as a reference point.

No reference point may be set on any fire hydrant or similarly temporary fixture.

VERTICAL REFERENCE POINTS

When performing the vertical referencing of a monument, differential leveling practices shall be used. The Corner Record shall include a minimum of four (4) vertical reference points. It is preferable that the horizontal reference points also be used for the vertical referencing.

All vertical references shall be based on a value and datum provided by the City of Berkeley, Public Works Department, Engineering Division, Survey Section, at the time of the request for referencing. Note that the value associated with any control point in the City's vertical and horizontal network is subject to change as the City periodicallyrecalculates its position.

RESOLUTION NO. 68,299–N.S.

COMMUNITY WORKFORCE AGREEMENT WITH BUILDING TRADES COUNCIL, ET.AL. FOR CITY OF BERKELEY CONSTRUCTION PROJECTS OVER $500,000

WHEREAS, since its January 18, 2011 adoption, the Community Workforce Agreement has incorporated community interests by providing Berkeley residents access to quality union jobs with better standards for pay and benefits; and

WHEREAS, the City has operated continuously under the guidelines of the CWA, which has enhanced local hiring efforts by ensuring a portion of workers on certain City of Berkeley construction projects are from the local area, and that City projects will not be affected by work stoppages due to labor issues; and

WHEREAS, by Resolution No. 65,157-N.S. on January 18, 2011, Council approved the CWA for a term of three years and authorized the City Manager to execute the Agreement with the Alameda County Building and Construction Trades Council, AFL-CIO and twenty-two labor organizations regarding the provision of union labor to City construction projects in excess of $1 million dollars; and

WHEREAS, on May 15, 2012, Council approved the City Manager's recommendation to maintain the CWA's $1 million dollar threshold for publicly-funded construction projects for an additional twelve months; and

WHEREAS, on June 23, 2015, Council approved Resolution No. 67,111-N.S. reducing the threshold from $1 million to $500,000, with that threshold continuing to be based on the engineer's estimate and authorizing the City Manager to extend the then-current CWA for three years; and

WHEREAS, the City has since that time honored the terms of that Agreement and its key components, and the Parties have worked diligently and cooperatively to reach an accord on newly added contract language and a new expiration term.

NOW THEREFORE, BE IT RESOLVED by the Council of the City of Berkeley that the City Manager is authorized to execute a contract with the Building Trades Council and twenty-two labor organizations regarding the provision of labor to City of Berkeley construction projects in Berkeley with an estimated value in excess of $500,000 for a three-year term that will expire June 30, 2020.

The foregoing Resolution was adopted by the Berkeley City Council on January 23, 2018 by the following vote:

Ayes: Davila, Droste, Hahn, Harrison, Maio, Wengraf, Worthington and Arreguin.

Noes: None.

Absent: Bartlett.

Jesse Arreguin, Mayor

Attest:
Mark Numainville, City Clerk

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APPENDIX 5

RESOLUTION NO. 70,926 – N.S.

REFERENCE TO COMMUNITY WORKFORCE AGREEMENT FOR CONSTRUCTION PROJECTS OVER $500,000

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RESOLUTION NO. 70,926-N.S.

CONTRACT AMENDMENT: COMMUNITY WORKFORCE AGREEMENT EXTENSION WITH BUILDING AND CONSTRUCTION TRADES COUNCIL ET AL. FOR CONSTRUCTION PROJECT AT OR ABOVE $500,000

WHEREAS, since its January 18, 2011 adoption, the Community Workforce Agreement (hereafter CWA) has incorporated community interests by providing Berkeley residents access to quality union jobs with better standards for pay and benefits; and

WHEREAS, by Resolution No. 65,157-N.S. on January 18, 2011, Council approved the CWA for a term of three years and authorized the City Manager to execute the Agreement with the Alameda County Building and Construction Trades Council, AFL-CIO and twenty-two labor organizations regarding the provision of union labor to City construction projects in excess of $1 million dollars; and

WHEREAS, on May 15, 2012, City Council maintained the CWA's $1 million dollar threshold for publicly-funded construction projects for an additional twelve months; and

WHEREAS, on June 23, 2015, Council approved Resolution No. 67,111-N.S. reducing the threshold from $1 million to $500,000, with that threshold continuing to be based on the engineer's estimate and authorizing the City Manager to extend the then-current CWA for three years; and

WHEREAS, on January 23, 2018, and December 15, 2020, City Council again authorized the City Manager to extend the CWA, the latter extension until June 30, 2023; and

WHEREAS, the CWA will support the efforts of the City to increase employment opportunities for Berkeley residents, including youth, through apprenticeship and pre-apprenticeship programs; and

WHEREAS, the CWA helps to provide for peaceful settlement of labor disputes and grievances without strikes or lockouts, thus promoting the public interest in assuring the timely and economical completion of the projects.

NOW THEREFORE, BE IT RESOLVED by the Council of the City of Berkeley that the City Manager is authorized to execute a contract amendment with the Building Trades Council and twenty-two labor organizations regarding the provision of labor to construction projects in Berkeley with an estimated value in excess of $500,000 for a three-year term that will expire June 30, 2026.

The foregoing Resolution was adopted by the Berkeley City Council on June 27, 2023 by the following vote:

Ayes: Bartlett, Hahn, Harrison, Humbert, Kesarwani, Robinson, Taplin, Wengraf, and Arreguin.

Noes: None.

Absent: None.

Jesse Arreguin, Mayor

Attest:
Mark Numainville, City Clerk

- **Local Workforce Hiring Goals**
  The City of Berkeley's local workforce-hiring goal is 20% of craft hours worked, on a craft by craft basis on locally funded projects. City Staff will provide a template to be used by the general contractor (GC) for reporting the summary of the total work hours and total number of Berkeley residents, this report is to be submitted with each certified payroll (CP), including CP for each subcontractor. GC can compile the report for the subcontractors or can require each sub to prepare their own report. Please include documentation detailing efforts to meet the local hire goals, i.e., dispatch requests to the unions. Please note the GC is responsible for the local hire component for the entire project. This report will be reviewed by the Joint Administrative Committee (JAC) to monitor compliance of the local workforce hiring goals. The JAC may periodically request contractors to attend a JAC meeting to describe and discuss their local hire efforts. GC and the subs are strongly encouraged to utilize the city-funded pre-apprenticeship program, Rising Sun Energy Center, for the hiring of Berkeley residents on the projects. Rising Sun staff will work closely with the trades and the contractor to facilitate the hiring of the program graduates for entry into the trades. City staff will conduct periodic interviews of workers throughout the project.

- **Certified Payrolls**
  Contractors are required to submit certified payrolls (CP) on a monthly basis to the Public Works Project Manager. The monthly report described above shall reflect the information provided on the Certified Payrolls. Address & trade for each worker must be included in Certified Payroll and is subject to verification by City staff. Please redact Social Security Numbers from CP prior to sending to city staff. When submitting CP, please attach any documentation pertinent to your good faith efforts, such as dispatch requests & union hall responses to those requests.

- **Core (Regular, experienced) Employees**
  A non-signatory contractor may use up to five (5) of its own "core" employees provided that the first worker hire comes from the union, second worker is "core", third worker from the union, fourth worker is "core", and so forth. The contractors' worker must comply with the Union Hall's registration process; the contractor and subcontractor may request by name, and the local will honor, referral of the core employee(s) who have applied to the local union hall for work on the project and who demonstrate the following qualifications: 1) possess any license required by state or federal law, 2) have worked at least 1,000 hours in the construction craft during the prior three years, 3) have been on the Contractor's active payroll for at least sixty (60) out of the one hundred and eighty (180) hours in the calendar year immediately prior to contract award, 4) must have the ability to safely perform the basic functions of the applicable trade, and 5) must reside in Berkeley.

- **Hiring Plan**
  A hiring plan is to be submitted prior to the Notice to Proceed date, with the understanding that the workforce may change during the project. The hiring plan is used as baseline information, with the monthly workforce utilization reports, certified payroll and dispatch request documentation serving as confirmation of good faith efforts to hire locally.

- **Apprentices**
  Consistent with the requirements of California Labor Code § 1776, 1777.5 and 1777.6, contractors and their subcontractors are required to hire at least one Berkeley resident as a First Period Apprentice for $500,000 or more of total bid amount, thereafter, for every five million dollars of the total bid amount the Prime Contractor and their subcontractors are required to hire one additional first period apprentice. Berkeley residents that participate in local workforce development programs will be screened and referred for the apprenticeship opportunities, city staff, union halls & training programs will facilitate this process.

- **California Prevailing Wages**
  All construction workers will be paid prevailing wages as determined by the State of California. Benefits are the established labor-management vacation, pension or other form of deferred compensation plan, apprenticeship and health benefit funds for each hour worked. Any local collectively bargained wage and/or fringe benefit increase shall be recognized on the date on which they become effective.

- **Agreement to be Bound**
  All general contractors and all sub-contractors, including trucking, and regardless of tier, must sign an *Agreement to be Bound* to the CWA. This agreement binds the contractor to the terms of the CWA for the awarded project only. It does not bind any contractor to a union agreement for any other project.

- **Pre-Job Conference**
  Prior to start of construction, the successful general contractor and all subcontractors are required to attend a pre-job conference with the affected Building & Construction Trades Council. The Pre-Job request form shall include subcontractor information including scopes of work. The Agreements to be Bound shall be submitted **prior** to the Pre-job Conference. General Contractor and subcontractors will make craft/trade work assignments at this meeting. Should any union disagree, it may follow the established jurisdictional dispute resolution process provided in the Community Workforce Agreement. The pre-job conference may be held via conference call arranged by the building trades, city staff will also participate in the pre-job conference.

- **Joint Administrative Committee**
  This Committee shall be comprised of up to two (2) representative selected by the City; up to two (2) representatives of the signatory Unions and Alameda County Building and Construction Trades Council; and one (1) contractor representative, mutually selected by the City and the Alameda County Building and Construction Trades Council. Each representative shall designate an alternate who shall serve in his or her absence for any purpose contemplated by this Agreement. The Joint Administrative Committee shall meet regularly to review the implementation of the Agreement and the progress of the Projects including, but not limited to, compliance with Article 8, prevailing wage, safety, craft workforce levels and construction progress. The JAC may contact the Contractor and/or their subcontractors in writing to request their presence at a JAC meeting to describe good faith efforts throughout the project or at the end of a project.

CWA Administration

Delfina Geiken
Employment Programs Administrator
Department of Health, Housing and Community Services
2180 Milvia, 2nd floor
Berkeley, CA 94704

Nathan Dahl
Community Development Project Coordinator
Department of Health, Housing and Community Services
2180 Milvia, 2nd floor
Berkeley, CA 94704

To view the complete & most recent City Council report:

https://www.cityofberkeley.info/Clerk/City_Council/2018/01_Jan/Documents/2018-01-23_Item_23_Community_Workforce_Agreement.aspx

Health Housing and
Community Services Department
Labor Standards Enforcement

Community Workforce Agreement (CWA) Procedures

STEP 1
GENERAL CONTRACTOR AND SUBCONTRACTORS

☐ Review the current City of Berkeley Community Workforce Agreement (CWA)

☐ Sign an Agreement to be Bound (ATB) to the terms of the CWA

Note: All general contractors and all sub-contractors, including trucking, and regardless of tier or scope, must sign an Agreement to be Bound to the CWA.

☐ Send the signed ATBs to the City's project manager

STEP 2
CITY PROJECT MANAGER

☐ Fill out a Pre-Job Request Form for the project

☐ Collect all ATBs from general contractor and subcontractors

☐ Send completed Pre-Job Request Form and all ATBs to City of Berkeley Labor Standards Enforcement staff at localhire@berkeleyca.gov

STEP 3
CITY LABOR STANDARDS ENFORCEMENT STAFF

☐ Collect Pre-Job Request form and all ATBs from the City project manager

☐ Request a Pre-Job Meeting with the Alameda County Building and Construction Trades Council (BTC) by emailing Pre-Job Request Form and all ATBs to prejobs@btcalameda.org. Copy the City project manager but not the contractor or subcontractors

- *Pre-Job Meetings should be held at least **21 work days** before the work commences.*
- *Every subcontractor performing work on the project must have a representative attend the Pre-Job Meeting to avoid delays to the start of the project.*

- *No subcontractor that is not already listed on the Pre-Job Request form can be added to the Pre-Job Meeting without BTC's prior approval.*

☐ Confirm date of meeting sent from BTC with the City project manager and the general contractor.

Note: BTC does not accommodate requests for specific alternative times. BTC will select a new time if the one offered does not work for the City and the contractors

☐ Inform BTC of the confirmations. Include the email addresses of the City project manager, the general contractor, and the subcontractors to ensure that BTC sends a Pre-Job Meeting invitation to all relevant parties.

☐ BTC will send out a meeting invite to all email addresses were included in the Pre-Job Request Form. LSE staff will confirm that BTC included all relevant parties.

STEP 4
CITY PROJECT MANAGER, GC AND SUBCONTRACTORS, CITY LABOR STANDARDS ENFORCEMENT STAFF

☐ Attend Pre-Job Meeting with BTC and the Unions. What to expect:

- BTC asks the following questions of the contractor and each subcontractor:

1. Name and contact information of contractor/subcontractor
2. Scope of the work for contractor/subcontractor
3. Estimated start date for contractor/subcontractor
4. Estimated length of time on the project for the contractor/subcontractor.
5. Craft assigned for the work (hint: which union, ex: Laborers, OE, Masons, etc.)
6. How many of each craft during the peak of work?
7. Teamsters usually ask all subcontractors about trucking.

- After each contractor and subcontractor describes the scope of their work, BTC will ask the Union reps if they have any questions. After discussion, BTC will ask the Unions if they claim any of the work.

☐ During the meeting, contractors and subcontractors should exchange contact information with the Union reps who have claimed the work they will be performing.

STEP 5
GENERAL CONTRACTOR AND SUBCONTRACTORS

☐ Complete Hiring Plan document prior to the Notice to Proceed date and send to City Project Manager and Labor Standards Enforcement staff (localhire@berkeleyca.gov). The Hiring Plan is used as baseline information, and it is understood that the workforce may change during the project.

STEP 6
GENERAL CONTRACTOR AND SUBCONTRACTORS

☐ Use the Unions' Job Referral Systems to hire workers for the project. Contractors can fulfill their local hiring obligations by emailing the Union to request that Berkeley Residents be referred first if any are available on the Union's referral list. Submit a copy of that email and the Union's response to localhire@berkeleyca.gov.

☐ Please refer to the **Article 8** of the CWA for hiring and referral requirements. Excerpts below:

8.1 REFERRAL
8.1.1 "Contractor (s) performing construction work on the Projects described in the Agreement shall, in filling craft job requirements, utilize and be bound by the registration facilities and referral systems established or authorized by the Unions signatory hereto ("Job Referral System")."

8.2 LOCAL HIRE
8.2.1 "To the extent allowed by law and consistent with the non-discriminatory referral procedures of the Union hiring halls, the Parties agree to a goal that Berkeley Residents will perform a minimum of 20% of the hours worked, on a craft by craft basis for the Projects. The Contractor(s) shall make good faith efforts to reach this goal through the utilization of the Unions' hiring hall procedures."

8.2.3 APPRENTICESHIP & WORKFORCE DEVELOPMENT
"Consistent with the requirements of California Labor Code §§ 1776, 1777.5 and 1777.6, Contractor(s) will be required to hire 1 New Apprentice Berkeley resident as for every $500,000 dollars or more of total construction bid amount. The New Apprentice(s) must work a minimum of 10% of the projects work hours. The contractor may deploy the apprentice to work on another concurrent project in order to meet the minimum hours, and those hours will be counted towards the total hours of the craft on the Berkeley project…"

STEP 7
GENERAL CONTRACTOR

☐ Submit completed CWA Community Workforce Utilization Report (CWA-CWUR) with the Certified Payroll by the 25th of each month by sending it to localhire@berkeleyca.gov. This report is to record the total number of hours worked by Berkeley residents. The report must include:

1. Data on Berkeley Resident's work hour utilization on a craft by craft basis
2. The number of New Apprentices hired and the hours they have worked
3. Documentation showing any requests made to the union dispatchers for Berkeley Residents and the Union's response to the request.

RELATED DOCUMENTS

1. **Community Workforce Agreement (CWA)** between the City of Berkeley and the Building and Construction Trades Council of Alameda County (BTCA)
2. **Agreement to Be Bound (ATB)** to the terms of the CWA
3. **Pre-Job Request Form**
4. **Hiring Plan Template**
5. **Community Workforce Utilization Report (CWUR) Template**

CITY OF BERKELEY

COMMUNITY WORKFORCE AGREEMENT

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Signatures

Agreement to be Bound

COMMUNITY WORKFORCE AGREEMENT
For the
City of Berkeley

This Agreement is made and entered into retroactively from July 1, 2023 by and between the City of Berkeley ("City") together with other contractors and/or sub-contractors, who shall become parties to this Agreement by signing the "Agreement to be Bound" (Attachment A), and the Local Unions signatory hereto and the Alameda County Building & Construction Trades Council ("Council") and its affiliated local unions who have executed this Agreement.

PURPOSE

The purpose of this Agreement is to support the efforts of the City to increase employment opportunities for workers who reside in Berkeley, to help increase training and employment opportunities for Berkeley residents in the construction trades through apprenticeship and pre-apprentice programs as the students graduate from the City's schools, to promote efficiency of construction operations performed for and within the City of Berkeley and to provide for peaceful settlement of labor disputes and grievances without strikes or lockouts, thereby promoting the public interest in assuring the timely and economical completion of the projects.

RECITALS

WHEREAS, the successful completion of the City's construction projects is of the utmost importance to the City of Berkeley; and

WHEREAS, the interests of the general public, the City, the Unions and Contractor(s) would be best served if the construction work proceeded in an orderly manner without disruption because of strikes, sympathy strikes, work stoppages, picketing, lockouts, slowdowns or other interferences with work; and

WHEREAS, the Contractor(s) and the Unions desire to mutually establish and stabilize wages, hours and calendar conditions for the workers employed on construction work for and within the City of Berkeley by the Contractor(s), and further, to encourage close cooperation among the Contractor(s) and the Union(s) to the end that a satisfactory, continuous and harmonious relationship will exist among the parties to this Agreement; and

WHEREAS, contracts for construction work within the City of Berkeley will be awarded in accordance with the applicable provisions of the Charter of the City of Berkeley, the California State Public Contract Code and the Labor Code, including but not limited to requiring competitive bidding and prevailing wages; and

WHEREAS, the City of Berkeley has the absolute right to select the lowest responsive and responsible bidder for the award of the construction contracts on the Projects; and

WHEREAS, the parties signatory to this Agreement pledge their full good faith and trust to work towards a mutually satisfactory completion of the Projects;

NOW, THEREFORE, IT IS AGREED BETWEEN AND AMONG THE PARTIES HERETO, AS FOLLOWS:

ARTICLE 1
DEFINITIONS

1.1 “Agreement” means this Community Workforce Agreement.

1.2 "Berkeley Resident" means any individual who is a current resident of Berkeley can certify through a utility bill, or other similar means acceptable to the parties to this Agreement that the individual resides within the boundaries of the Berkeley City Limits.

1.4 “City” means the City of Berkeley.

1.5 “Completion” means that point at which the City accepts a project at issue by filing a Notice of Completion, or as otherwise provided by applicable state law. “Punch list” items and any other work within the scope of this Agreement not completed prior to commencement of revenue service shall nonetheless be included within the scope of this Agreement. It is understood by the parties that portions of the Projects may be completed in phases and Completion of any such phase may occur prior to Completion of the Projects.

1.6 “Contractor(s)” and/or “Subcontractor(s)” means any individual, firm, partnership or corporation, or combination thereof, including joint ventures, which is an independent business enterprise and has entered into a contract with the City or any of its contractors or subcontractors of any tier, with respect to the construction work necessary for any part of the Projects. This shall include subcontractors not required to be listed in the bid documents. As applicable depending on its context, “Contractor” shall refer to Contractor or Contractor and Subcontractor.

1.7 “Construction Contract(s)” means all of the contract(s) for construction of any of the Projects.

1.8 “Council” means the Alameda County Building and Construction Trades Council, AFL-CIO.

1.9 "New Apprentice” is a Berkeley Resident who is enrolled in a State of California approved apprenticeship program that is a joint labor management apprentice program for no more than twenty-four months

1.11 “Projects” mean any construction project of the City whose value as estimated by the City meets or exceeds $500,000 (Five hundred thousand) dollars.

1.12 “Union” or “Unions” means the Council and any other labor organization signatory to this Agreement, acting on their own behalf and on behalf of their respective affiliates and member organizations whose names are subscribed hereto and who have through their officers executed this Agreement.

1.13 “Project Manager” means the person or persons or business entity designated by the City to oversee all phases of construction on the Projects.

1.14 “Master Labor Agreement” or “MLA” shall mean the collective bargaining agreement of each craft Union that is Signatory to this Agreement

1.15 “Calendar Day” shall mean any day, relating to any day of the week including Saturday, Sunday and public holidays.

1.16 “ Apprenticeship Program” -Recognizing the need to develop adequate numbers of competent workers in the construction industry, the Contractor(s)/Employer(s) shall employ apprentices of a California State-approved Joint Apprenticeship Program in the respective crafts to perform such work as is within their capabilities and which is customarily performed by the craft in which they are indentured.

The apprentice ratios will be in compliance with the applicable provisions of the applicable “Master Labor Agreement”.

ARTICLE 2
SCOPE OF AGREEMENT

2.1 Parties: This Agreement shall apply and is limited to all Contractors and subcontractors performing Construction Contracts necessary for the Projects, the City, the Council and any other labor organization signatory to this Agreement, acting in their own behalf and behalf of their respective affiliates and member organizations whose names are subscribed hereto and who have through their officers executed this Agreement.

2.2 Project Description: This Agreement shall govern the award of all of the Construction Contracts identified by the City as part of the Projects. The City has the absolute right to combine, change, consolidate, suspend or cancel Construction Contract(s) or portions of Construction Contract(s) identified as part of the Projects. Should the City suspend or remove any contract from the Projects and thereafter authorize that construction work be commenced on such contract, then such contract shall be performed under the terms of this Agreement. Once a Construction Contract is completed it is no longer covered by this Agreement except when a Contractor is directed to engage in repairs, warranty work or modifications required by its

Construction Contract with the City. For the purposes of this Agreement, a Construction Contract shall be considered Completed as set forth in Section 1.5 of this Agreement.

2.3 Covered work:

2.3.1 This Agreement covers, without limitation, all on-site construction, demolition, alteration, painting or repair of buildings, structures, landscaping, temporary fencing and other works and related activities for the Projects that is within the craft jurisdiction of one of the Unions and that is part of the Projects, including, without limitation, pipelines, site preparation, survey work, demolition of existing structures and all construction, demolition or improvements required to be performed as a condition of approval by any public agency. This scope of work includes all soils and materials testing and inspection where such testing and inspection is a classification in which a prevailing wage determination has been published.

2.3.2 The Projects include work necessary for the Projects and/or in temporary yards or areas adjacent to and dedicated to the Projects, and at any on-site batch plant(s) constructed solely to supply materials to the Projects, when those sites are dedicated exclusively to the Projects. This Agreement covers all on-site fabrication work over which the City, Contractor(s) or subcontractor(s) possess the right of control (including work done for the Projects in any temporary yard or area established for the Projects.)

2.3.3 The furnishing of supplies, equipment or materials which are stockpiled for later use shall in no case be considered subcontracting. Construction trucking work, such as the delivery of ready-mix, asphalt, aggregate, sand or other fill material which are directly incorporated into the construction process as well as the off-hauling of debris and excess fill material and/or mud, shall be covered by the terms and conditions of this Agreement, to the fullest extent provided by law and by prevailing wage determinations of the California Department of Industrial Relations. Employers, including brokers, of persons providing construction trucking work shall provide certified payroll records to the City within ten (10) calendar days of written request or as required by bid specifications.

2.4 Exclusions: The following shall be excluded from the scope of this Agreement:

2.4.1 This Agreement is not intended to, and shall not affect or govern the award of public works contracts by the City which are outside the identified scope of work of the Projects.

2.4.2 This Agreement is not intended to, and shall not affect the current or anticipated operation, maintenance, access or use of any of the City's buildings or facilities, whether or not such facilities are identified in Section 1.7 above.

2.4.3 This Agreement shall not apply to a Contractor or subcontractor’s executives, managerial employees, engineering employees, design employees, supervisors (except

those covered by existing building and construction trades collective bargaining agreements), office and clerical employees.

2.4.4 This Agreement shall not apply to any work performed on or near or leading to the site of work covered by this Agreement that is undertaken by state, county or other governmental bodies or their contractors; or by public or private utilities or their contractors; or by the City or its contractors for work not part of the scope of the Projects. Parties performing work shall notify in writing, The Council and The District of any work being performed near or leading to the site work that is not covered by this agreement. Further, this Agreement shall not be construed to prohibit or restrict the City or its employees from performing work on or around the Project construction sites or from entering the sites for any purposes deemed necessary or appropriate by the City.

2.4.5 This Agreement shall not apply to the off-site maintenance of leased equipment or the on-site supervision of such work.

2.4.6 This Agreement shall not apply to any start-up, calibration, performance testing, repair, maintenance, operational revisions to systems and/or subsystems performed after Completion.

2.5 Termination, Suspension and/or Delay of Work: It is understood and agreed that the City, at its sole option, may change, terminate, delay and/or suspend any and all portions of the covered work at any time. Further, the City may prohibit some or all work on certain days or during certain hours of the day to comply with applicable codes, laws or regulations, permits or to accommodate the ongoing operations of the City's facilities and/or to mitigate the effect of the ongoing Projects' work on the businesses and residents in the neighborhood of the Project sites; and/or require such other operational or schedule changes that it may be deemed necessary, in its sole judgment, to effectively maintain the primary purpose of the City's facilities and to remain a good neighbor to the residents and businesses in the area of any Projects. In order to permit the Contractors and Unions to make appropriate scheduling plans, the City will provide the affected Contractor and Union(s) with reasonable notice of any changes it requires pursuant to this Section.

2.6 Work covered by this Agreement within the following craft jurisdictions shall be performed under the terms of their National Agreements as follows: the NTL Articles of Agreement, the National Stack/Chimney Agreement, the National Cooling Tower Agreement, and the National Agreement of Elevator Constructors, and any instrument calibration work and loop checking shall be performed under the terms of the UA/IBEW Joint National Agreement for Instrument and Control Technicians, with the exception that Articles 4, 8,12 and 13 of this Agreement shall apply to such work.

ARTICLE 3
EFFECT OF AGREEMENT/SUBCONTRACTORS

3.1 By executing this Agreement, the Unions and the City agree to be bound by each and every provision of this Agreement.

3.2 By accepting the award of a Construction Contract for the Projects, whether as contractor or subcontractor at any tier, the Contractor/Subcontractor agrees to be bound by each and every provision of this Agreement.

3.3 This Agreement shall only be binding on the signatory parties hereto and shall not apply to the parents, affiliates, subsidiaries, or other ventures of any other party.

3.4 It is understood that this Agreement, together with the referenced MLA , constitute an integrated, self-contained, stand-alone agreement, and that by virtue of having become bound to this Agreement, the Contractor will not be obligated to sign any other local, area, or national agreement as a condition of performing work within the scope of this Agreement. In addition, it is understood and agreed that all grievances and disputes involving the interpretation or application of this Agreement, including the MLA, shall be resolved according to the procedures set forth in Article 12 of this Agreement; provided, however, that should a dispute involve a single MLA and a Contractor signatory thereto, and not involve interpretation or application of this Agreement, then such dispute shall be processed and resolved pursuant to the grievance provisions of that MLA. Should there be a dispute in the first instance as to whether the provisions of Article 12 of this Agreement or the grievance procedures of a MLA apply, the dispute shall be presented initially to arbitrator Judge William Cahill or, if unavailable, arbitrator Earnest Brown, for resolution as to the applicable procedure. Such referral of a dispute as to the applicable procedures shall be done by an immediate conference call among the parties and the arbitrator, and heard and decided within three (3) calendar days. Should the arbitrator hold that Article 12 applies, the parties may, by mutual agreement, submit the issue to the same arbitrator pursuant to the provisions of Article 12, or, absent mutual agreement, commence processing the dispute at Step 1 of that Article.

3.5 Subcontractors. At the time that any Contractor enters into a subcontract with any subcontractor of any tier for the performance of construction or construction trucking work within the scope of this Agreement, the Contractor shall provide a copy of this Agreement, as it may from time to time be modified by the negotiating parties, to said subcontractor and shall require the subcontractor as a part of accepting an award of a construction subcontract to agree to be bound by each and every provision of the Agreement prior to the commencement of work.

3.5.1 Each Contractor and Subcontractor shall evidence their agreement to be bound to this Agreement by executing the Agreement To Be Bound form attached hereto as Appendix A. A copy of the Agreement To Be Bound executed by the Contractors and Subcontractors shall be submitted to the Union(s) prior to both the commencement of work and the Pre-Job Conference and will be a required submittal within the City's bid packages. If the Contractor or Subcontractor refuses to execute the Agreement To Be

Bound, then such Contractor or Subcontractor shall not be awarded a Construction Contract to perform work on the Projects. A Contractor or Subcontractor who executes the Agreement to Be Bound shall be considered a signatory party to this Agreement.

3.6 It is understood that the liability of each Contractor and Subcontractor and the liability of each Union under this Agreement shall be several and not joint. The Unions agree that this Agreement does not have the effect of creating any joint employment status between or among the City and/or any Contractor or Subcontractor.

3.7 With regard to any Contractor or subcontractor that is independently signed to any MLA, this Agreement shall in no way supersede or prevent the enforcement of any subcontracting clause contained in such MLA, except as specifically set forth in section 3.7.1 of this Agreement. Any such subcontracting clause in a MLA shall remain and be fully enforceable between each craft union and its signatory employers and no provision of this Agreement shall be interpreted and/or applied in any manner that would give this Agreement precedence over subcontracting obligations and restrictions that exist between craft Unions and their respective signatory employers under a MLA, except as specifically set forth in section 3.7.1 in this Agreement. To the extent that the provisions of this Agreement are inconsistent with any other provisions contained in a MLA, the provisions of this Agreement shall prevail

3.7.1 If a craft Union ("Aggrieved Union") believes that an assignment of work on this Project has been made improperly by a Contractor or subcontractor, even if that assignment was as a result of another craft Union's successful enforcement of the subcontracting clause in its MLA, as permitted by section 3.7 of this Agreement, the Aggrieved Union may submit a claim under the jurisdictional dispute resolution procedure contained in Article 13 of this Agreement and the decision rendered as part of that process shall be enforceable to require the Contractor or subcontractor that made the work assignment to assign that work prospectively to the Aggrieved Union. An award made to a craft Union under the subcontracting clause of its MLA, as permitted under section 3.7 of this Agreement, shall be valid and fully enforceable by that craft Union unless it conflicts with a jurisdictional award made pursuant to Article 12 of this Agreement. If the award made under MLA conflicts with the jurisdictional award, the award of any damages under the former shall be null and void *ab initio.*

ARTICLE 4
WORK STOPPAGES, STRIKES, SYMPATHY STRIKES, JURISDICTIONAL DISPUTES AND LOCKOUTS

4.1 The Unions, City and Contractor agree that for the duration of the Projects:

4.1.1 There shall be no strikes, sympathy strikes, work stoppages, picketing, hand-billing or otherwise advising the public that a labor dispute exists, or slowdowns of any kind, for any reason, by the Unions or construction persons employed on the Projects, at a job site of the Projects or at any other facility of the City because of a dispute on the Projects. Nor shall the Unions or construction persons employed on the Projects participate in any strikes, sympathy strikes, work stoppages, picketing, hand billing,

slowdowns, or otherwise advising the public that a labor dispute exists at a Project jobsite because of a dispute between Unions and Contractor(s) on any other project.

4.1.2 As to construction persons employed on the Projects, there shall be no lockout of any kind by a Contractor covered by this Agreement. It shall not be a violation of this Article if a Contractor or Subcontractor (1) suspends or terminates a portion of the Project work or (2) discharges an employee for just cause.

4.1.3 If a MLA between a Contractor and the Union expires before the Contractor completes the performance of a Construction Contract and the Union or Contractor gives notice of demand for a new or modified MLA, the Union agrees that it will not strike, picket, hand-bill, slowdown or engage in any other disruptive activity against the Contractor and the Contractor will not lockout construction persons of the Union on said Construction Contract for work covered under this Agreement and the Union and the Contractor agree that the expired MLA shall continue in full force and effect for work covered under this Agreement until a new or modified MLA is reached between the Union and Contractor. If the new or modified MLA reached between the Union and Contractor provides that any terms of the new MLA shall be retroactive, the Contractor agrees to comply with any retroactive terms of the new or modified MLA which are applicable to construction persons employed on the Projects within seven (7) calendar days.

4.2 A party to this Agreement shall institute the following procedure, prior to invoking any other action at law or equity when a breach of this Article 4 is alleged to have occurred:

4.2.1 A party invoking this procedure shall notify, by the most expeditious means available, with notice by facsimile, electronic mail or telephone to the City, to the party alleged to be in violation, to the Council and to the involved local Union if a Union is alleged to be in violation.

4.2.2 Upon receipt of said notice, the City will contact the designated permanent arbitrator, Judge William Cahill, or if unavailable, his alternate Ernest Brown, who shall attempt to convene a hearing within twenty-four (24) hours if it is contended that the violation still exists.

4.2.3 The Arbitrator shall notify the parties by facsimile, electronic mail or telephone of the place and time for the hearing. Said hearing shall be completed in one session, which, with appropriate recesses at the arbitrator's discretion, shall not exceed twenty-four (24) hours unless otherwise agreed upon by all parties. A failure of any party to attend said hearings shall not delay the hearing of evidence or the issuance of any award by the arbitrator.

4.2.4 The sole issue at the hearing shall be whether or not a violation of Article 4, Section 4.1 of this Agreement has occurred. The arbitrator shall have no authority to consider any matter of justification, explanation or mitigation of such violation or to

award damages, which issue is reserved for court proceedings, if any. The award shall be issued in writing within three (3) hours after the close of the hearing, and may be issued without a written opinion. If any party desires a written opinion, one shall be issued within fifteen (15) calendar days, but its issuance shall not delay compliance with or enforcement of the award. The arbitrator may order cessation of the violation of this Article 4 and other appropriate relief and such award shall be served on all parties by hand or registered mail upon issuance.

4.2.5 Such award may be enforced by any Court of competent jurisdiction upon the filing of this Agreement and all other relevant documents referred to above in the following manner. Written notice of the filing of such enforcement proceedings shall be given to the other party. In the proceeding to obtain a temporary order enforcing the arbitrator's award as issued under Section 4.2.4 of this Article 4, all parties waive the right to a hearing and agree that such proceedings may be ex parte. Such agreement does not waive any party's right to participate in a hearing for a final order or enforcement. The Court's order or orders enforcing the arbitrator's award shall be served on all parties by hand or delivered by certified mail.

4.2.6 Any rights created by statute or law governing arbitration proceedings inconsistent with the above procedure or which interfere with compliance are waived by the parties.

4.2.7 The fees and expenses of the arbitrator shall be divided equally between the party instituting the arbitration proceedings provided in this Article and the party alleged to be in breach of its obligations under this article.

4.3 Liquidated Damages. If the arbitrator determines that a violation of Section 4.1 has occurred, the breaching party shall, within eight (8) hours of the issuance of the decision take all steps necessary to immediately cease such activities and return to work. If the breaching party involved does not cease such activities by the beginning of the next regularly scheduled shift following the expiration of the eight (8) hour period after the arbitrator's issuance of the decision, then the breaching party shall pay the sum of ten thousand dollars ($10,000) as liquidated damages to the City per shift until the breach is remedied. The arbitrator shall retain jurisdiction for the sole purpose of determining compliance with this obligation and determining the amount of liquidated damages, if any; but such retention shall not prevent the moving party from seeking judicial enforcement of the initial decision.

ARTICLE 5
PRE-JOB CONFERENCE

5.1 A mandatory pre-job conference shall be held prior to the commencement of each Construction Contract. Such conference shall be attended by a representative each from the participating Contractor(s) and Union(s) and the Project Manager. All efforts will be made to hold the pre-job conference in sufficient time to ensure all parties the ability to properly raise and resolve any issue that may arise out of such meeting, with a

goal that such conferences will be held at least 21 work days before the work commences.

ARTICLE 6
NO DISCRIMINATION

6.1 The Contractors and Unions agree not to engage in any form of discrimination on the ground of or because of race, color, creed, national origin, ancestry, age, religious or political affiliation, gender, sexual orientation or disability against any person, or applicant for employment on the Projects.

ARTICLE 7
UNION SECURITY

7.1 The Contractors recognize the Union(s) as the sole bargaining representative of all construction persons working within the scope of this Agreement.

7.2 All construction persons who are employed by the Contractor(s) shall, as a condition of employment, on or before the eighth (8th) day of consecutive or cumulative employment on the Projects, be responsible for the payment of the applicable monthly working dues and any associated fees uniformly required for union membership in the applicable local union which is signatory to this Agreement. Further, there is nothing in this Agreement that would prevent non-union construction persons from joining the local union.

ARTICLE 8
REFERRAL AND LOCAL HIRE PROGRAM

8.1 Referral

8.1.1 Contractor (s) performing construction work on the Projects described in the Agreement shall, in filling craft job requirements, utilize and be bound by the registration facilities and referral systems established or authorized by the Unions signatory hereto ("Job Referral System"). Such Job Referral System will be operated in a non-discriminatory manner and in full compliance with all federal, state, and local laws and regulations, including those which require equal employment opportunities and nondiscrimination.

8.1.2 The Contractor(s) shall have the right to reject any applicant referred by the Union(s), in accordance with the applicable Master Agreement.

8.1.3 The Contractor(s) shall have the unqualified right to select and hire directly all supervisors above general foreman it considers necessary and desirable, without such persons being referred by the Unions(s).

8.1.4 In the event that referral facilities maintained by the Union(s) are unable to fill the requisition of a Contractor(s) for employees within a seventy-two (72) hour period after

such requisition is made by the Contractor(s), the Contractor(s) shall be free to obtain employees from any source. Contactor(s) shall promptly notify the Union(s) of any applicants hired from other sources. This provision does NOT affect core employees as defined below.

8.1.5 Unions shall exert their utmost efforts to recruit sufficient numbers of skilled craft persons to fulfill the requirements of the Contractor(s).

8.1.6 Core Employees

All parties agree to make a good faith effort to refer on a priority basis, consistent with the non-discriminatory referral procedures of the hall, qualified and available, and bona-fide Berkeley Residents for Project work.

8.1.7 The parties also recognize and support the City's commitment to provide opportunities for participation on the Projects to Berkeley Residents who are regular, experienced employees ("Core" employees) of contractors and subcontractors awarded work on the Projects and who do not traditionally work under a local collective bargaining agreement(s). In furtherance of this commitment, the parties agree that such contractors and subcontractors awarded work on the Projects may request by name, and the local will honor, referral of persons who have applied to the local union for Project work and who demonstrate the following qualifications:

(1) Possess any license required by state or federal law for the Project work to be performed;

(2) Have worked a total of at least one thousand (1,000) hours in the construction craft during the prior three (3) years;

(3) Were on the Contractor's active payroll for at least sixty (60) out of the one hundred and eighty (180) calendar days prior to the contract award;

(4) Have the ability to perform safely the basic functions of the applicable trade, and

(5) Are Berkeley residents.

The Union will refer to such Contractor one journeyman employee from the hiring hall out-of-work list for the affected trade or craft, and will then refer one of such Contractor's "core" employees as a journeyman and shall repeat the process, one and one, until such Contractor's crew requirements are met or until such Contractor has hired five (5) "core" employees, whichever occurs first. Thereafter, all additional employees in the affected trade or craft shall be hired exclusively from the hiring hall out-of-work list(s). For the duration of the Contractor's work the ratio shall be maintained and when the Contractor's workforce is reduced, employees shall be reduced in the same ratio of core employees to hiring hall referrals as was applied in the initial hiring.

8.1.8 The Contractor shall notify the appropriate Union of the name and social security number of each direct hire and each direct hire shall register with the Union's hiring hall before commencing Project work. If there is any question regarding an employee's eligibility under this Subsection 8.2.1, the City Representative, at a Union's request, shall obtain satisfactory proof of such from the Contractor.

8.2 Local Hire

8.2.1 To the extent allowed by law and consistent with the non-discriminatory referral procedures of the Union hiring halls, the Parties agree to a goal that Berkeley Residents will perform a minimum of 20% of the hours worked, on a craft by craft basis for the Projects. The Contractor(s) shall make good faith efforts to reach this goal through the utilization of the Unions' hiring hall procedures. The Unions shall exercise their best efforts in their recruiting and training of Berkeley Resident workers and in their hiring hall procedures to facilitate this 20% goal on the Projects. In the event that referral facilities maintained by the Union(s) are unable to fulfill the 20% local hire requirement, paragraph 8.2.2 of this Article shall not apply. Contractors shall document all efforts to hire locally and provide such documents to the City of Berkeley. The Council will provide an annual census of Berkeley residents, in each of the crafts party to this agreement, to the City of Berkeley. This report will be provided by August 1 of each year of this agreement.

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8.2.2 Should any of the contractors performing work on the Projects fail to meet this 20% goal and fail to demonstrate efforts to do so, through a specific submittal process to be included in their contractual requirements and enforced by the grievance procedure. The contract's 10% retention will be held until such time that this failure is remedied, but not longer than sixty (60) calendar days after the date of substantial completion of the Projects or as required by law, in addition to the breach of contract remedies available to the parties for non-performance under this Agreement.

8.2.3 Apprenticeship & Workforce Development

A) Consistent with the requirements of California Labor Code §§ 1776, 1777.5 and 1777.6, Contractor(s) will be required to hire 1 New Apprentice Berkeley resident as for every $500,000 dollars or more of total construction bid amount. The New Apprentice(s) must work a minimum of 10% of the projects work hours. The contractor may deploy the apprentice to work on another concurrent project in order to meet the minimum hours, and those hours will be counted towards the total hours of the craft on the Berkeley project. Certified Payroll must reflect the hours worked.

Contractor must fully document efforts to hire a New Apprentice, through the following steps: 1) requesting New Apprentices through the Union dispatch procedure, 2) contacting a minimum of three MC3-approved pre-apprenticeship training programs for referral of Berkeley residents. Unions shall provide written documentation to the contractor in response to dispatch requests to fulfill the New Apprentice requirement, the next tier of residents will come from the Green Corridor.

B) There can be no more than 1 entry-level New Apprentices for each craft, provided said crafts have apprenticeship openings and the general contractor will be able to include New Apprentices hired by their subcontractor to meet this requirement. Unions will agree to cooperate with Contractor(s) in furnishing apprentices as requested and the hiring of the apprentices will be in accordance to the Apprenticeship provisions listed in the Master Agreements and or the union agreements with the division of apprenticeship standards, and the apprentices shall be properly supervised and paid in accordance with provisions contained within the MLA'S. The Unions and Contractors will agree to cooperate with local pre-apprenticeship programs to ensure Berkeley residents have the opportunity to apply for and enter the into the apprenticeship programs.

C) The intent of this provision is to utilize Berkeley Resident New Apprentices to the fullest extent permissible by state law and the MLA. Failure of Contractor(s) and their subcontractors to maintain qualified apprentices on the job will be subject to further penalties as determined by the Grievance Committee as identified in Article 12.

8.11 Enforcement, Compliance & Reporting.

Contractors will be required to submit Certified Weekly Payrolls to the City along with monthly workforce utilization reports documenting the Contractor's compliance with the requirements described in this article. At a minimum the monthly reports must include 1) data on Berkeley Resident's work hour utilization on a craft by craft basis, 2) number of New Apprentices hired and the hours they have worked, 3) documentation showing any requests made to the union dispatchers for Berkeley Residents and the Union's response to the request. Enforcement of this article shall be according to the Grievance and Arbitration procedure outlined in Article 12.

ARTICLE 9
HELMETS TO HARDHATS

9.1 The parties recognize a desire to facilitate the entry into the Building and Construction Trade Union(s) of Veterans who are interested in careers in the building and construction industry. The parties agree to utilize the services of the Center for Military Recruitment, Assessment and Veteran's Employment ("Center") and the Center's "Helmets to Hardhats" program to serve as a resource for preliminary orientation, assessment of construction aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as identified by the parties.

9.2 The Union(s) and Contractor(s) agree to coordinate with the Center to participate in an integrated database of Veterans interested in working on this Project and of apprenticeship and employment opportunities for this Project. To the extent permitted by law, the Union(s) will give credit to such Veterans for bona fide, provable past experience.

ARTICLE 10
GRIEVANCE PROCEDURE

10.1 Any Contractor which is not otherwise bound through an agreement with a Union to a grievance procedure which confers jurisdiction to consider and resolve disputes over the imposition of discipline or dismissal of its construction persons working on this Project shall be bound to the arbitration procedure contained in the MLA of the craft representing the employee(s) involved in the dispute. For the purposes of this Article, such grievance procedure shall be limited to disputes regarding the imposition of discipline or dismissal arising from work covered by the Agreement. Such Contractor shall not impose discipline or dismissal on its construction persons covered by this Agreement without just cause.

ARTICLE 11
JOINT ADMINISTRATIVE COMMITTEE

11.1 The parties to this Agreement shall establish a five (5) person Joint Administrative Committee comprised of at least one and up to two (2) representatives representing the City; two (2) representatives of the signatory Unions and The Council; and one industry representative, mutually selected by the City and The Council. Each representative shall designate an alternate who shall serve in his or her absence for any purpose contemplated by this Agreement.

11.2 The Joint Administrative Committee shall meet at the request of either party, but not less than once each quarter, to review the implementation of the Agreement and the progress of the Projects including, but not limited to, compliance with Article 8, prevailing wage, safety, Workforce development and Industry trends. Requests for certified payroll made by a Joint Labor/Management Committee to which the Union(s) signatory to this Agreement are a party shall be provided as allowed by law.

ARTICLE 12
GRIEVANCE ARBITRATION PROCEDURE

12.1 The parties understand and agree that in the event any dispute arises out of the meaning, interpretation or application of the provisions of this Agreement, the same shall be settled by means of the procedures set out herein. No grievance shall be recognized unless the grieving party provides notice in writing to the signatory party with whom it has a dispute within seven (7) calendar days after becoming aware of the dispute, but in no event more than thirty (30) calendar days after it reasonably should have become aware of the event giving to the dispute. The time limits in this Article 12 may be extended by mutual written agreement of the parties.

12.2 Grievances shall be settled according to the following procedures:

Step 1: Within seven (7) calendar days after the receipt of the written notice of grievance, the Business Representative of the involved Local Union, the City's authorized representative, representative of the construction person, and the representative of the involved Contractor shall confer and attempt to resolve the grievance.

Step 2: In the event that the representatives are unable to resolve the dispute within seven (7) calendar days after its referral to Step 1, either involved party may submit it within three (3) calendar days to Grievance Committee. The Grievance Committee shall consist of one (1) person selected by the City and one (1) person selected by the Council, which shall meet within seven (7) calendar days after such referral (or such longer time as mutually agreed upon by all representatives of the subcommittee), to confer in an attempt to resolve the grievance. The decision of the Grievance Committee shall be legal, final and binding. If the dispute is not resolved within such time seven (7) calendar days after its referral or such longer time as mutually agreed upon) it may be referred within seven (7) calendar days by either party to Step 3.

Step 3: Within seven (7) seven calendar days after referral of a dispute to Step 3, the representatives shall submit the matter to the designated permanent Arbitrator, Judge William Cahill.

12.3 In the event that Judge Cahill is unavailable, the arbitrator shall be Earnest Brown.

12.4 The Arbitrator shall arrange for a hearing no later than fourteen days (14) calendar days after the matter has been submitted to arbitration. A decision shall be given to the parties within five (5) calendar days after completion of the hearing unless such time is extended by mutual agreement. A written opinion may be requested by a party from the Arbitrator. The time limits specified in any step of the Grievance Procedure set forth in Section 12.1 may be extended by mutual agreement of the parties initiated by the written request of one party to the other, at the appropriate step of the Grievance Procedure. However, failure to process a grievance, or failure to respond in writing within the time limits provided above, without the request for an extension of time, shall be deemed a waiver of such grievance without prejudice, or without precedent to the processing of and/or resolution of like or similar grievances or disputes.

12.5 The decision of the Arbitrator shall be binding by all parties. The Arbitrator shall not have authority to change, amend, add, or detract from any of the provisions of the Agreement. The expense of the Arbitrator shall be borne equally by both parties.

12.6 In order to encourage the resolution of disputes and grievances at Step 1 and 2 of this Grievance Procedure, the parties agree that such settlements shall not be precedent-setting.

ARTICLE 13
JURISDICTIONAL DISPUTES

13.1 The assignment of Covered Work will be solely the responsibility of the Contractor/Employer(s) performing the work involved; and such work assignments will be in accordance with the Plan for the Settlement of Jurisdictional Disputes in the Construction Industry (the "Plan") or any successor Plan.

13.2 All jurisdictional disputes on this Project between or among the Union(s) and the Contractor/Employer(s), parties to this Agreement, shall be settled and adjusted according to the present Plan established by the Building and Construction Trades Department, or any other plan or method of procedure that may be adopted in the future by the Building and Construction Trades Department. Decisions rendered shall be final, binding and conclusive on the Contractor/Employer(s) and Union(s) parties to this Agreement.

13.2.1 If a dispute arising under this Article involves the Northern California Carpenters Regional Council or any of its subordinate bodies, an Arbitrator shall be chosen by the procedures specified in Article V, Section 5, of the Plan from a list composed of John Kagel, Thomas Angelo, Robert Hirsch and Thomas Pagan and the Arbitrator's hearing on the dispute shall be held at the offices of the California State Building and Construction Trades Council in Sacramento, California, within fourteen (14) calendar days of the selection of the Arbitrator. All other procedures shall be as specified in the Plan.

13.3 All jurisdictional disputes shall be resolved without the occurrence of any strike, work stoppage, or slow-down of any nature, and the Contractor/Employer(s)' assignment shall be adhered to until the dispute is resolved. Individuals violating this Section shall be subject to immediate discharge.

13.4 Each Contractor/Employer(s) shall conduct a Pre-Job Conference with the Council prior to commencing Covered Work. The Primary Employer, Coordinator and the District will be advised in advance of all such conferences and may participate if they wish. Pre-job conferences for different Contractor(s) may be held together.

ARTICLE 14
APPRENTICES

14.1 Recognizing the need to maintain continuing support of programs designed to develop adequate numbers of competent workers in the construction industry, the Contractor (s) shall employ apprentices in the respective crafts to perform such work as is within their capabilities and which is customarily performed by the craft in which they are indentured.

14.2 The apprentice ratios will be in compliance with the applicable provisions of the California Labor Code and Prevailing Wage Rate Determination.

14.3 There shall be no restrictions on the utilization of apprentices in performing the work of their craft provided they are properly supervised.

14.4 All Apprentices will come from a State approved Labor Management Apprenticeship program.

ARTICLE 15
MANAGEMENT RIGHTS

15.1 The Contractor shall retain full and exclusive authority for the management of their operations, including the right to direct their work force in their sole discretion with regard to the following: the hiring, promotion, transfer, layoff, corrective action or discharge for just cause of its employees (in accordance with Article 9); the determination of the number of employees needed for the Project work; the selection/hiring of foremen and supervisors; the assignment and schedule of work; the requirement of overtime work, the determination of when it will be worked, and the number of employees engaged in such work, except as otherwise limited by the terms of this Agreement and/or the MLA. No rules, customs or practices shall be permitted or observed which limit or restrict production, or limit or restrict the working efforts of construction persons except that the lawful manning provisions of the MLA shall be recognized.

ARTICLE 16
WAGES/BENEFITS

16.1 **Wages.** All construction persons covered by this Agreement shall be classified in accordance with work performed and paid the hourly wage rates for those classifications in the applicable MLA for such craft work and in compliance with the applicable prevailing wage rate determination.

16.2 **Benefits.** Contractor agrees to pay contributions into established construction person benefit funds in the amounts designated in the appropriate MLA; provided, however, that each Contractor and Union agree that only such bona fide construction person benefits as included in the prevailing wage determination shall be included in this requirement and required to be paid by the Contractor under this Agreement; provided further, however, that this provision does not relieve Contractors signatory to a local collective bargaining agreement with a signatory Union which would be applicable to the Projects from making

any other fund contributions (including, but not limited to, those for contract administration), required by such local agreement. Contractor shall not be required to pay contributions to any other trust funds to satisfy their obligation under this Article. By signing this Agreement, the Contractors adopt and agree to be bound by the written terms of the legally established Trust Agreements, specifying the detailed basis on which the payments are to be made into, and the benefits paid out of, such Trust Funds.

16.3 **Compliance.** It shall be the responsibility of the Contractor(s) and Unions to investigate and monitor compliance with the provisions of the agreement contained in Article 15. Nothing in this agreement shall be construed to interfere with or supersede the usual and customary legal remedies available to the Unions and/or employee benefit Trust Funds to collect delinquent Trust Fund contributions from Contractors on the Project.

ARTICLE 17
MODIFIED MASTER LABOR AGREEMENTS

17.1 Certain Provisions Shall Not Apply. Provisions negotiated into the new or modified MLA which are less favorable to the Contractor than those uniformly required of employers for construction work normally covered by those agreements or which may be construed to apply exclusively or predominately to work covered by this Agreement shall not apply to work covered by this Agreement. Any disagreement between the parties regarding the application of the provisions of any new or modified collective bargaining agreement to work covered by this Agreement shall be resolved under the dispute and grievance arbitration procedures set forth in Article 12 hereof.

ARTICLE 18
DRUG and ALCOHOL TESTING

18.1 The use, sale, transfer, purchase and/or possession of a controlled substance, alcohol and/or firearms at any time during the work day is prohibited.

18.2 Employer shall be allowed to utilize employment drug screens. All personnel are subject to random alcohol and drug/alcohol testing at any time, except, the following changes will apply. Employer shall follow said Unions Master Labor Agreement drug polices, regulations and limits. Body fluid tests will utilize urine and saliva specimens. Employer may also selectively require an employee to undergo alcohol or drug/alcohol testing if Employer has reasonable cause to believe that an employee's ability to work safely may be impaired. All requirements and activities of the Employer with regard to drug/alcohol testing shall comply with the provisions of State law.

ARTICLE 19
SAVINGS CLAUSE

19.1 The parties agree that in the event any article, provision, clause, sentence or word of this Agreement is determined to be illegal or void as being in contravention of any applicable law, by a court of competent jurisdiction the remainder of the Agreement shall remain in full force and effect. The parties further agree that if any article, provision, clause, sentence or word of the Agreement is determined to be illegal or void, by the court of competent jurisdiction, the parties shall substitute, by mutual agreement, in its place and stead, an article, provision, clause, sentence or word which will meet the objections to its validity and which will be in accordance with the intent and purpose of the article, provision, clause, sentence or word in question.

19.2 The parties also agree that in the event that a decision of a court of competent jurisdiction materially alters the terms of this Agreement such that the intent of the parties is defeated, then the entire Agreement shall be null and void.

ARTICLE 20
ENTIRE AGREEMENT

20.1 This Agreement represents the complete understanding of the parties. The provisions of this Agreement, including the MLA, shall apply to the work covered by this Agreement. Where a subject covered by the provisions of this Agreement is also covered by a MLA, the provisions of this Agreement shall prevail. Where a subject is covered by the provisions of a MLA and is not covered by this Agreement, the provisions of the MLA shall prevail. Nothing contained in a MLA, working rule, by-laws, constitution or other similar document of the Unions shall in any way affect, modify or add to this Agreement unless otherwise specifically set forth in this Agreement or mutually agreed to in writing executed by the parties.

20.2 The parties agree that this Agreement covers all matters affecting wages, hours, and other terms and conditions of employment and that during the term of this Agreement the parties will not be required to negotiate on any further matters affecting these or any other subject not specifically set forth in this Agreement except by mutual agreement of the parties.

20.3 This Agreement may be executed in counterparts, such that original signatures may appear on separate pages and when bound together all necessary signatures shall constitute an original. Facsimile signature pages transmitted to other parties to this Agreement shall be deemed the equivalent to original signatures.

ARTICLE 21
TERM

21.1 The Agreement shall be included as a condition of the award of the Construction Contracts.

21.2 The Agreement shall continue in full force and effect for a term of three years from the Effective Date of July 1, 2023 through June 30, 2026 and shall be applicable to all Projects until completion that are advertised for bidding during the term.

21.3 This Agreement shall continue in full force and effect until Completion of the Project. The parties may mutually agree to extend and/or amend this Agreement.

SIGNATURES

City of Berkeley

By:_____

Dee Williams-Ridley, City of Berkeley City Manager

Date:_____

Alameda County Building & Construction Trades Council, AFL-CIO

By:_____

Andreas Cluver, Secretary-Treasurer for the Building Trades Council of Alameda County on behalf of the Signatory Unions

Date: _____

Signatory Unions

Asbestos Workers, Local 16 Boilermakers, Local 549

Bricklayers & Allied Craftsmen

Local 3 Cement Masons, Local 300

Electrical Workers, Local 595

Elevator Constructors, Local 8

Hod Carriers, Local 166

Iron Workers, Local 378

Laborers, Local 67

Laborers, Local 304

Operating Engineers,

Local 3 Plasterers, Local 66

Roofers, Local 81

Sheet Metal Workers, Local 104

Sign Display, Local 510

Sprinkler Fitters, Local 483

Teamsters, Local 853

United Association of Journeymen and Apprentices Fitting Industry, Underground Utility & Landscape, Local 355

United Association of Steamfitters, Ironworkers City and the RDA Council of Pipefitters, Plumbers, & Gas California Fitters, Local 342

Council No. 16 Northern California

International Union of Laborers
Painters & Allied Trades (On behalf of Painters, Local 3; Carpet & Linoleum Layers, Local 12; Glass Workers, Local 169; Auto& Marine Painters, Local 1176)

Northern California Carpenters
Regional Council (on behalf of Carpenters, Local 713; Carpenters, Local 2236; Lathers, Local 68L; Millwrights, Local 102; Pile Drivers, Local 34)

AGREEMENT TO BE BOUND

The undersigned, as a Contractor or Subcontractor ("Contractor") on a City Project (“Project”), for and in consideration of the award to it of a contract to perform work on said Project, and in further consideration of the mutual promises made in the Project’s Community Workforce Agreement ("Agreement"), a copy of which was received and is acknowledged, hereby:

1. Accepts and agrees to be bound by the terms and conditions of the Agreement, together with any and all amendments and supplements now existing or which are later made to said Agreement.

2. Certifies that it has no commitments or agreements which would preclude its full and complete compliance with the terms and conditions of said Agreement;

3. Agrees to secure from any Contractor (as defined in said Agreement) which is or becomes a subcontractor (of any tier) to it, and from any successors, a duly executed Agreement to be bound in form identical to this document.

4. Contractor agrees that it shall be bound by all applicable trust agreements and plans for the provision of such fringe benefits as accrue to the direct benefit of the construction persons, including Health and Welfare, Pension, Training, Vacation, and/or other direct benefits provided pursuant to the appropriate craft agreement contained in Schedule "A" of Agreement.

Date: _____

Company Name: _____

Name of Prime Contractor or Higher Level Subcontractor:

_____

Name of Project: _____

Signature:_____

Print Name: _____

Title: _____

Contractor’s License #: _____

Motor Carrier Permit (CA) #: _____

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APPENDIX 6

BAY AREA RAPID TRANSIT (BART) DISTRICT
PERMIT TO ENTER

(NOT USED)

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APPENDIX 7

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)

ENCROACHMENT PERMIT

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STANDARD ENCROACHMENT PERMIT APPLICATION

DOT TR-0100 (REV 08/2025)

Complete ALL fields, write "N/A" if not applicable. Type or print clearly.

This application is not complete until all requirements have been approved.

Permission is requested to encroach on the State Highway right-of-way as follows:

FOR CALTRANS USE
TRACKING NO. 04-25-X-XX-2982
DIST/CO/RTE/PM 04/ALA/123/PM 2.45-Var
SIMPLEX STAMP
DATE OF SIMPLEX STAMP

1. COUNTY	2. ROUTE	3. POST MILE
ALA	123	2.45-Var

4. ADDRESS OR STREET NAME	5. CITY
	Berkeley

6. CROSS STREET (Distance and direction from project site)

7. WORK TO BE PERFORMED BY
☐ APPLICANT ☒ CONTRACTOR

8. IS THIS APPLICATION FOR A RIDER?
☒ NO ☐ YES. If "YES", provide the Parent Permit Number

9. ESTIMATE START DATE

10. ESTIMATED COMPLETION DATE

11. ESTIMATED NUMBER OF WORKING DAYS WITHIN STATE HIGHWAY RIGHT-OF-WAY
10

12. ESTIMATED CONSTRUCTION COSTS WITHIN STATE HIGHWAY RIGHT-OF-WAY
$0.0

13. HAS THE PROJECT BEEN REVIEWED BY ANOTHER CALTRANS BRANCH?
☒ NO ☐ YES. If "YES", which branch?

14. FUNDING SOURCE(S)
☐ FEDERAL ☐ STATE ☒ LOCAL ☐ PRIVATE ☐ SB 1 (ROAD REPAIR AND ACCOUNTABILITY ACT OF 2017)

15. CALTRANS PROJECT CODE (ID)

16. APPLICANT'S REFERENCE / UTILITY WORK ORDER NUMBER

17. DESCRIBE WORK TO BE DONE WITHIN STATE HIGHWAY RIGHT-OF-WAY (in 20 lines or less)
Attach 6 complete sets of plans (folded to 8.5" x 11") and any applicable specifications, calculations, maps, traffic control plans, etc.

We will be performing rehabilitation and replacement on chosen sanitary sewer pipe segments in West Berkeley. Work will be done on a segment on Ashby Ave and several segments on San Pablo Ave

18 (a). PORTION OF STATE HIGHWAY RIGHT-OF-WAY WHERE WORK IS BEING PROPOSED (check all that apply)
☒ Traffic lane ☐ Shoulder ☐ Sidewalk ☐ Median ☐ At or near an intersection ☐ Mobile work
☐ Outside of the shoulder, 0.0 feet from edge of pavement ☐ Other

18 (b). PROPOSED TRAFFIC CONTROL PLANS AND METHOD
☐ No traffic control needed ☐ State Standard Plans (T-Sheets) #
☐ Project specific Traffic Control Plans included ☒ To be submitted by contractor

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STANDARD ENCROACHMENT PERMIT APPLICATION

DOT TR-0100 (REV 08/2025)

TRACKING NO.
04-25-X-XX-2982

19. EXCAVATION	MAX. DEPTH (in)	MIN. DEPTH (in)	AVG. WIDTH (in)	LENGTH (ft)	SURFACE TYPE (e.g. Asphalt, concrete, soil, etc.)
	0.0000	0.0000	0.0000	0.0000	

20. PIPES	PRODUCT BEING TRANSPORTED	CARRIER PIPE	CASING PIPE
		DIAMETER 0.0000 (in.) MATERIAL	DIAMETER 0.0000 (in.) MATERIAL

PROPOSED INSTALLATION METHOD (e.g. HDD, Bore & Jack, Open Cut, etc.)

VOLTAGE / PSIG

DOES THE PROPOSED PROJECT INVOLVE THE REPLACEMENT AND/OR ABANDONMENT OF AN EXISTING FACILITY?

☐ NO ☒ YES. If "YES", provide a description We will be replacing existing pipe segments using several methods

21. IS A CITY, COUNTY OR OTHER PUBLIC AGENCY INVOLVED IN THE APPROVAL OF THIS PROJECT?

☐ YES (if "YES", check the type of project AND attach the environmental documentation and conditions of approval)

☐ COMMERCIAL DEVELOPMENT ☐ BUILDING ☐ GRADING ☐ OTHER

☐ CATEGORICALLY EXEMPT ☐ NEGATIVE DECLARATION ☐ ENVIRONMENTAL IMPACT REPORT ☐ OTHER

☒ NO (if "NO", check the category below which best describes the project AND answer questions A-K)

☐ DRIVEWAY OR ROAD APPROACH, RECONSTRUCTION, MAINTENANCE OR RESURFACING ☐ FENCE ☐ EROSION CONTROL

☐ PUBLIC UTILITY MODIFICATION, EXTENSIONS, HOOKUPS ☐ MAILBOX ☐ LANDSCAPING

☐ FLAGS, SIGNS, BANNERS, DECORATIONS, PARADES AND CELEBRATIONS ☒ OTHER US - Service, Pothole, Modifications, Conn

The following questions must be answered when a City, County or other public agency IS NOT involved in the approval of this project.

Your answers to these questions will assist Caltrans staff in identifying any physical, biological, social or economic resources that may be affected by your proposed project within State Highway right-of-way and to determine which type of environmental studies may be required to approve your application for an encroachment permit. It is the applicant's responsibility for the production of all required environmental documentation and supporting studies and in some cases this may be costly and time consuming. If possible, attach photographs of the location of the proposed project. Answer these questions to the best of your ability. Provide a description of any "YES" answers (type, name, number, etc.).

A. Will any existing vegetation and/or landscaping within State Highway right-of-way be disturbed?
No

B. Are there waterways (e.g. river, creek, pond, natural pool or dry streambed) adjacent to or within the limits of the proposed project?
No

C. Is the proposed project located within five miles of the coast line?
No

D. Will the proposed project generate construction noise levels greater than 86 decibels (dBA) (e.g. Jack-hammering, pile driving)?
No

E. Will the proposed project incorporate land from a public park, recreation area or wildlife refuge open to the public?
No

F. Are there any recreational trails or paths within the limits of the proposed project?
No

G. Will the proposed project impact any structures, buildings, rail lines or bridges within State Highway right-of-way?
No

H. Will the proposed project impact access to any businesses or residences?
No

I. Will the proposed project impact any existing public utilities or public services?
No

J. Will the proposed project impact any existing pedestrian facilities, such as sidewalks, crosswalks or overcrossings?
No

K. Will new lighting be constructed within or adjacent to State Highway right-of-way?
No

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STANDARD ENCROACHMENT PERMIT APPLICATION

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TRACKING NO.
04-25-X-XX-2982

22. Will the proposed project cause a substantial change in the significance of a historical resource (45 years or older), or cultural resource? ☐ YES ☒ NO (if "YES", provide a description)

23. Will the proposed project be on an existing State Highway or street where the activity involves removal of a scenic resource? (e.g. A significant tree or stand of trees, a rock outcropping or a historic building) ☐ YES ☒ NO (if "YES", provide a description)

24. Is work being done on the applicant's property in addition to State Highway right-of-way? ☐ YES ☒ NO
(If "YES", attach 6 complete sets of site and grading plans)

25. Will the proposed project require the disturbance of soil? ☐ YES ☒ NO
If "YES", estimate the area of disturbed soil within State Highway right-of-way in acres: 0.0000
and estimate the area of disturbed soil outside State Highway right-of-way in acres: 0.0000

26. Will the proposed project require dewatering? ☐ YES ☒ NO
If "YES", estimate Total gallons AND gallons/month. N/A (Total gallons) AND N/A (gallons/month)
SOURCE*: ☐ STORMWATER ☒ NON-STORMWATER
*(*See Caltrans SWMP for definition of non-storm water discharge: https://www.dot.ca.gov/programs/environmental-analysis/stormwater-management-program)*

27. How will any storm water or ground water be disposed?
☐ Storm Drain System ☐ Combined Sewer / Stormwater System ☐ Stormwater Retention Basin ☐ N/A
☐ Other (explain) _____

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STANDARD ENCROACHMENT PERMIT APPLICATION

DOT TR-0100 (REV 08/2025)

TRACKING NO.
04-25-X-XX-2982

READ THE FOLLOWING CLAUSES PRIOR TO SIGNING THIS ENCROACHMENT PERMIT APPLICATION.

The applicant's submission of this application to the California Department of Transportation constitutes the applicant's agreement and representation that the work or other activity contemplated by the encroachment permit application shall comply with all applicable standards, specifications, policies, requirements, conditions, and regulations of the California Department of Transportation, and the applicant understands the application may be denied if there is non-compliance with any of the above. An exception process exists and may result in approval of a non-compliant encroachment, in the discretion of the California Department of Transportation, but the exception process may require additional time to complete. The applicant understands and agrees all work or other activity contemplated by the encroachment permit application is subject to inspection and oversight by the California Department of Transportation. The applicant understands and agrees encroachment permit fees must still be paid if an application is withdrawn or denied. The applicant understands a denial may be appealed, in accordance with California Streets and Highways Code, Section 671.5, and the related regulations found in California Code of Regulations, Title 21, Division 2, Chapter 8, Article 2.

The applicant understands and agrees that immediately upon issuance of the encroachment permit the applicant is bound by, subject to, and must comply with the "Encroachment Permit General Provisions" (TR-0045), "Stormwater Special Provisions" (TR-0400) and any other applicable Special Provisions and Conditions of the encroachment permit. The "Encroachment Permit General Provisions" (TR-0045), and the Stormwater Special Provisions (TR-0400) are available at: *https://dot.ca.gov/-/media/dot-media/programs/traffic-operations/documents/encroachment-permits/appendix-k-ada-a11y.pdf*. If a paper copy is needed of the "Encroachment Permit General Provisions" (TR-0045) and/or "Stormwater Special Provisions" (TR-0400), please contact the District Office of Encroachment Permits. Their contact information is available at: *https://dot.ca.gov/programs/traffic-operations/ep/district-contacts*. The "Encroachment Permit General Provisions" (TR-0045) and any other applicable Special Provisions and Conditions will be provided as part of the encroachment permit. Information about Stormwater requirements is available at the Internet address: *https://dot.ca.gov/programs/environmental-analysis/stormwater-management-program*.

The applicant understands an encroachment permit may be denied, revoked, and/or a bond may be required, for non-payment of prior or present encroachment permit fees. An encroachment permit is not a property right and does not transfer with the property to a new owner.

Each of the persons purporting to execute this application on behalf of the applicant and/or on behalf of the applicant's authorized agent or engineer represents and warrants such person has full and complete legal authority to do so and to thereby bind applicant to the terms and conditions herein and to the terms and/or conditions of the encroachment permit. Applicant understands and agrees this application may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Executed copies of this application and/or its counterparts may be reproduced and/or exchanged by copy machine, mailing, facsimile, or electronic means (such as e-mail), and such copies shall be deemed to be effective as originals.

28. NAME OF APPLICANT (Project or Property Owner or Organization) Adadu Yemane		
ADDRESS OF APPLICANT (Include City, State and Zip Code) 1947 Center St. Berkeley CA 94704		
E-MAIL ADDRESS ayemane@berkeleyca.gov	PHONE NUMBER (510)981-6413	FAX NUMBER
29. NAME OF AUTHORIZED AGENT / ENGINEER / APPLICANT'S EMPLOYEE (A "Letter of Authorization" is required if different from #28) Kevin Aguilar		IS A LETTER OF AUTHORIZATION ATTACHED? ☐ YES ☐ NO
ADDRESS OF AUTHORIZED AGENT / ENGINEER (Include City, State and Zip Code) 121 Park Place Richmond CA 94801		
E-MAIL ADDRESS kaguilar@cswst2.com	PHONE NUMBER (415)884-6449	FAX NUMBER
30. NAME OF BILLING CONTACT (Same as #28 ☐ Same as #29 ☐)		
BILLING ADDRESS WHERE INVOICE(S) IS / ARE TO BE MAILED (Include City, State and Zip Code)		
E-MAIL ADDRESS	PHONE NUMBER	FAX NUMBER

* I hereby certify under penalty of perjury under the laws of the State of California that the information in this application and any document submitted with or in support of this application are true and correct to the best of my knowledge and belief, and that copies of any documents submitted with or in support of this application are true and correct copies of unaltered original documents. I further understand that if I have provided information that is false, intentionally incomplete, or misleading I may be charged with a crime and subjected to fine or imprisonment, or both fine and imprisonment. (Penal Code Section 72)

31. SIGNATURE OF APPLICANT OR AUTHORIZED AGENT* Kevin Aguilar	32. PRINT OR TYPE NAME Kevin Aguilar	
33. TITLE		34. DATE 11/3/2025

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STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STANDARD ENCROACHMENT PERMIT APPLICATION

DOT TR-0100 (REV 08/2025)

INSTRUCTIONS

Complete ALL fields, write "N/A" if not applicable. Type or print clearly. All dimensions must be in U.S. Customary (English) units.

Print your application single sided and submit all of the required attachments (See Section VII A&B of the "Encroachment Permit Application Guide Booklet" found at: https://dot.ca.gov/programs/traffic-operations/ep/guidelines).

1. County (e.g. Fresno, San Francisco, Los Angeles, etc.)
2. State Highway Route Number (e.g. I-5, SR-99, etc.)
3. Highway Postmile: (location of work, see https://postmile.dot.ca.gov/) If unable to determine, contact the appropriate District Encroachment Permits Office for assistance at: https://dot.ca.gov/programs/traffic-operations/ep/district-contacts
4. Address of project site (if the property has a physical address with a Number and Street/Road Name)
5. City (e.g. Sacramento, Redding, Irvine, etc.)
6. Distance and the direction from the nearest cross street to the project site (e.g. 500 ft. north of "C" Street).
7. Indicate whether the work will be performed by the applicant (your own forces) or by a contractor.
8. Indicate if you are applying for a "Rider Permit" (Time extension, change in scope of work, etc. and provide the “Parent Permit Number”.
9. Estimated start date for the proposed work. (Allow a minimum of 60 calendar days from the submittal date of your application for processing)
10. Estimated completion date for the proposed work.
11. Estimated number of working days within State Highway right-of-way.
12. Estimated construction costs for all work to be done within State Highway right-of-way.
13. Has another Caltrans' branch seen or reviewed your project? Which branch? (e.g. Design, Project Management, Right-of-Way, Environmental, etc.)
14. Identify funding source(s) for the proposed work.
15. Caltrans’ Project Code (ID) if this is a State project, capital project, or joint venture project.
16. Your company’s reference number or utility work order number for this project.
17. Describe the proposed work to be done entirely. If applicable, attach six (6) complete sets of FOLDED plans (folded 8-½” X 11”) and any applicable specifications, calculations, maps, etc.
18. (a) Identify portion(s) of State right-of-way where work will occur and (b) proposed traffic control plans to be used if any.
19. Maximum and minimum depth, average width, and length of the excavation area. Existing surface type (e.g. Asphalt, concrete, soil, etc.)
20. Product being transported (e.g. water, natural gas, etc.) Carrier pipe, diameter (inches) and material (e.g. Steel, HDPE, etc.) Casing pipe (if any), diameter and material Proposed installation method, Voltage of electrical current or pressure of liquid or gas. Replacement and/or abandonment of an existing facility (e.g. Abandoning pipe and filling it with two-sack slurry cement)
21. Check “YES”, if you are getting a permit or approval from another agency (City, County, etc.), and an environmental determination has been made. Then check the Categorically Exempt, Negative Declaration, Environmental Impact Report box or Other if one has been prepared. Attach a copy of the approved document and a copy of the Notice of Determination. Skip questions A-K.

    If you checked “NO”, check the box of the appropriate type of work to be done,or check “other” and fill in the type of work to be done. Also answer questions A-K.
22. A Historical Resource includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript that has historical or archaeological significance, or significance in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.
23. In this context a Scenic Resource includes, but is not limited to, trees that display outstanding features of form or age; unique, massive rock formations; historic buildings that are rare examples of their period, style, design, or which have special architectural features and details of importance.
24. Is there any work being done on the applicant’s property?
25. Indicate if the proposed project will require the disturbance of soil. If “YES,” estimate the area within AND outside of State Highway right-of-way in acres.
26. Indicate if the proposed project will require dewatering. If “YES,” estimate volume in total gallons AND gallons per month. Also indicate the source: Stormwater or Non-Stormwater (see Caltrans Stormwater Management Plan for definitions of non-stormwater discharge at: https://dot.ca.gov/programs/environmental-analysis/stormwater-management-program).
27. Indicate how any stormwater or ground water will be disposed of from or near the limits of the proposed project.
28. Name of the applicant or organization applying for the permit. List the mailing address, e-mail address, phone and fax numbers.
29. Name of the authorized agent or engineer acting on behalf of the applicant or organization. Attach a letter of authorization signed by the applicant or organization. List the mailing address, e-mail address, phone and fax numbers.
30. Name of the billing contact. List the mailing address where invoices are to be mailed, email address, phone and fax numbers.
31. Signature of the applicant or applicant's authorized agent.
32. Name of the applicant or applicant's authorized agent.
33. Title (owner, president, etc.) of the applicant or applicant's authorized agent.
34. Date of the signature.

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City of Berkeley
0424-NUS-2122

Conditional Permit

The following provisions 1 & 2 must be submitted prior to the commencement of the work.

1.The authorized contractor must submit the Traffic Control Plans, stamped, and signed by a California Licensed Professional Engineer.

2.TR-429 must be included as condition to the permit.

The following codes are to be used when reporting your intended closure status to TMC:

Use "1097" code, at the start of a lane and shoulder or ramp closures (dropping off the first cone).
Use "1098" code, after the lane and shoulder or ramp are open to traffic (picking up the last cone).
Use "1022" code, if canceling an approved closure.

When the request is rejected, you may clarify, revise, and resubmit your request by consulting the State Representative.

In addition to the 2024 Standard Specifications and Standard Plans (available at https://dot.ca.gov/programs/design/ccs-standard-plans-and-standard-specifications), the attached "Encroachment Permit General Provisions" (TR-0045) (available at https://dot.ca.gov/-/media/dot-media/programs/traffic-operations/documents/encroachment-permits/ep-general-provisions-a11y.pdf), "Encroachment Permit Underground Utility Provisions" (TR-0163) and "Stormwater Special Provisions for Minimal or No Impact" (TR-0400) (available at https://dot.ca.gov/programs/traffic-operations/ep/ep-manual/), all work permitted herein must comply with the following provisions:

A pre-job meeting with the State Representative is required at least 7 days prior to the start of any work under this permit. Failure to do so may result in permit revocation with no prejudice.

The permittee must provide the stage construction plans, traffic handling plans, work schedule, and a list of all sub-contractors to the State Representative at the time of the pre-job meeting.

Certain details of work authorized herein are shown on the plans and specifications submitted by the permittee, and attached to this encroachment permit.

•TR-0429 "Encroachment Permit Applicant: Contractor(s) Authorization Form"

Non-compliance with this provision may result in Caltrans taking actions including but not limited to canceling this permit without further notice, requiring bonds, and/or not providing such conditional approvals for the Permittee on future projects.

Signs, lights, flags or other protective devices must not obscure the visibility of, nor conflict in intent, meaning, and function of either existing signs, lights and traffic control devices, or any construction area signs.

On conventional highways, permittee's vehicles and equipment not involved in the permitted activities must be legally located off the traveled way and not interfere with free traffic and pedestrian flow.

No vehicle or equipment must be stored overnight within the State highway right-of-way. All vehicles and equipment must be removed immediately at the completion of the day's work. Refueling of vehicle or equipment within the State highway right-of-way is strictly prohibited.

Traffic control must comply with the 2024 Caltrans Standard Plans T9 through T14 (available at https://dot.ca.gov/programs/design/ccs-standard-plans-and-standard-specifications), and the California MUTCD, Part 6, "Temporary Traffic Control" (available at https://dot.ca.gov/programs/traffic-operations/camutcd/).

All traffic control devices must be installed, maintained, and removed by a qualified traffic control contractor.

The State Representative and CHP reserve the right to require reopening the highway at any time as necessary. All cost must be borne by the permittee.

Traffic control is authorized to close lane only from 9 p.m. to 7 a.m., Monday through Friday, 10 p.m. to 9 a.m. Saturday and Sunday, excluding holidays as defined in the 2024 Caltrans Standard Specifications (available at https://dot.ca.gov/programs/design/ccs-standard-plans-and-standard-specifications). No more than one lane may be closed at a time. Traffic control must be in compliance with the approved traffic control plans.

Do not reduce an open traffic lane width to less than 11 feet. If traffic cones or delineators are used for temporary edge delineation, the side of the base of the cones or delineators nearest traffic is considered the edge of traveled way.

Traffic control using flagging, must comply with the California MUTCD, Part 6E, "Flagger Control" (available at https://dot.ca.gov/programs/traffic-operations/camutcd/), and Cal/OSHA Construction Safety Orders, Section 1599, “Flaggers”, (available at https://www.dir.ca.gov/title8/1599.html).

Temporary pedestrian facilities must comply with the Caltrans Temporary Pedestrian Facilities Handbook (available at https://dot.ca.gov/-/media/dot- media/programs/construction/documents/contract-administration/temporary-pedestrian-facilities-handbook-a11y.pdf) and the California MUTCD Part 6, Chapter 6D – “Pedestrian and Worker Safety” (available at http://www.dot.ca.gov/programs/traffic-operations/camutcd).

Notwithstanding General Provision 13, temporary pedestrian access routes must comply with the 2023 Caltrans Standard Plans T30 through T34 (available at https://dot.ca.gov/programs/design/ccs-standard-plans-and-standard-specifications).

Changes to the provisions herein require an Encroachment Permit Rider, except for minor changes authorized by the State Representative.

Time extension requests must be made a minimum 30 days prior to permit expiration.

The State Representative or CHP may stop work not being performed in compliance with this permit.

Neither materials nor waste must be stockpiled within the State highway right-of-way.

All mud, dirt, and gravel tracked onto the roadway must be immediately removed.

Any damage to State facilities must be repaired to the same state as before the damage and the cost of repairs must be the responsibility of the permittee.

Upon completion of work authorized by this encroachment permit, the permittee must provide the State Representative with “Notice of Completion” (TR-0128) (available at https://dot.ca.gov/-/media/dot-media/programs/traffic-operations/documents/encroachment-permits/tr0128.pdf).

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

ENCROACHMENT PERMIT APPLICANT: CONTRACTOR(S) AUTHORIZATION FORM

DOT TR-0429 (NEW 12/2022)

The Permittee warrants and represents the Permittee has hired the following prime contractor(s) to perform the approved encroachment activities under Encroachment Permit # _____ on the Permittee's behalf as agents in accordance with Encroachment Permit General Provision #4 or Adopt-A-Highway Special Provision # 3, whichever is part of the Encroachment Permit. The Permittee warrants and represents the Permittee has provided a copy of the Encroachment Permit to the prime contractor(s) listed below, and further warrants and represents that the activities related to the Encroachment Permit, whether performed by the Permittee or by the prime contractor(s) below or by any person or entity acting for or on behalf of the Permittee, will be performed in compliance with all terms, conditions, specifications, standards, provisions, and other requirements of the subject Encroachment Permit. The person signing below warrants and represents such person has authority on behalf of the Permittee to make the warranties and representations contained herein, and to agree to and so bind the Permittee to this page.

List of authorized prime contractors for the encroachment permit:

Contractor Name	Scope of work (Traffic Control/civil work etc.)	Contact Person	Contact Person's Information (Phone # and E-mail)

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Name of Permittee	**Name and Title of Person Signing for Permittee (Print)**	**Signature**	**Date**

ENCROACHMENT PERMIT APPLICANT: CONTRACTOR(S) AUTHORIZATION FORM

DOT TR-0429 (NEW 12/2022)

By signing below, each prime contractor acknowledges that such prime contractor has received a copy of Encroachment Permit #_____ and agrees such prime contractor, and such prime contractor's employees, managers, officers, directors, agents, subcontractors, and suppliers, will comply with, and will perform all activities in accordance with, all terms, conditions, specifications, standards, provisions, and other requirements of the Encroachment Permit, including but not limited to notifying the permit inspector as required in the Encroachment Permit and reporting the lane closure notifications per the Encroachment Permit General Provisions (TR-0045). Each person signing on behalf of each prime contractor warrants and represents such person has the authority to make the acknowledgements, warranties, and representations contained herein on behalf of the named prime contractor, and has the authority to agree to and so bind the named prime contractor to this page.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Name of Prime Contractor	Name and Title of Person Signing for Contractor (Print)	Signature	Date

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
NOTICE OF COMPLETION
TR-0128 (REV. 6/01) CT #7541-5529-1

PERMIT NO.

Dear Sir or Madam:

All work authorized by the above-numbered permit was completed on DATE

SIGNATURE OF PERMITTEE

FM 92 1546 M

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
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FM 92 1546 M

ENCROACHMENT PERMIT GENERAL PROVISIONS

TR-0045 (REV. 12/2022)

1. **AUTHORITY:** The California Department of Transportation ("Department") has authority to issue encroachment permits under Division 1, Chapter 3, Article 1, Sections 660 through 734 of the Streets and Highways Code.
2. **REVOCATION:** Encroachment permits are revocable on five (5) business days' notice unless otherwise stated on the permit or otherwise provided by law, and except as provided by law for public corporations, franchise holders, and utilities. Notwithstanding the foregoing, in an emergency situation as determined by the Department, an encroachment permit may be revoked immediately. These General Provisions and any applicable Special Provisions are subject to modification or abrogation by the Department at any time. Permittees' joint use agreements, franchise rights, reserved rights or any other agreements for operating purposes in State of California ("State") highway right-of-way may be exceptions to this revocation.
3. **DENIAL FOR NONPAYMENT OF FEES:** Failure to pay encroachment permit fees when due may result in rejection of future applications, denial of encroachment permits, and revocation of the encroachment permit if already issued.
4. **PERMITTEE AUTHORIZATION FOR OTHERS TO PERFORM WORK:** This encroachment permit allows only the Permittee and/or Permittee's authorized contractor or agent to work within or encroach upon the State highway right-of-way, and the Permittee may not assign or transfer this encroachment permit. Any attempt to assign or transfer this encroachment permit shall be null and void. Permittee shall provide to the Department a list of Permittee's authorized contractors/agents, in the form and at the time specified by the Department but if no time is specified then no later than the pre-construction meeting. Permittee shall keep the list current and shall provide updates to the Department immediately upon any change to the list of authorized contractors/agents, including but not limited the addition, removal, or substitution of an authorized contractor/agent, or a new address or contact information for an existing authorized contractor/agent. Permittee is responsible for the acts and/or omissions of any person or entity acting on behalf of the Permittee, even if such person or entity is not included on Permittee's list of authorized contractors and/or agents.
5. **ACCEPTANCE OF PROVISIONS:** Permittee, and the Permittee's authorized contractors and/or agents, understand and agree to accept and comply with these General Provisions, the Special Provisions, any and all terms and/or conditions contained in or incorporated into the encroachment permit, and all attachments to the encroachment permit (collectively "the Permit Conditions"), for any encroachment, work, and/or activity to be performed under this encroachment permit and/or under color of authority of this encroachment permit. Permittee understands and agrees the Permit Conditions are applicable to and enforceable against Permittee as long as the encroachment remains in, under, or over any part of the State highway right-of-way. The Permittee's authorized contractors and/or agents, are also bound by the Permit Conditions. Non-compliance with the Permit Conditions by the Permittee's authorized contractor and/or agent will be deemed non-compliance by the Permittee.
6. **BEGINNING OF WORK:** When traffic is not impacted (see General Provision Number 35), the Permittee must notify the Department's representative two (2) business days before starting permitted work. Permittee must notify the Department's representative if the work is to be interrupted for a period of five (5) business days or more, unless otherwise agreed upon. All work must be performed on weekdays during regular work hours, excluding holidays, unless otherwise specified in this encroachment permit.
7. **STANDARDS OF CONSTRUCTION:** All work performed within State highway right-of-way must conform to all applicable Departmental construction standards including but not limited to: Standard Specifications, Standard Plans, Project Development Procedures Manual, Highway Design Manual and Special Provisions.

   Other than as expressly provided by these General Provisions, the Special Provisions, the Standard Specifications, Standard Plans, and other applicable Departmental standards, nothing in these General Provisions is intended to give any third party any legal or equitable right, remedy, or claim with respect to the encroachment permit and/or to these General Provisions or any provision herein. These General Provisions are for the sole and exclusive benefit of the Permittee and the Department.

   Where reference is made in such standards to "Contractor" and "Engineer," these are amended to be read as "Permittee" and "Department's representative," respectively, for purposes of this encroachment permit.
8. **PLAN CHANGES:** Deviations from plans, specifications, and/or the Permit Conditions as defined in General Provision Number 5 are not allowed without prior approval from the Department's representative and the Federal Highway Administration ("FHWA") representative if applicable.
9. **RIGHT OF ENTRY, INSPECTION AND APPROVAL:** All work is subject to monitoring and inspection. The United States, the State, the Department, and the Directors, officers, employees, agents, and/or contractors of the State and/or of the Department, and other state, and federal agencies, and the FHWA, through their agents or representatives, must have full access to highway

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facilities/encroachment area, at any and all times for the purpose of inspection, maintenance, activities needed for construction/reconstruction, and operation of the State highway right-of-way.

Upon completion of work, Permittee must request a final inspection for acceptance and approval by the Department. The local public agency Permittee must not give final construction approval to its contractor until final acceptance and approval by the Department is obtained.

10. **PERMIT AT WORKSITE:** Permittee and Permittee's authorized contractors/agents must keep the permit package and current list of authorized contractors/agents, or copies thereof, at the work site at all times and must show such documents upon request to any Department representative or law enforcement officer. If the permit package or current list of authorized contractors/agents, or copies thereof, are not kept and made available at the work site at all times, then all work must be suspended.
11. **CONFLICTING ENCROACHMENTS:** Permittee must yield start of work to ongoing, prior authorized work adjacent to or within the limits of the Permittee's project site. When existing encroachments conflict with Permittee's work, the Permittee must bear all cost for rearrangements (e.g., relocation, alteration, removal, etc.).
12. **PERMITS, APPROVALS, AND CONCURRENCES FROM OTHER AGENCIES AND/OR ENTITIES:** This encroachment permit is invalidated if the Permittee has not obtained all permits, approvals, and concurrences necessary and required by law, including but not limited to those from the California Public Utilities Commission ("CPUC"), California Occupational Safety and Health Administration ("Cal-OSHA"), local and state and federal environmental agencies, the California Coastal Commission, and any other public agency and/or entity having jurisdiction. Permittee is responsible for providing notice of the encroachment to, and obtaining concurrence from, any person or entity (whether public or private) affected by the scope of work described in the encroachment permit, regardless of whether such notice or concurrence is required by law; the Department is not responsible to provide such notice or obtain such concurrence. Permittee warrants all such permits, approvals, and concurrences have been obtained before beginning work under this encroachment permit. The Department may, at the Department's discretion, require the Permittee to demonstrate that Permittee has obtained all such permits, approvals, and concurrences, and Permittee shall demonstrate this at the time and in the manner specified by the Department.
13. **PEDESTRIAN AND BICYCLIST SAFETY:** A safe continuous passageway must be maintained through the work area at existing pedestrian or bicycle facilities. At no time must pedestrians be diverted onto a portion of the street used for vehicular traffic. At locations where safe alternate passageways cannot be provided, appropriate signs and barricades must be installed at the limits of construction and in advance of the limits of construction at the nearest crosswalk or intersection to detour pedestrians to facilities across the street. Attention is directed to Section 7-1.04 "Public Safety," and to Section 12-4.04 "Temporary Pedestrian Access Routes," and to Section 16-2.02 "Temporary Pedestrian Facility," of the Department's Standard Specifications, and to California Vehicle Code section 21760, subdivision (c).
14. **PUBLIC TRAFFIC CONTROL:** The Permittee must provide traffic control protection, warning signs, lights, safety devices, etc., and take all other measures necessary for the traveling public's safety as required by law and/or the Department. While providing traffic control, the needs of all road users, including but not limited to motorists, bicyclists and pedestrians, including persons with disabilities in accordance with the Americans with Disabilities Act, must be an essential part of the work activity.

    Lane, Bike Lane, Sidewalk, Crosswalk, and/or shoulder closures must comply with the Department's Standard Specifications and Standard Plans for Temporary Traffic Control Systems & Temporary Pedestrian Access Routes, and with the applicable Special Provisions. Where issues are not addressed in the Standard Specifications, Standard Plans, and/or Special Provisions, the California Manual on Uniform Traffic Control Devices (Part 6, Temporary Traffic Control) must be followed.
15. **MINIMUM INTERFERENCE WITH TRAFFIC:** Permittee must plan and conduct work so as to create the least possible inconvenience to the traveling public (motorized vehicles, unmotorized vehicles such as bicycles, pedestrians, person(s) with disabilities, etc.), such that traffic is not unreasonably delayed.
16. **STORAGE OF EQUIPMENT AND MATERIALS:** The storage of equipment or materials is not allowed within State highway right-of-way, unless specified within the Special Provisions of this encroachment permit. If encroachment permit Special Provisions allow for the storage of equipment or materials within the State highway right-of-way, the equipment and material storage must also comply with Section 7-1.04, Public Safety, of the Department's Standard Specifications.
17. **CARE OF DRAINAGE:** Permittee must provide alternate drainage for any work interfering with an existing drainage facility in compliance with the Department's Standard Specifications, Standard Plans, and/or as directed by the Department's representative.
18. **RESTORATION AND REPAIRS IN STATE HIGHWAY RIGHT-OF-WAY:** Permittee is responsible for restoration and repair of State highway right-of-way resulting from permitted work (Streets and Highways Code, section 670 et seq.).
19. **STATE HIGHWAY RIGHT-OF-WAY CLEAN UP:** Upon completion of work, Permittee must remove and dispose of all scraps, refuse, brush, timber, materials, etc. off the State highway right-of-way. The aesthetics of the highway must be as it was before work started or better.
20. **COST OF WORK:** Unless stated otherwise in the encroachment permit or a separate written agreement with the Department, the Permittee must bear all costs

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incurred for work within the State highway right-of-way and waives all claims for indemnification or contribution from the United States, the State, the Department, and from the Directors, officers, and employees of the State and/or the Department. Removal of Permittee's personal property and improvements shall be at no cost to the United States, the State, and the Department.

21. **ACTUAL COST BILLING:** When specified in the permit, the Department will bill the Permittee actual costs at the currently set Standard Hourly Rate for encroachment permits.
22. **AS-BUILT PLANS:** When required, Permittee must submit one (1) set of folded as-built plans within thirty (30) calendar days after completion and acceptance of work in compliance with requirements listed as follows:
    a) Upon completion of the work provided herein, the Permittee must submit a paper set of As-Built plans to the Department's representative.
    b) All changes in the work will be shown on the plans, as issued with the permit, including changes approved by Encroachment Permit Rider.
    c) The plans are to be prominently stamped or otherwise noted "AS-BUILT" by the Permittee's representative who was responsible for overseeing the work. Any original plan that was approved with a Department stamp, or by signature of the Department's representative, must be used for producing the As-Built plans.
    d) If construction plans include signing or striping, the dates of signing or striping removal, relocation, or installation must be shown on the As-Built plans when required as a condition of the encroachment permit. When the construction plans show signing and striping for staged construction on separate sheets, the sheet for each stage must show the removal, relocation, and installation dates of the appropriate staged striping and signing.
    e) As-Built plans must contain the Encroachment Permit Number, County, Route, and Post Mile on each sheet.
    f) The As-Built Plans must not include a disclaimer statement of any kind that differs from the obligations and protections provided by sections 6735 through 6735.6 of the California Business and Professions Code. Such statements constitute non-compliance with Encroachment Permit requirements and may result in the Department retaining Performance Bonds or deposits until proper plans are submitted. Failure to comply may also result in denial of future encroachment permits or a provision requiring a public agency to supply additional bonding.
23. **PERMITS FOR RECORD PURPOSES ONLY:** When work in the State highway right-of-way is within an area under a Joint Use Agreement (JUA) or a Consent to Common Use Agreement (CCUA), a fee exempt encroachment permit is issued to the Permittee for the purpose of providing a notice and record of work. The Permittee's prior rights must be preserved without the intention of creating new or different rights or obligations. "Notice and Record Purposes Only" must be stamped across the face of the encroachment permit.
24. **BONDING:** The Permittee must file bond(s), in advance, in the amount(s) set by the Department and using forms acceptable to the Department. The bonds must name the Department as obligee. Failure to maintain bond(s) in full force and effect will result in the Department stopping all work under this encroachment permit and possibly revoking other encroachment permit(s). Bonds are not required of public corporations or privately-owned utilities unless Permittee failed to comply with the provisions and/or conditions of a prior encroachment permit. The surety company is responsible for any latent defects as provided in California Code of Civil Procedure section 337.15. A local public agency Permittee also must comply with the following requirements:
    a) In recognition that project construction work done on State property will not be directly funded and paid by State, for the purpose of protecting stop notice claimants and the interests of State relative to successful project completion, the local public agency Permittee agrees to require the construction contractor to furnish both a payment and performance bond in the local public agency's name with both bonds complying with the requirements set forth in Section 3-1.05 Contract Bonds of the Department's Standard Specifications before performing any project construction work.
    b) The local public agency Permittee must defend, indemnify, and hold harmless the United States, the State and the Department, and the Directors, officers, and employees of the State and/or Department, from all project construction related claims by contractors, subcontractors, and suppliers, and from all stop notice and/or mechanic's lien claimants. The local public agency also agrees to remedy, in a timely manner and to the Department's satisfaction, any latent defects occurring as a result of the project construction work.
25. **FUTURE MOVING OF INSTALLATIONS:** Permittee understands and agrees to relocate a permitted installation upon notice by the Department. Unless under prior property right or agreement, the Permittee must comply with said notice at the Permittee's sole expense.
26. **ENVIRONMENTAL:**
    a) ARCHAEOLOGICAL/HISTORICAL: If any archaeological or historical resources are identified or encountered in the work vicinity, the Permittee must immediately stop work, notify the Department's representative, retain a qualified archaeologist who must evaluate the site at Permittee's sole expense, and make recommendations to the Department's representative regarding the continuance of work.
    b) HAZARDOUS MATERIALS: If any hazardous waste or materials (such as underground storage tanks, asbestos pipes, contaminated soil, etc.) are identified or encountered in the work vicinity, the Permittee must immediately stop work, notify the Department's representative, retain a qualified hazardous

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waste/material specialist who must evaluate the site at the Permittee's sole expense, and make recommendations to the Department's representative regarding the continuance of work.
Attention is directed to potential aerially deposited lead (ADL) presence in unpaved areas along highways. It is the Permittee's responsibility to take all appropriate measures to protect workers in conformance with California Code of Regulations Title 8, Section 1532.1, "Lead," and with Cal-OSHA Construction Safety Orders, and to ensure roadway soil management is in compliance with Department of Toxic Substances Control (DTSC) requirements.

c) BIOLOGICAL: If any regional, state, or federally listed biological resource is identified or encountered in the work vicinity, the Permittee must immediately stop work, notify the Department's representative, retain a qualified biologist who must evaluate the site at Permittee's sole expense, and make recommendations to the Department's representative regarding the continuance of work.

27. **PREVAILING WAGES:** Work performed by or under an encroachment permit may require Permittee's contractors and subcontractors to pay appropriate prevailing wages as set by the California Department of Industrial Relations. Inquiries or requests for interpretations relative to enforcement of prevailing wage requirements must be directed to the California Department of Industrial Relations.
28. **LIABILITY, DEFENSE, AND INDEMNITY:** The Permittee agrees to indemnify and save harmless the United States, the State, the Department, and the Directors, officers, employees, agents and/or contractors of the State and/or of the Department, including but not limited to the Director of Transportation and the Deputy Directors, from any and all claims, demands, damages, costs, liability, suits, or actions of every name, kind, and description, including but not limited to those brought for or on account of property damage, invasion of privacy, violation or deprivation of a right under a state or federal law, environmental damage or penalty, or injury to or death of any person including but not limited to members of the public, the Permittee, persons employed by the Permittee, and/or persons acting on behalf of the Permittee, arising out of or in connection with: (a) the issuance and/or use of this encroachment permit; and/or (b) the encroachment, work, and/or activity conducted pursuant to this encroachment permit, or under color of authority of this encroachment permit but not in full compliance with the Permit Conditions as defined in General Provision Number 5 ("Unauthorized Work or Activity"); and/or (c) the installation, placement, design, existence, operation, and/or maintenance of the encroachment, work, and/or activity; and/or (d) the failure by the Permittee, or by anyone acting for or on behalf of the Permittee, to perform the Permittee's obligations under any part of the Permit Conditions as defined in General Provision Number 5, in respect to maintenance or any other obligation; and/or (e) any change to the Department's property or adjacent property, including but not limited to the features or conditions of either of them, made by the Permittee or anyone acting on behalf of the Permittee; and/or (f) a defect or obstruction related to or caused by the encroachment, work, and/or activity whether conducted in compliance with the Permit Conditions as defined in General Provision Number 5 or constituting Unauthorized Work or Activity, or from any cause whatsoever. The duty of the Permittee to indemnify and save harmless includes the duties to defend as set forth in Section 2778 of the Civil Code.

It is the intent of the Department and the Permittee that except as prohibited by law, the Permittee will defend, indemnify, and hold harmless as set forth in this General Provision Number 28 regardless of the existence or degree of fault or negligence, whether active or passive, primary or secondary, on the part of: the United States, the State; the Department; the Directors, officers, employees, agents and/or contractors of the State and/or of the Department, including but not limited to the Director of Transportation and the Deputy Directors; the Permittee; persons employed by the Permittee; and/or persons acting on behalf of the Permittee.

The Permittee waives any and all rights to any type of expressed or implied indemnity from or against the United States, the State, the Department, and the Directors, officers, employees, agents, and/or contractors of the State and/or of the Department, including but not limited to the Director of Transportation and the Deputy Directors.

The Permittee understands and agrees to comply with the obligations of Titles II and III of the Americans with Disabilities Act in the conduct of the encroachment, work, and/or activity whether conducted pursuant to this encroachment permit or constituting Unauthorized Work or Activity, and further agrees to defend, indemnify, and save harmless the United States, the State, the Department, and the Directors, officers, employees, agents, and/or contractors of the State and/or of the Department, including but not limited to the Director of Transportation and the Deputy Directors, from any and all claims, demands, damages, costs, penalties, liability, suits, or actions of every name, kind, and description arising out of or by virtue of the Americans with Disabilities Act.

The Permittee understands and agrees the Directors, officers, employees, agents, and/or contractors of the State and/or of the Department, including but not limited to the Director of Transportation and the Deputy Directors, are not personally responsible for any liability arising from or by virtue of this encroachment permit.

For the purpose of this General Provision Number 28 and all paragraphs herein, "contractors of the State and/or of the Department" includes contractors, and their subcontractors, under contract to the State and/or the Department.

This General Provision Number 28 and all paragraphs herein take effect immediately upon issuance of this encroachment permit, and apply before, during, and after the encroachment, work, and/or activity

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contemplated under this encroachment permit, whether such work is in compliance with the Permit Conditions as defined in General Provision Number 5 or constitutes Unauthorized Work or Activity, except as otherwise provided by California law. The Permittee's obligations to defend, indemnify, and save harmless under this General Provision Number 28 take effect immediately upon issuance of this encroachment permit and have no expiration date, including but not limited to situations in which this encroachment permit expires or is revoked, the work or activity performed under this encroachment permit is accepted or not accepted by the Department, the encroachment, work, and/or activity is conducted in compliance with the Permit Conditions as defined in General Provision Number 5 or constitutes Unauthorized Work or Activity, and/or no work or activity is undertaken by the Permittee or by others on the Permittee's behalf.

If the United States or an agency, department, or board of the United States is the Permittee, the first two paragraphs of this General Provision Number 28 (beginning "The Permittee agrees to indemnify…" and "It is the intent of the parties…") are replaced by the following paragraph:

Claims for personal injury, death, or property damage allegedly caused by the negligent or wrongful act or omission of any employee of the United States acting within the scope of their official duties are subject to the Federal Tort Claims Act, as amended, 28 U.S.C. § 1346 and § 2671 et seq. (Chapter 171).

29. **NO PRECEDENT ESTABLISHED:** This encroachment permit is issued with the understanding that it does not establish a precedent.
30. **FEDERAL CIVIL RIGHTS REQUIREMENTS FOR PUBLIC ACCOMMODATION:**
    a) As part of the consideration for being issued this encroachment permit, the Permittee, on behalf of Permittee and on behalf of Permittee's personal representatives, successors in interest, and assigns, does hereby covenant and agree that:
        i) No person on the grounds of race, color, or national origin may be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.
        ii) That in connection with the construction of any improvements on said lands and the furnishings of services thereon, no discrimination must be practiced in the selection and retention of first-tier subcontractors in the selection of second-tier subcontractors.
        iii) That such discrimination must not be practiced against the public in their access to and use of the facilities and services provided for public accommodations (such as eating, sleeping, rest, recreation), and operation on, over, or under the space of the State highway right-of-way.
        iv) That the Permittee must use the premises in compliance with all other requirements imposed pursuant to Title 15, Code of Federal Regulations, Commerce and Foreign Trade, Subtitle A. Office of the Secretary of Commerce, Part 8 (15 C.F.R. Part 8) and as said Regulations may be amended.
    b) That in the event of breach of any of the above nondiscrimination covenants, the State and the Department have the right to terminate this encroachment permit and to re-enter and repossess said land and the facilities thereon and hold the same as if said permit had never been made or issued.
31. **MAINTENANCE:** The Permittee is responsible at Permittee's sole expense for the encroachment, and the inspection, maintenance, repair, and condition thereof, and is responsible to ensure the encroachment does not negatively impact State highway safety, maintenance, operations, construction, State facilities, activities related to construction/reconstruction, or other encroachments. The Permittee's obligations in the preceding sentence take effect immediately upon issuance of this encroachment permit and continue until the encroachment is entirely and permanently removed. Additional encroachment permits or approval documents may be required authorizing work related to inspection, repair, and/or maintenance activities. Contact the Department for information.
32. **SPECIAL EVENTS:** In accordance with subdivision (a) of Streets and Highways Code section 682.5 and 682.7, the Department is not responsible for the conduct or operation of the permitted activity, and the applicant agrees to defend, indemnify, and hold harmless the United States, the State, the Department, and the Directors, officers, employees, agents, and contractors of the State and/or of the Department, including but not limited to the Director of Transportation and the Deputy Directors, from any and all claims, demands, damages, costs, liability, suits, or actions of every name, kind and description arising out of any activity for which this encroachment permit is issued.

    The Permittee is required, as a condition of this encroachment permit, for any event that awards prize compensation to competitors in gendered categories, for any participant level that receives prize compensation, to ensure the prize compensation for each gendered category is identical at each participant level. (Streets and Highways Code, section 682.7.)

    The Permittee understands and agrees to comply with the obligations of Titles II and III of the Americans with Disabilities Act in the conduct of the event, and further agrees to defend, indemnify, and save harmless the United State, the State and the Department, and the Directors, officers, and employees of the State and/or Department, including but not limited to the Director of the Department and the Deputy Directors, from any and all claims, demands, damages, costs, liability, suits, or actions of every name, kind and description arising out of or by virtue of the Americans with Disabilities Act.
33. **PRIVATE USE OF STATE HIGHWAY RIGHT-OF-WAY:** State highway right-of-way must not be used for private purposes without compensation to the State. The gifting

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of public property uses and therefore public funds is prohibited under the California Constitution, Article XVI, Section 6.

34. **FIELD WORK REIMBURSEMENT:** Permittee must reimburse the Department for field work performed by or on behalf of the Department to correct or remedy issues created by the Permittee or by others acting on behalf of the Permittee, including but not limited to hazards or damaged facilities, or to clear refuse, debris, etc. not attended to by the Permittee or by others acting on behalf of the Permittee.
35. **LANE CLOSURE REQUEST SUBMITTALS AND NOTIFICATION OF CLOSURES TO THE DEPARTMENT:** Lane closure request submittals and notifications must be in accordance with Section 12-4.02, and Section 12.4-04, of the Department's Standard Specifications or as directed by the Department's representative. The Permittee must notify the Department's representative and the Traffic Management Center ("TMC") before initiating a lane closure or conducting an activity that may cause a traffic impact. In emergency situations when the corrective work or the emergency itself may affect traffic, the Department's representative and the TMC must be notified as soon as possible.
36. **SUSPENSION OF TRAFFIC CONTROL OPERATION:** The Permittee, upon notification by the Department's representative, must immediately suspend all traffic lane, bike lane, sidewalk, crosswalk, and/or shoulder closure operations and any operation that impedes the flow of traffic. All costs associated with this suspension must be borne by the Permittee.
37. **UNDERGROUND SERVICE ALERT (USA) NOTIFICATION:** Any excavation requires compliance with the provisions of Government Code section 4216 et seq., including but not limited to notice to a regional notification center, such as Underground Service Alert (USA). The Permittee must provide notification to the Department representative at least five (5) business days before, and the regional notification center at least forty-eight (48) hours before, performing any excavation work within the State highway right-of-way.
38. **COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA):** All work within the State highway right-of-way to construct and/or maintain any public facility must be designed, maintained, and constructed strictly in accordance with all applicable Federal Access laws and regulations (including but not limited to Section 504 of the Rehabilitation Act of 1973, codified at 29 U.S.C. § 794), California Access laws and regulations relating to ADA, along with its implementing regulations, Title 28 of the Code of Federal Regulations Parts 35 and 36 (28 C.F.R., Ch. I, Part 35, § 35.101 et seq., and Part 36, § 36.101 et seq.), Title 36 of the Code of Federal Regulations Part 1191 (36 C.F.R., Ch. XI, Part 1191, § 1119.1 et seq.), Title 49 of the Code of Federal Regulations Part 37 (49 C.F.R., Ch. A, Part 37, § 37.1 et seq.), the United States Department of Justice Title II and Title III for the ADA, and California Government Code section 4450 et seq., which require public facilities be made accessible to persons with disabilities.

    Notwithstanding the requirements of the previous paragraph, all construction, design, and maintenance of public facilities must also comply with the Department's Design Information Bulletin 82, "Pedestrian Accessibility Guidelines for Highway Projects" and Standard Plans & Specifications on "Temporary Pedestrian Access Routes."
39. **STORMWATER:** The Permittee is responsible for full compliance with the following:
    a) For all projects, the Department's Storm Water Program and the Department's National Pollutant Discharge Elimination System (NPDES) Permit requirements under Order No. 2012-0011-DWQ, NPDES No CAS000003; and
    b) In addition, for projects disturbing one acre or more of soil, with the California Construction General Permit Order No. 2009-0009-DWQ, NPDES No CAS000002; and
    c) In addition, for projects disturbing one acre or more of soil in the Lahontan Region with Order No. R6T-2016-0010, NPDES No CAG616002.
    d) For all projects, it is the Permittee's responsibility to install, inspect, repair, and maintain all facilities and devices used for water pollution control practices (Best Management Practices/BMPs) before performing daily work activities.

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STORMWATER SPECIAL PROVISIONS FOR MINIMAL OR NO IMPACT (SWSP)

TR-0400 (Rev. 09/2024)

1. **GENERAL:** The purpose of these Special Provisions is to provide the Permittee with specifications for water pollution control to minimize, prevent, or control the discharge of material into the air, surface waters, groundwater, and storm sewers owned by the State or local agencies. These provisions are not intended to take the place of the Caltrans Water Pollution Control Program (WPCP) for projects where soil disturbance from work activities ranging from more than a quarter of an acre to less than one acre, or work activities of one acre or more subject to the preparation of the Caltrans Storm Water Pollution Prevention Plan (SWPPP). These provisions must be included with the permit for projects that require an Erosion and Sediment Control Plan (ESCP). The Permittee must comply with the following Special Provisions and the direction of the State Representative. All Stormwater Best Management Practices (BMPs) must conform to Section 13 Water Pollution Control of the Caltrans' Standard Specifications.
2. **NPDES REQUIREMENTS:** The Permittee must be responsible for full compliance with the Caltrans Storm Water Program and the Caltrans National Pollutant Discharge Elimination System (NPDES) Permit requirements (Order 2022-0033-DWQ, NPDES No. CAS000003, and any amendments and/or subsequent orders). Projects in construction with active waste discharge identification number (WDID number) may continue their coverage with the California Construction General Permit CGP (Order 2009-0009-DWQ, NPDES No. CAS000002, and any amendments and/or subsequent orders) until 9/1/2025. Privately funded projects may not extend their 2009 CGP regulatory coverage and are responsible for compliance with the CGP (Order WQ 2022-0057-DWQ NPDES No. CAS000002) after 9/1/2023. It is the Permittee's responsibility to install, inspect, and repair or maintain facilities and devices used for water pollution control practices (BMPs) before performing daily work activities. Installation, inspection and maintenance responsibilities on the job site include: 1) soil stabilization materials in work areas that are inactive or prior to storm events, 2) water pollution control devices to control sediment and erosion, 3) implementation of spill and leak prevention procedures for chemical and hazardous substances stored on the job site, 4) material storage, 5) stockpile management, 6) waste management, 7) non-stormwater management, 8) water conservation, 9) tracking controls, and 10) illicit connection, illegal discharge detection and reporting. The Permittee must report to the State Representative when discharges enter receiving waters, adjacent property, and drainage systems. The Permittee must also address any illicit discharges or illegal dumping prior to start of daily work schedule by cleaning them up. Copies of written notices or orders from the Regional Water Quality Control Board or other regulatory agency must be provided to the State Representative within forty-eight (48) hours of reported activity. For additional information on stormwater compliance, visit the State Water Resources Control Board's Storm Water Program.
3. **RESPONSIBILITY FOR DEBRIS REMOVAL:** The Permittee must be responsible for preventing project related sediment, trash, debris, and other construction waste from entering the street, storm drains, drainage swales, stormwater conveyance infrastructure, local creeks, or any other bodies of water. All existing treatment BMP's (TBMPs) must be protected in place. If an existing TBMP is damaged by the Permittee, the Permittee is responsible for complete repair to a satisfactory condition determined by the State Representative.
4. **SPOILS AND RESIDUE:** The Permittee must vacuum any saw-cut concrete waste material, debris, residue, etc. No spoils, debris, residue, etc. must be washed into a drainage system. The Permittee must ensure that Portland cement concrete and asphalt concrete grindings are not stockpiled or used in a manner that may result in an unauthorized stormwater discharge to waters of the state.
5. **SWEEPING:** Sweep paved roads at construction entrance and exit locations and surrounding paved areas daily within the job site during: 1) clearing and grubbing, 2) earthwork, 3) trenching, 4) soil disturbance, 5) pavement grinding and/or cutting, and 6) after observing tracking of material onto or off the State property. Minimize the amount of dust particles during sweeping activities, ensuring that the levels do not exceed the standards set by local air quality control districts or the EPA's National Ambient Air Quality standards. Use wet-vacuum whenever dust generation is excessive, or sediment pickup is ineffective.

   Roadways or work areas must not be washed down with water. Street sweeping operations must conform to Section 13 Water Pollution Control of the Caltrans' Standard Specifications.
6. **VEHICLES AND EQUIPMENT:** The Permittee must prevent all vehicles, equipment, etc. from leakage or mud tracking onto roadways. If leaks cannot be repaired immediately, remove the vehicle or equipment from the job site. If vehicle or equipment cannot be immediately removed from job site, install secondary containment to contain spill and prevent illicit non-stormwater discharge.
7. **MAINTENANCE AND FUELING OF VEHICLES AND EQUIPMENT:** Maintenance and fueling of equipment must not result in any pollution at the job site. The Permittee must immediately clean up spills/leaks, and properly dispose of contaminated soil and materials. All maintenance and fueling should be conducted at an appropriate facility that is feasible. All maintenance and fueling which must occur onsite

shall be conducted as far away as practical from drain inlets, water bodies, and other stormwater conveyance systems.

8. **CLEANING VEHICLES AND EQUIPMENT:** Limit vehicle and equipment cleaning or washing at the job site except what is necessary to control vehicle tracking or hazardous waste. All equipment must be sanitized prior to mobilization to limit the spread of invasive plant species. The Permittee must clean all equipment within a bermed area or over a drip pan large enough to prevent run-off. Notify the Engineer before cleaning vehicles and equipment at the job site with soap, solvents, or steam. Any water from this operation must be collected and disposed of at an appropriate site. Containment berms or dikes must be used for fueling, washing, maintaining and washing vehicles or equipment in outside areas. Containment must be performed at least one hundred (100) feet from concentrated flows of storm water, drainage courses, and storm drain inlets if within a flood plain, otherwise at least fifty (50) feet if outside the floodplain. Keep adequate quantities of absorbent spill cleanup material and spill kits in the fueling or maintenance area and on fueling trucks.
9. **DIESEL FUELS:** The use of diesel fuel from petroleum or other fossil fuel as a form-oil or solvent is not allowed.
10. **WEATHER CONDITIONS AT WORKSITE:** Any activity that generates fine particles or dust (e.g., Saw cutting, earthwork, sanding, etc.), which could be carried off-site by stormwater, must be conducted during dry weather conditions to avoid immediate mobilization into the drainage system.
11. **WIND EROSION PROTECTION**: The use of Wind Erosion BMPs must be deployed year-round in instances where dust or fine particles could be transported off site. Potential wind erosion BMPs may include wind fence, water application, gravel, and/or hydro-mulch.
12. **HOT MIX ASPHALT:** Runoff from washing hot mix asphalt must not enter any drainage conveyances or receiving waters.
13. **PROTECTION OF DRAINAGE FACILITIES:** The Permittee must protect/cover gutters, ditches, drainage courses, and inlets with gravel bags, fiber rolls, State approved fabric filters, etc., to the satisfaction of the State Representative during grading, paving, sealing, saw-cutting, grooving and grinding, or any other activity which may result in an illicit discharge. All materials must conform to Section 13-6.02 Materials for Water Pollution Control of the Caltrans' Standard Specifications. No such protection measures must cause an obstruction to the traveling public. The Permittee must implement spill and leak prevention procedures for chemicals and hazardous substances stored on the job site (including secondary containment requirements) in accordance with Section 13-4.03B Spill Prevention and Control and for leaks and spills from vehicles and equipment each day of use in accordance with Section 13-1.03C Inspections for Water Pollution Control and Section 14-11 Hazardous Waste and Contamination for Environmental Stewardship of the Caltrans' Standard Specifications.
14. **PAINT:** Clean water-based and oil-based paint from brushes or equipment within a contained area to prevent contamination of soil, receiving waters, or storm drain systems. Handle and dispose of paints, thinners, solvents, residues, and sludges that cannot be recycled or reused as hazardous waste under section 14-11. When thoroughly dry, dispose of dry latex paint, paint cans, used brushes, rags, absorbent materials, and drop cloths as solid waste under section 14-10.
15. **CONSTRUCTION MATERIALS AND MATERIAL MANAGEMENT:** Materials necessary for erosion and sediment control must be stockpiled on site at convenient locations to facilitate prompt installation. Such materials must be implemented at all inactive disturbed areas, and prior to all qualifying rain events. A "Qualifying Precipitation Event" (QPE) is defined as a forecast with a 50% or greater probability of precipitation that results in 0.5 inches or more of rain within a 24-hour period. Do not allow soil, sediment, or other debris from stockpiles to enter storm drains, open drainages, or watercourses. Minimize stockpiles of all construction materials, including, but not limited to; pressure treated wood, asphalt concrete, cold mix asphalt concrete, concrete, grout, cement containing premixes, and mortar. All stockpiling of such materials must conform to Section 13-4.03C(2) Material Storage and Section 13-4.03C(3) Stockpile Management for Water Pollution Control of the Caltrans' Standard Specifications.
16. **CONCRETE EQUIPMENT:** Concrete equipment must be washed in a designated washing area in a way that does not contaminate soil, receiving waters, or storm drain systems. Any concrete washout activities which result in compromised containment must be cleaned and disposed of immediately. All Designated concrete facilities, including equipment, washout areas must be contained during Qualifying Precipitation Events (QPEs) marked by clearly visible signage throughout the project area.
17. **EXISTING VEGETATION**: Established existing vegetation is the best form of erosion control. Minimize disturbance to existing vegetation. Fenced barriers may serve as an adequate buffer to prevent traffic across existing vegetation. Damaged or removed vegetation must be replaced as directed by the State Representative.
18. **SOIL DISTURBANCE:** Soil disturbing activities must be avoided during the wet weather season. If construction activities during wet weather are allowed in the permit, all necessary erosion control and soil stabilization measures must be implemented in advance of soil disturbing activity. All temporary relocation of BMPs must be completed at the end of each working day and prior to each Qualifying Precipitation Event with a 50% or greater probability of precipitation that results in 0.5 inches or more of rain within a 24-hour period. Silt and debris shall be removed from linear barriers as part of the regular inspection schedule and as deemed necessary by the State Representative.

ENCROACHMENT PERMIT SPECIAL PROVISIONS

19. **SLOPE STABILIZATION AND TRACKING CONTROL:** Consider a certified expert in Erosion and Sediment Control in cases where slopes are disturbed or during implementation of temporary road construction for equipment and material access to the project. The Permittee is directed to comply with Section 13.5 Temporary Soil Stabilization, Section 13.6 Temporary Sediment Control, Section 13.7 Temporary Tracking Control and Section 21 Erosion Control of the Caltrans' Standard Specifications for construction during application of temporary soil stabilization and sediment/tracking control measures to minimize impacts to the soil surface. Temporary construction entrances/exits are required to be stabilized and may include gravel, rumble plates, and/or FODS. Erosion control blankets, temporary mulch, soil binders, tackifier, fiber, seed, straw, temporary covers, rigid plastic, gravel bag barriers, sediment filter bags, temporary check dams, drainage inlet protection, fiber rolls and/or silt fences may be required down slope and on temporary construction roads and entrances until permanent soil stabilization is established. Consult with manufacturer specifications regarding maintenance frequency of sediment controls. All controls must be maintained to ensure proper functionality. The Permittee must limit the use of plastic materials when more sustainable, environmentally friendly alternatives exist or when environmental regulations prohibit their use within the project.
20. **STOCKPILES:** All stockpiled materials must be stored at least one hundred (100) feet from concentrated flows of storm water, drainage courses, and storm drain inlets if within a flood plain, otherwise at least fifty (50) feet if outside the floodplain. All stockpiles must be covered and protected with a temporary perimeter sediment barrier if inactive or prior to each Qualifying Precipitation Event with a 50% or greater probability of precipitation that results in 0.5 inches or more of rain within a 24-hour period. A stockpile is considered inactive after fourteen (14) days without addition or subtraction. Additionally, cold mix stockpiles must be stored on an impermeable surface and covered with nine (9) mil plastic to prevent contact with water. Minimize stockpiling of materials on the job site. Manage stockpiles by implementing the water pollution control practices in Section 13--4.03C(3) Stockpile Management for Water Pollution Control of the Caltrans' Standard Specifications for construction. Demolished material must not be allowed to enter storm drain systems and receiving waters. Use authorized covers and platforms to collect debris. Use attachments on equipment to catch debris during all demolition activities. Empty debris-catching devices daily and handle debris in accordance with Section 13-4.03D Waste Management for Water Pollution Control of the Caltrans' Standard Specifications for construction.
21. **DISCOVERY OF CONTAMINATION:** The State Representative must be notified in case any unusual discoloration, odor, or texture of ground water, is found in excavated material. Additionally, the State Representative must be notified if abandoned, underground tanks, pipes, or buried debris are encountered.
22. **SANITARY AND SEPTIC WASTE:** Do not bury or discharge wastewater from a sanitary or septic system within the highway. A sanitary facility discharging into a sanitary sewer system must be properly connected and free from leaks. Place a portable sanitary facility at least 50 feet away from storm drains, receiving waters, and flow lines. The Permittee must comply with local health agency regulations if using an on-site disposal system.
23. **LIQUID WASTE:** Prevent job site liquid waste from entering storm drain systems and receiving waters. Drilling slurries, grease or oil-free wastewater or rinse water, dredging, and wash water or rinse water running off a surface or other non-storm water liquids not covered under separate wastewater permits must be held in structurally sound, leak-proof containers, such as portable bins or portable tanks. Store containers at least fifty (50) feet away from moving vehicles, equipment, concentrated flows of storm water, drainage courses, and storm drain inlets. Liquid waste may require testing to determine hazardous material content prior to disposal. All measures must conform to section 13--4.03D(5) Liquid Waste for Water Pollution Control of the Caltrans' Standard Specifications for construction.
24. **WATER CONTROL AND CONSERVATION:** Manage water use in a way that will prevent erosion and discharge of pollutants into storm drain systems and receiving waters. Direct all runoff into areas where it can infiltrate.
25. **PILE DRIVING:** Keep spill kits and cleanup materials at pile driving locations. Park pile driving equipment over drip pans, absorbent pads, or plastic sheeting with absorbent material, and away from stormwater run-on when not in use. In the event of oil/grease leaks and spills from pile driving activities, immediately contain and dispose of all contaminated materials.
26. **DEWATERING**: Dewatering consists of discharging accumulated storm water, groundwater, or surface water from excavations or temporary containment facilities. All dewatering operations must comply with the latest Caltrans guidelines including the Field Guide for Construction Site Dewatering. Contact the State Representative for approval of dewatering discharge by infiltration or evaporation, otherwise, any effluent discharged into a permitted storm water system requires approval from the Regional Water Quality Control Board. Prior to the start of dewatering, the Permittee must provide the State Representative with a dewatering and discharge work plan that complies with Section 13-4.03G Dewatering for Water Pollution Control of the Caltrans' Standard Specifications for construction. Work plan also references guidelines and BMPs in the CGP and the Field Manual for Construction Site Dewatering. A 24-hour email notification of dewatering discharge to the Regional Water Board, including the implemented SWPPP and BMPs, is required by Attachment J of the CGP.

UTILITY UNDERGROUND PROVISIONS (UG)

TR-0163 (Rev. 07/2023)

In addition to the attached Encroachment Permit General Provisions (TR-0045), the following special provisions are also applicable:

High priority utilities, pressurized facilities, pipes or ducts six (6) inches or larger in diameter, or placement of multiple pipes or ducts regardless of diameters are required to be encased on both conventional and access-controlled State highway right-of-way. An exception to this encasement policy may be allowed on a case-by-case basis with the "Uncased High-Pressure Natural Gas Pipeline" Special Provisions (TR-0158).

A "High Priority Utility" is defined as: 1) natural gas pipelines greater than six (6) inches in diameter, or with normal operating pressures greater than sixty (60) psig; 2) petroleum pipelines; 3) pressurized sanitary sewer pipelines; 4) high-voltage electric supply lines, conductors, or cables that have a potential to ground of greater than or equal to sixty (60) kV; or 5) hazardous materials pipelines that are potentially harmful to workers or the public if damaged.

The pavement or roadway must not be open cut unless specifically allowed. Utility installations are not allowed inside culverts or drainage structures.

All installations must comply with Chapter 17 of the Caltrans Project Development Procedures Manual for utility clearance and offset requirements.

For additional details regarding longitudinal utility encroachments on both conventional and access-controlled State highway right-of-way, see Section 602 of the Encroachment Permits Manual.

UG 1. ENCASEMENT: Casings must have an inside diameter sufficiently larger than the outside diameter of the pipe or duct to accommodate placement and removal.

When Horizontal Directional Drilling (HDD) is authorized, High-Density Polyethylene (HDPE) is acceptable as the casing.

When Reinforced Concrete pipe in accordance with Section 65-2 of Caltrans Standard Specifications is installed by Bore & Jack, it must have rubber gaskets at the joints and see "D" below for grouting of voids left by jacking operations.

A. Spiral welded casings may be allowed provided the casing is new and the weld is smooth.

B. The ends of the casing must be plugged with ungrouted bricks or other suitable material approved by the Department's representative.

C. Minimum wall thicknesses of steel encasements for different lengths and diameters of pipes are as follows:

Minimum Wall Thickness

Casing Diameter	Up to 150 feet in length	Over 150 feet in length
6 to 28 inches	1/4 inch	1/4 inch
30 to 38 inches	3/8 inch	1/2 inch
40 to 60 inches	1/2 inch	3/4 inch
62 to 72 inches	3/4 inch	3/4 inch

D. When required by the Department's representative, the permittee must pressure grout to fill any voids caused by the permitted work at the permittee's expense. The grout holes when placed the inside of the casing must be on eight (8) feet centers, longitudinally and offset twenty-two (22) degrees from the vertical axis of the casing and staggered to the left and right of the top longitudinal axis of the casing. Grout pressure must not exceed five (5) psig for a duration sufficient to fill all voids.

E. When the placement of multiple encasements is requested, the distance between multiple encasements must be the greater of twenty-four (24) inches or twice the diameter of the larger pipe being installed.

F. Casings within access-controlled highways must extend to the right-of-way lines.

G. Wing cutters, if used, must be a maximum of one (1) inch larger in diameter than the outside diameter of the casing. Voids caused by the use of wing cutters must be grouted in accordance with "D" above.

H. A band welded to the leading edge of the casing must be placed square to the alignment and not on the bottom edge. A flared lead section on bores over one hundred (100) feet is not allowed.

I. The length of the auger strand must be equal to that of the section of encasement pipe.

J. The casings within conventional highways must extend at least five (5) feet beyond the back of curb or edge of pavement, or to the right-of-way line if less. Where Portland Cement Concrete (PCC) cross-gutter exists, the casings must extend at least five (5)

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feet beyond the back of the cross-gutter, or to the right-of-way line if less.

UG 2. OPEN-CUT METHOD: When the encroachment permit authorizes installation by the open-cut method, surfacing and base materials and thickness thereof must be as specified in the encroachment permit.

No more than one (1) lane of the highway pavement must be open cut at any time unless otherwise approved in writing by the Department's representative. After the pipe is placed in the open-cut section, the trench must be backfilled in accordance with Section 19-3 of Caltrans Standard Specifications. The backfilled section must be open to traffic safely with temporary repairs to the surfacing before the next section of pavement is cut.

If backfilling operations have not been properly completed at the end of a working day, steel plate bridging is required to make the entire highway facility open to traffic in accordance with the "Steel Plate Bridging Utility" Special Provisions (TR-0157).

Sides of open-cut trenches in paved areas must be kept as nearly vertical as possible. Trenches must not be two (2) feet wider than the sum of the outside diameter of the pipe to be laid therein plus the necessary width to accommodate shoring.

UG 3. TRENCHLESS CONSTRUCTION: The following provisions are applicable for installing conduit with the bore diameter less than thirty (30) inches using trenchless methods (e.g., Bore & Jack, HDD, Microtunneling, Pipe Bursting, Pipe Ramming, etc.). For installations with the bore diameter equal to or greater than thirty (30) inches, permittees must comply with Non-Standard Special Provision (NSSP) 19-15, Trenchless Construction. A copy of the NSSP 19-15 can be obtained from the Department's representative or District Encroachment Permits Office.

3.1. Definitions

Bore: Borehole excavated using trenchless construction for the installation of conduit.

Overcut: Radial annular gap between bore and outer pipe wall.

3.2. Construction: The superintendent must be at the site at all times when work is being conducted, if the borehole diameter is greater than ten (10) inches and the depth of installation is less than eight (8) times the diameter of the borehole.

Trenchless excavation and conduit installation must be performed to the line and grade shown. When excavation or installation is out of line or grade, make immediate alignment correction.

Existing structures, pavement, and utilities must be protected during installation. Restore and repair immediately any damage resulting from construction.

Repair or replace any damaged pipe sections.

Overcut must be less than:

A. One (1) inch or five (5) percent of the conduit outside radius, whichever is less, and
B. Two (2) inches for trenchless construction using HDD method

Notify the Department's representative immediately if you encounter obstruction or condition that impedes construction.

3.3. Quality Assurance

3.3-1. Pre-construction Meeting: Contact the Department's representative to schedule and have a pre-construction meeting at least seven (7) business days before the start of trenchless construction or as identified in the permit.

Attendees should include:

1. The Department's representative
2. Your project manager
3. Your project superintendent
4. The contractor for trenchless construction

Provide and present:

1. Trenchless construction shop drawings, work plans, and calculations
2. Mitigation plans for both during and after construction
3. Construction timeline and critical path activities

3.3-2. Contractor Qualifications: The contractor must employ a superintendent, who has successfully completed at least five (5) of such projects, if the borehole diameter is greater than ten (10) inches and the depth of installation is less than eight (8) times the diameter of the borehole. Before pre-construction meeting, the following must be submitted to Department's representative if requested:

1. Summary of the contractor's experience demonstrating that the contractor has successfully completed at least five (5) projects in the past five (5) years using similar trenchless construction in similar ground and groundwater conditions with similar drive lengths and diameter range.
2. Summary of the superintendent's experience demonstrating that the superintendent has successfully completed at least five (5) projects using similar construction methods for trenchless construction in similar ground and groundwater

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conditions with similar drive lengths and diameter range.

3.3-3. Conduit Line, Grade, and Shape: When monitoring is required:

1. Survey and record control lines at least seven (7) business days before trenchless construction.
2. Observe and adjust measurements of survey control lines weekly. Report discrepancies to the Department's representative.

Survey and record the centerline of the constructed conduit after each section is advanced or every five (5) feet of advancement, whichever is shorter.

3.3-4. Ground Surface Movement Monitoring: Ground surface movement monitoring is required if the installation meets the following criteria or if required by the Department's representative:

1. Bore diameter is greater than ten (10) inches, and
2. Minimum vertical distance between the pavement or sidewalk surface and the top of bore is less than eight (8) times the diameter of the borehole.

Mark monitoring points on critical structures and utilities at locations shown. Include these points in monitoring surveys. Perform monitoring surveys before noon and at ambient temperature below eighty-five (85) degrees Fahrenheit. Perform ground surface survey under the Caltrans Surveys Manual and supplemental guidance.

Establish a minimum of four (4) control points for ground surface movement monitoring. Perform baseline ground surface survey at least fifteen (15) business days before trenchless construction. Notify the Department's representative at least ten (10) business days before the survey.

Develop baseline surface model. Use the baseline surface model to determine the movement of ground surface and embankment slope. See Encroachment Permit Survey Grid (TR-0151) in Appendix E of the Encroachment Permits Manual for survey grid spacing and other requirements.

Perform ground surface movement monitoring survey:

1. Weekly during construction or as required by the Department's representative
2. Biweekly for one (1) month after completion of each installation or as required by the Department's representative

Produce the surface model based on the monitoring survey data and calculate the movement of monitoring points using baseline surface model. Each monitoring survey may have different grid points.

Each ground surface horizontal and vertical measurement must be accurate to ±0.03 feet on pavement and ±0.1 feet on unpaved surfaces at the ninety-five (95) percent confidence level. Vertical movement produced by comparing current surface model with pre-construction surface model must be accurate to ±0.01 feet on pavement and ±0.1 feet on unpaved surfaces at the ninety-five (95) percent confidence level.

If ground surface movement in the pavement above the advancing pipe meets the requirements for two (2) consecutive weeks, the frequency of monitoring survey may be reduced to biweekly.

Notify the Department's representative at completion of each installation. Ground surface vertical movement requirements are:

Ground Surface Vertical Movement

Quality Characteristic	Requirement
Critical Structure Monitoring Points - Horizontal or Vertical (max, feet)	0.02
Highway surface (max, feet)	0.04
Embankment slope (max, feet)	0.2

If ground surface vertical movement requirements are not met:

1. Stop work immediately.
2. Notify the Department's representative.
3. Submit an alternative construction method.
4. Submit a mitigation plan that includes methods to fill the voids created under the ground surface and restore the density of subsurface materials.
5. Monitor ground surface movement in the area above the advancing pipe:
   5.1. Daily until no additional vertical movement is detected in the areas that exceed the movement requirements
   5.2. Every two (2) working days until the vertical movement meets the requirements for two (2) consecutive weeks

3.4. Submittals

3.4-1. Monitoring Plans: Submit monitoring plans for:

1. Conduit grade and alignment control, including monitoring instruments, layout of instrumentation points, construction details, and monitoring frequency
2. Logging of excavated materials, including anticipated volume of excavation and measured volume of removed spoil
3. Critical operations of applicable trenchless construction, including excavation, boring, spoil removal, lubrication, jacking, installation, and grouting
4. Ground surface movement, including digital surface survey method, survey data processing and analysis

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method, and digital surface file for the bore diameter greater than ten (10) inches and the vertical distance between the pavement or sidewalk surface and the top of bore less than eight (8) times the diameter of the borehole

3.4-2. Daily Construction Record: Maintain Daily Construction Record and submit to the Department's representative upon request.

Daily Construction Record must include:

1. Date and time of operation
2. Names of key personnel
3. Length of constructed conduit, including coordinates and elevation of the beginning and ending (latitude, longitude and northing, easting, elevation) of the conduit advanced during each work shift. Record must reference the project coordinate system.
4. Rate of advance
5. Jacking force
6. Problems encountered, possible causes, and mitigation performed
7. Geological log of excavated face and materials, with the logging performed by a geologist who is registered as an engineering geologist in the State
8. Records and field note of:
   8.1. Any visible cracks
   8.2. Conduit line and grade control
   8.3. Anticipated and actual volumes of spoil removed and causes of the volume discrepancy
   8.4. Groundwater table elevation if dewatering is required

3.4-3. Ground Surface Movement Monitoring Records: Submit:

1. Before construction: survey data and surface model to demonstrate compliance with the Caltrans Surveys Manual and supplemental guidance
2. During and after construction: survey data, surface model, and vertical movement based on the comparison between current and pre-construction surface model

3.4-4. Contact Grouting Record: Maintain Contact Grouting Record and submit to the Department's representative upon request.

Contact Grouting Record must include:

1. Injection locations
2. Grout quantity]
3. Grout pressure
4. Measurements and observations, including heave, casing or carrier pipe movement, grout loss quantity, communication between grout ports, ground surface, and nearby utilities and storm drains
5. Problems encountered, possible causes, and mitigation performed

3.4-5. Post-Construction Record: Maintain Post-Construction Record and submit to the Department's representative upon request.

Post-Construction Record must include:

1. Completed conduit construction inspection records, including video recording and photographs
2. As-built plans showing details and alignment of the constructed conduit, horizontal and elevation survey based on project coordinate system, any problems encountered, and mitigation actions performed
3. As-built plans showing details of pavement restoration work performed

3.5. Restore Highway Pavement: After completion of trenchless construction of conduit, restore highway pavement to conditions as it was prior to beginning of construction activities or better. Restore Asphalt Concrete (AC) pavement with mill and fill. Repair or replace AC pavement with dowels for any cracks and spalling caused by construction.

UG 4. Bore and receiving pits must:

1. be located at least ten (10) feet from the edge of pavement on rural conventional highways.
2. be located at least five (5) feet beyond the concrete curb and gutter or AC dike on urban conventional highways.
3. be located at least five (5) feet beyond the toe of slope of embankments.
4. be located outside access-controlled highway right-of-way.
5. be protected by placement of six (6)-foot chain link fence or Type K railing around them.
6. be adequately shored in accordance with Cal/OSHA requirements. Shoring for jacking and receiving pits located within fifteen (15) feet of traffic lanes on a State highway must not extend more than thirty-six (36) inches above the pavement grade unless otherwise authorized by Department's representative. Reflectors must be affixed to the shoring on the sides facing traffic. A six (6)-foot chain link fence must be installed around the perimeter of the pits during non-working hours.
7. have crushed rock and sump areas to clear groundwater and water used to clean the casing. Where groundwater is found and pumping is required, the pits must be lined with filter fabric.

UG 5. LIMIT OF EXCAVATION: No excavation is allowed within ten (10) feet from the edge of pavement

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except in curbed urban areas or as specified in the encroachment permit. Where no curb exists and excavations within ten (10) feet of the traveled way are to remain open, a temporary Type K railing must be placed at a 10:1 taper or as otherwise directed by the Department's representative.

UG 6. TUNNELING: In addition to the requirements of "**UG 1**" and Section 603.6 of the Encroachment Permits Manual, the following requirements are also applicable:

A. For this provision, a tunnel is defined as any installation that is thirty (30) inches or greater in diameter.
B. When tunneling is authorized, the permittee must provide full-time inspection of tunneling operations. The Department's representative must monitor projects.
C. Sand shields may be required as ground conditions change.
D. Pressure grouting for liner plate, rib and spiling, or rib and lagging tunnels must be at every eight (8) feet section or the end of work shift before the next section is excavated. All grouting must be completed by the end of each workday.
E. The headway must be secured at the end of each workday. Breast boards or plates must be installed during working hours for running sand or super-saturated soil.

UG 7. FACILITIES EXEMPT FROM UTILITY POLICIES: The following utilities are exempt from the requirements for location and depiction on the project plans unless the depiction of the utility is needed for interconnectivity with the proposed work (see Chapter 17 of the Project Development Procedures Manual):

- Natural gas service lines less than two (2) inches in pipe diameter that have normal operating pressures of sixty (60) psig or less
- Service connections (laterals) for water, sewer, electric, and telecommunication including fiber optic and cable service

All State-owned utilities must be plotted on the plans.

UG 8. DETECTOR STRIP: A continuous metallic detectable strip must be provided for non-metallic main utility installations. Service connections must be installed at right angles to the centerline of the State highway.

UG 9. BACKFILLING: All backfilling operations must be in accordance with Section 19-3 of Caltrans Standard Specifications.

Any required compaction tests must be performed by a certified laboratory at no cost to the Department and the laboratory report must be furnished to the Department's representative.

UG 10. ROADWAY SURFACING AND BASE MATERIALS: Temporary repairs to pavements must be made and maintained upon completion of backfill until permanent repairs are made. Permanent repairs to pavements must be made within thirty (30) calendar days of completion of backfill unless otherwise authorized by the Department's representative. Temporary pavement patches must be placed and maintained in a smooth riding plane free of humps and depressions.

UG 11. DAMAGE TO TREE ROOTS: Tree roots three (3) inches or larger in diameter must not be cut within the tree drip line when trenching or other underground work is necessary adjacent to roadside trees. If such roots are encountered, they must be tunneled under, wrapped in burlap, and kept moist until the trench is backfilled. Trenching machines must not be used under trees if the trunk or limbs can be damaged by their use. Manholes must not be installed within twenty (20) feet of any trunk.

If the trees involved are close together and of such sizes that it is impractical to protect all roots three (3) inches or larger in diameter, or when roots are less than four (4) inches in diameter, outside tree drip line, special arrangements may be made whereby pruning of the tree tops to balance the root loss can be done by the permittee only when approved by and under the close supervision of the District Landscape Specialist or District Tree Maintenance Supervisor.

UG 12. PIPES ALONG ROADWAY: Pipes and conduits paralleling the pavement must be located as shown on the plans or as close as possible to the right-of-way line.

UG 13. BORROW AND WASTE: Borrow and waste must not be allowed within the work limits unless otherwise specified in the encroachment permit.

UG 14. MARKERS: All markers must not create a safety hazard for the traveling public or highway workers.

UG 15. CATHODIC PROTECTION: The permittee must perform stray current interference tests on underground utilities under cathodic protection and notify the Department's representative prior to the tests. The permittee must perform any corrective measures as necessary and authorized by the Department's representative.

UG 16. PAVEMENT REMOVAL: ASPHALT CONCRETE (AC) pavement must be saw cut to the full depth to provide a neat and straight pavement break along sides of the trench. Portland Cement Concrete (PCC)

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pavement must be saw cut at the slab joints and to the full slab depth.

Where the edge of the trench is within two (2) feet of the existing curb and gutter or pavement edge, the AC pavement between the trench and the curb or pavement edge must be removed.

UG 17. EXCAVATION UNDER FACILITIES: Where it is necessary to excavate under the existing curb and gutter or underground facilities, the void must be backfilled with two (2) sack cement-sand slurry.

UG 18. PERMANENT REPAIRS TO PCC PAVEMENT: Repairs must be of PCC containing at least six hundred fifty-eight (658) pounds or seven (7) sacks of cement per cubic yard. The new pavement must have the same thickness as the adjacent pavement. The PCC must be satisfactorily cured and protected from disturbance until it can be open to traffic with a compressive strength of at least 3,000 psig or for not less than forty-eight (48) hours. The new pavement may be open to traffic after six (6) hours of curing when no more than two (2) percent by weight of calcium chloride is added to the PCC mix as an accelerating chemical admixture.

UG 19. REMOVAL OF PCC SIDEWALKS OR CURBS: PCC sidewalks or curbs must be saw cut to the nearest score marks and reconstructed to match the existing sidewalk or curb.

UG 20. SPOILS: No earth or construction materials must be tracked onto the highway pavement and public or private approach. The permittee must remove these materials immediately if tracked from the highway pavement and public or private approach.

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HAZARDOUS MATERIALS AND HAZARDOUS WASTE MANAGEMENT SPECIAL PROVISIONS

By acceptance of this encroachment permit, Permittee hereby agrees that:

1. All construction debris/materials/water/excess soil must become the property of the Permittee, and must be transported and disposed of, outside of Caltrans' right-of-way, in accordance with all applicable environmental laws and regulations. The Permittee must be identified as the generator for all construction debris/materials/water/excess soil and must be responsible for proper identification (including sampling and analysis) and management of all construction and contaminated debris/materials/water/excess soil that are removed, and/or excavated, from the work site. If hazardous waste is generated, the Permittee must obtain an Environmental Protection Agency (EPA) Identification Number issued in their name. State Permit Inspector does not sign any manifests or shipping papers. The Permittee must be named as the generator on all Uniform Hazardous Waste Manifests and shipping papers. Caltrans must not be identified or written anywhere on the manifests or shipping papers. Prior to waste disposal, the Permittee should submit the waste generator form(s) to State Permit Inspector for verification. The Permittee must submit to the State Permit Inspector, a copy of all manifests and/or shipping papers generated for materials removed, transported and/or excavated from the state right-of-way.

2. If contaminated material is encountered, Permittee is to stop work and contact the State Permit Inspector immediately. The Permittee must submit a Sampling and Analysis Plan (SAP), and a Health and Safety Plan (HaSP) prepared by a Certified Industrial Hygienist (CIH) and in conformance with California Code of Regulations title 8, section 5192, "Hazardous Waste Operations and Emergency Response" for sampling activity through a separate permit application. Upon the permit review, additional environmental documents may be required prior to resumption of construction activity.

3. Permittee is responsible for any violation, penalty, enforcement action, corrective action, remedial action, and any other type of consequences resulting from cross contamination of groundwater (including perched groundwater), improper handling/managing of hazardous materials and/or placement of contaminated materials inside Caltrans right-of-way.

4. It is the Permittee's responsibility to comply with the Department of Toxic Substances Control (DTSC) ADL requirements for roadway soil management. Reuse of soils containing greater than 80 mg/kg total lead is not allowed without written approval of the DTSC and Caltrans. The Soil Management Agreement for Aerially Deposited Lead-Contaminated Soils between Caltrans and the DTSC does not constitute written approval for the Permittee to reuse soils containing greater than 80 mg/kg total lead.

5. The Permittee must implement the emergency notification requirements established in the California Office of Emergency Management Hazardous Materials, Spill / Release Notification Guidance (http://www.caloes.ca.gov/).

6. Any imported material used for backfill must be free of contamination, and a certificate of the material as "clean" with the source area of the material must be provided to Permit Inspector upon request. Importing soils containing greater than 80 mg/kg total lead for use in state right-of-way is not allowed.

7. Stockpiles of material containing aerially deposited lead shall not be placed where affected by surface run-on or run-off. Stockpiles shall be covered with plastic sheeting 13 mils minimum thickness or with one foot of nonhazardous material. Stockpiles shall not be placed in environmentally sensitive areas. Stockpiled material shall not enter storm drains, inlets, or waters of the State.

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APPENDIX 8

EBMUD CHEMICAL ROOT CONTROL AND CURED-IN-PLACE (CIPP) NOTIFICATION PROCEDURES

EAST BAY
MUNICIPAL UTILITY DISTRICT

November 20, 2024

Daniel Akagi
Supervising Civil Engineer
City of Berkeley
1947 Center Street, 4th Floor
Berkeley, CA 94704

RE: EBMUD Chemical Root Control and Cured-in-Place Pipe (CIPP) Notification Procedures

Dear Daniel Akagi,

All municipalities which own or operate sewer collection systems in the EBMUD Wastewater Service Area are required to follow the cured-in-place pipe (CIPP) and root control requirements listed below:

1. Notify EBMUD Source Control Section at least **two weeks** prior to conducting any CIPP projects or chemical root control applications at cleanbay@ebmud.com.

2. For CIPP projects or root control projects, please provide the following information:
    a. Chemical/resin being used in the application
    b. Volume of chemical/wastewater or condensate to be discharged to sewer
    c. Date(s) of the application
    d. Name of any contractor, including a field contact person and mobile phone number
    e. Name of city project manager, including a field contact person and phone number
    f. Exact location of the sewer line, including City maintenance hole number and cross streets
3. If the timeline, volume, or any other plans related to the CIPP projects or root control application change, contact EBMUD prior to beginning the project.

Root Control[4]: The use of any product containing **Metam sodium is prohibited** in any sewer discharging to the EBMUD Wastewater Treatment Plant. If you propose application of any product other than those already approved by EBMUD including those registered with the California Department of Pesticide Regulation, you **must** receive EBMUD approval prior to application. To obtain approval, please provide the following information to EBMUD Source Control Section at cleanbay@ebmud.com at least **two weeks** prior to intended application:

    a. Name of product and active ingredient
    b. SDS for proposed root control product
    c. Maximum daily volume to be applied

For questions, contact EBMUD Source Control Section at (510) 287-1651 or cleanbay@ebmud.com.

Regards,

Adam Kern
Supervising Wastewater Control Representative

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[1] For chemical root control, only apply products with following active ingredients approved by EBMUD Source Control Section:
- Diquat dibromide
- Dichlorhiamid
- Dichlobenil
- Dinoseb
- Endothall

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APPENDIX 9

CITY OF BERKELEY
TYPICAL PROPERTY ACCESS AGREEMENT

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City of Berkeley
Public Works Department
Engineering Division

Property Access Agreement

Property Address: _____

This agreement entered between the undersigned property owner and the City of Berkeley, does hereby grant temporary access to the City, its agents, employees, contractors, and assigns for the purpose of inspection, repair, replacement, rehabilitation, or abandonment of the existing sanitary sewer line in the sewer easement in or adjacent to the above address or on private property.

The work to be performed will consist of inspection, repair, replacement, rehabilitation, or abandoning of the aged or damaged sanitary sewer line. No interruption of sanitary sewer services, water, gas, or telephone services is anticipated.

Upon completion of construction, the City of Berkeley will restore existing surface improvements, including fencing, retaining walls, concrete flatwork, asphalt concrete pavement and landscaping. Restoration will be to a condition and appearance as near as practicable to that existing prior to construction, except that plant materials may be replaced with commercially available plant materials acceptable to the property owner.

The rights of the undersigned property owner to make claims and/or bring actions for damage from the said entry or work with respect to the subject property are not waived by execution of this agreement. However, it is expressly understood and agreed that the City of Berkeley is not liable or responsible for any damaged property or appurtenances from any cause not resulting from performance of the sanitary sewer work by the City, its agents, employees, contractors, and assigns.

This agreement will be in full force and effect through September 30, 2026.

Approved by:

City Engineer	**Property Owner (Print Name)**
Signature	**Signature**
Date	**Date**

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APPENDIX 10

CITY OF BERKELEY
CITY OF BERKELEY PEDESTRIAN, BICYCLE, AND BUS FACILITY ACCOMODATION IN CONSTRUCTION ZONES

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Supplemental Design Guidelines: Accommodating pedestrians, bicyclists, and bus facilities in construction zones

Every reasonable effort should be made to avoid and minimize construction impacts on pedestrian, bicycle, and bus facilities in Berkeley.

This document provides engineering and design guidance on temporary traffic control measures used to accommodate pedestrians, bicyclists, and bus facilities through construction zones in Berkeley. The guidance supplements the guidance in Part 6 of the California Manual on Uniform Traffic Control Devices (CA MUTCD)[1], which specifies that bicyclists and pedestrians must be safely accommodated through construction zones, and the City of Berkeley's "TRAFFIC CONTROL PLAN PREPARATION GUIDELINES" This supplemental guidance specifies when and where pedestrian, bicycle, and bus facilities may be relocated, detoured, modified, and closed in Berkeley. This guidance applies to all sidewalks and all roads on which bicyclists are legally allowed to travel, including designated bikeways. The guidance applies to any entity ("construction sponsor") performing construction work in the public right-of-way, including utility companies, private land use development, and the City of Berkeley.

Any construction sponsor submitting for any permit[2] for work in the public right-of-way to the City of Berkeley that will result in the blockage of a sidewalk, bicycle lane, vehicle travel lane, bus stop, or other public bicycle or pedestrian path must submit a Temporary Traffic Control Plan (TCP) to Public Works Traffic Engineering for review and approval. The guidance in this document is intended to direct the development of the construction sponsor's TCP.

The two major types of temporary traffic control (TTC) for pedestrians are adjacent sidewalk diversions and sidewalk detours (see Figure 1). To determine which temporary facility is appropriate, refer to Table 1.

Pedestrian Accommodation

All temporary pedestrian facilities and alternate paths must be ADA-compliant, and all pedestrian-related signage shall be as permanent as the other TTC signage. Any diversions, detours, or full closures must be approved as part of a Traffic Control Plan. Refer to the CalTrans Temporary Pedestrian Access Routes Handbook[3], for guidelines on these standards.

- Sidewalk Diversion - A temporary, protected pedestrian route shall be provided adjacent to the sidewalk in a parking lane (if present), travel lane, or bicycle lane. It shall be protected from moving traffic by an approved barricade device that is detectable by people with visual disabilities. If the pedestrian diversion takes up a bike lane, bike accommodation must be maintained (see Bicyclist Accommodation below). All sidewalk diversion routes must keep and maintain minimum 5 feet clear width, but shall provide up to 6' where feasible for pedestrian access.
    - The preferred treatment for long-term pedestrian diversions in construction zones in downtown Berkeley and other areas with significant pedestrian activity is a covered pedestrian walkway. Covered walkways shall conform with Berkeley's Pedestrian Access During Construction Projects (see attachment), the CalTrans Temporary Pedestrian Access Routes Handbook, ADA accessibility standards, and OSHA structural specifications for

[1] California Manual on Uniform Traffic Control Devices (CA MUTCD) 2009 Edition Part 6: https://dot.ca.gov/-/media/dot-media/programs/safety-programs/documents/ca-mutcd/rev6/camutcd2014-part6-rev6.pdf
[2] Permits include but are not limited to Concrete Permits for Sidewalk, Curb, Gutter and Driveway Approaches, Utility Excavation Permits, Miscellaneous Permits to Obstruct, Excavate and/or Construct in the right of way, Street and Sidewalk Use Permits, etc.
[3] CalTrans Safety / Traffic Webpage: https://dot.ca.gov/programs/construction/safety-traffic

scaffolding[4]. Design of the walkway should ensure limited obstruction between the top of railing and walkway cover to allow passive surveillance into and from the walkway, and should have a maximum exit access travel distance of 100 feet. Construction sponsors are responsible for maintaining adequate lighting within the covered walkway at all times and for removal of graffiti and cleaning of debris.

    - Construction sponsors may alternatively propose uncovered diversions using longitudinal channelizing devices, such as concrete k-rails, if permitted under the requirements listed by Berkeley's Pedestrian Access During Construction Projects. Channelizing devices used to separate a pedestrian diversion from moving traffic must fully protect pedestrians from motor vehicle impacts. Bases of temporary cyclone fences shall not extend over any adjacent traffic, bicycle lane, or pedestrian path of travel.

- Pedestrian diversions shall always be clearly identified, wheelchair usable, shielded from motor vehicle traffic, and free of pedestrian hazards such as holes, debris, gravel, mud, etc.

- **Sidewalk detours are not acceptable in downtown Berkeley, nor in areas where significant pedestrian activity occurs, such as near BART stations, near the University of California, Berkeley campus and in neighborhood commercial areas and are up to the discretion of the City's Traffic Engineer, or their designee.** All detours should ensure accessible conditions. Sponsor may be required to make appropriate repairs to the detour route. Signage shall be provided at closest intersections to alert pedestrians of the sidewalk closure and direct them to the detour. Advance notification to pedestrians of any sidewalk detours or diversions shall be provided at the nearest crosswalk that meets minimum safety requirements on either side of the detour or diversion.

    - In areas where long-term sidewalk detours are not acceptable, sidewalk detours may be approved for limited duration when full closure of a sidewalk is required for intermittent and unavoidable construction activity. Refer to Table 1 for the maximum acceptable duration and conditions per project location.

- In areas where sidewalk diversions or detours impact access to AC Transit, Berkeley Lab, or Bear Transit bus and shuttle stops the Contractor must receive written confirmation from affected parties regarding stop relocations. See "Bus Stop Relocation or Closure" subsection below.

[4] OSHA Standard 1910-28: Duty to have fall protection and falling object protection: https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.28

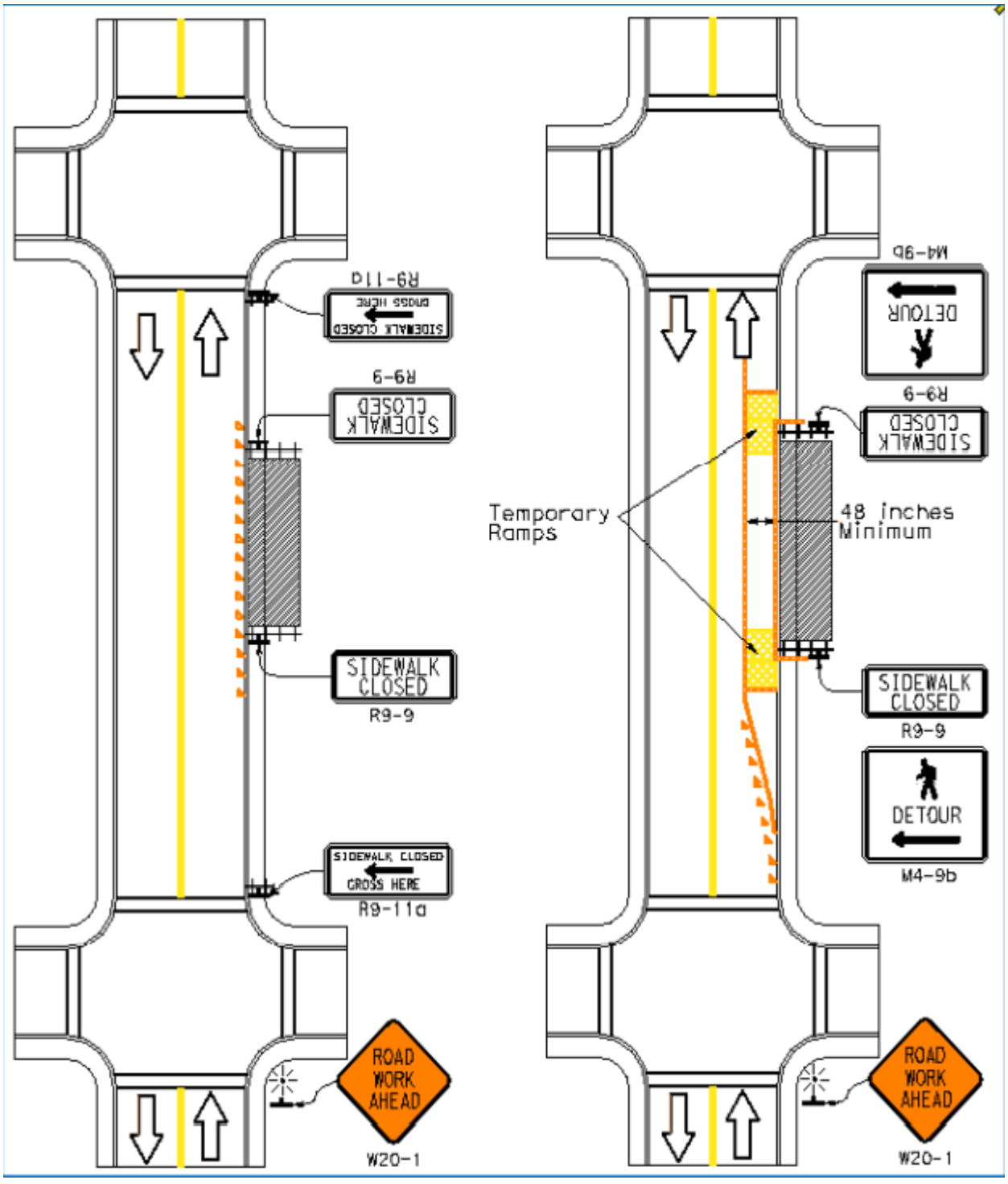
Table 1: Reasonable Accommodation for Pedestrians

Treatment*	**Construction Project Location**		
	Downtown & within 0.25 miles of a BART station or UC Berkeley campus	Neighborhood commercial areas and major transit corridors	All other areas
Sidewalk diversion (temporary ADA walkway provided)*	Acceptable†	Acceptable†	Acceptable†
Sidewalk detour (no walkway provided)*	Prohibited	Prohibited	Acceptable†
Maximum duration of temporary sidewalk detour	4 hours Flagger required throughout duration of closure.	24 hours Flagger required throughout duration of closure.	One week Flagger required during peak traffic hours only.

***** "Sidewalk diversion" and "Sidewalk detour" are defined in Figure 1.

† Acceptable only if TCP is deemed sufficient and approved by the City's Traffic Engineer, or their designee.

Figure 1: Sidewalk Detour and Sidewalk Diversion[5]



[5] Caltrans Pedestrian Temporary Access Routes Handbook (2020): https://dot.ca.gov/-/media/dot-media/programs/construction/documents/policies-procedures-publications/temp-ped-access-routes-handbook-2020-a11y.pdf

Bicyclist Accommodation

As with pedestrian facilities, bike lane closures should be avoided. Existing bike lanes must remain clear (minimum 5') unless the bike lane closure is specifically approved as part of a Temporary Traffic Control Plan (TCP) and a reasonable accommodation for an alternate bicycle path of travel is implemented, defined and prioritized below:

1. Closing a parking lane and keeping the adjacent bicycle lane open;
2. Shifting the bicycle lane to a location on the same roadway to bypass the work zone or obstruction, and if necessary, shifting and narrowing the adjacent motor vehicle traffic lanes; provided the adjacent motor vehicle travel lanes shall be maintained at no less than ten feet (10 ft.) wide;
3. Closing the adjacent motor vehicle travel lane to provide space for a bicycle lane, provided that a minimum of one (1) motor vehicle travel lane shall remain in the same direction of travel;
4. Merging the bicycle lane and the adjacent motor vehicle travel lane into a shared travel lane adjacent to the work zone or other obstruction, installing shared travel lane markings (sharrows) in the shared travel lane and installing signage directing bicyclists to merge into the shared travel lane; provided the shared travel lane shall be maintained at no less than fourteen feet (14 ft.) wide; and
5. As a last resort, detouring bicyclists onto an adjacent roadway, in which case the detour route shall be adequately signed and replicate, as closely as practicable, the level of safety found on the bicycle route being blocked.

Note: if a bike lane closure is needed, the alternate path of travel must be implemented at the same level of protection as the existing facility. For example, if an existing protected bike lane must be closed, then a temporary protected bike lane shall be provided.

Any TCP that identifies bike lane closures, detours, or other bike facility changes is subject to approval and shall address the following guidance:

1. Active bike lanes must remain clear (5' minimum). Signage, channelizing devices, barriers, and other equipment shall not be placed in active bike lanes or in locations that would block bicyclists' path of travel.
2. Bike lanes shall not be closed for construction activities unless the closure is documented and approved in a TCP.
3. TCPs shall indicate the length and duration of all bike lane closures.
4. Where bike lanes must be closed, advance notification and tapers shall be provided with sufficient length to allow bicyclists to merge into the adjoining travel lane in advance of the bike lane closure.
5. TCPs that include bike lane closures shall post construction zone speed limits of 25 mph or less.
6. All bicycle-related signage shall be as permanent as the other TTC signage in the construction zone.
7. If the TCP includes roadway striping, temporary bike lanes and/or sharrows shall be installed.
8. The City's Traffic Engineer, or their designee, shall review TCPs that include bikeway detours or bike lane closures of longer than one week.

Refer to temporary traffic control details for Multi-lane Roadway with Travel Lane Closure, Temporary Bike Lane, and Parking Lane Closure and Single-lane Roadway with Bike Lane Closure and Parking Lane Closure (attachments).

Bus Stop Relocation or Closure

Temporary relocation of a bus or shuttle stop for construction activity requires written approval from AC Transit, Berkeley Lab, and/or Bear Transit, submitted at the time of a TCP submission. Temporary bus stops must also be approved by Public Works Traffic Engineering and must be noted on the TCP. Any parking obstruction, sidewalk obstruction, travel lane obstruction, or other accommodation required for the temporary bus stop shall be proposed through an Engineering Permit application at the sponsors' expense.

Lane Closures

On multi-lane roadways, traffic lanes may be converted to a bike lane or pedestrian diversion, as specified in an approved TCP. Below is a set of guidance related to lane closures:

- As a general rule, no more than one lane fewer than the total lanes per direction may be closed. For example, a four-lane roadway with two lanes in each direction shall provide a minimum of one lane in each direction.
- Different guidance applies to lane closures on multi-lane one-way streets in downtown Berkeley. So long as a minimum of one travel lane remains open, the closure of two or more travel lanes may be approved upon request.
- The minimum width of a temporarily narrowed traffic lane is 10' (12' for streets serving AC Transit bus routes), clear of any obstructions, including traffic cones or delineators. Fire Department may have additional clear width requirements for emergency vehicle access.
- Existing left turn lanes shall be maintained. Left turn lanes should not be used for temporary through travel lanes.
- Completely closing any direction of traffic is generally not allowed. This includes any plan which allows one lane to be used for two directions of traffic ("Two-Way Flag Control"). An approved TCP is required to use "Two-Way Flag Control."
- When any movement is reduced to a single lane that includes left and through movements at an intersection, the TCP may need to prohibit the left turn movement to facilitate efficient traffic flow. The TCP should include a recommended detour of the left turn.

Developing a Traffic Control Plan

Reflecting the above guidance in addition to the "Traffic Control Plan Preparation Guidelines", Traffic Control Plans shall be prepared by a certified traffic engineer. The proposed design and placement of the temporary traffic control signs, devices, and roadway markings shall be in compliance with the most recent edition of the CA MUTCD.

Subject to the conditions in Table 1, periodic full closures of streets and sidewalks may be approved. Note: the safe and reasonable flow of pedestrian and bicycle traffic is to be maintained in preference to construction activities and the flow of construction vehicles. If periodic full closures are necessary and anticipated, the construction sponsor shall indicate the following within the TCP, subject to approval:

1. The proposed location of flaggers or spotters to be posted at each end of the closed pedestrian or cycle route for the entire duration of time the intermittent closure is in place; and
2. The times of day when intermittent closure may occur; and
3. Acknowledgement that advance notice to Public Works Traffic Engineering, Berkeley Police Department, and emergency services is required for each full closure, subject to fine and/or revocation of the Engineering Permit.

Display of Permitted Temporary Traffic Control Plan

After an obstruction permit and TCP is approved and before commencing any activities that result in the blockage of a pedestrian or bicycle facility, construction sponsors must display a copy of the Engineering Permit at a prominent, publicly accessible location near the construction site entrance. Additionally, the following information must be simultaneously displayed:

1. The range of dates during which the permit is valid;
2. The name and contact information of the party requesting the permit;
3. A clear description of the approved temporary traffic control plan
4. A Berkeley Public Works Traffic Engineering phone number and email address to direct questions, comments, and concerns regarding the blockage.

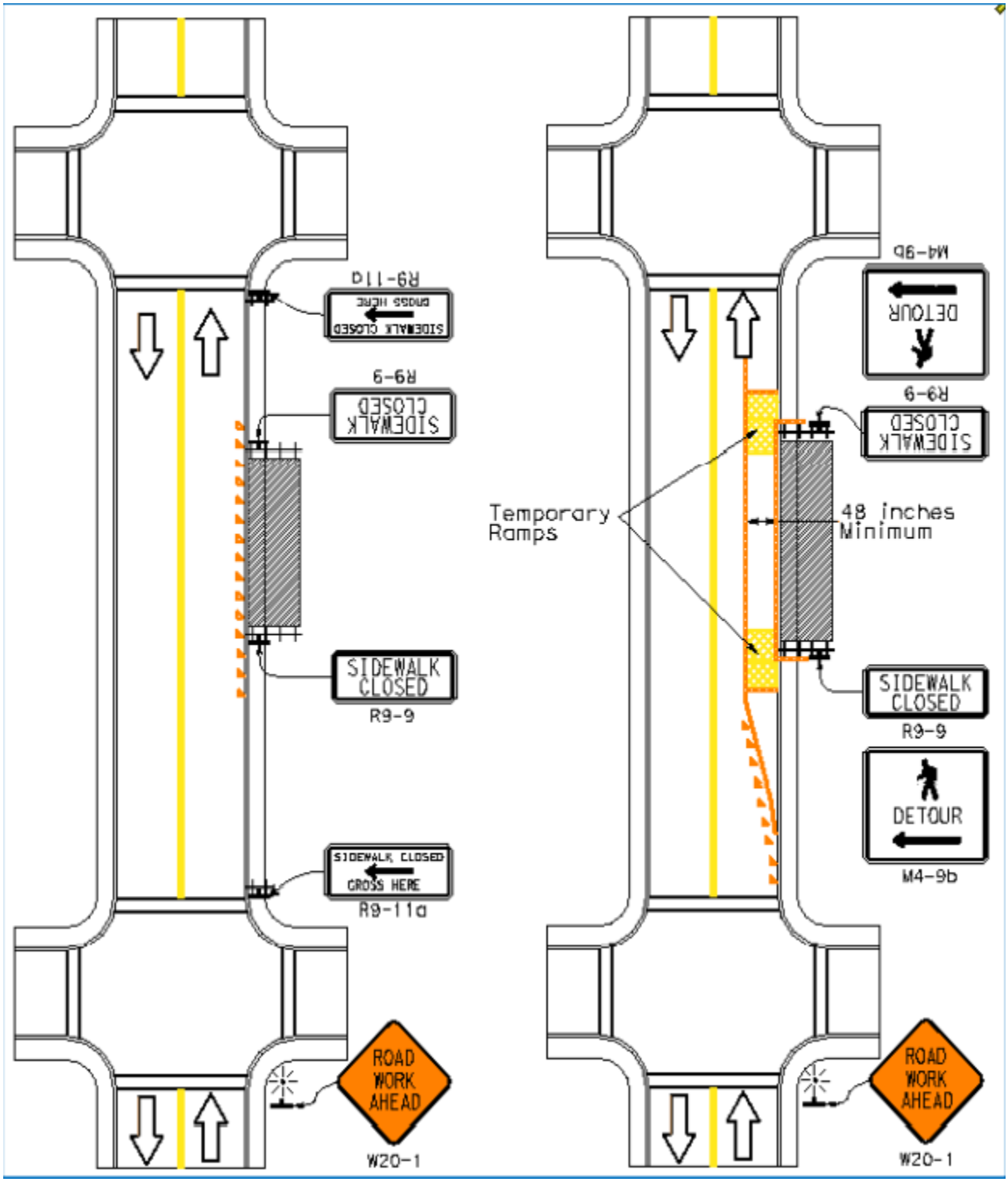
Planning Appropriately for Temporary Traffic Control Plan Review

Every reasonable effort should be made to avoid and minimize construction impacts on pedestrian, bicycle, and bus facilities in Berkeley. As such, construction sponsors for land use development projects may elect to propose and receive feedback on preliminary plans for temporary traffic control within a land use development planning application. At minimum, construction sponsors should submit TCP proposals 60 days before desired construction start date.

Attachments

- *Figure 1: Sidewalk Detour and Sidewalk Diversion*
- *Pedestrian Access During Construction Projects*
- *Detail TTC-1: Multi-lane Roadway with Travel Lane Closure, Temporary Bike Lane, and Parking Lane Closure*
- *Detail TTC-2: Single-lane Roadway with Bike Lane Closure and Parking Lane Closure*
- *Signs: Temporary Traffic Control Sign Details for Bikeway Detours and Long-Term Bike Lane Closures*

Figure 1: Sidewalk Detour and Sidewalk Diversion[6]



[6] Caltrans Pedestrian Temporary Access Routes Handbook (2022): https://dot.ca.gov/-/media/dot-media/programs/construction/documents/policies-procedures-publications/temp-ped-access-routes-handbook-2020-a11y.pdf

PEDESTRIAN ACCESS DURING CONSTRUCTION PROJECTS

Public Works Engineering

The purpose of these standards for construction in the public right-of-way is to ensure pedestrian safety and access.

Standards apply to City of Berkeley crews, Contractors with the City, and all others working in the right-of-way.

Each project is unique and requires thorough review to ensure complete, safe, usable, and accessible paths of travel.

Please note: City of Berkeley Engineers may stop work when any hazardous conditions are present.

Permit Service Center
1947 Center St. 3rd floor
Berkeley, CA 94704
510-981-7500 TTY 6903
permits@cityofberkeley.info

MAINTENANCE OF A CLEAR AND ACCESSIBLE PEDESTRIAN CORRIDOR

The Contractor or permittee shall maintain an accessible corridor that provides at least one safe path of travel for all pedestrians at all times for the duration of the project.

- ☐ Pedestrian corridor shall be a nominal width of 6' whenever feasible, and shall conform to ADAAG guidelines. It shall not be less than 48" wide at single point of contact or obstruction.
- ☐ Accessible pedestrian corridor shall connect with facilities within the project area.
- ☐ Equipment, debris, construction materials or vehicles shall not obstruct the corridor.
- ☐ No parked vehicles can obstruct blue curb parking spaces unless permitted.
- ☐ Temporary closure of designated pedestrian routes and crossings shall be allowed only when flaggers are present and safely directing pedestrians around hazards.

TEMPORARY RAMPS CONFORMING TO ACCESSIBLITY STANDARDS

The Contractor or permittee shall install and maintain temporary concrete, asphalt or wood ramps to provide a safe path of travel for mobility-impaired pedestrians at all locations where ramps have been temporarily removed OR needed to route pedestrians.

- ☐ Temporary ramps shall be constructed so installation and removal will not damage existing pavement, curb and/or gutter.
- ☐ Ramps shall have a minimum 4' wide walking surface and a maximum slope of 8%.
- ☐ Ramps shall snugly meet existing surfaces without gaps for drainage as required.
- ☐ Schedule 40 PVC pipe minimum 2" diameter shall be installed through ramp.
- ☐ Transitions between ramps and the street surface shall be smooth such that no lip exists at the base of the ramp.
- ☐ Sides of a ramp shall be protected where there is any drop-off.

CONSTRUCTION OF SIGNPOSTS, BARRICADES AND FENCING

Barricades that are impenetrable shall be used to separate pedestrians from hazards on all sides of excavations that may be exposed to pedestrians. Use materials and methods suitable to site conditions. Signs and fencing material shall not protrude into the clear pathway.

- ☐ A-frames used for defining path of travel (not barricading trenches) shall be placed end-to-end without spacing, shall be connected and maintained to ensure stability to help a person who is blind negotiate a safe path while using a cane.

- [ ] Caution Tape shall NOT be used by itself to delineate the path of travel or create a barricade.
- [ ] Fencing material requires a minimum 3” height, solid, uninterrupted toe-board.
- [ ] Signposts, scaffolding and fencing supports shall be placed entirely outside the pedestrian path of travel, minimum 4’ wide and 80” high without obstruction.
- [ ] Construction barriers shall be maintained in a sound, neat and clean condition.

IDENTIFICATION OF SAFE PATH OF TRAVEL

If a portion of the pedestrian way is rerouted due to construction, the path of travel shall be clearly defined. Traffic Engineer shall review any pedestrian access limitations and notification requirements for pedestrians with mobility or vision impairments.

- [ ] Paths of travel that DO NOT continue to the next corner or to a safe crosswalk shall be closed to pedestrian traffic. Signs a minimum of 36” x 36” must be posted stating the sidewalk is closed and detour pedestrians to accessible sidewalk.
- [ ] Pedestrian access corridors shall be clearly delineated with cones or barricades, as approved by the Engineer.
- [ ] If a crosswalk is closed, curb ramps leading into that crosswalk must be barricaded in such a manner that walkways that are not closed remain accessible to use.
- [ ] Caution Tape shall NOT be used by itself to delineate the path of travel or create a barricade.

SURFACING OF PEDESTRIAN CORRIDORS

During construction, tripping hazards and barriers for people with mobility impairments must be removed to maintain an accessible pedestrian corridor.

- [ ] Any change of level, which exceeds 1/4” height, must be beveled at 45º.
- [ ] Closed trenches, temporary paving surfaces, walking surfaces, steel plates; etc. shall have a smoothly finished, firm walking surface made even w/surrounding walkways.
- [ ] Aisle or loading area adjacent to a parking space is part of the pedestrian corridor.

RESTORATION OF PEDESTRIAN ROUTES

After construction, the site shall be returned to its former condition, or new condition as required.

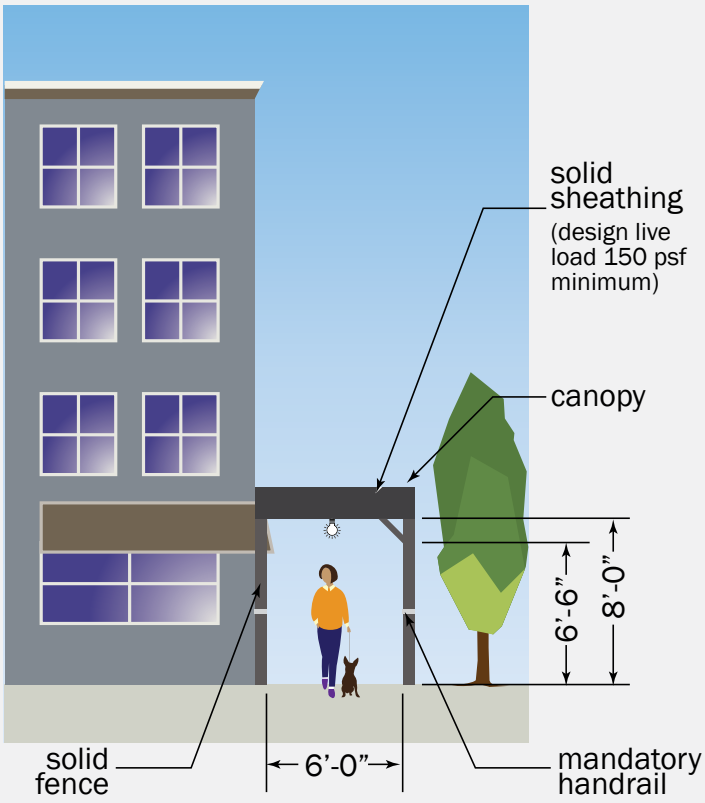
- [ ] Temporary ramps shall be removed as soon as construction and approval of permanent ramp is completed.
- [ ] After work is completed, surface of the pedestrian path shall be restored free from all ridges, gaps, bumps and rough edges.
- [ ] Construction that affects existing curb ramp shall include replacement or repair of the curb ramp to meet current City standards.

TABLE 3306.1 PROTECTION OF PEDESTRIANS

Height of Construction	Distance from Construction to Lot Line	Type of Protection Required
8 feet or less	Less than 5 feet	Construction Railings (see Figure C)
	5 feet or more	None
More than 8 feet	Less than 5 feet (see Figure A)	Barrier and covered walkway
	5 feet or more, but not more than ¼ the height of construction	Barrier and covered walkway
	5 feet or more, but between ¼ and ½ the height of construction	Barrier (see Figure B)
	5 feet or more, but exceeding ½ the height of construction	None

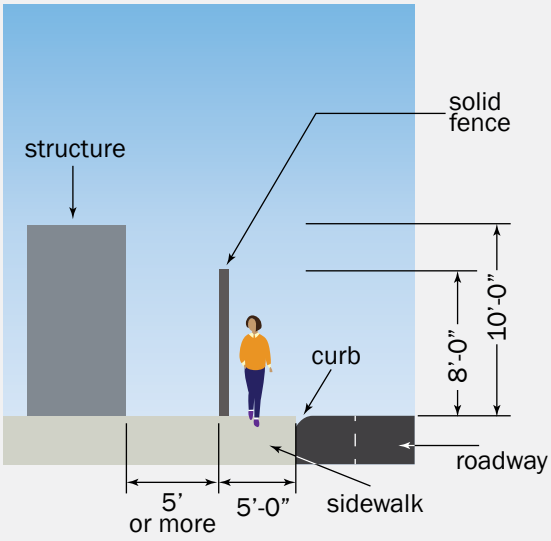
Figure A

Construction height greater than 8’



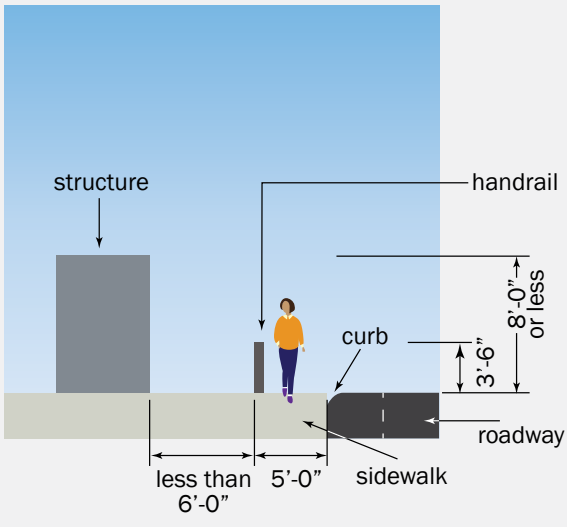
Type B

5 feet or more, but between ¼ and ½ the height of construction



Type C

Less than 5 feet



3306.2 WALKWAYS

☐ A walkway shall be provided for pedestrian travel in front of every construction and demolition site unless the applicable governing authority authorizes the sidewalk to be fenced or closed. Walkways shall be of sufficient width to accomodate the pedestrian traffic, but in no case shall they be less than 4 feet (1219 mm) in width. Walkways shall be provided with a durable walking surface. Walkways shall be accessible in accordance with Chapter 11 and shall be designed to support all imposed loads and in no case shall the design live load be less than 150 pounds per square foot (psf) (7.2 kN/m^2).

3306.3 DIRECTIONAL BARRICADES

☐ Pedestrian traffic shall be protected by a directional barricade where the walkway extends into the street. The directional barricade shall be of sufficient size and construction to direct vehicular traffic away from the pedestrian path.

3306.4 CONSTRUCTION RAILINGS

☐ Construction railings shall be not less than 42 inches (1067 mm) in height and shall be sufficient to direct pedestrians around construction areas.

3306.5 BARRIERS

☐ Barriers shall be not less than 8 feet (2438 mm) in height and shall be placed on the side of the walkway nearest the construction. Barriers shall extend the entire length of the construction site. Openings in such barriers shall be protected by doors that are normally kept closed.

3306.6 BARRIER DESIGN

Barriers shall be designed to resist loads required in Chapter 16 unless constructed as follows:

☐ Barriers shall be provided with 2-inch by 4-inch (51 mm by 102 mm) top and bottom plates.

☐ The barrier material shall be boards not less than 3/4-inch (19.1 mm) thick or wood structural panels not less than 1/4-inch (6.4 mm) thick.

☐ Wood structural use panels shall be bonded with an adhesive identical to that for exterior wood structural use panels.

☐ Wood structural use panels 1/4 inch (6.4 mm) or 5/16-inch (23.8 mm) in thickness shall have studs spaced not more than 2 feet (610 mm) on center.

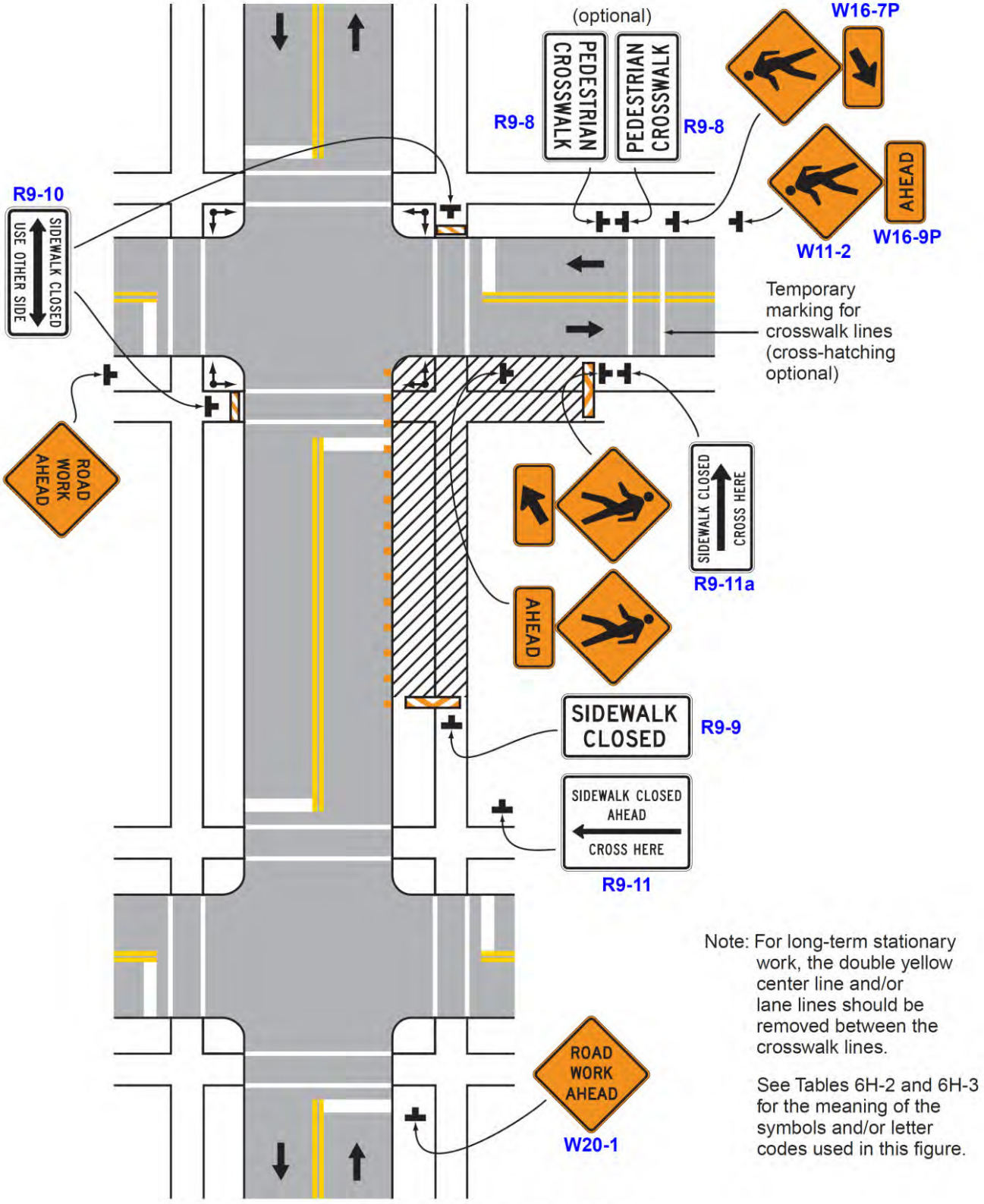
☐ Wood structural use panels 3/8 inch (9.5 mm) or 1/2 inch (12.7 mm) in thickness shall have studs spaced not more than 4 feet (1219 mm) on center provided a 2-inch by 4-inch (51 mm by 102 mm) stiffener is placed horizontally at mid-height where the stud spacing is greater than 2 feet (610 mm) on center.

☐ Wood structural use panels 5/8 inch (15.9 mm) or thicker shall not span over 8 feet (2438 mm).

Check One: ☐ Contractor ☐ Owner ☐ Owner's Agent

Name	Signature	Date

Figure 6H-29. Crosswalk Closures and Pedestrian Detours (TA-29)

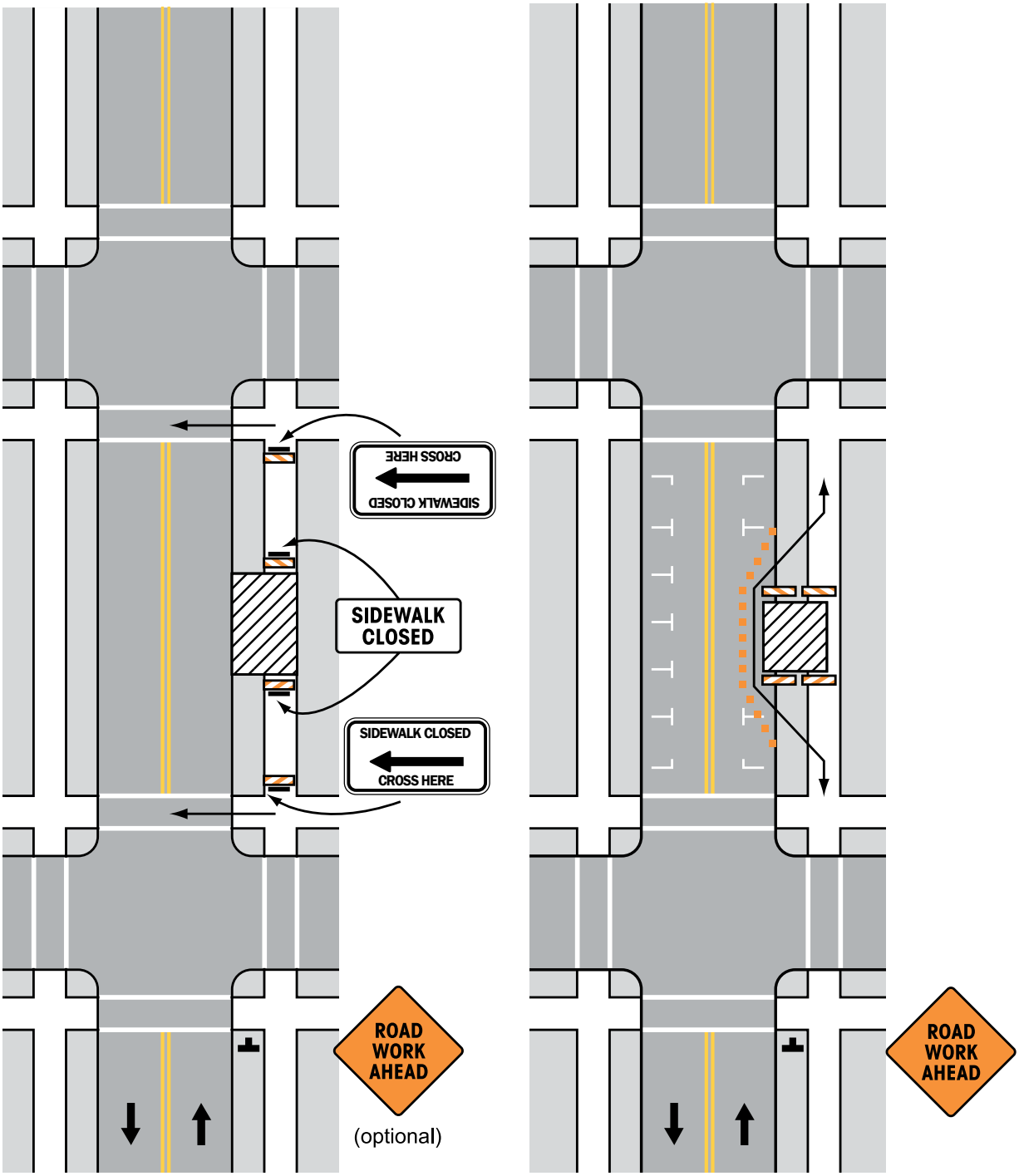


Note: For long-term stationary work, the double yellow center line and/or lane lines should be removed between the crosswalk lines.

See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Typical Application 29

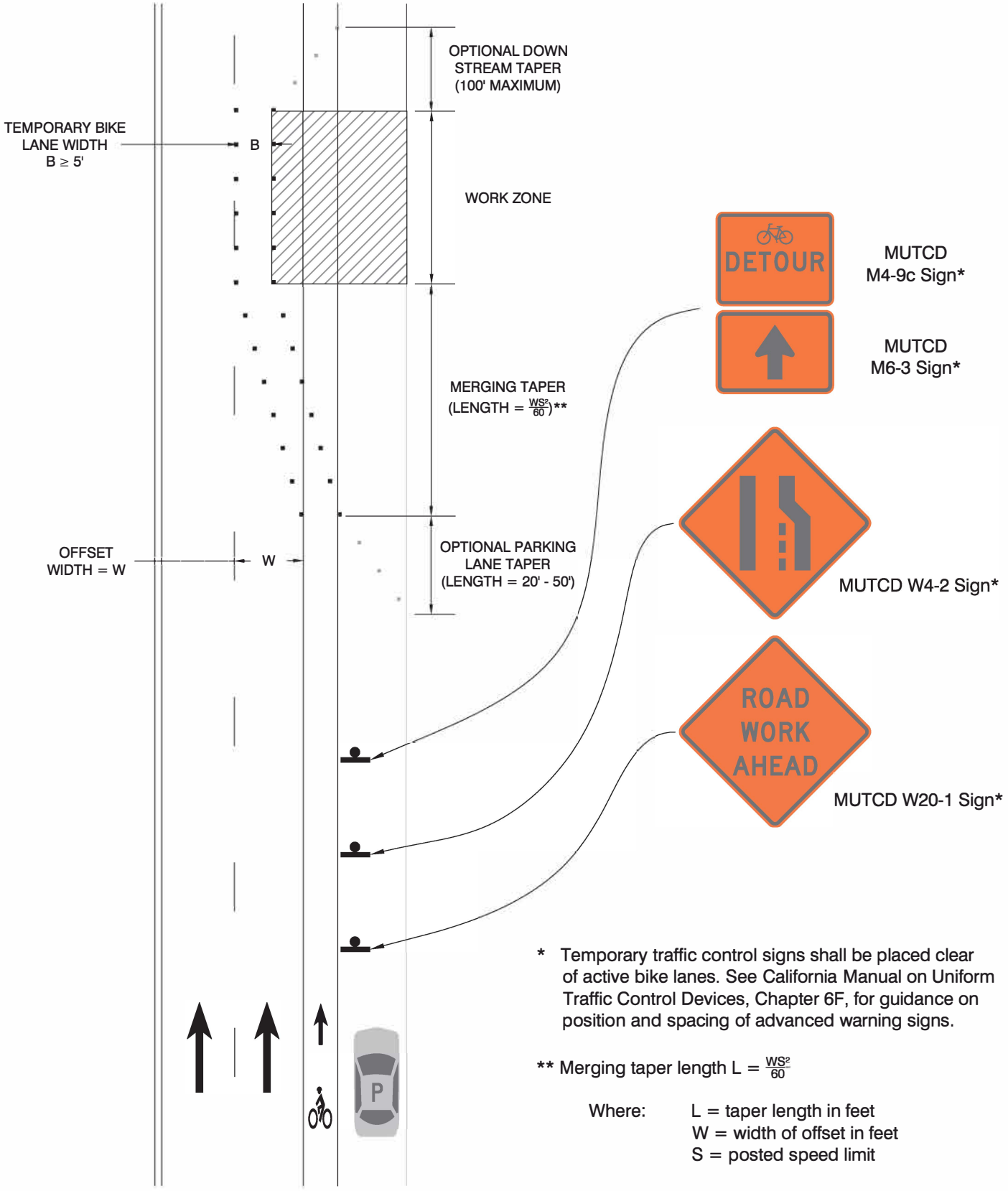
Figure 6H-28. Sidewalk Detour or Diversion (TA-28)



SIDEWALK DETOUR **SIDEWALK DIVERSION**

Typical Application 28

Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.



* Temporary traffic control signs shall be placed clear of active bike lanes. See California Manual on Uniform Traffic Control Devices, Chapter 6F, for guidance on position and spacing of advanced warning signs.

** Merging taper length $L = \frac{WS^2}{60}$

Where: L = taper length in feet
W = width of offset in feet
S = posted speed limit

CITY OF OAKLAND
BUREAU OF ENGINEERING AND CONSTRUCTION
BICYCLE FACILITIES PROGRAM
250 FRANK H. OGAWA PLAZA, SUITE 4344 * OAKLAND CA, 94612
(510) 238-3466 * FAX (510) 238-7415

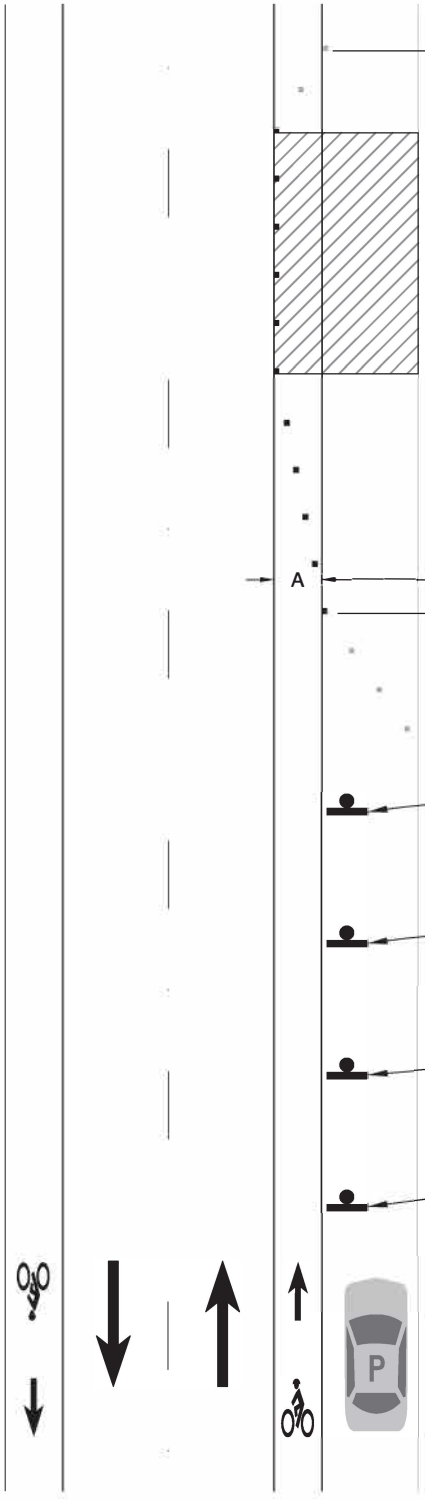
MULTI-LANE ROADWAY WITH TRAVEL LANE CLOSURE, TEMPORARY BIKE LANE, AND PARKING LANE CLOSURE

TEMPORARY TRAFFIC CONTROL DETAILS

SCALE: NOT TO SCALE

DWG. NO. TTC-1

DATE: OCT 2016





MUTCD R4-11 Sign*
(Black on Orange)



Modified
MUTCD W20-5 Sign*



MUTCD C17(CA) Sign*



MUTCD W20-1 Sign*

* Temporary traffic control signs shall be placed clear of active bike lanes. See California Manual on Uniform Traffic Control Devices, Chapter 6F, for guidance on position and spacing of advanced warning signs.

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SINGLE-LANE ROADWAY WITH BIKE LANE CLOSURE AND PARKING LANE CLOSURE

TEMPORARY TRAFFIC CONTROL DETAILS

SCALE: NOT TO SCALE

DWG. NO. TTC-2

DATE: OCT 2016

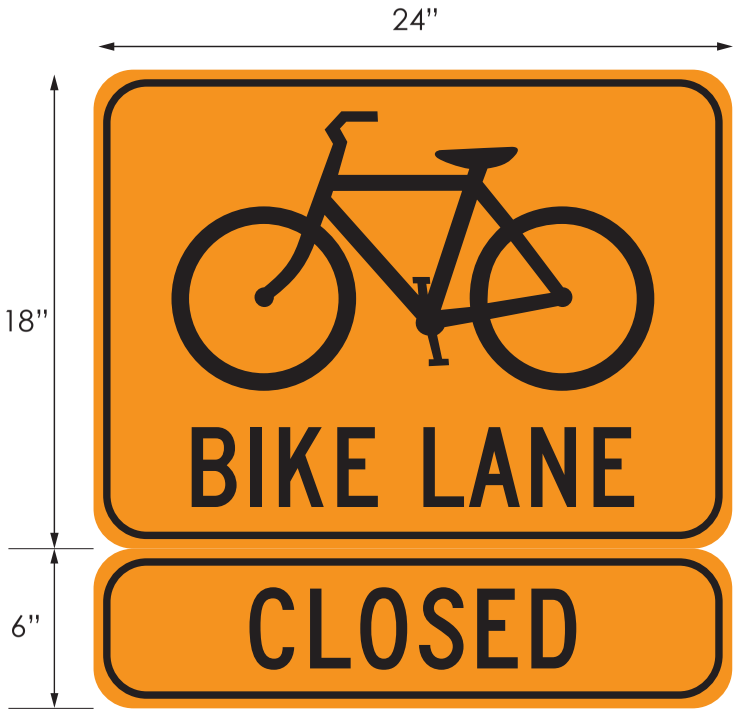
Assemblies for Long-Term Bike Lane Closures

Sign blades/assemblies based on those in the MUTCD (sign numbers indicated, except where noted), modified for traffic control use. All signs shall have a black legend and border on an orange background and use FHWA Series C typeface.

R81/Custom Supplemental "CLOSED AHEAD" Plaque
- 3" letter height, all CAPS



R81/Custom Supplemental "CLOSED" Plaque
- 3" letter height, all CAPS



Assemblies for Streets Without Bike Lanes

Sign blades/assemblies based on those in the MUTCD (sign numbers indicated, except where noted), modified for traffic control use. All signs shall have a black legend and border on an orange background and use FHWA Series C typeface.

R4-11 (BIKES MAY USE FULL LANE)
- Use: roads with two or more lanes per direction
- 4" letter height, all CAPS



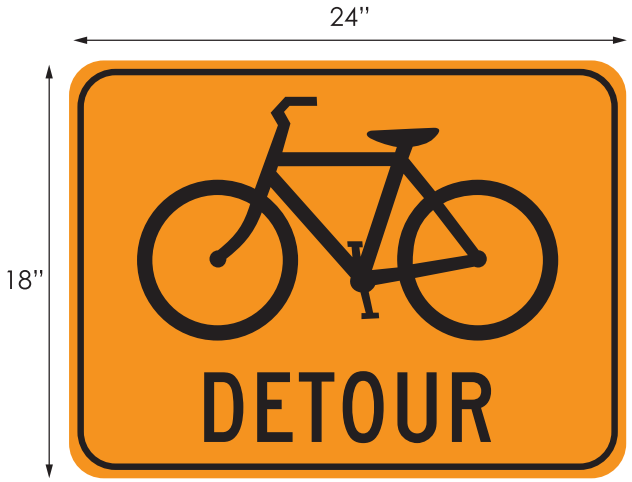
W11-1 (bike warning) / W16-1 (SHARE THE ROAD) assembly
- Use: roads with one lane per direction
- W16-1: 5" letter height, all CAPS



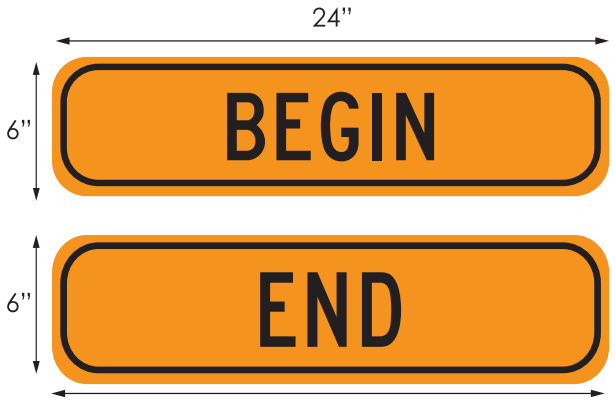
Blade Layout Details

Sign blades/assemblies based on those in the MUTCD (sign numbers indicated, except where noted), modified for traffic control use. All signs shall have a black legend and border on an orange background and use FHWA Series C typeface.

D11-1
- 3" letter height, CAPS



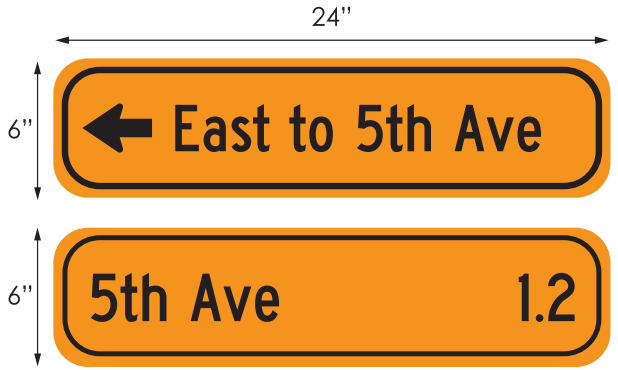
M4 series
- 3" letter height, CAPS



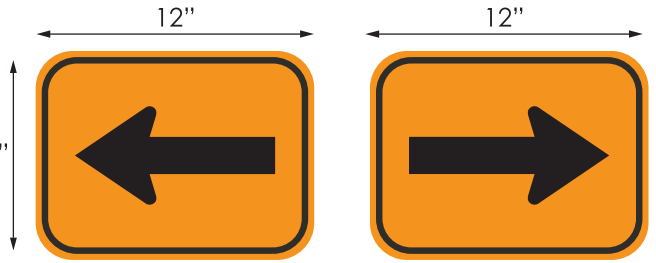
S17 (CA)
- 2.5" letter height, CAPS
  (example route name shown)



D1-1b
- 24" wide, 6" high (one-line); 10" high (two-line, not shown)
- 2" letter height, Title Case
  (example text shown)



M7-1 (L/R)



Example Assemblies for Bikeway Detours *

Sign blades/assemblies based on those in the MUTCD (sign numbers indicated, except where noted), modified for traffic control use. All signs shall have a black legend and border on an orange background and use FHWA Series C typeface.

A



- 30" wide; height varies based on content
- Min 2.5 letter height, all CAPS

B



- 24" wide x 36" high

C



- 24" wide x 33" high

D



- 24" wide x 30" high

E



- 24" wide x 30" high

** Example assemblies shown above are from a project-specific detour. Assemblies will vary by project.*

APPENDIX 11

BYPASS PLAN – FLOW DATA

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Peak Dry Weather Flows (PDWF) for Sanitary Sewers*			
Contract Plan sheets	Upstream MH	Downstream MH	PDFW (cfs)
5	15-004-03	15-004-01A	8.57
16	17-000-25	17-000-23	70.96
23	17-302-03	17-302-02	7.52
17	17-200-19	17-200-17A	5.34
17	17-200-21	17-200-19	8.46
17,18	17-200-23	17-200-21	8.14
11	17-040-13	17-040-11	7.89
12	17-040-15	17-040-13A	9.27
13	17-040-07	17-040-05	7.40
12,13	17-040-09	17-040-07	8.05
15	17-040-01	17-000-16	6.78
14	17-040-03	17-040-01A	8.01
13,14	17-040-05	17-040-03	7.80
12	17-040-11	17-040-09	7.88
14,15	17-040-01A	17-040-01	7.98
7	17-303-04	17-303-03	3.88
18	17-200-24	17-200-23	12.41
18	17-200-25	17-200-24	11.67
11,12	17-040-13A	17-040-13	N/A

***CONTRACTOR SHALL VERIFY FLOWS**

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APPENDIX 12

Uni-B-6-98

Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe

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UNI-BELL PVC PIPE ASSOCIATION

UNI-B-6-98

RECOMMENDED PRACTICE FOR LOW-PRESSURE AIR TESTING OF INSTALLED SEWER PIPE

July 1998

UNI-BELL PVC PIPE ASSOCIATION

2711 LBJ Freeway, Suite 1000

Dallas, TX 75234

Phone: 972.243.3902 Fax: 972.243.3907

www.uni-bell.org

Prepared by the

UNI-BELL PVC PIPE ASSOCIATION

MEMBERS:

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JM Eagle

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Royal Pipe Systems

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More information concerning Member companies can be obtained by calling Uni-Bell.

The statement contained in this technical report are those of the Uni-Bell PVC Pipe Association and are not warranties, nor are they intended to be warranties. Inquiries for information on specific products, their attributes and recommended uses and the manufacturer's warranty should be directed to member companies.

Recommended Practice

FOR LOW-PRESSURE AIR TESTING OF INSTALLED SEWER PIPE

FOREWORD

This recommended practice is intended for use as a document to be referenced in project specifications and contract documents relative to the performance testing of installed wastewater collection lines.

In the not too distant past, sewers were installed with little regard to low infiltration service and watertight construction. However, it was not long after the advent and logical acceptance of separate sanitary sewer systems that economics began to dictate sizable reductions in the amount of infiltration allowable for newly installed sanitary sewers.

To insure quality sewer pipe materials and proper installation practices, engineers began to use specifications that limited the amount of water leakage a sewer could have after being installed. Allowable leakage rates were typically specified as gallons of water per inch of diameter per mile of sewer per day. A survey conducted in the middle 1950's on sewer infiltration allowances specified by consulting engineers indicated rates as high as 1,000 gallons per inch of diameter per mile per day and disclosed that some municipalities and sewer districts permitted as high as 1,500 gallons per inch of diameter per mile of pipe per day. Such excessive allowances were replaced in the 1960's by allowances in the neighborhood of 500 gallons per inch of diameter per mile per day. In the late 1960's and early 1970's, the trend continued to minimize costly infiltration through the use of higher quality pipe materials and better elastomeric joint seals. By this time, infiltration rates of 200 gallons per inch of diameter per mile per day were quite common.

Today the costs of wastewater treatment and collection are such that even 200 gallons per inch of diameter per mile per day can be considered excessive from a cost-effective point of view. The stringent sewage treatment requirements mandated by the "Water Pollution Control Act of 1972" and the more recent "Clean Water Act of 1977" have renewed the public's awareness of the high costs associated with sewage treatment. Specifying lower allowable infiltration rates can minimize these costs. Consequently, an ever increasing number of consulting engineers and regulatory bodies are now specifying maximum infiltration rates ranging from 50 to 150 gallons per inch of diameter per mile per day. Such rates are obtainable in properly installed, modern sewer piping systems.

Infiltration testing is accurate and representative only when the pipe is continuously under groundwater. However, many sewers are only seasonally under groundwater and others are exposed to infiltration only during rain events. To test in these situations a water exfiltration test was developed. This test was a logical extension of the infiltration test. The controllable conditions under which the exfiltration test could be performed had obvious advantages. But, the exfiltration test is not without its own shortcomings, the most notable being air entrapment. Unless every lateral is provided with an air vent, air is likely to be trapped in the line as it is filled with water. If this is the case, there is no way of knowing how much of the volume

lost during the test is due to water leakage and how much is the result of trapped air loss.

Since air had complicated testing with water, engineers began testing with air alone. During the past 20 years, low-pressure air testing has become a fully accepted means of testing sewers. The vast majority of users now believe low-pressure air testing to be far superior to any other.

It is true that due to the differing physical characteristics of water and air, no direct numerical correlation exists between air loss and water leakage. However, the lack of a numerical correlation does not mean that the two are unrelated. An experience article entitled, "Air Testing Sanitary Sewers," by Sam H. Hobbs and Lloyd G. Cherne, published in the April, 1968, *WPCF Journal*, established that lower air loss rates are associated with lower water leakage rates. In this regard, allowable air loss rates have evolved over the years in a manner not unlike allowable leakage rates, *i.e.*, allowable air loss rates have decreased over the years.

The most notable and respected researchers on the subject of low-pressure air testing are Messrs. Ramseier and Riek who first published an article in the *Journal of the Sanitary Engineering Division, A.S.C.E.*, April 1964, entitled, "Low Pressure Air Test for Sanitary Sewers." Based upon a thorough analysis of collected data from 515 air tests they concluded that: "The recommended specifications consider the pipeline installation acceptable if it loses air at a rate not greater than 0.0030 cubic foot per minute per square foot of internal pipe surface when tested at an average pressure of 3.0 psi greater than the average back pressure of any ground water that may submerge the pipe. When any section of the installation, tested in its entirety between manholes or cleanout structures, loses air at a rate greater than 0.0030 cu.ft. per min. per sq.ft. of internal pipe surface, but the total rate of air loss from the section under test does not exceed 2.0 cu.ft. per min., the pipeline shall be considered free from significant leaks. When these rates of leakage are exceeded, pipe breakage, joint leakage or plug leakage will be present, and appropriate repairs should be made." Thus, most early air test specifications required that allowable air loss not exceed either the total rate of 2.0 cu.ft. per minute or the per square foot rate of 0.0030 cu.ft. per minute, whichever was greater for the section being tested. The only justification for the 2.0 cu.ft. per minute allowance was the inability of equipment used in the beginning of the 1960's to locate leaks smaller than 2 cu.ft. per minute.

After the early 1960's, significant progress was made. Equipment capable of finding leaks much smaller than 1 cu.ft. per minute was developed. Thus, many parts of the country eliminated the 2.0 cu.ft. per minute minimum, simplifying the test considerably and providing added assurance of quality installation.

Mr. Ramseier pursued his interest in proper air test requirements and continued to collect data and analyze the results to determine if actual air loss had decreased over the years in conjunction with the more stringent infiltration limits. Mr. Ramseier published his findings in the April, 1972, issue of the *Water Pollution Control Federation Journal*. His article, entitled "Testing New Sewer Pipe Installations," summarized the results from over 1,100 tests made on newly installed sewers. Ramseier noted that pipe tested before 1962 had a greater pipe wall and pipe joint porosity than pipe tested since that time and that the decrease in porosity coincided with the general adoption of air testing. Ramseier also reported that, "specifications recommended in 1963 were based on more

porous pipe that had been under observation for several years and an average loss of 0.003 cu.ft. of air/min./sq.ft. of internal pipe surface was chosen as the basis of the specifications." However, through continued analysis of actual test results, Ramseier found out of all pipes tested that "85 percent leaked less than 0.0015 cu.ft./ min./sq.ft.," this rate of air loss being only half of that originally used. In fact, several regulatory bodies began writing specifications based on 0.0015 cu.ft./min./ sq.ft. in the mid 1960's and have been very satisfied with the results. Thus, Ramseier concluded that "0.0015 can be used in an area where the pipe manufacturers and contractors have accepted air testing."

Even more important than the observed reduction in air loss rate per unit of pipe surface area was Ramseier's finding relative to a recommended maximum total leakage rate, regardless of pipe size or length. Ramseier found that a maximum total leakage rate is essential to eliminate the possibility of one or two significant leaks in an otherwise good section of pipe.

To determine a reasonable specification limit, Ramseier again analyzed the actual air test data he had collected. He found that "94 percent of the pipes tested had a loss of less than 2 cu.ft./min. and 87 percent had a loss of less than 1 cu.ft./min."

From his extensive analysis, Mr. Ramseier concluded that:

> "A specification based only on the average loss per unit of surface area can be uniformly applied to all sections having an area less than 625 sq.ft. internal surface, but as the surface area of the pipe increases, the possibility of the one undetected leak in an otherwise perfect pipe increases. A specification based only on the total loss will, in turn, allow a high average loss for short sections."

To accommodate this conclusion, Mr. Ramseier developed the following recommended air test specification:

> "Test sections shall not lose more than **Q** cubic feet per minute per square foot of internal surface area for any portion containing less than 625 square feet internal surface area. The total leakage from any test section shall not exceed 625 **Q** cu.ft./min."

The Uni-Bell PVC Pipe Association's, "Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe," is based upon and supports the thoroughly researched recommended air test specification of Mr. Roy Edwin Ramseier.

Considering more than 20 years of documented air testing history, the steadily increasing cost of sewage treatment, the higher sewer maintenance costs associated with poor quality construction and the fact that nearly every region of North America has accepted air testing; an allowable leakage rate of 0.0015 cu.ft./min./sq.ft. would appear to be long overdue. Thus, a maximum **Q** value of 0.0015 cu.ft./min./sq.ft. is strongly recommended. Such a **Q** value yields a maximum total leakage rate of about 1.0 cu.ft./min. (625 **Q**).

To corroborate Ramseier's findings, William Chase and Walter Berschauer published an analysis of their air test results in the May and June, 1972, issues of *Public Works Magazine*. They found that "Comparing Mr. Ramseier's data with the authors' indicates a remarkable similarity in the performance of all three types of pipe in the range of the usual specifications." The plotted data of Chase and Berschauer indicates that 70 percent of the pipes tested in the late 1960's and very early 1970's leaked less than 0.0015 cu.ft./min./sq.ft. These results were based upon over 1,300

tests of some 380,000 lineal feet of pipe ranging in sizes from 6" through 24".

Low-pressure air testing is economical to run and the equipment can be operated quickly and easily. Consequently, contractors are able to test each section of pipe rather than random testing. Therefore, a much tighter pipe can be turned over to the owner. Everyone benefits from specified air test requirements that are properly enforced. It may require that extra care be taken during installation, but the results are good for everyone, *e.g.*, the engineer's reputation, the contractor's pride and the community's pocketbook.

It is important to remember in judging the original acceptability of any sewer: the sewer is in its best condition at the time of acceptance. In other words, the specified infiltration rate or air loss rate will tend to increase over the years. Thus, it behooves design engineers and conscientious communities to insist upon an efficient test that will assure the best possible initial condition. The data compiled by Messrs. Ramseier, Chase, Berschauer and others clearly shows that, for many years, the vast majority of properly installed sewer pipe could pass an air test limit of 0.0015 cu.ft./min./sq.ft. Thus, only an air test limit less than or equal to 0.0015 cu.ft./min./sq.ft. will assure the best possible initial condition and quality workmanship for today's modern sewer collection systems.

SECTION 1 - SCOPE

1.1 This recommended practice defines the proper procedures for acceptance testing of installed gravity sewer pipe, using low-pressure air, to provide assurance that the pipe, as installed, is free from significant leaks. Included are requirements for equipment accuracy, safety precautions, line preparation, test method and minimum holding times. This recommended practice does not cover the testing of manholes.

1.2 Only lines tested after backfilling to final grade will be considered for acceptability. However, this test may also be used by the installer as a presumptive test to determine the condition of the line prior to backfilling.

SECTION 2 - DEFINITIONS

2.1 Owner: The person, firm, corporation or government subdivision entering into contract with the Contractor for the installation of sewer pipe and appurtenances.

2.2 Engineer: The person, firm, corporation or government agency acting for the Owner as his duly authorized agent in designing and engineering the project.

2.3 Inspector: An authorized representative of the Engineer or Owner assigned to make any and all necessary inspections of the work performed, materials and equipment furnished by the Contractor.

2.4 Contractor: The person, firm or corporation entering into the contract with the Owner for the installation of sewer pipe and appurtenances.

2.5 Other Terms: Whenever in the specifications or drawings the words **directed, required, permitted, ordered, designated, prescribed** or words of like import are used, it shall be understood that a direction, requirement, permission, order, designation or prescription of the Engineer is intended, and similarly, the words **approved, acceptable, satisfactory** or words of like import shall mean approved by, or acceptable or satisfactory to, the Engineer, unless otherwise expressly stated.

SECTION 3 - RESPONSIBILITIES

3.1 RESPONSIBILITY OF THE CONTRACTOR

Unless otherwise specified, the Contractor shall furnish all the necessary equipment and be responsible for conducting all low-pressure air tests. In addition, the Contractor is responsible for any necessary repair work on sections that do not pass the test. No sealant shall be used in any newly installed sewer without the prior approval of the Engineer. Using sealant in a sewer is not the equivalent of a sound sewer pipe. Proper structural repair work is much preferred and may be required by the Engineer or the Owner.

3.2 RESPONSIBILITY OF THE ENGINEER

The Engineer and/or a qualified Inspector shall witness all low-pressure air tests and verify the accuracy and acceptability of the equipment utilized. The Engineer should inform the Contractor regarding acceptable methods of repair in the event one or more sections fail to pass the low-pressure air test. The Engineer should also report to the Owner regarding the acceptability of the Contractor's work.

3.3 RESPONSIBILITY OF THE OWNER

The Owner shall make a final decision as to the acceptability of the Contractor's work based upon the Engineer's recommendation.

3.4 REGULATORY AGENCIES

Regulatory Agencies at the State, Federal and/or local level may be legally entitled to witness any air testing and/or review the results. The Owner or his Engineer should check to see that the low-pressure air test specified for his installation is at least as stringent as those that may be required by such regulatory bodies.

SECTION 4 – SAFETY

4.1 PLUG RESTRAINT

It is extremely important and essential that all plugs be installed and braced in such a way that blowouts are prevented. As an example of the hazard, a force of 250 pounds is exerted on an 8-inch plug by an internal pipe pressure of 5 psig, and a force of 2,250 pounds is exerted on a 24-inch plug by an internal pressure of 5 psig. It must be realized that sudden expulsion of a poorly installed plug or of a plug that is partially deflated before the pipe pressure is released can be very dangerous. For this reason it is recommended that every plug be positively braced against the manhole walls, and that no one be allowed in the manhole adjoining a line being tested so long as pressure is maintained in the line.

It is further recommended that no internal pressure of more than 9 psig be permitted except for leak location equipment where the plugs are firmly tied together.

4.2 RELIEF VALVE

All pressurizing equipment used for low-pressure air testing shall include a regulator or relief valve set no higher than 9 psig to avoid over-pressurizing and displacing temporary or permanent plugs. As an added safety precaution, the pressure in the test section should be continuously monitored to make certain that it does not at any time exceed 9 psig. (It may be necessary to apply higher pressure at the control panel to overcome friction in the air supply hose during pressurization.)

SECTION 5 - EQUIPMENT

5.1 PLUG DESIGN

Either mechanical or pneumatic plugs may be used. All plugs shall be designed to resist internal testing pressures without the aid of external bracing or blocking. However, the

Contractor should internally restrain or externally brace the plugs to the manhole wall as an added safety precaution throughout the test.

5.2 SINGULAR CONTROL PANEL

To facilitate test verification by the inspecting Engineer, all air used shall pass through a single, above ground control panel.

5.3 EQUIPMENT CONTROLS

The above ground air control equipment shall include a shut-off valve, pressure regulating valve, pressure relief valve, input pressure gauge and a continuous monitoring pressure gauge having a pressure range from 0 to at least 10 psi. The continuous monitoring gauge shall be no less than 4 inches in diameter with minimum divisions of 0.10 psi and an accuracy of ±0.04 psi.

5.4 SEPARATE HOSES

Two separate hoses shall be used to: (1) connect the control panel to the sealed line for introducing low-pressure air, and (2) a separate hose connection for constant monitoring of air pressure build-up in the line. This requirement greatly diminishes any chance for over-pressurizing the line.

5.5 PNEUMATIC PLUGS

If pneumatic plugs are utilized, a separate hose shall also be required to inflate the pneumatic plugs from the above ground control panel.

SECTION 6
LINE PREPARATION

6.1 LATERALS, STUBS AND FITTINGS

During sewer construction all service laterals, stubs and fittings into the sewer test section shall be properly capped or plugged so as not to allow for air loss that could cause an erroneous air test result. It may be necessary and is always advisable to restrain gasketed caps, plugs or short pipe lengths with bracing stakes, clamps and tie-rods or wire harnesses over the pipe bells.

6.2 PIPE WETTING

Air may pass through some porous pipe materials. If such materials are used, the pipe walls may be wetted to temporarily reduce the porosity of the material. Non-porous pipe materials need not be wetted.

Note - Ramseier found that wetting the pipe would reduce its air loss rate by 96 percent.

SECTION 7 - TEST PROCEDURE

7.1 PLUG INSTALLATION AND TESTING

After a manhole-to-manhole reach of pipe has been backfilled to final grade, prepared for testing and the specified waiting period has elapsed, the plugs shall be placed in the line at each manhole and secured.

It is advisable to seal test all plugs before use. Seal testing may be accomplished by laying one length of pipe on the ground and sealing it at both ends with the plugs to be checked. The sealed pipe should be pressurized to 9 psig. The plugs shall hold against this pressure without bracing and without any movement of the plugs out of the pipe. No persons shall be allowed in the alignment of the pipe during plug testing.

It is advisable to plug the upstream end of the line first to prevent any upstream water from collecting in the test line. This is particularly important in high groundwater situations.

When plugs are being placed, the pipe adjacent to the manhole shall be visually inspected to detect any evidence of shear in the pipe due to differential settlement between the pipe and the manhole. A probable point of leakage is at the junction of the manhole and the pipe, and this fault may be covered by the pipe plug, and thus not revealed by the air test.

7.2 LINE PRESSURIZATION

Low pressure air shall be slowly introduced into the sealed line until the internal air pressure reaches 4.0 psig greater than the average back pressure of any groundwater above the pipe, but not greater than 9.0 psig. If groundwater is present, refer to Section 8 - "Determination of Ground Water Elevation and Air Pressure Adjustment."

7.3 PRESSURE STABILIZATION

After a constant pressure of 4.0 psig (greater than the average groundwater back pressure) is reached, the air supply shall be throttled to maintain that internal pressure for at least 2 minutes. This time permits the temperature of the entering air to equalize with the temperature of the pipe wall.

7.4 TIMING PRESSURE LOSS

When temperatures have been equalized and the pressure stabilized at 4.0 psig (greater than the average groundwater backpressure), the air hose from the control panel to the air supply shall be shut off or disconnected. The continuous monitoring pressure gauge shall then be observed while the pressure is decreased to no less than 3.5 psig (greater than the average backpressure of any groundwater over the pipe). At a reading of 3.5 psig, or any convenient observed pressure reading between 3.5 psig and 4.0 psig (greater than the average groundwater back pressure), timing shall commence with a stop watch or other timing device that is at least 99.8 percent accurate.

A predetermined required time for a specified pressure drop shall be used to determine the lines acceptability. Traditionally, a pressure drop of 1.0 psig has been specified. However, other pressure drop values may be specified, provided that the required holding times are adjusted accordingly. If the specified pressure drop is 0.5 psig rather than the more traditional 1.0 psig, then the required test times for a 1.0 psig pressure drop must be halved. Specifying a 0.5 psig pressure drop is desirable in that it can reduce the time needed to accomplish the air test without sacrificing test integrity. Therefore, the following subsections contain provisions for both the traditional 1.0 psig pressure drop and the more efficient 0.5 psig pressure drop. All requirements for a specified 0.5 psig drop are given in parentheses. To provide further efficiencies in testing, there is a zero pressure drop option. If there has been no leakage (zero psig drop) after one hour of testing, the test section shall be accepted and the test complete.

7.5 DETERMINATION OF LINE ACCEPTANCE

7.5.1 If the time shown in Table I (or Table II), for the designated pipe size and length, elapses before the air pressure drops 1.0 psig (or 0.5 psig); the section undergoing test shall have passed and shall be presumed to be free of defects. The test may be discontinued once the prescribed time has elapsed even though the 1.0 psig (or 0.5 psig) drop has not occurred.

7.5.2 If there has been no leakage (zero psig drop) after one hour of testing; the section undergoing test shall have passed and shall be presumed free of defects. If there has been any pressure drop, the test shall continue as specified in **7.5.1**.

7.6 DETERMINATION OF LINE FAILURE

If the pressure drops 1.0 psig (or 0.5 psig) before the appropriate time shown in Table I (or Table II) has elapsed, the air loss rate shall be considered excessive and the section of pipe has failed the test.

7.7 LINE REPAIR OR REPLACEMENT

If the section fails to meet these requirements, the Contractor shall determine at his own expense the source, or sources, of leakage, and he shall repair or replace all defective materials and/or workmanship to the satisfaction of the Engineer. The extent

and type of repair which may be allowed, as well as results, shall be subject to the approval of the Engineer. The completed pipe installation shall then be retested and required to meet the requirements of this test.

SECTION 8
DETERMINATION OF GROUNDWATER ELEVATION AND AIR PRESSURE ADJUSTMENT

8.1 APPLICABILITY

The requirements of this Section shall only apply where groundwater is known to exist or is anticipated above the sewer line to be tested.

8.2 PIPE NIPPLE INSTALLATION

During manhole installation, a one-half inch diameter threaded pipe nipple shall be installed through the manhole wall directly on top of one of the sewer pipes entering the manhole. The threaded end of the nipple shall extend no more than two inches on the inside of the manhole. The total length of the nipple shall exceed the manhole wall thickness by no less than four inches. The pipe nipple shall be non-corrosive and resistant to chemicals common in domestic sewage. Special attention shall be given to providing a permanent, watertight seal around the pipe nipple at the manhole wall. The pipe nipple shall be sealed with a threaded one-half inch cap. Every manhole need not have a pipe nipple. A few key manhole locations should be sufficient to establish a groundwater profile for the test area. The Engineer shall assist the Contractor in selecting appropriate manholes for pipe nipple installation.

8.3 GROUNDWATER ELEVATION

Immediately before air testing, the groundwater level shall be determined by removing the threaded cap(s) from the nipple(s) nearest the section to be tested, blowing air through the pipe nipple(s) to remove any obstructions, and then connecting clear plastic tube(s) to the pipe nipple(s). Each plastic tube shall be held vertically to allow groundwater to rise in it. After the water level in the tube has stopped rising, a measurement of the height in feet of water over the invert of the sewer pipe shall be taken. (See Figure 1.) If the section to be tested is not immediately adjacent to an installed pipe nipple, the groundwater height shall be estimated based upon nearby height readings and the pipe's invert elevation.

8.4 AIR PRESSURE ADJUSTMENT

The air pressure correction, which must be added to the 3.5 psig normal test starting pressure, shall be calculated by dividing the average vertical height, in feet of groundwater above the invert of the sewer pipe to be tested by 2.31. The result gives the air pressure correction in pounds per square inch to be added. (For example, if the average vertical height of groundwater above the pipe invert is 2.8 feet, the additional air pressure required would equal 2.8 divided by 2.31 or 1.2 psig. This would require a minimum starting pressure of 3.5 plus 1.2 or 4.7 psig.) The allowable pressure drop of 1.0 psig (or 0.5 psig) and the timing in Table I (or Table II) are not affected and shall remain the same.

8.5 MAXIMUM TEST PRESSURE

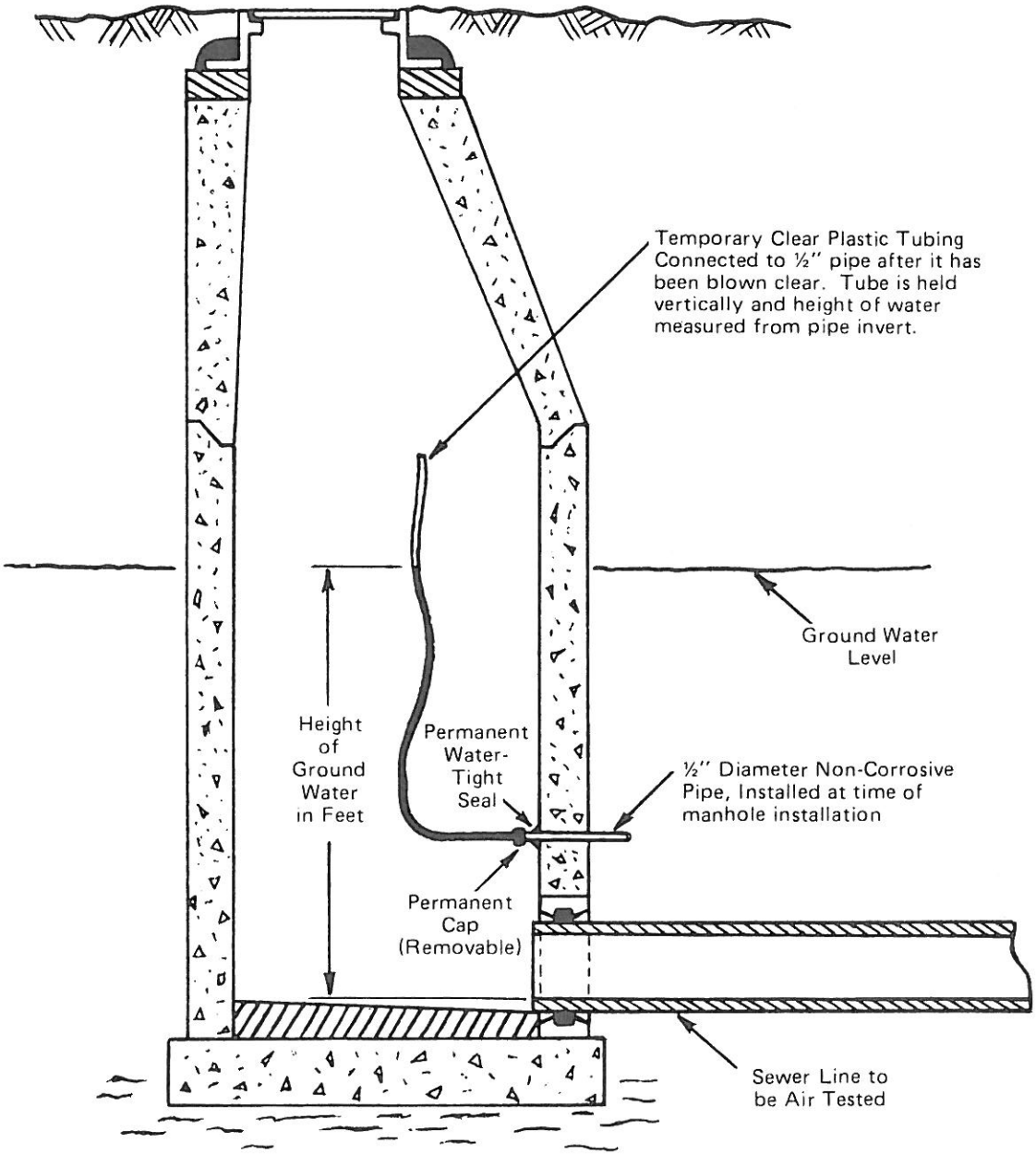
In no case should the starting test pressure exceed 9.0 psig. If the average vertical height of groundwater above the pipe invert is more than 12.7 feet, the section so submerged may be tested using 9.0 psig as the starting test pressure. The 9 psig limit is intended to further ensure workman safety and falls within the range of the pressure monitoring gauges normally used.

8.6 RE-SEALING OF PIPE NIPPLES

After the groundwater height has been determined, each pipe nipple shall be

FIGURE NO. 1

MANHOLD CROSS-SECTIONAL VIEW OF THE PROPER METHOD FOR DETERMINING GROUND WATER HEIGHT



recapped and sealed to prevent any future infiltration.

SECTION 9 - TEST TIMES

9.1 TEST TIME CRITERIA

The Ramseier test time criteria requires that no test section shall be accepted if it loses more than **Q** cubic feet per minute per square foot of internal pipe surface area for any portion containing less than 625 square feet internal pipe surface area. The total leakage from any test section shall not exceed 625 **Q** cubic feet per minute.

9.2 ALLOWABLE AIR LOSS RATE

A **Q** value of 0.0015 cubic feet per minute per square foot shall be utilized to assure the Owner of quality pipe materials, good workmanship and tight joints.

9.3 TEST TIME CALCULATION

All test times shall be calculated using Ramseier's equation:

$$T = 0.085\frac{DK}{Q}$$

Where: **T** = Shortest time, in seconds, allowed for the air pressure to drop 1.0 psig,

K = 0.000419 **DL**, but not less than 1.0,

Q = 0.0015 cubic feet/minute/ square feet of internal surface,

D = Nominal pipe diameter in inches, and

L = Length of pipe being tested in feet.

For more efficient testing of long test sections and/or sections of larger diameter pipes, a timed pressure drop of 0.5 psig may be used in lieu of the 1.0 psig timed pressure drop. If a 0.5 psig pressure drop is used, the appropriate required test times shall be exactly half as long as those obtained using Ramseier's equation for **T** cited above.

If there has been no leakage (zero psig drop) after one hour of testing, the test section shall be accepted and the test complete. This provides a more efficient test for large diameter sewers that have demonstrated an air loss rate (zero) well within the allowable. If there is any pressure drop, the complete test shall be run to determine whether or not the test section is acceptable.

9.4 TESTING MAIN SEWERS WITH LATERAL SEWERS

It is often convenient to include connected lateral sewers when testing sewer mains having lateral sewers. If lateral sewers are included in the test, their lengths may generally be ignored for computing required test times. This can be done because in practice, ignoring the branch, lateral or house sewers will normally increase the severity of the air test whenever the tested surface area is less than 625 square feet so that the total rate of rejection may only be increased about 2 percent. If the total tested surface area is greater than 625 square feet, ignoring the lateral sewers will only slightly decrease the severity of the test.

In the event a test section, having a total internal surface area less than 625 square feet, fails to pass the air test when lateral sewers have been ignored; the test time shall be recomputed to include all lateral sewers using the following formula:

$$T = 0.085\left[\frac{D_1{}^1L_1 + D_2{}^2L_2 + \ldots D_n{}^2L_n}{D_1L_1 + D_2L_2 + \ldots + D_nL_n}\right]\frac{K}{Q}$$

Where: **T** = Shortest time, in seconds, allowed for the air pressure to drop 1.0 psig.

K = $0.000419 (D_1L_1 + D_2L_2 + ... + D_nL_n)$, but not less than 1.0;

Q = 0.0015 cu.ft./min./sq.ft. of internal surface;

D_1, D_2, etc. = Nominal diameters of the different size pipes being tested;

L_1, L_2, etc. = Respective lengths of the different size pipes being tested.

If the recomputed test time is short enough to allow the section tested to pass, then the section shall be presumed to be free of defects and comply with this specification.

9.5 SPECIFIED TIME TABLES

To facilitate the proper use of this recommended practice for air testing, the following tables are provided. Table I contains the specified minimum times required for a 1.0 psig pressure drop from a starting pressure of at least 3.5 psig greater than the average back pressure of any groundwater above the pipe's invert. Table II contains specified minimum times required for a 0.5 psig pressure drop from a starting pressure of at least 3.5 psig greater than the average back pressure of any groundwater above the pipe's invert. Both tables also include easy to use formulas for calculating required test times for various pipe sizes and odd lengths. Also, a zero pressure drop option is shown as a footnote to Table I and Table II. If there has been no leakage (zero psig drop) after one hour, the test section is accepted and the test is complete. A series of examples are provided in the Appendix to this recommended practice that demonstrates proper use of the tables.

TABLE I

MINIMUM SPECIFIED TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q = 0.0015

1 Pipe Diameter (in.)	2 Minimum Time (min: sec)	3 Length for Minimum Time (ft)	4 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
4	3:46	597	.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	398	.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
21	19:50	114	10.470 L	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31
24	22:40	99	13.674 L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48
30	28:20	80	21.366 L	35:37	53:25	71:13	89:02	106:50	124:38	142:26	160:15
33	31:10	72	25.852 L	43:05	64:38	86:10	107:43	129:16	150:43	172:21	193:53
36	34:00	66	30.768 L	51:17	76:55	102:34	128:12	153:50	179:29	205:07	230:46
42	39:48	57	41.883 L	69:48	104:42	139:37	174:30	209:24	244:19	279:13	314:07
48	45:34	50	54.705 L	91:10	136:45	182:21	227:55	273:31	319:06	364:42	410:17
54	51:02	44	69.236 L	115:24	173:05	230:47	288:29	346:11	403:53	461:34	519:16
60	56:40	40	85.476 L	142:28	213:41	284:55	356:09	427:23	498:37	569:50	641:04

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. (See Section 7.5.)

TABLE II

MINIMUM SPECIFIED TIME REQUIRED FOR A 0.5 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q = 0.0015

1 Pipe Diameter (in.)	2 Minimum Time (min: sec)	3 Length for Minimum Time (ft)	4 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
4	1:53	597	.190 L	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:53
6	2:50	398	.427 L	2:50	2:50	2:50	2:50	2:50	2:50	2:51	3:12
8	3:47	298	.760 L	3:47	3:47	3:47	3:47	3:48	4:26	5:04	5:42
10	4:43	239	1.187 L	4:43	4:43	4:43	4:57	5:56	6:55	7:54	8:54
12	5:40	199	1.709 L	5:40	5:40	5:42	7:08	8:33	9:58	11:24	12:50
15	7.05	159	2.671 L	7:05	7:05	8:54	11:08	13:21	15:35	17:48	20:02
18	8:30	133	3.846 L	8:30	9:37	12:49	16:01	19:14	22:26	25:38	28:51
21	9:55	114	5.235 L	9:55	13:05	17:27	21:49	26:11	30:32	34:54	39:16
24	11:20	99	6.837 L	11:24	17:57	22:48	28:30	34:11	39:53	45:35	51:17
27	12:45	88	8.653 L	14:25	21:38	28:51	36:04	43:16	50:30	57:42	64:54
30	14:10	80	10.683 L	17:48	26:43	35:37	44:31	53:25	62:19	71:13	80:07
33	15:35	72	12.926 L	21:33	32:19	43:56	53:52	64:38	75:24	86:10	96:57
36	17:00	66	15.384 L	25:39	38:28	51:17	64:06	76:55	89:44	102:34	115:23
42	19:54	57	20.942 L	34:54	52:21	69:49	87:15	104:42	122:10	139:37	157:04
48	22:47	50	27.352 L	45:35	68:23	91:11	113:58	136:46	159:33	182:21	205:09
54	25:31	44	34.618 L	57:42	86:33	115:24	144:15	173:05	201:56	230:47	259:38
60	28:20	40	42.738 L	71:14	106:51	142:28	178:05	213:41	249:18	284:55	320:32

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. (See Section 7.5.)

APPENDIX 1

10.1 PURPOSE

The purpose of this Appendix is to illustrate the proper application of this recommended practice with regard to appropriate test time selection. The examples that follow include a variety of conditions that may be encountered in the field.

10.2 EXAMPLE A

A manhole-to-manhole reach of nominal 12 inch pipe is 350 feet long. No lateral connections exist in the reach. What is the required test time for a 0.5 psig pressure drop?

Solution: The required test time can be read directly from Table II. For 350 feet of 12 inch pipe, the required test time is 9:58 (9 minutes and 58 seconds).

10.3 EXAMPLE B

A 350 foot section of nominal 12 inch pipe is ready for testing. A total of 128 feet of 4 inch lateral sewer pipe is connected to the 350 foot section and will be included in the test. What will be the required test time for a 0.5 psig pressure drop?

Solution: Lateral sewers may be disregarded when selecting test times (see Section 9.4). Therefore, the required test time will be the same as for Example A, *i.e.*, 9 minutes and 58 seconds.

Note - If lateral sewers had not been disregarded, the required test time would be 10 minutes and 22 seconds, i.e., only 24 seconds longer.

10.4 EXAMPLE C

What should the required test time be for a 1.0 psig pressure drop in 327 feet of nominal 8 inch diameter pipe between two manholes?

Solution: The exact test time is easily calculated by using Table I. Table I is used because a 1.0 psig pressure drop is specified. Since 327 feet exceeds the 298 foot length associated with the minimum test time for an 8 inch pipeline, the fourth column in Table I shall be used to quickly calculate the required test time as follows:

$$\mathbf{T} = 1.520\,\mathbf{L} = 1.52 \times 327 = 497 \text{ seconds}$$

Therefore, the required test time for a 1.0 psig pressure drop is 497 seconds or 8 minutes and 17 seconds.

10.5 EXAMPLE D

A manhole-to-manhole reach of nominal 24 inch pipe is 82 feet long. What is the required test time for a 0.5 psig pressure drop?

Solution: Table II must be used because a 0.5 psig pressure drop is specified. Since 82 feet is less than the 99 foot length associated with the minimum test time for a 24 inch pipeline, the minimum test time shall apply. Thus, the required test time for a 0.5 psig pressure drop must be 11:20 (11 minutes and 20 seconds).

10.6 EXAMPLE E

A 412 foot section of nominal 15 inch sewer pipe has been readied for air testing. A total of 375 feet of nominal 6 inch lateral piping and 148 feet of nominal 4 inch lateral piping branch off of the 15 inch sewer line. All laterals have been capped and/or plugged and will be tested together with the 15 inch main line. The specified pressure drop that will be timed is 0.5 psig. What is the appropriate test time for this pipe network?

Solution: All lateral sewer sizes and lengths may be disregarded since their influence is generally not significant enough to warrant computation (refer to Section 9.4). Table II must be used for a 0.5 psig pressure drop. The fourth column in the table provides the appropriate formula for calculating the required test time because 412 feet is longer than the third column value of 159 feet.

$$\mathbf{T} = 2.671\mathbf{L} = 2.671 \times 412 = 1{,}100 \text{ seconds}$$

The required test time is 1,100 seconds or 18 minutes and 20 seconds.

10.7 EXAMPLE F

A manhole-to-manhole reach of nominal 8 inch pipe is only 100 feet long. A total of 300 feet of nominal 4 inch lateral piping is connected to the 100 foot section and will be included in air testing the section. What will be the required test time for a 1.0 psig pressure drop?

Solution: The required test time can be read directly from Table I, since lateral sewers need not be considered. Thus, for 100 feet of 8 inch pipe, the required holding time is 7:34 (7 minutes and 34 seconds). However, should the section fail to meet this test, the required holding time must be recalculated taking into account the connected laterals per Section 9.4. This recalculation is required because the total internal pipe surface area is less than 625 square feet.

Total Area =

$$\pi\left[\frac{D_1L_1 + D_2L_2 + \ldots + D_nL_n}{12}\right]$$

$$= 3.14\left[\frac{(8x100)+(4x300)}{12}\right]$$

= 524 square feet

Thus, using the equation provided in Section 9.4, the required test time should be recomputed as follows:

$$\mathbf{K} = 0.000419\,[(8 \times 100) + (4 \times 300)]$$
$$= 0.838$$

$$0.838 < 1.0 \rightarrow \mathbf{K} = 1.0$$

*Note - **K** will always be 1.0 when the total area is less than 625 square feet.*

$$T = 0.085\left[\frac{(8^2x100)+(4^2x300)}{(8x100)+(4x300)}\right]\frac{1.0}{0.0015}$$

$$\mathbf{T} = 317 \text{ seconds}$$

The required test time is actually only 317 seconds or 5 minutes and 17 seconds for a 1.0 psig pressure drop. Therefore, if the section is able to meet this test time, it shall be passed.

Note - For a specified 0.5 psig pressure drop, the test holding time would be only half as long, i.e., 2 minutes and 38 seconds.

APPENDIX 2

AIR TEST DATA SHEET

Owner (Name of city, district, etc.) _____ Test No. _____

Identification of Pipe Installation (Job name, location, contract number, etc.) _____

_____

Field Test Data: (To be filled in by the Inspector)

Date: _____ Specified Maximum Pressure Drop: _____ psig

Identification of Pipe Material Installed _____

Pipe Under Test				Spec. Time	Field Test Operations Data					
Upstream MH sta #	Downstream MH sta #	Dia. D (in.)	Length L (ft.)	Refer to UNI-B-6 (min:sec)	Pressure Initially Raised to (psig)	Time Allowed for Pressure to Stabilize (min)	Start Test Pressure (psig)	Stop Test Pressure (psig)	Elapsed Time (min:sec)	Pass or Fail (P or F)

Inspector's Name and Title: _____

Signature of Inspector: _____

If a section fails, the following items should be completed:

Identify section(s) that failed _____

Leak (was) (was not) located. Method used: _____

Description of leakage found: _____

Description of corrective action taken: _____

_____

For test results after repair refer to Test No. _____. Inspector _____

This data sheet may be used in conjunction with Recommended Practice UNI-B-6. The Uni-Bell PVC Pipe Association is interested in evaluating the testing of sewer pipe installations with low-pressure air. The purpose of this "Air Test Data Sheet" is to assist in obtaining information from field testing of sewer pipes as well as to assist the community in evaluating the sewer's acceptability.

Copies of the above "Air Test Data Sheet" are available free of charge upon request from Uni-Bell. The Uni-Bell PVC Pipe Association suggests that one copy of the completed sheet be retained for your files and requests that one copy be sent to: Uni-Bell PVC Pipe Association, 2655 Villa Creek Drive, Suite 155, Dallas, TX 75234.