

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
SPECIFICATIONS

FOR
FY 2025 DRAINAGE IMPROVEMENTS
SPECIFICATION NOS. 23-11561-C & 25-11677-C

MAY 2025

PRE-BID MEETING: None
BID OPENING DATE: June 3, 2025

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

CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS
SPECIFICATIONS
FOR
FY 2025 DRAINAGE IMPROVEMENTS
SPECIFICATION NOS. 23-11561-C & 25-11677-C

Prepared under the direction of:

 5/8/25

Ricardo Salcedo, P.E.
Acting Supervising Civil Engineer



Reviewed By:



Ronald A. Nevels, P.E.
City Engineer

Engineering Division
1947 Center Street, 4th Floor
Berkeley, California 94704
Project Engineer: Jonathan Caudillo

ATTENTION

1. THE CONTRACTOR SHALL SUBMIT ALL CONTRACT DOCUMENTS INCLUDING BONDS AND INSURANCE BEFORE:

July 18, 2025
2. THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS AND GUIDELINES OF ALL REGULATORY AGENCIES.
3. THE CITY RESERVES THE RIGHT TO REJECT ANY AND ALL PROPOSALS.
4. DURING CONSTRUCTION, THE CONTRACTOR MAY BE REQUIRED TO ATTEND WEEKLY MEETINGS AT THE ENGINEER'S OFFICE.
5. THIS PROJECT IS SUBJECT TO STATE OF CALIFORNIA SB 854 – PUBLIC WORKS REFORM

TENTATIVE SCHEDULE

(DATES SUBJECT TO CHANGE)

- | | | |
|----|---------------------------------------|-------------------|
| 1. | Advertisement | May 9, 2025 |
| 2. | Pre-Bid Meeting
(Non-mandatory) | None |
| 3. | Bid Opening | June 3, 2025 |
| 4. | Pre-Award Conference | July 1, 2025 |
| 5. | Council Award | July 8, 2025 |
| 6. | Contract Documents Due | July 18, 2025 |
| 7. | Contract Award
(Notice to Proceed) | August 11, 2025 |
| 8. | Start Construction | September 2, 2025 |

TABLE OF CONTENTS

BIDDING CONTRACTUAL DOCUMENTS

NOTICE TO BIDDERS	1 – 4
BIDDER’S AND CONTRACTOR’S CHECK LIST	5
BIDDER’S PROPOSAL	6 – 15
EXPERIENCE AND FINANCIAL QUALIFICATIONS	16
TAXPAYER IDENTIFICATION REPORT	17
MEMORANDUM OF UNDERSTANDING	18
WORKFORCE COMPOSITION OCCUPATIONAL CATEGORIES	19
WORKFORCE COMPOSITION FORM FOR ALL CONSTRUCTION CONTRACTS	20
AGREEMENT FOR CHANGE IN SUB-CONTRACTORS	21
NUCLEAR FREE ZONE DISCLOSURE FORM	22
OPPRESSIVE STATES COMPLIANCE STATEMENT FOR COMMODITIES	23
SANCTUARY CITY COMPLIANCE STATEMENT	24
RIGHT TO AUDIT FORM	25
NOTICE REGARDING THE EQUAL BENEFITS ORDINANCE	26
EQUAL BENEFITS ORDINANCE DISCLOSURE FORM	27 – 28
CERTIFICATION OF COMPLIANCE WITH EQUAL BENEFITS ORDINANCE (FORM EBO-1)	29 – 30
COMMERCIAL GENERAL AND AUTOMOBILE LIABILITY ENDORSEMENT	31
PERFORMANCE BOND	32 – 34
AGREEMENT TO BE BOUND	35
CWA HIRING PLAN	36

PART A	GENERAL PROVISIONS
PART B	SPECIAL PROVISIONS
PART C	TECHNICAL PROVISIONS – SCHEDULE A
PART D	TECHNICAL PROVISIONS – SCHEDULE B
PART E	CURB RAMP AND CROSS DRAIN LOCATIONS AND QUANTITIES
PART F	CURB RAMP AND CROSS DRAIN LOCATION MAP
PART G	CITY STANDARD DETAILS
APPENDIX A	COMMUNITY WORKFORCE AGREEMENT
APPENDIX B	CITY OF BERKELEY PEDESTRIAN, BICYCLE, AND BUS FACILITY ACCOMMODATION IN CONSTRUCTIONS ZONES
APPENDIX C	CITY OF BERKELEY MONUMENT REFERENCE GUIDELINES
APPENDIX D	TWO WEEK LOOK-AHEAD SCHEDULE EXAMPLE

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, June 3, 2025

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 (Pages 15) 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 **FY 2025 DRAINAGE IMPROVEMENTS, SPECIFICATION NOS. 23-11561-C & 25-11677-C**.

Pre-Award Conference: The apparent low bidder will be invited to a pre-award conference scheduled for 11:00 A.M., Tuesday, July 1, 2025 at 1947 Center Street, 4th Floor, Berkeley, CA.

2. Scope of Work: The work for the **FY 2025 DRAINAGE IMPROVEMENTS PROJECT** consists of the following components:

- **WILDCAT CANYON RD DRAINAGE IMPROVEMENTS (BID SCHEDULE A)** - The work to be done consists of, but is not limited to: traffic control; environmental protections; rehabilitation of storm drain culverts by open trench, and cured-in-place pipe lining; installation of pre-cast drainage inlets; installation of custom, cast-in-place drainage inlets and concrete aprons; cast-in-drilled hole piers; slope stabilization and slide repairs with rip rap; erosion mitigation; reinforced concrete retaining walls; minor concrete; removal and disposal of pavement surfaces and base materials; aggregate base; hot-mix asphalt; removal and replacement of guardrail; and asphalt berms.
 - Plans, titled **Wildcat Canyon Road Culvert Improvements, Specification No. 23-11561-C**
 - General and Special Provisions
 - Part C - Technical Provisions for Schedule A
- **FY 2024 STORM DRAIN IMPROVEMENTS (BID SCHEDULE B)** - The work to be done consists of, but is not limited to: traffic control; environmental protections; clearing and grubbing; tree removal and root pruning; protection of underground utilities; removal of existing concrete improvements; construction of concrete curb, gutter, sidewalk, driveways, curb ramps, valley gutter, and through drains; construction and rehabilitation of storm drain pipes by open trench, sliplining, and cured-in-place pipe lining; removal and installation of junction boxes, catch basins, and maintenance holes; removal and disposal of pavement surfaces and base materials; aggregate hot-mix asphalt and concrete pavement.

- Plans, titled **FY 2024 Storm Drain Improvements, Specification No. 25-11677-C**
- General and Special Provisions
- Part D – Technical Provisions for Schedule B
- Part E – Curb Ramp and Cross Drain Locations and Quantities
- Part F – Curb Ramp and Cross Drain Map

3. California Contractor License Classification required:

A General Engineering

4. Location: The work is located at various locations throughout the City of Berkeley.

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 Jonathan Caudillo, Assistant Public Works Engineer, via email at jcaudillo@berkeleyca.gov to be included on the Planholders List. Please include the following in the email subject header: “Spec. 23-11561-C & 25-11677-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., 60,382-N.S., and 70,606-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. This contract will be subject to the Community Workforce Agreement approved by the Berkeley City Council on December 15, 2020. 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.
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. 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.

- g. 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.
 - h. 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.
 - i. 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. See attached BIDDER'S AND CONTRACTOR'S CHECK LIST for additional items to be submitted.
18. In accordance with California State Labor Code, the wage scale is on file with the Engineering Office, or is attached herewith.
19. 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.
20. 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 to Jonathan Caudillo, Assistant Public Works Engineer, via email at jcaudillo@berkeleyca.gov, **no later than 12:00 P.M., Monday, May 26, 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.](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 pm, Tuesday, June 3, 2025

- Bidder's Proposals (**One full set of originals and two additional original signature pages, Page 15, signed in BLUE ink**)
- Addenda (if any)
- Bid Bond – At least 10% of Total Base Bid
- Experience and Financial Qualifications
- Taxpayer Identification Report
- Nuclear Free Zone Disclosure Form
- Oppressive States Compliance Statement
- Sanctuary City Compliance Statement
- Equal Benefits Ordinance Disclosure Form

Items Required at Pre-Award (Non-Discrimination and Contract Compliance) Conference:

11:00 A.M., Tuesday, July 1, 2025

- Memorandum of Understanding
- Work Force Composition Form
- Agreement for Change in Sub-Contractors
- Right to Audit Form
- Certification of Compliance with Equal Benefits Ordinance (Form EBO-1)
- First Source Agreement (Engineer's Estimate less than \$500,000)
- OR**
- Community Workforce Agreement To Be Bound and Hiring Plan (Engineer's Estimate of \$500,000 or greater)
- 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
- Worker's Compensation Insurance - Statutory Amount
- Liability Insurance - \$2,000,000
- Performance Bond - 100% (executed on enclosed Performance Bond form)
- 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)
- Community Workforce – Agreement – Agreements to be Bound and Hiring Plans for any subcontractors added to project:
- Correspondence with unions and minority/female organizations

Items Required Upon Completion of Project:

- Guarantee Bond - 10%
- 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
(continued)

BID SCHEDULE A – WILDCAT CANYON RD DRAINAGE IMPROVEMENTS					
Item No.	Description*	Estimated Quantity	Unit	Unit Cost	Total Cost
A-1.	Mobilization And Demobilization	1	LS	\$	\$
A-2.	Traffic Control	1	LS	\$	\$
A-3.	Construction Info Sign	8	EA	\$	\$
A-4.	Changeable Message Boards	3	EA	\$	\$
A-5.	Pre-Construction Audio/Video Survey	1	LS	\$	\$
A-6.	Water Pollution Control	1	LS	\$	\$
A-7.	Construction Staking	1	LS	\$	\$
A-8.	Pothole and Protect Existing Utilities	1	LS	\$	\$
A-9.	Excavation Safety	1	LS	\$	\$
A-10.	Clearing and Grubbing	1	LS	\$	\$
A-11.	Tree Protection, Tree Pruning & Root Pruning	1	LS	\$	\$
A-12.	Tree Removal 12-Inch Diameter	1	EA	\$	\$
A-13.	Tree Removal 24-Inch Diameter	1	EA	\$	\$
A-14.	Earthwork - Outfalls	164	CY	\$	\$
A-15.	PCC Aprons	29	EA	\$	\$
A-16.	PCC V-Ditch	59	LF	\$	\$
A-17.	PCC 8" Curb	31	LF	\$	\$
A-18.	Asphalt Removal	29	Ton	\$	\$
A-19.	Cold Plane 2-1/4"	120	SF	\$	\$
A-20.	Hot Mix Asphalt (Type A)	26	Ton	\$	\$
A-21.	AC Dike (Type A)	162	LF	\$	\$
A-22.	Remove And Replace Guardrail	140	LF	\$	\$
A-23.	12" HDPE Storm Drain Pipe	367	LF	\$	\$
A-24.	15" HDPE Storm Drain Pipe	140	LF	\$	\$
A-25.	18" HDPE Storm Drain Pipe	302	LF	\$	\$
A-26.	10" CMP Storm Drain Pipe	10	LF	\$	\$
A-27.	12" CMP Storm Drain Pipe	30	LF	\$	\$
A-28.	15" CMP Storm Drain Pipe	32	LF	\$	\$

BIDDER'S PROPOSAL
(continued)

BID SCHEDULE A – WILDCAT CANYON RD DRAINAGE IMPROVEMENTS					
Item No.	Description*	Estimated Quantity	Unit	Unit Cost	Total Cost
A-29.	18" CMP Storm Drain Pipe	96	LF	\$	\$
A-30.	24" CMP Storm Drain Pipe	50	LF	\$	\$
A-31.	Storm Drain Pipe (12" RCP)	21	LF	\$	\$
A-32.	10" Cured-In-Place Pipe Lining	73	LF	\$	\$
A-33.	15" Cured-In-Place Pipe Lining	95	LF	\$	\$
A-34.	Custom Drainage Inlet	14	EA	\$	\$
A-35.	Precast Drainage Inlet (1.5' X 1.5')	5	EA	\$	\$
A-36.	Precast Drainage Inlet (2' X 2')	1	EA	\$	\$
A-37.	Precast Drainage Inlet (2' X 3')	1	EA	\$	\$
A-38.	Precast Drainage Inlet (3' X 3')	3	EA	\$	\$
A-39.	Precast Drainage Inlet (4' X 4')	2	EA	\$	\$
A-40.	Grouted Pipe Encasement	4	EA	\$	\$
A-41.	Modify Existing Maintenance Hole	1	EA	\$	\$
A-42.	Modify Existing Drainage Inlet	1	EA	\$	\$
A-43.	Modify Existing Tailwall	1	EA	\$	\$
A-44.	Abandonment Of Storm Drainage Structures	1	LS	\$	\$
A-45.	Cast In Drilled Hole (CIDH) Piers	60	LF	\$	\$
A-46.	Outfall Dissipater – Class 1 Rsp	30	Ton	\$	\$
A-47.	Outfall Dissipater – Class 3 Rsp W/ Class 1 Rsp And 3/4" Drain Rack	58	Ton	\$	\$
A-48.	Outfall Dissipater – 50% Class 1 Rsp And 50% Class 3 Rsp By Weight	267	Ton	\$	\$
A-49.	Outfall Dissipator – Impermeable Liner	2,020	SF	\$	\$
A-50.	Composite Headwall Structure – 15" Or Smaller Outlet	9	EA	\$	\$
A-51.	Composite Headwall Structure – 18" Or Larger Outlet	6	EA	\$	\$
A-52.	Channel Reinforcement Mat	250	SF	\$	\$
A-53.	Remove & Replace Roadside Sign And Post	1	EA	\$	\$
A-54.	Slide Repair – Earthwork	1	LS	\$	\$

BIDDER'S PROPOSAL
(continued)

BID SCHEDULE A – WILDCAT CANYON RD DRAINAGE IMPROVEMENTS					
Item No.	Description*	Estimated Quantity	Unit	Unit Cost	Total Cost
A-55.	Slide Repair – Class 3 Rsp 2/ Class 1 Rsp And ¾” Drain Rock	450	Ton	\$	\$
A-56.	Slide Repair – Structural Concrete Wall Between Existing Piers	1	LS	\$	\$
A-57.	Hydroseeding	1	LS	\$	\$
A-58.	Monument Replacement	1	EA	\$	\$
A-59.	Monument Preservation	1	LS	\$	\$
The following Bid Item, "Supplemental Work," is an 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. The additional work may be located throughout the City of Berkeley and may be outside the limits of work.					
A-60.	Supplemental Work	1	LS	\$ 150,000	\$ 150,000
TOTAL COST \$					

TOTAL COST OF BID SCHEDULE A IN WORDS AND FIGURES:

_____ Dollars and _____ Cents (\$ _____).

BIDDER'S PROPOSAL
(continued)

BID SCHEDULE B – FY 2024 STORM DRAIN IMPROVEMENTS					
Item No.	Description*	Estimated Quantity	Unit	Unit Cost	Total Cost
B-1.	Mobilization	1	LS	\$	\$
B-2.	Traffic Control and Construction Area Signs	1	LS	\$	\$
B-3.	Changeable Message Boards	2	EA	\$	\$
B-4.	Pre-Construction Audio/Video Survey	1	LS	\$	\$
B-5.	Storm Water Pollution Controls	1	LS	\$	\$
B-6.	Excavation Safety	1	LS	\$	\$
B-7.	Clearing, Grubbing, Tree Protection, and Root Pruning	1	LS	\$	\$
B-8.	Tree Removal – 24" to 36" Diameter	1	EA	\$	\$
B-9.	Stump Grinding – 0" to 18" Depth (Revocable)**	48	DIA-IN	\$	\$
B-10.	Stump Grinding – 18" to 36" Depth (Revocable)**	48	DIA-IN	\$	\$
B-11.	Pothole and Protect Existing Utilities	1	LS	\$	\$
B-12.	Monument Preservation	1	LS	\$	\$
B-13.	Remove PCC Sidewalk	2,339	SF	\$	\$
B-14.	Remove PCC Driveway	456	SF	\$	\$
B-15.	Remove PCC Curb & Gutter	437	LF	\$	\$
B-16.	Remove Storm Drain Catch Basin	1	EA	\$	\$
B-17.	PCC Sidewalk	2,356	SF	\$	\$
B-18.	PCC Driveway	456	SF	\$	\$
B-19.	PCC Curb & Gutter (1' Gutter)	77	LF	\$	\$
B-20.	PCC Curb & Gutter (2' Gutter)	563	LF	\$	\$
B-21.	PCC Vertical Curb	3	LF	\$	\$
B-22.	PCC Retaining Curb	7	LF	\$	\$
B-23.	PCC Valley Gutter	324	SF	\$	\$
B-24.	PCC 1' Transition from Flush Curb to 6" Curb	1	EA	\$	\$
B-25.	PCC 2' Transition from 6" Curb to Flush Curb	1	EA	\$	\$
B-26.	PCC 4' Transition to Rolled Curb	1	EA	\$	\$
B-27.	PCC Through Drain	12	LF	\$	\$
B-28.	PCC Through Drain Transitions	2	EA	\$	\$

BIDDER'S PROPOSAL
(continued)

BID SCHEDULE B – FY 2024 STORM DRAIN IMPROVEMENTS					
Item No.	Description*	Estimated Quantity	Unit	Unit Cost	Total Cost
B-29.	PCC Miscellaneous	10	SF	\$	\$
B-30.	Curb Ramp Case A	13	EA	\$	\$
B-31.	Curb Ramp Case G	2	EA	\$	\$
B-32.	Remove Cross Drain Pipe Under Sidewalk/Curb Ramp	154	LF	\$	\$
B-33.	Remove Cross Drain Pipe Under Street	481	LF	\$	\$
B-34.	Install Cross Drain Pipe Under Sidewalk/Curb Ramp	160	LF	\$	\$
B-35.	Install Cross Drain Pipe Under Street	481	LF	\$	\$
B-36.	Remove Sidewalk Cross Drain Checker Plate	28	EA	\$	\$
B-37.	Install Sidewalk Cross Drain Checker Plate	28	EA	\$	\$
B-38.	Remove Junction Box	8	EA	\$	\$
B-39.	Install Junction Box	8	EA	\$	\$
B-40.	Remove and Replace 8-inch HMA	2,250	SF	\$	\$
B-41.	Storm Drain Maintenance Hole	5	EA	\$	\$
B-42.	Storm Drain Maintenance Hole (Shallow)	1	EA	\$	\$
B-43.	Storm Drain Standard Catch Basin	1	EA	\$	\$
B-44.	Storm Drain Catch Basin 18" x 24"	1	EA	\$	\$
B-45.	Storm Drain Catch Basin 24" x 24"	1	EA	\$	\$
B-46.	Low Profile Drain Inlet	1	EA	\$	\$
B-47.	6" HDPE (Type S)	15	LF	\$	\$
B-48.	12" HDPE (Type S)	24	LF	\$	\$
B-49.	15" HDPE (Type S)	11	LF	\$	\$
B-50.	12" HDPE (ASTM F714, SDR-17)	324	LF	\$	\$
B-51.	Twin 8" HDPE (ASTM F714, SDR-11)	20	LF	\$	\$
B-52.	6" HDPE Perforated Pipe	17	LF	\$	\$
B-53.	Slipline Existing 18" CMP with 16" HDPE SDR-21	258	LF	\$	\$
B-54.	Flush & Investigate Existing 12" CMP Storm Drain Pipe	1	LS	\$	\$
B-55.	Abandon Existing Storm Drain Infrastructure	1	LS	\$	\$

BIDDER'S PROPOSAL
(continued)

BID SCHEDULE B – FY 2024 STORM DRAIN IMPROVEMENTS					
Item No.	Description*	Estimated Quantity	Unit	Unit Cost	Total Cost
B-56.	Energy Dissipation Assembly	1	LS	\$	\$
B-57.	Post-Construction Closed Circuit Television (CCTV) Inspection	661	LF	\$	\$
B-58.	Adjust Water Meter to Finished Grade	2	EA	\$	\$
B-59.	Adjust Sewer Maintenance Hole to Finished Grade	2	EA	\$	\$
B-60.	Adjust Sewer Cleanout to Finished Grade	4	EA	\$	\$
B-61.	Relocate Sewer Cleanout	1	EA	\$	\$
B-62.	Relocate Private Bubble Up Drain	1	EA	\$	\$
B-63.	Replace Existing Junction Box Metal Lid	1	EA	\$	\$
B-64.	Bolt Down Maintenance Hole Frame and Cover	1	EA	\$	\$
B-65.	Remove and Replace Wood Wall	1	LS	\$	\$
B-66.	Monument Replacement	2	EA	\$	\$
B-67.	Painted Curb	280	LF	\$	\$
B-68.	12" Cured-In-Place Pipe (CIPP) Liner (Revocable)**	149	LF	\$	\$
The following Bid Item, "Supplemental Work," is an 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. The additional work may be located throughout the City of Berkeley and may be outside the limits of work.					
B-69.	Supplemental Work	1	LS	\$ 100,000	\$ 100,000
TOTAL COST \$					

TOTAL COST OF BID SCHEDULE B IN WORDS AND FIGURES:

_____ Dollars and _____ Cents (\$ _____).

BIDDER'S PROPOSAL
(continued)

BASIS OF AWARD OF CONTRACT:

Determination of the lowest responsible bidder will be based on the SUM OF TOTAL COST OF BID SCHEDULE A and TOTAL COST OF BID SCHEDULE B.

The City reserve the right to award all, none, or any combination of the various bid items.

**SUM OF TOTAL COST OF BID SCHEDULE A + TOTAL COST OF BID SCHEDULE B
IN WORDS AND 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.
- ** Revocable Bid Items: The City reserves the right to delete these bid items prior to award of contract or during construction at its own discretion. No compensation will be allowed the Contractor by reason of such omission.

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 contract documents 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 One Hundred (100) 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 and Twenty (120) WORKING days which include an additional Twenty (20) WORKING days for project closeout beyond the above construction time.

Company: _____ Address: _____

By: _____

Title: _____ Phone: _____

Taxpayer I.D. No.: _____ Date: _____
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 Base Bid in the amount of _____

_____ (\$ _____), in accordance with the terms and conditions set forth in Specification Nos. 23-11561-C & 25-11677-C. The Contractor shall complete all work specified in the contract documents in accordance with the plans and specifications within One Hundred and Twenty (120) 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: **FY 2025 DRAINAGE IMPROVEMENTS, SPECIFICATION NOS. 23-11561-C & 25-11677-C**

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.:

FY 2025 DRAINAGE IMPROVEMENTS, SPECIFICATION NOS. 23-11561-C & 25-11677-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 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 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).

"Commodities" includes, but is not limited to, any tangible supplies, goods, vehicles, machinery or equipment.

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

The commodities which vendor proposes to supply to the City are not manufactured, assembled, extracted, harvested or refined in any Oppressive State. Vendor 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 buys, sells, leases or distributes Commodities in the conduct of business with, or 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 this 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: _____

Signed: _____ 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.

Signed: _____ Date: _____

Contract description/Specification No.: **FY 2025 DRAINAGE IMPROVEMENTS, SPECIFICATION NOS. 23-11561-C & 25-11677-C**

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:

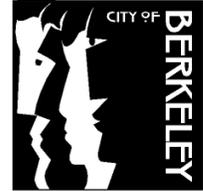
_____ Date: _____

Business Entity:

Specification Name & No.:

FY 2025 DRAINAGE IMPROVEMENTS, SPECIFICATION NOS. 23-11561-C & 25-11677-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 Jonathan Caudillo, 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 Obligees to be in default under the Contract, the Obligees having performed Obligees' 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 Obligees elects, upon determination by the Obligees and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and Obligees, 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 Obligees to principal under the contract and amendments, thereto, less the amount properly paid by Obligees 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 Obligees named herein or the heirs, executors, administrators or successors of Obligees.

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
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: _____

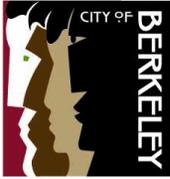
Signature: _____

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: **FY 2025 DRAINAGE IMPROVEMENTS, SPECIFICATION NOS. 23-11561-C & 25-11677-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:

Nathan Dahl, Employment Programs Administrator
2180 Milvia Street, 2nd floor
Berkeley, CA 94704

PART A
GENERAL PROVISIONS

SPECIFICATIONS

FOR

FY 2025 DRAINAGE IMPROVEMENTS

SPECIFICATION NOS. 23-11561-C & 25-11677-C

PART A – GENERAL PROVISIONS

SECTION 1 - DEFINITION OF TERMS1

SECTION 2 - PROPOSAL REQUIREMENTS AND CONDITIONS.....3

SECTION 3 - AWARD AND EXECUTION OF CONTRACT5

SECTION 4 - SCOPE OF WORK.....6

SECTION 5 - CONTROL OF THE WORK14

SECTION 6 - CONTROL OF MATERIAL.....19

SECTION 7 - LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC20

SECTION 8 - PROSECUTION AND PROGRESS.....27

SECTION 9 - MEASUREMENT AND PAYMENT.....31

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 latest revised "Standard Specifications for Public Works Construction" by the Southern California Chapter, American Public Works Association, Part 2 and Part 3, construction materials and construction methods respectively, as amended herein.
- 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 Assistant City Manager for Public Works of the City of Berkeley or his designated representatives.
- 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

FY 25 DRAINAGE IMPROVEMENTS

SPECIFICATION NOS. 23-11561-C & 25-11677-C

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 if it is awarded to him.

101.15 Plans

-- The official plans, profiles, cross-sections, details working drawings, and mental 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 General Provisions, Detailed and Technical Specifications, Special Provisions, Standard Details, the Contract Documents, 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.

FY 25 DRAINAGE IMPROVEMENTS

SPECIFICATION NOS. 23-11561-C & 25-11677-C

- 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, or 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.

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 Examination 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, or 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 his 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 samples 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, or to have the work performed by City employees, or to abandon the work, if in the judgement 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, the total cost of which 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) 227-2600 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 SBC 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 same 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 falsework 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 PM and before the end of each day's work, 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 endeavor, whenever possible, to restrict the use of water to control dust for his convenience in order to conserve water during drought situations or mandated rationing required by the Water Utility Company. Whenever flushing of streets or any other work is necessary, the Contractor shall provide filter materials at the catch basin to retain any debris and dirt flowing into the City's drainage system.

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 causing any obstruction or blocks access to the neighboring properties and/or dangerously placed without proper barricades and lights and/or backfill stockpiles or debris washing away into the street gutter and catch basins.

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 cleanout 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 pre-construction conditions. The costs of the pre-construction 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 Subsection 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 Subsection 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 with 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, 1985 Edition.
8. Standard Specifications for Public Works Construction, 1985 Edition, Part 2 Construction Materials and Part 3 - Construction Methods.
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 manhole 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 48 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, lost, 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 forthwith 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
 - 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. 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 1979 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 hereinbefore 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 program of affirmative action he proposed to undertake 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 that 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 nonresponsive 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 nonresponsive 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 authorized 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 these specifications 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 if 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 flagpersons, 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:

- o Safe pedestrian passage shall be provided at all times on the project site.
- o All open trenches will be covered with appropriately thick steel plates in accordance with page 25 of the "Work Area Traffic Control Handbook" published by Building News, Inc. (213) 870-9871. Safe passage for all vehicles shall be maintained at all times in both directions.
- o 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.

- o 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: 981-5900
 Fire: 981-5900
 School:644-6182
 Streets & Utilities: 981-6620
 A.C. Transit: (where applicable) 891-4777

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 of the City 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 nonexecution 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 willfully or careless destruction, he 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 48 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 manhole rings and covers, catch basin gratings, angle iron, pipe railings, valve boxes and lamphole 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 nonresponsive 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 30 calendar days after the award of the contract 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, 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 50 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 re-let 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 Agency. The date of initiation of this guarantee period shall be the date of the filing of the notice of completion by the Agency. 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 Agency; 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 Agency may do the work and the Contractor and his surety shall be liable to the Agency 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 Agency 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 Agency, 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 said section.

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 Government Code Section 4590 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 Government Code Section 4590. Contractor agrees that any escrow agreement under this contract provision must substantially conform to the form escrow agreement in Government Code 4590. 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.

PART B
SPECIAL PROVISIONS

SPECIFICATIONS

FOR

FY 2025 DRAINAGE IMPROVEMENTS

SPECIFICATION NOS. 23-11561-C & 25-11677-C

PART B – SPECIAL PROVISIONS

1. Standard Specifications.....1

2. Locations of Work1

3. Sequence of Work & First Order of Business1

4. Nature of Work2

5. Contractor's License: State SB #223.....2

6. State Senate Bill SB #8542

7. Performance Bond3

8. Labor and Material Bond.....3

9. Oppressive States Compliance Statement.....3

10. Nuclear Free Zone Disclosure Form.....4

11. Equal Benefits Ordinance Disclosure Form4

12. Sanctuary City Compliance Statement4

13. Community Workforce Agreement5

14. Insurance Certificate5

15. Progress Schedule5

16. Holidays6

17. Obstructions7

18. Weight Certificates8

19. Public Relations Requirements8

20. Lines and Grades.....9

21. Revocable Bid Items9

22. Construction on Hill Streets.....9

23. Overage Permits.....10

24. Stormwater Pollution Control.....10

25. Creek Protection.....12

26. Tree and Root Protection and Root Pruning.....13

27. Conformance to Plans and Specifications.....14

28. Bond Riders for Additional Work during Construction14

29. Retained Funds.....14

30. Mobilization and Demobilization14

31. Existing Utilities15

32. General Conditions Compensation17

FY 25 DRAINAGE IMPROVEMENTS

SPECIFICATION NOS. 23-11561-C & 25-11677-C

33. Termination of Contract for Convenience17

34. Dewatering.....17

35. East Bay Regional Park District18

36. Pavement Striping and Markings.....18

37. Concrete Pavement21

SPECIAL PROVISIONS

SPECIAL PROVISIONS

1. Standard Specifications

The work embraced herein shall be done in accordance with the project plans, the City's General Provisions, these Special Provisions, and the State of California Department of Transportation (Caltrans) 2018 Standard Specifications and Standard Plans, as revised April 15, 2022, herein, called the "Standard Specifications" and "Standard Plans" respectively, unless otherwise noted. In case of conflict between the Standard Specifications and Plans and the Special Provisions and/or General Provisions, the Special and/or General Provisions, shall prevail. It is the intent of this contract to obtain a finished, workmanlike job, complete in place.

2. Locations of Work

The work described in Bid Schedule A, Wildcat Canyon Road Drainage Improvements is located at 24 discrete locations through the full length of Wildcat Canyon Road within the City of Berkeley limits.

The work described in Bid Schedule B, FY 2024 Storm Drain Improvements is located at various locations throughout the City of Berkeley. The exact limits of work are shown on the project plans and the table included in Part E of these specifications.

3. Sequence of Work & First Order of Business

Wildcat Canyon Road Drainage Improvements (Bid Schedule A)

Work shall be implemented in 3 phases corresponding to the sections below.

- Phase 1
Wildcat Canyon Road between Grizzly Peak and Sunset Lane
(Sites SW-1 to SW-9)
- Phase 2
Wildcat Canyon Road between Sunset Lane and Park Hills Rd.
(Sites SW-10 to SW-16)
- Phase 3
Wildcat Canyon Road between Park Hills Road and Anza View Road
(Sites SW-17 to SW-24)

Phase 1 and Phase 2 work shall be completed first and the contractor shall only be permitted to work and implement traffic control on a single phase at a time.

FY 2024 Storm Drain Improvements (Bid Schedule B)

Work on Site 8 shall be completed before work can begin on any other sites.

Furthermore, Contractor shall comply with the following:

1. The Contractor shall always be actively be working on an individual site. Work

on a site shall not be dormant for more than 2 days on standard working days.

2. The work shall be organized so that special inspections can be coordinated. For instance, concrete and rebar inspections shall occur on the same days when possible.
3. The Contractor shall provide adequate labor and equipment to advance construction on the sites. Crews and equipment should not be re-directed to sites multiple times per day.

4. **Nature of Work**

Scope of Work: Wildcat Canyon Road Drainage Improvements (Bid Schedule A):

The work to be done consists of, but is not limited to: traffic control; environmental protections; rehabilitation of storm drain culverts by open trench and cured-in-place pipe lining; installation of pre-cast drainage inlets; installation of custom, cast-in-place drainage inlets and concrete aprons; cast-in-drilled hole piers; slope stabilization and slide repairs with rip rap; erosion mitigation; reinforced concrete retaining walls; minor concrete; removal and disposal of pavement surfaces and base materials; aggregate base; hot-mix asphalt; removal and replacement of guardrail; and asphalt berms.

Scope of Work: FY 2024 Storm Drain Improvements (Bid Schedule B):

The work to be done consists of, but is not limited to: traffic control; environmental protections; clearing and grubbing; tree removal and root pruning; protection of underground utilities; removal of existing concrete improvements; construction of concrete curb, gutter, sidewalk, driveways, curb ramps, valley gutter, and through drains; construction and rehabilitation of storm drain pipes by open trench, sliplining, and cured-in-place pipe lining; removal and installation of junction boxes, catch basins, and maintenance holes; removal and disposal of pavement surfaces and base materials; aggregate hot-mix asphalt and concrete pavement.

5. **Contractor's License: State SB #223**

State Senate Bill No. 223, signed into law by the Governor on September 27, 1985, requires all public entities to specify the type of Contractor's license which a prime Contractor must possess at the time a contract is awarded. In order to be considered for award of this contract, the prime Contractor must possess one of the following Contractor's licenses:

A - General Engineering Contractor

6. **State Senate Bill SB #854**

Per State Senate Bill No. 854, signed into law by the Governor on June 20, 2014:

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. Performance Bond

The required 100% performance bond must be submitted on the attached performance bond form provided by the City. The form must be properly executed by the Contractor and a duly authorized representative of a surety company licensed to offer surety bonds in the State of California. All signatures must be properly authorized and notarized.

8. Labor and Material Bond

The required Labor and Material Bond in the sum of not less than 100% of the amount of the contract may be submitted on your Surety Company's standard certificate with original signatures.

9. Oppressive States Compliance Statement

“Oppressive State” means: **Tibet Autonomous Region and the Provinces of Aho, Kham, and U-Tsang; and Burma (Myanmar).**

Resolution No. 59,853-N.S., 60,382-N.S., and 70,606-N.S. allow the City to refrain from entering into personal services contracts with certain entities that maintain business relationships with morally repugnant regimes.

A Contractor 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.

The Contractor must further understand and agree that Contractor’s failure to comply with the Resolution shall constitute a 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.

In compliance with this Section, the Contractor must submit the attached Oppressive States Compliance Statement along with the bid.

10. Nuclear Free Zone Disclosure Form

Contractor agrees to comply with the provisions of Nuclear Free Berkeley Ordinance No. 5784-N.S. as described in the Nuclear Free Zone Disclosure Form included herein. Contractor must submit said Disclosure Form along with the bid.

11. Equal Benefits Ordinance Disclosure Form

Contractor agrees to comply with the provisions of Berkeley Equal Benefits Ordinance No. 6623-N.S. Contractor must submit both the Equal Benefits Ordinance Disclosure Form and the Certification of Compliance with Equal Benefits Ordinance (Form EBO-1) included herein along with the bid prior to execution of the contract.

12. Sanctuary City Compliance Statement

Contractor agrees to comply with the provisions of Berkeley Sanctuary City Contracting Ordinance No. 7650-N.S., Berkeley Municipal Code Chapter 13.105. In accordance with this Chapter, Contractor agrees not to provide the U.S. Immigration and Customs Enforcement Division of the United States Department of Homeland Security with any Data Broker or Extreme Vetting Services as defined herein:

- 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.

In compliance with this Section, the Contractor must submit the attached Sanctuary City Compliance Statement along with the bid.

13. Community Workforce Agreement

Contractor and any subcontractor at any tier shall comply with the City's Community Workforce Agreement included as an Appendix to these Specifications.

Under the Community Workforce Agreement, Contractor must sign and comply with the Agreement to be Bound prior to execution of the Contract. Subcontractors at any tier must also sign and comply with an Agreement to be Bound prior to execution of their respective subcontracts. The signing of an Agreement to be Bound is a condition precedent to entering into any contract for this project.

14. Insurance Certificate

The required insurance certificate must be accompanied by the General and Automobile Liability Endorsement contained herein. The endorsement must be properly executed by a duly authorized representative of the insurance company. All signatures must be original in blue ink.

15. Progress Schedule

A detailed progress schedule will be required for this contract. The progress schedule shall be submitted prior to commencement of work **and updated weekly**. The Contractor shall provide a graphic description, in the form of a bar chart that outlines the items of work to be completed, and provide weekly updated written documentation that the work is proceeding on schedule and will be completed within the specified time frame. This schedule will assist the City in advanced notification of adjacent residents and businesses. Therefore, the schedule and any changes to the schedule must be approved by the City and adhered to by the Contractor.

In addition, the contractor shall provide a detailed Two-Week Look-Ahead schedule that must include the scheduled tasks over the next two weeks and a snapshot of completed tasks from the previous week. An example of a Two-Week Look-Ahead schedule is included as an Appendix to these Specifications.

Contractor shall coordinate operations with City's Zero Waste pickup schedules for refuse, recycling and plant debris.

Due to fire danger that exists during a Red Flag Warning event, the City is implementing restrictions for work within City of Berkeley Fire Zones 2 and 3. Restrictions may include but are not limited to prohibition of work deemed a potential ignition risk or work that may restrict full use of the street in the event of an evacuation or impede access by emergency services. Red Flag days requiring a work stoppage shall be treated as inclement weather delays per Section 801.8 of the General Provisions.

A map of City Fire Zones can be viewed at the website below.

<https://www.arcgis.com/home/webmap/viewer.html?webmap=c83555684940467b9c103c12eb3ac3bf&extent=-122.3095,37.851,-122.2084,37.8925>.

Contractors are responsible to stay informed of the Warnings during the High Fire Season. Information regarding Red Flag Warning alerts is available at AC Alert – Alameda County. View notifications or sign up for AC Alert texts at <https://member.everbridge.net/453003085612570/notif>

16. Holidays

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

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.

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 May 19 (Malcom X Day)
- Monday or Friday nearest March 31 (Cesar Chavez Day)
- Monday or Friday nearest June 19 (Juneteenth)
- Second Monday in October (Indigenous People’s Day)
- Day After Thanksgiving Day

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.

Designated streets and their limits are listed below:

Telegraph Ave.	Bancroft Way	To	South City Limits
Bancroft Way	Piedmont Ave.	To	Shattuck Ave.
Durant Ave.	Shattuck Ave.	To	Bowditch St.
College Ave.	Webster St.	To	Russell St.
Sacramento St.	University Ave.	To	South City Limits
Shattuck Ave.	Rose St.	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 St.	To	Martin Luther King Jr.
Kittredge St.	Fulton St.	To	Milvia St.
Vine St.	Walnut St.	To	Shattuck Ave.
Solano Ave.	The Alameda	To	West City Limits

Allston Way	Fulton St.	To	Milvia St.
Addison St.	Fulton St.	To	Milvia St.
Fourth St.	Addison St.	To	Virginia St.
Euclid Ave.	Hearst Ave.	To	Ridge Rd.
Oxford/Fulton St.	Hearst Ave.	To	Dwight Way

Designated highway routes are:

- Ashby Avenue
- Tunnel Road
- San Pablo Avenue

Due to budgetary constraints, City of Berkeley offices will be closed approximately one day every month (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. Dates of Reduced Service Days are to be confirmed and will be provided to the contractor as necessary.

17. Obstructions

Attention is directed to the possible existence of abandoned underground utilities, manholes, monuments, or any other facilities which may exist within the limits of work. The Contractor shall exercise due caution in performing his work so as not to damage said facilities.

Attention is also directed to the presence of overhead and underground utilities in the construction area. The Contractor shall exercise due caution in performing his work so as not to damage said utilities.

The work specified shall be so conducted as to permit the utility companies to maintain their services without interruption.

Utilities and underground pipelines are to remain in place and shall be worked around and protected from damage or interruption of service. All costs caused by delays or extra work associated with maintaining utilities and pipelines shall be borne by the Contractor.

The Contractor shall determine the unknown location of main and service utilities in advance 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 the Contractor's responsibility to make corrections if conflicts arise among utilities. If conflict arises, the Contractor shall inform the Engineer in advance before any correction is made.

Where various utilities are to be relocated or set to grade by the utility companies, the

Contractor shall notify the various utility companies well in advance so as not to impede this work. Contractor shall mark locations of such utilities and maintain said markings for a period of 30 days after final paving.

18. Weight Certificates

A duplicate certified ticket, giving weight of material in the truck and the date and time of weighing, shall be given to the Engineer on the job as soon as the truck arrives at the site. All trucks used for hauling hot mix asphalt, rock, or other materials used in the project, shall be weighed empty daily at such times as directed by the Engineer.

19. Public Relations Requirements

Public Relations 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 residents at all times. Any City employee or CITY 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 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 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 Relations 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.
- 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 pre-construction 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.

20. Lines and Grades

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.

21. 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.

22. Construction on Hill Streets

When streets to be rehabilitated are located in the hill areas, lightweight trucks, loads, or equipment, (e.g., 10 wheelers) shall be required in order to deter subgrade damage (pumping or distortion) and due to accessibility issues on narrow, winding roads.

23. Overage Permits

Contractor is hereby notified that permits must be obtained for transporting overheight, overwidth, and/or overweight loads within the limits of the City of Berkeley. These permits which may be obtained from the Engineering Counter of the City's Permit Service Center **are enforced** by the Berkeley Police Department. **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.**

24. Stormwater Pollution Control

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.

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.

Water Pollution Control Plan (WPCP) and Coordinator. The Contractor shall prepare, submit for favorable review by the City, and implement a WPCP which shall contain at a minimum the items included in this section. The WPCP 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 WPCP shall identify each point of entry and show how each entry point will be protected. The WPCP 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 WPCP 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 WPCP. 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 WPCP 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 WPCP and finding at City's sole discretion that the WPCP meets the intent and goals of the project.

In addition, the Contractor shall observe the following guidelines:

- Paving during wet weather:
 - a. No paving while it is raining.
 - b. No paving of the top lift of asphalt concrete (AC) on any day that experiences ¼" of rain in a twenty-four period
 - c. 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/her designee.
- Store materials as required under Section 6-1.01, "Control of Materials, General," of the Standard Specifications.
- Cover inlets and manholes 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.
- Place drip pans or absorbent materials under paving equipment when not in use.
- During wet weather store paving equipment indoors or cover with tarp or other waterproof covering.
- Sweep site daily to prevent sand, gravel or excess asphalt from entering or being transported by rain into the storm drain system.
- Keep ample supplies of drip pans or absorbent materials on-site.
- If paving involves Portland cement concrete, refer to Concrete Waste Management Section 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:

- Store all materials in waterproof containers or under cover away from drain inlets or drainage areas.
- Avoid mixing excess amounts of Portland cement materials. Dispose of any excess materials properly.
- 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:

Locate washout area at least fifty (50) feet from storm drains, open ditches or other water bodies, preferably in a dirt area. Confine run-off from this area by constructing a temporary pit or bermed area large enough for the liquid and solid waste.

- 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.
- 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.
- Collect and return sweepings from exposed aggregate concrete to a stockpile or dispose of the waste in trash container.

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 WPCP, and all BMPs (including BMP operation and maintenance) that are planned for the construction site(s).

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.

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 WPCP, 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. City reserves the right to deduct monies from payments due 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.

25. **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 starting 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.

26. 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. The Contractor shall replace trees determined to be damaged as a result of contractor's operations.

In the event that root pruning would compromise the structural stability of the tree, the tree will be removed. Trees may also be removed based on their condition or location. Tree removal will be decided by the Urban Forestry Representative or Certified Arborist provided by the City.

For tree/root protection, root pruning, tree removal, and stump grinding as required, the Contractor shall adhere to the Technical Provisions set forth for the applicable bid item.

Damages

The Contractor shall make every effort to avoid damaging any City-owned property, including roots, trunk, and canopy of City maintained trees. If damages to trees are found to be as part of contractor negligence, the Contractor shall be responsible for damages as follows:

- a) The contractor shall provide full reparation to include: removal of irreparable tree and replacement with approved species. The Contractor shall remove and replace the approved tree under the supervision of the City's Urban Forestry Representative, and/or,
- b) The contractor shall reimburse City for City expenses incurred in the related reparation work, consisting of but not limited to, site inspections, corrective pruning, tree removal, and tree replacement.
- c) Damages will be graded 1 (minor) through 5 (replacement), as determined by the City, with monetary values noted below.

Grade	Description	Value of Damages
1	Minor Damage	\$500
2	Avoidable Damage to a Major Limb or Root	\$750
3	Moderate Damage	\$1,000
4	Severe Damage, but Recovery Expected	\$1,500
5	Replacement	\$5,000

In lieu of direct payment from the contractor, the City reserves the right to deduct the cost as determined herein from monies due or to become due the contractor.

27. Conformance to Plans and Specifications

The Contractor’s work shall conform to these specifications and project plans.

Upon notification of the Engineer, the Contractor shall correct any deficiencies within 72 hours. The City may request the City crews or contract with another Contractor to perform the necessary work and repairs if the deficiencies have not been corrected after the 72-hour notification. The Contractor shall pay the cost of the work performed by the City crews or other contractor plus an additional seventy percent (70%) surcharge by deduction from payment due on the contract.

28. 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 20%.

29. Retained Funds

Pursuant to 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.

30. Mobilization and Demobilization

Mobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies and incidentals to the project site; for the establishment of all offices, buildings and other facilities necessary for work on the project; and for all other work and operations which must be

performed or costs incurred prior to beginning work on the various contract items on the project site.

The Contractor shall insure that adequate existing sanitation facilities are available or the Contractor shall provide and maintain adequate sanitation facilities. All wastes and refuse from sanitary facilities provided by the Contractor’s operations shall be disposed of away from the site in accordance with all laws and regulations pertaining thereto.

Demobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the removal of personnel, equipment, supplies and incidentals from the project site and for all other work and operations which must be performed or costs incurred after completion of the various contract items on the project site.

31. Existing Utilities

It is not the intent of the plans to show the exact location of existing or relocated utilities, and the Engineer assumes no responsibility therefor. Whenever any such utilities are indicated thereon, the Contractor shall be responsible for verifying their actual location and depth in the field. The Contractor shall notify Underground Service Alert at (800) 227-2600 prior to excavation.

It shall be the Contractor’s responsibility to coordinate with the utility agencies for relocation or adjustment of utilities. Utilities to notify include but are not limited to:

PG&E	(800) 743-5000	Notify 5 working days in advance
AT&T	(510) 864-8255	Notify 2 weeks in advance
East Bay Municipal Utility District (EBMUD)	(510) 986-7733	Notify 2 weeks in advance and 48 hours.
Comcast	(925) 424-0152	Notify 2 weeks in advance

Contact EBMUD before working in the vicinity of all EBMUD facilities.

Where excavations are performed in the vicinity of underground utility mains and/or services the Contractor shall, as necessary, perform initial exploratory excavations to determine their exact depth and location. Extreme care shall be exercised to avoid damage, and it will be the Contractor’s responsibility to have repairs made to existing facilities at his/her expense in the event of damage.

Styrofoam shall be placed between new storm drain and existing utilities where vertical clearance between utility crossings is less than six (6) inches.

Attention is directed to the possible existence of underground facilities not indicated on the plans or in the Special Provisions and to the possibility that underground main or

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

If the Contractor discovers underground main or trunk lines not indicated on the plans or in the Special Provisions, the Contractor shall immediately give the Engineer and the Utility Company written notification of the existence of those facilities. The main or trunk lines shall be located and protected from damage as directed by the Engineer, and the cost of that work will be paid for as extra work as provided in Section 4-1.05 of the Standard Specifications. The Contractor shall, if directed by the Engineer, repair any damage that may occur to the main or trunk lines. The cost of that repair work, not due to the failure of the Contractor to exercise reasonable care, will be paid for as extra work as provided in Section 4-1.05 of the Standard Specifications. Damage due to the Contractor's failure to exercise reasonable care shall be repaired at the Contractor's cost and expense.

Where it is determined by the Engineer that the rearrangement of an underground facility is essential in order to accommodate the improvements and the plans and specifications do not provide that the facility is to be rearranged, the Engineer shall provide for the rearrangement of the facility by other forces or the rearrangement shall be performed by the Contractor and will be paid for as extra work as provided in Section 4-1.05 of the Standard Specifications.

When ordered by the Engineer in writing, the Contractor shall rearrange any utility or other non-highway facility necessary to be rearranged as a part of the improvements, and that work will be paid for as extra work as provided in Section 4-1.05 of the Standard Specifications.

Should the Contractor desire to have any rearrangement made in any utility facility, or other improvement, for the Contractor's convenience in order to facilitate the Contractor's construction operations, which rearrangement is in addition to, or different from, the rearrangements indicated on the plans or in the Special Provisions, the Contractor shall make whatever arrangements are necessary with the owners of the utility or other non-highway facility for the rearrangement and bear all expenses in connection therewith. The Contractor shall immediately notify the Engineer of any delays to the Contractor's operations as a direct result of underground main or trunk line facilities which were not indicated on the plans or in the Special Provisions or were located in a position substantially different from that indicated on the plans or in the Special Provisions, or as a direct result of utility or other non-highway facilities not being rearranged as herein provided (other than delays in connection with rearrangements made to facilitate the Contractor's construction operations or delays due to a strike or labor dispute). These delays shall be considered within the meaning of Section 8-1.07, "Delays," of the Standard Specifications, and compensation for the delay will be determined in

conformance with the provisions in Section 8 of the Standard Specifications. The Contractor shall be entitled to no other compensation for that delay.

Any delays to the Contractor's operations as a direct result of utility or other non-highway facilities not being rearranged, due to a strike or labor dispute, shall entitle the Contractor to an extension of time as provided in Section 8-1.07B, "Time Adjustments," of the Standard Specifications. The Contractor shall be entitled to no other compensation for that delay.

32. General Conditions Compensation

Full compensation for complying with the General Conditions shall be considered as included in the contract prices paid for the various items of work and no separate payment will be made therefor.

33. 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:
 - a. 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,
 - b. 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.

34. Dewatering

Dewatering may be required for trenching, drilling, and other work requiring excavation. Contractor shall implement a groundwater management plan which includes the following:

1. Keep all excavations, including drilled shaft foundations, reasonably free from water during construction.
2. Disposal of water shall not damage property or create a public nuisance.
3. Have on hand pump equipment and machinery in good working condition for emergencies and workmen available for its operation.
4. Dewatering systems shall operate continuously until foundations are poured or trenches are backfilled.
5. Groundwater shall be controlled to prevent softening of the bottom of excavations, or formation of “quick” conditions.
6. Dewatering systems shall not remove natural soils.
7. Control surface runoff to prevent entry or collection of water excavations.
8. Release of groundwater shall be controlled to prevent disturbance of the natural foundation soils or compact fill.
9. There shall be no discharge of turbid water on site.
10. Discharge or disposal of water shall be controlled to prevent erosion along roadway embankments. Erosion control BMPs such as rip rap, wattles, shall be implemented for this purpose.
11. Dewatering effluent shall not be discharged into City sanitary sewer system without prior approval from Engineer.

Full compensation for dewatering shall be considered as included in the contract prices paid for the various items of work and no separate payment will be made therefor.

35. East Bay Regional Park District

Work included in **Wildcat Canyon Road Drainage Improvements (Bid Schedule A)** requires construction adjacent to and within East Bay Regional Park District (EBRPD) property. The City is in the process of acquiring right-of-entry into EBRPD property for equipment as needed to complete work for site SW-1, SW-3, SW-6, SW-10, and SW-18. For all other sites, the Contractor shall assume equipment access is limited to City right-of-way which is approximately 20 feet from the edge of roadway.

36. Pavement Striping and Markings

Contractor shall submit shop drawings and diagrams, indicating stripe width of roadway divider stripes, style and size of letters for pavement marking designation, configuration and dimensions of arrows and any other traffic control markings on pavement.

Contractor shall submit shop drawings and diagrams indicating dimensions of traffic channelizers including mounting equipment.

Contractor shall submit evidence or affidavit which certifies that paint to be used complies with latest CARB/VOC regulations.

A certificate of compliance shall be provided by the Contractor to the City that all materials used for pavement marking and legends conform to the Specifications.

MATERIALS

Traffic stripes and pavement markings shall be installed per Section 84 of the Standard Specifications and these Specifications.

All striping and pavement markings shall be Thermoplastic and conform to either State Specifications 8020-41G-19 or 8010-41G-21. State Specifications for thermoplastic material and glass beads may be obtained from the Transportation Laboratory, P.O. Box 19128, Sacramento, California, 95819- (916) 739-2400. Thermoplastic material for all pavement markings shall be applied at a minimum thickness of 0.070-inch.

Traffic channelizer posts shall conform to CA MUTCD Section 3H.01. Each post shall have a minimum 2.25-inch diameter, be 42-inches tall and constructed of white PVC / polyethylene. Posts must have a minimum 3-inch by 12-inch retroreflective surface. Each post shall be equipped with an internal zinc-coated spring and mounted onto a rigid base designed for bolt/screw-in installation into asphalt. The posts shall be designed to withstand 60 mph impact while maintaining 360-degrees of flexibility.

EXECUTION

1. All existing pavement markers and thermoplastic stripes and legends within the roadway reconstruction shall be completely removed immediately prior to hot mix asphalt paving. Markers, stripes, or legends which are removed shall be replaced with temporary markers, stripes and legends prior to opening the roadway to vehicular or pedestrian traffic.
2. All traffic striping, pavement markings (legend), and pavement markers removed prior to excavation or grinding shall be replaced except as modified in the Plans or as directed by the Engineer. Prior to replacement, the Contractor shall layout all striping patterns and marking locations by cat tracking or other suitable means for review and approval by the Engineer. Any striping and/or markings installed by the Contractor that the Engineer has not pre-approved, and that the Engineer determines are installed improperly or in the wrong location, shall be removed and replaced to the satisfaction of the Engineer at the Contractor's sole expense.
3. Surfaces which are to receive markings shall be thoroughly cleaned, free from loose materials and dry. Such areas shall be prepared by the Contractor to the satisfaction of the Engineer.
4. Any damage to existing or newly placed traffic striping due to the failure of the Contractor to protect the work, and correction of errors, shall be repaired by the Contractor at no additional cost.
5. All new traffic stripes and pavement markings shall meet the following requirements for applications with enhanced wet night visibility:

Quality Control and Assurance

1. Within 14 days of applying a thermoplastic traffic stripe or pavement marking with enhanced wet night visibility, the retroreflectivity must be a minimum of 700 millicandelas per square meter per lux for white stripes and markings and 500 millicandelas per square meter per lux for yellow stripes and markings. Test the retroreflectivity under ASTM E 1710. Have a reflectometer as described in ASTM E 1710 at the job site for making these measurements.
2. Thermoplastic traffic stripes and pavement markings with enhanced wet night visibility must consist of a single uniform layer of thermoplastic and 2 layers of glass beads as follows:
 - a. The first layer of glass beads must be on the Authorized Material List under high-performance retroreflective glass beads for use in thermoplastic traffic stripes and pavement markings. The color of the glass beads must match the color of the stripe or marking to which they are being applied.
 - b. The 2nd layer of glass beads must comply with AASHTO M 247, Type 2.
3. Both types of glass beads must be surface treated for use with thermoplastic under the bead manufacturer's instructions.

Construction

1. Use a ribbon extrusion or screed type applicator to apply a thermoplastic traffic stripe.
2. Operate the striping machine at a speed of 8 mph or slower during the application of thermoplastic traffic stripe and glass beads.
3. Apply a thermoplastic traffic stripe at a rate of at least 0.38 pounds per foot of 4-inch wide solid stripe. The applied thermoplastic traffic stripe must be at least 0.090 inch thick.
4. Apply a thermoplastic pavement marking at a rate of at least 1.06 pounds per square foot. The applied thermoplastic pavement marking must be at least 0.100 inch thick.
5. Apply a thermoplastic traffic stripe and both types of glass beads in a single pass. Apply the thermoplastic 1st, followed immediately by consecutive applications of high-performance glass beads and then AASHTO M 247, Type 2 glass beads. Use 2 separate applicator guns for the glass beads, 1 applicator gun for each type of glass bead.
6. Contractor may apply glass beads by hand methods on pavement markings.
7. Distribute all glass beads uniformly on traffic stripes and pavement markings. Apply high-performance glass beads at a rate of at least 6 pounds per 100 square feet of stripe or marking. Apply AASHTO M 247, Type 2 glass beads at a rate of at least 8 pounds per 100 square feet of stripe or marking. The combined weight of

the 2 types of glass beads must be greater than 14 pounds per 100 square feet of stripe or marking.

PAYMENT

Full compensation for pavement striping and markings shall be considered as included in the contract prices paid for the various items of work and no separate payment will be made therefor.

37. Concrete Pavement

Concrete pavement, materials, and procedures shall conform to the provisions in Section 40, "Concrete Pavement," and Section 90, "Concrete" of the Standard Specifications (Caltrans 2010), the City of Berkeley Standard Specifications, and these Contract Specifications.

Concrete pavement shall be unreinforced jointed plain concrete pavement with a compressive strength of 4,000 psi after 28 days and flexural strength of 400 psi after 28 days. The aggregate shall be 1-inch x No. 4. The contractor shall submit the proposed mix design for approval.

Materials

Cement: Meet the requirements of Caltrans Section 90-1.02B(2), including Type II and Type V cement (AASHTO M 85) and blended hydraulic cement Type IP (MS), Type IS (MS), Type IT (MS), and Type IL (MS) (AASHTO M 240). Type III cement is allowable for use with high early strength patch materials.

Supplementary Cementitious Materials (SCM):

- Fly Ash: Comply with Caltrans Section 90-1.02B(3).
- UFFA: Comply with Caltrans Section 90-1.02B(3).
- Ground Granulated Blast Furnace Slag (GGBFS): Comply with Caltrans Section 90-1.02B(3).
- Natural Pozzolan: Comply with Caltrans Section 90-1.02B(3).

Fine Aggregate for Concrete:

- Meet the requirements of Caltrans Section 90-1.02C(3).
- Comply with the following gradation:

Sieve Size	Percent Passing	
	Operating Range	Contract
3/8"	100	100
No. 4	95 to 100	93 to 100
No. 8	65 to 95	61 to 99
No. 16	X ± 10	X ± 13
No. 30	X ± 9	X ± 12
No. 50	X ± 6	X ± 9
No. 100	2 to 12	1 to 15
No. 200	0 to 8	0 to 10
Caltrans 90-1.02C(4)(c)		

NOTE: "X" is the gradation that is proposed to furnish for the

The Engineer may authorize a change in gradation, subject to materials available locally at the time of construction.

Coarse Aggregate for Concrete:

- Gravel, crushed gravel, crushed rock, reclaimed aggregates, or a combination of these meet the requirements of Caltrans Section 90-1.02C(3).
- Comply with the following gradation:

Sieve size	Percentage passing primary aggregate nominal sizes							
	1-1/2 inch x 3/4		1 inch x No. 4		1/2 inch x No. 4		3/8 inch x No. 8	
	Opera ting	Contra ct	Opera ting	Contra ct	Opera ting	Contra ct	Opera ting	Contra ct
2 inch	100	100	--	--	--	--	--	--
1-1/2 inch	88 to100	85 to100	100	100	--	--	--	--
1 inch	X ±	X ± 25	88	86	--	--	--	--
3/4	0 to17	0-20	X ±	X ± 22	100	100	--	--
1/2	--	--	--	--	82to	80-100	100	100
3/8	0 to7	0 to 9	X ±	X ± 22	X ±	X ± 22	X ±	X ± 20
No. 4	--	--	0 to	0 to 18	0 to	0 to 18	0 to	0 to 28
No. 8	--	--	0 to 6	0 to 7	0 to 6	0 to 7	0 to 6	0 to 7

NOTE: "X" is the gradation that is proposed to furnish for the specific sieve size under

The Engineer may authorize a change in gradation, subject to materials available locally at the time of construction.

Aggregate Grading:

Combined aggregate grading should meet that specified in Caltrans Section 90-1.02C(4), although Engineer may waive, in writing, the specifications for gradation if, in the Engineer's opinion, the proposed gradation is satisfactory to complete the necessary work.

Water Requirements:

Comply with Caltrans Section 90-1.02D. Potable water obtained from a municipal supply suitable for drinking may be accepted without testing.

Admixtures:

Meet the requirements for the liquid admixtures shown below. Other admixtures may be used subject to the approval of the Engineer.

- Air Entrainment Admixture: Comply with Caltrans Section 90-1.02E(3).
- Retarding and Water Reducing Admixtures: Comply with Caltrans Section 90-1.02E (2).
- Accelerating admixtures: Comply with Caltrans Section 90-1.02E (2).

Bars:

Comply with Caltrans Section 40-1.02F for dowel bars. All bars must be epoxy coated.

Liquid Curing Compound:

Comply with Caltrans Section 90-1.03B(3).

Covering:

- Burlap: Comply with Caltrans Section 90-1.03B(2).
- Plastic Film: Comply with Caltrans Section 90-1.03B(2).
- Insulating Cover: Comply with Caltrans Section 90-1.03B(2).

Concrete Mixes**Mix Design Classes:**

- Standard Strength Patching: Use a concrete mix that achieves a 28-day compressive strength of 4,000 psi. It can be opened to traffic when it achieves 3,000 psi.
- High Early Strength Patching: Use a traditional portland cement concrete mixture that achieves a 2-day compressive strength of 3,000 psi and a 7-day compressive strength of 4,000 psi.
Rapid strength concrete may be used as an alternative that meets the requirements of Caltrans Section 90-3.
- Partial Depth Patching: Use a coarse aggregate in concrete mixture meeting AASHTO M 80 No. 67 stone requirements. Meet same strength requirements as Class Standard Strength or Class High Early Strength Patching. Compressive strength of 1,800 psi is required at the time of opening.
If rapid strength gain is required, fast-setting grout meeting the requirements of Caltrans Section 41-4.01 can be used.
- Ensure compatibility of all material combinations. If the concrete materials are not producing a workable concrete mixture, a change in the material may be required. Changes will be at no additional cost to the Contracting Authority.

Consistency and Workability:

- Slump:

Use an amount of mixing water that will produce workable concrete of uniform consistency. Unless specifically modified by the Engineer, ensure slump, measured according to ASTM C 143, is no less than 1/2 inch or no more than 2 1/2 inches for machine finish and no less than 1/2 inch and no more than 4 inches for hand finish.

Suppose it is not possible to produce concrete having the required consistency without exceeding the maximum allowable water to cement ratio specified. In that case, the cement content may be increased, or a water-reducing admixture may be added. Obtain the Engineer's approval. Do not exceed the maximum water to cement ratio. Additional cement or water reducer will be added with no additional cost to the Contracting Authority.

The basic absolute volume of water per unit volume of concrete is based on average conditions. If material characteristics require that the total quantity of water used to secure the required consistency reduces the batch yield (computed on the basis of absolute volumes of the batch quantities used) by more than 2.0%, the Engineer may adjust the proportions to correct the yield. This adjustment will not be a basis for the adjustment of the contract unit price.

- Air Content:

Use of an approved air-entraining agent is not required. If an air-entraining admixture is used, a target air content, plus or minus 1.5%, must be maintained as measured on-site as determined by California Test 504.

Equipment**Batching and Mixing Equipment:**

General:

- Weighing and Proportioning Equipment: Comply with Caltrans Section 90-1.02F.
- Mixing Equipment: Comply with Caltrans 90-1.02G.
- Material Bins: Involves any structure in which materials are stored. Each part of any bin, including foundations and supports, must be adequate to withstand any stress to which it might be subjected to while in use.

Batching:

- Ensure the batching plant is calibrated and approved. Provide copy of current calibrations and approvals.
- Coordinate the batch plant operation and batch trucks with the paving operation in order to ensure a steady supply of materials.
- Operate the batch plant and trucks to minimize dust, noise, or truck nuisances.

Mixing:

- **Construction or Stationary Mixer:**
Ensure the concrete is uniform in composition and consistency. If this condition is not produced because of the size of the batch, the size of the batch may be reduced or the mixing time increased, or both, until this result is obtained. If non-uniform, corrective action must be taken.
Ensure the methods of delivering and handling the concrete are such that objectionable segregation or damage to the concrete will not occur, and they will facilitate placing with a minimum of handling.

Ready Mixed Concrete:

- Ensure the concrete is uniform in composition and consistency. If non-uniform, concrete producers must take corrective action.
Ready mixed concrete is defined as concrete proportioned in a central plant and mixed in a stationary mixer for transportation in trucks without agitation, proportioned at a central plant, and only partially mixed in a stationary mixer for transportation and finish mixing in a transit mixer, or proportioned at a central plant, and then mixed in a transit mixer prior to or during transit.
When necessary to add additional mixing water at the site of placement, mix the batch at least an additional 30 revolutions of the drum at mixing speed.
Ensure each vehicle in which concrete will be delivered is capable of discharging concrete having a slump not over 2 inches at an overall rate for its entire load of not less than 1.25 cubic yards per minute. Ensure the concrete is delivered at a rate sufficient to maintain a sustained rate of progress of not less than 100 feet per hour for the width and depth of pavement to be placed.
- **All Methods:** Identify each truck load by a plant charge ticket showing plant name, contractor, project data, quantity, class, time batched, and water added at site.

Concrete Placement Equipment:**Consolidating and Finishing Equipment:**

- Use a paving machine that meets all of the following:
 - Designed for the specific purpose of placing, consolidating, and finishing concrete pavement.
 - Develops vertical edges on the pavement.
 - Self-propelled and equipped with a means for spreading the concrete to a uniform depth before it enters the throat.
 - Vibrates the concrete to the full width and depth being placed in a single passage. Use vibrating tubes or arms working in the concrete or a vibrating pan operating on the surface of the concrete.
 - Produces a surface reasonably free of voids and tears.
 - When the paver is operated on previously placed concrete, prevent damage to the pavement surface.
 - For slip-form pavers, use a paver equipped with automatic horizontal and vertical grade controls.

- Hand methods utilizing air screeds and vibrating screeds may be used for short pavement runs, cul-de-sacs, driveways, patches, and some intersections.

Vibrators for Machine Paving:

- Consolidate the full width and depth of concrete requiring a finishing machine with a single pass of an approved internal or surface vibrator. Operate internal vibrators within a frequency range of 4,000 to 8,000 vibrations per minute. The Engineer may authorize the minimum vibration frequency to be lowered to 3,500 vibrations per minute for particular paving sections, such as superelevations. Operate surface vibrators within a frequency range of 3,500 to 6,000 vibrations per minute.
- Avoid operating vibrators to cause a separation of the mix ingredients, either a downward displacement of large aggregate particles or an accumulation of laitance on the surface of the concrete. When the forward motion of the paver is reduced, vibrator frequency may need to be reduced to avoid separation of the mix.
- If a vibrator fails to operate within the specifications, repair or change the vibrator before the paving begins:
 - The following day, or
 - The same day if the continuous paving that day is stopped at a header or at the end of a session.
- If two adjacent vibrators fail to operate within the specifications, stop the paving operation and repair or replace the vibrators.
- Stop vibrators whenever the forward motion of the paver is stopped.
- Set the internal vibrator penetration depth into the concrete pavement to a mid slab or as deep as possible while passing above reinforcing steel. Provide an operating position locking device so that no part of the vibrating unit can be lowered to the extent that it will come in contact with reinforcing steel or tie bars while paving.

Do not exceed the manufacturer's recommendations for vibrator horizontal spacing. Do not exceed 16 inches from center to center.
- Mount the longitudinal axis of the vibrator body approximately parallel to the direction of paving. Tilt the trailing end of each vibrator downward to an approximate slope of 15 degrees below horizontal.
- Use vibrators that meet or exceed the following specifications at the manufacturer's design frequency of 10,000 vpm:
 - Amplitude (peak to peak) 0.070 inches.
 - Centrifugal force 1,200 pounds.

Vibrators for Hand Methods: Use a vibration rate between 3,500 to 6,000 vibrations per minute and use an amplitude sufficient to be perceptible on the surface of the concrete more than 12 inches from the vibrating unit.

Hand Finishing Equipment: Provide all finishing tools necessary for proper finishing of the concrete, including straightedges for checking and correcting finished concrete surfaces.

Forms:

- Rigid Forms: Steel, a minimum thickness of 5 gages, height at least equal to design thickness of pavement with base width at least 6 inches.
 - Minimum section length of 10 feet, joint connections designed to allow horizontal and vertical adjustment with locking device to hold abutting sections firmly in alignment.
 - Bracing, support, and staking must prevent deflection or movement of forms.
- Flexible Forms: Use steel or wood flexible forms for curves with a radius less than 100 feet.
 - Bracing, support, and staking must prevent deflection or movement of forms.
 - Ensure that forms used to shape the back of curbs at returns have height at least equal to design thickness of pavement and curb height.
 - Forms must be free from scale and surface irregularities.

Curing Equipment: Use a pressure sprayer capable of applying a continuous uniform film of curing compound. Use equipment with a shield if wind conditions do not allow proper coverage

Concrete Saws: Use power-operated concrete saws capable of cutting hardened concrete neatly.

Joint Sealing Equipment: Use equipment capable of cleaning the joint and heating and installing sealant in joints according to the manufacturer's recommendations.

Pavement Construction

Removal of Pavement: Comply with various Sections included herein.

Final Subgrade/Subbase Preparation:

1. General: Restore subgrade and subbase in accordance with Section YYYY 3.2B.
2. Maintenance of Subgrade or Subbase: Maintain the completed subgrade or subbase during subsequent construction activities.

Surface Fixture Adjustment:

1. Adjust maintenance hole frames and other fixtures within area to be paved to conform to the finished surface.
2. Clean outside of fixture to a depth of pavement before concrete placement.
3. Construct boxouts where allowed for later adjustment of fixtures.

Setting of Forms: When forms are used, meet the following requirements.

1. Ensure forms have sufficient strength to support paving operations being used.
2. Set the base of forms at or below subgrade elevation with the top of forms at pavement surface elevation. With Engineer approval, extra height forms may

- be used to shape the back of integral curb and edge of pavement; set base at or below subgrade elevation with top of form at the top of curb elevation.
3. Place and secure forms to required grade and alignment. Do not vary the top face of the form from a true plane by more than 1/8 inch in 10 feet, and do not vary the vertical face from a true plane by more than 1/4 inch in 10 feet.
 4. If the soil supporting the forms is softened by rain or standing water so that the forms are inadequately supported, or if voids occur under the forms, remove forms. Rework subgrade to proper elevation and density, and reinstall forms.
 5. Ensure forms are free of latent concrete and coated with a release agent before concrete is placed.

Bar and Reinforcement Placement: Ensure bars are clean, straight, free from distortion and rust, and are firmly secured in position as specified in the contract documents. Place all bars in approved storage to prevent damage; do not distribute along with the work site except as needed to avoid delay in paving.

1. **Tie Bars:**
 - a. Place bars prior to vibration. Bars may be supported by approved chairs or may be placed in position by a machine or method approved by the Engineer.
 - b. Use approved continuous bolsters with runners to support reinforcement for bridge approach sections. Place the supports transversely across the approach and space them longitudinally no greater than 4 feet. For double reinforced approach sections, the top layer of reinforcing may be chaired off the bottom layer of reinforcing using approved continuous high chairs with runners, provided they are positioned directly above the continuous bolsters with runners supporting the bottom layer of reinforcing. Hold epoxy-coated reinforcing steel in place with epoxy or plastic-coated bar supports and epoxy or plastic-coated tie wires.
2. **Dowel Bar Assemblies:**
 - a. When dowel bar assemblies are required in the contract documents, accurately place these assemblies as shown. To prevent their movement during subsequent concrete paving operations, securely stake or fasten to the base to line and grade.
 - b. Do not use assemblies that are damaged prior to placement. If assemblies are damaged after placement, replace them prior to paving. Ensure horizontal and vertical alignment of the load transfer bars does not exceed 1/4 inch from parallel to line and grade. Place each assembly, so the bars are in a horizontal plane at $T/2 \pm 1/2$ inch.
 - c. Check the placement of each assembly and the position of the bars within the assembly using a suitable template or other device approved by the Engineer. If the assembly is found to be placed outside of the above tolerances, correct the placement.
 - d. Cutting the tie wires of the load transfer assemblies is optional.
3. **Bar Mats for Reinforced Pavement:**
 - a. When reinforced pavement is specified, assemble bar mats accordingly and firmly fasten together at all bar intersections.

- b. Place, secure, latch and tie bar mats for a continuous mat as specified in the contract documents. Displacement during concrete placement operations is not allowed.
 - c. Use chairs to ensure proper placement of bar mats.
4. Tie Bars and Dowel Bars in Existing Pavement:
- a. When anchoring in existing concrete, use a grout system according to the manufacturer's instructions. Obtain the Engineer's approval for the grout system.
 - b. For horizontal installations, use either a pressure injection system with mechanical proportioning and mixing or use encapsulated chemical anchors. Install as follows:
 - 1) Ensure drilled holes to receive the grout match the dimensions and spacing specified in the contract documents. When not specified in the contract documents, the maximum nominal diameter of the hole must be 1/8 inch larger than the outside diameter of the dowel or bar or as recommended by the manufacturer. Drill holes for tie bars and dowel bars into the face of the existing pavement at the midpoint. To ensure proper horizontal alignment, do not allow any hole misalignments to exceed 1/4 inch in the vertical or horizontal plane. Clean the hole with compressed air immediately prior to placing the grout.
 - 2) Use a polymer grout to secure the dowels in the existing pavement. Inject the grout into the rear of the hole with pressure. Use sufficient grout so that when the bar to be grouted is placed in position, excess grout will be forced out the front of the hole. Rotate the bar during the insertion process to ensure complete coating with the grouting material. Hand proportioning and mixing is not allowed.
 - 3) If using grout with approved encapsulated anchors, install according to the manufacturer's recommendations.
 - 4) Use horizontal installation procedures for vertical or angled installations; however, pourable grouts may be used. Pourable grouts must be mechanically mixed.

Concrete Pavement Placement:

- 1. Use the paving machine for all uniform width pavements 8 1/2 feet or more in width and 250 feet or more in length, unless alternate methods are approved by the Engineer. Screeds may be used on short pavement runs up to 250 feet.
- 2. Place, consolidate, and finish the concrete to the full depth and width conforming to the specified crown and cross-section in a single operation.
- 3. Keep a uniform pile of concrete in front of the paving machine, up to a maximum of 6 to 8 inches above the design surface elevation. Distribute and spread the concrete as soon as place. A mechanical concrete spreader may be used.
- 4. Deposit the concrete upon the in-place bars keeping segregation to a minimum.
- 5. Use shovels, not rakes, to do the necessary hand spreading and spading.
- 6. Do not allow the edges of pavement, including all longitudinal construction

joints, to deviate from the line shown on the plans by more than 1/2 inch at any point.

7. If the paving machine operates on adjacent pavement, protect the pavement from damage.
8. When placing by hand methods, consolidate the concrete by using vibrating units. Use a definite system or pattern in the operation of the vibrator so the full width of concrete in each linear foot of lane will receive adequate and uniform consolidation. The system and methods of vibrating are subject to the approval of the Engineer. Do not use vibrating equipment as a tool for moving concrete laterally.

Integral Curbs: Integral curbs are placed with the pavement in a single paving machine operation; however, hand methods may be allowed for radius, returns, and sections of curb and gutter 100 feet or less in length or in other special sections where mechanical equipment cannot be used.

1. Pave, edge, protect, saw, and cure curb in the same manner as pavement.
2. Finish curb as rapidly as finishing operations on pavement permit. The maximum distance behind the paving machine is 100 feet.
3. Complete final finish on curbs by hand methods, including the use of a 6-foot straightedge.
4. Check surfaces of curb and gutter with 10-foot straightedge; correct variations greater than 1/8 inch.
5. For drop curb at driveways and where sidewalks intersect streets, use forms to shape the backs of such curbs.
6. When using hand methods for building curb, the following additional requirements will apply:
 - a. Remove free water, latency, dust, leaves, or other foreign matter from the slab prior to placing concrete for the curb.
 - b. Use freshly mixed concrete; do not store concrete in receptacles at the side of pavement for use in the curb later; do not use concrete requiring retempering.
 - c. Consolidate curb concrete to obtain an adequate bond with the pavement slab and to eliminate honeycomb in the curb. Avoid disturbing the alignment of forms or the gutter flow line.

Finishing:

1. **Grade and Crown:** Promptly after the concrete has been placed and vibrated, strike off the surface to the true section by the screed. Finish the surface true to crown and grade.
2. **Watering the Surface:** The practice of lubricating the pavement surface by sprinkling water by spray, brush, or other methods to afford greater ease in finishing operation is not allowed.

3. Floats: Finish the surface with wood or magnesium floats; finish from both sides simultaneously if the pavement is placed to full width with one pass of paving machine.
4. Straightedging:
 - a. After the longitudinal floating has been completed and the excess water has been removed, and while the concrete is still plastic, test the pavement surface for trueness.
 - b. Immediately fill any depressions found with freshly mixed concrete, struck off, consolidate, and refinish.
 - c. Check surface longitudinally while concrete is still plastic; correct any surface deviations greater than 1/8 inch in 10 feet.
5. Surface Treatment:
 - a. Broom Surface Treatment: Unless otherwise specified, texture the finished surface with a broom treatment.
 - 1) Pull the broom over the finished surface to produce a tight, uniform, textured surface and round the edges in a workmanlike manner.
 - 2) Remove the broom from the pavement surface at regular intervals and clean with water to remove accumulated concrete from the bristles in order to maintain a consistent finished texture.
6. Edge Finish: Before the concrete has taken its initial set, finish all edges of the pavement with a 1/8 inch radius edging tool.

Surface Curing:

1. Apply liquid curing compound in a fine spray to form a continuous, uniform film on the horizontal surface, and vertical edges of pavement, curbs and back of curbs immediately after surface moisture has disappeared, but no later than 30 minutes after finishing. With the approval of the Engineer, the timing of cure application may be adjusted due to varying weather conditions and concrete mix properties to ensure acceptable macrotexture is achieved.
 - a. Use a white pigment liquid curing compound for concrete not receiving an asphalt overlay. When specified in the contract documents, use a linseed oil solution.
 - b. Use a dark-colored curing compound for concrete receiving an asphalt overlay.
2. Apply the compound with a power sprayer; rate of application not less than 15 square yards per gallon (0.067 gallons per square yard); do not dilute compound. For concrete receiving an asphalt overlay, use a minimum rate for the dark-colored cure of 12.5 square yards per gallon (0.08 gallon per square yards).
3. Ensure liquid curing materials are well agitated in the supply drum or tank immediately before the transfer to the sprayer. Keep curing materials well agitated during application.
4. Hand-operated sprayers may be used for small and irregular areas.
5. If forms are used, apply to pavement edges and back of curbs within 30 minutes after forms are removed.
6. If, due to other operations, the coating is damaged within 72 hours after being applied, immediately re-coat the affected areas. Coating of the sawed surface

with curing compound will not be allowed on joints that are to be sealed. When pavement is opened to traffic prior to 72 hours after application of the curing coating, a re-coating will not be required.

Construction of Joints:

1. General:
 - a. Construct joints of the type, dimensions, and at the locations specified in the contract documents.
 - b. Place longitudinal joints coincident with or parallel to the pavement centerline.
 - c. Place all transverse joints at right angles to the centerline and extend the full width of the pavement.
 - d. Place all joints perpendicular to the finished grade of the pavement and do not allow the alignment across the joint to vary from a straight line by more than 1 inch.
 - e. Exercise care in placing, consolidating, and finishing the concrete at all joints.
2. Saw Joints:
 - a. Mark joint locations with a string line before sawing.
 - b. Begin transverse joint sawing as soon as the concrete has hardened sufficiently to allow sawing without raveling or moving of aggregate. Saw joints before uncontrolled cracking take place.
 - c. Saw all joints in a single cutting operation for a specific joint. Make saw cuts true to line and to the dimensions specified in the contract documents.
 - d. Discontinue sawing a joint if a crack develops ahead of the saw.
 - e. Saw longitudinal joints within 24 hours of the concrete being placed.
 - f. If necessary, continue the sawing operations both day and night.
 - g. The concrete must be capable of supporting the sawing operations to allow the use of an early green concrete saw.
 - h. Repair or replace pavement with uncontrolled or random cracking at no additional cost to the Contracting Authority. Use repair methods approved by the Engineer. Repair or replace at the direction of the Engineer.
 - i. Use wet sawing for dust control when specified in the contract documents.
 - j. Where boxouts occur in the pavement, construct joints as shown on plans.
3. Construction Joints:
 - a. Place longitudinal and transverse construction joints where specified in the contract documents, at boxouts, and at headers.
 - b. Locate and place forms for boxouts on grade prior to paving as shown on plans
 - c. If concrete placement is delayed for more than 30 minutes or at the end of each day, construct a Days Work (DW) or a Rigid Tie (RT) transverse construction joint within 5 feet of a planned transverse contraction joint.
 - d. Finish the edges of the pavement at construction joints with a 1/8 inch

- radius edging tool.
4. Expansion Joints:
 - a. Install expansion joints as specified in the contract documents.
 - b. Prevent movement of or damage to joint assembly when placing concrete; set joint material low enough to clear the finished machine.
 - c. Construct a double-width expansion joint in the curb over an expansion joint in the pavement. The backside of the joint must be clear of concrete.
 - d. Align the expansion joint straight and true. After the mechanical finishing equipment has passed over the joint, check the joint for movement. If movement in excess of 1/2 inch has occurred, immediately correct the installation to its intended position.
 - e. If joint fillers are assembled in sections, or if joints as a whole are constructed in sections, do not allow offsets between adjacent fillers.
 - f. Where more than one section is used in a joint, securely lace or clip the sections together.
 - g. Supplemental vibration equipment is required for proper consolidation of the concrete.
 - h. After the surface finishing has been completed, finish the edge of the joint with a 1/8 inch edging tool.

Form Removal:

1. Timing:
 - a. Remove forms after the initial set of the concrete has taken place.
 - b. Remove stakes and forms with care to prevent cracking, spalling, or overstressing concrete. If damage does occur, repairs will be made as required by the Engineer.
2. Honeycomb Repair:
 - a. When the forms are removed, fill honeycombs with mortar composed of 1 part cement and two parts fine aggregate by weight.
 - b. If the honeycombing is to the degree and nature that it is considered by the Engineer as defective work, remove and replace at no additional cost to the Contracting Authority.
3. Paving Protection: In the area adjacent to the curbs and pavement edge, immediately place backfill after the forms are removed. Construct dams or other protection to ensure that no saturation or erosion of the subgrade under or near the pavement occurs. This may include check dams, pumping, etc.

Protection

Rain Protection:

- a. Have materials available, near the worksite, for proper protection of the edges and surface of the concrete. The protective material may consist of sheets of burlap or plastic film. Also, have planks or other material with suitable stakes that can be used as temporary forms available.
- b. If an initial set has not occurred, take every precaution necessary to protect the surface texture of the concrete.

c. If so determined by the Engineer, failure to adequately protect concrete will constitute cause for removal and replacement of defective pavement.

Night Conditions: Perform all finishing and covering operations prior to darkness (half an hour after sunset). Do not commence construction until half an hour before sunrise. Do not place or finish concrete under artificial light unless approved by the Engineer.

Protection from Traffic:

1. General:
 - a. Protect the new patches from traffic, both public and that caused by the Contractor's own employees and agents, at no additional cost to the Contracting Authority. This includes the erection and maintenance of warning signs, lights, barricades, watchmen to direct traffic, and pavement bridges or crossovers.
 - b. Do not operate equipment with metal tracks, metal bucket blades, or metal motor patrol blades directly on new patches. Do not unload soil or granular materials, including base rock, for storage and future reloading directly onto new patches.
2. End of Day's Run:
 - a. At the end of each day's run and at all side streets, erect and maintain safety barriers and fencing as necessary to protect the patches from damage.
 - b. Install safety fences within 1 hour of the completion of finishing and curing operations. Leave fences in place and maintained until the concrete has attained the minimum strength or age.
 - c. Intermediate safety fences may be required to open the pavement for access to a side road, side street, or entrance.
3. Repair of Damages: At the discretion of the Engineer, and at no additional cost to the Contracting Authority, replace any part of the patch damaged by traffic or other causes occurring prior to final acceptance of the pavement.

Transportation Restrictions

Do not use concrete transported with continuous agitation when the cement has been in contact with the aggregate more than 90 minutes before it is placed. With the approval of the Engineer, an approved retarding admixture may be used.

Do not use concrete transported without continuous agitation if the period elapsed between the time the concrete is mixed and the time it is placed greater than 30 minutes. With the approval of the Engineer, an approved retarding admixture may be used, and the mixed-to-placed time may be extended.

Ensure the methods of delivering and handling the concrete are such that objectionable segregation or damage to the concrete will not occur, and concrete placing will occur with a minimum of rehandling.

Thoroughly clean the truck compartment in which concrete is transported and flush with

water to ensure that hardened concrete will not accumulate. Discharge the flushing water from the truck compartment to the designated discharge point before it is charged with the next batch.

PAYMENT

Full compensation for concrete pavement shall be considered as included in the contract prices paid for the various items of work and no separate payment will be made therefor.

PART C
TECHNICAL PROVISIONS

SPECIFICATIONS

FOR

SCHEDULE A
WILDCAT CANYON ROAD DRAINAGE IMPROVEMENTS

SPECIFICATION NO. 23-11561-C

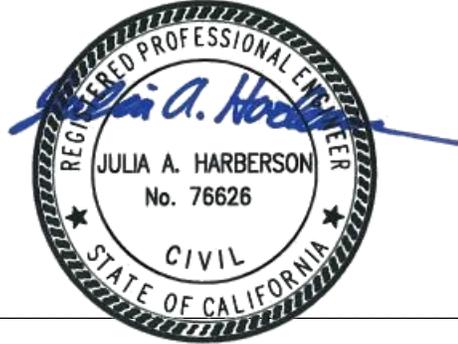
**PART C - TECHNICAL PROVISIONS FOR WILDCAT CANYON ROAD DRAINAGE
ENHANCEMENT PROJECT**

<u>BID ITEM NO. A-1 – MOBILIZATION AND DEMOBILIZATION.....</u>	<u>1</u>
<u>BID ITEM NO. A-2 – TRAFFIC CONTROL.....</u>	<u>3</u>
<u>BID ITEM NO. A-3 – CONSTRUCTION INFO SIGN.....</u>	<u>10</u>
<u>BID ITEM NO. A-4 – CHANGEABLE MESSAGE BOARDS.....</u>	<u>12</u>
<u>BID ITEM NO. A-5 – PRE-CONSTRUCTION AUDIO/VIDEO SURVEY</u>	<u>12</u>
<u>BID ITEM NO. A-6 – WATER POLLUTION CONTROL.....</u>	<u>13</u>
<u>BID ITEM NO. A-7 – CONSTRUCTION STAKING.....</u>	<u>14</u>
<u>BID ITEM NO. A-8 – POT HOLE AND PROTECT EX. UTILITIES.....</u>	<u>15</u>
<u>BID ITEM NO. A-9 – EXCAVATION SAFETY</u>	<u>18</u>
<u>BID ITEM NO. A-10 – CLEARING AND GRUBBING</u>	<u>20</u>
<u>BID ITEM NO. A-11 – TREE PROTECTION, TREE PRUNING & ROOT PRUNING</u>	<u>20</u>
<u>BID ITEM NO. A-12 – TREE REMOVAL 12-INCH DIAMETER.....</u>	<u>20</u>
<u>BID ITEM NO. A-13 – TREE REMOVAL 24-INCH DIAMETER.....</u>	<u>20</u>
<u>BID ITEM NO. A-14 – EARTHWORK - OUTFALLS.....</u>	<u>29</u>
<u>BID ITEM NO. A-15 – PCC APRONS</u>	<u>32</u>
<u>BID ITEM NO. A-16 – PCC V-DITCH</u>	<u>32</u>
<u>BID ITEM NO. A-17 – PCC 8” CURB</u>	<u>32</u>
<u>BID ITEM NO. A-18 – ASPHALT REMOVAL</u>	<u>36</u>
<u>BID ITEM NO. A-19 – COLD PLANE 2-1/4”</u>	<u>38</u>
<u>BID ITEM NO. A-20 – HOT MIX ASPHALT (TYPE A).....</u>	<u>40</u>
<u>BID ITEM NO. A-21 – AC DIKE (TYPE A).....</u>	<u>44</u>
<u>BID ITEM NO. A-22 – REMOVE AND REPLACE GUARDRAIL.....</u>	<u>46</u>
<u>BID ITEM NO. A-23 – 12” HDPE STORM DRAIN PIPE</u>	<u>47</u>
<u>BID ITEM NO. A-24 – 15” HDPE STORM DRAIN PIPE</u>	<u>47</u>
<u>BID ITEM NO. A-25 – 18” HDPE STORM DRAIN PIPE</u>	<u>47</u>
<u>BID ITEM NO. A-26 – 10” CMP STORM DRAIN PIPE</u>	<u>50</u>
<u>BID ITEM NO. A-27 – 12” CMP STORM DRAIN PIPE</u>	<u>50</u>
<u>BID ITEM NO. A-28 – 15” CMP STORM DRAIN PIPE</u>	<u>50</u>
<u>BID ITEM NO. A-29 – 18” CMP STORM DRAIN PIPE</u>	<u>50</u>
<u>BID ITEM NO. A-30 – 24” CMP STORM DRAIN PIPE</u>	<u>50</u>
<u>BID ITEM NO. A-31 – STORM DRAIN PIPE (12” RCP).....</u>	<u>53</u>
<u>BID ITEM NO. A-32 – 10” CURED-IN-PLACE PIPE LINING.....</u>	<u>55</u>
<u>BID ITEM NO. A-33 – 15” CURED-IN-PLACE PIPE LINING</u>	<u>55</u>
<u>BID ITEM NO. A-34 – CUSTOM DRAINAGE INLET</u>	<u>61</u>

<u>BID ITEM NO. A-35 – PRECAST DRAINAGE INLET (1.5’ x 1.5’)</u>	61
<u>BID ITEM NO. A-36 – PRECAST DRAINAGE INLET (2’ x 2’)</u>	61
<u>BID ITEM NO. A-37 – PRECAST DRAINAGE INLET (2’ x 3’)</u>	61
<u>BID ITEM NO. A-38 – PRECAST DRAINAGE INLET (3’ x 3’)</u>	61
<u>BID ITEM NO. A-39 – PRECAST DRAINAGE INLET (4’ x 4’)</u>	61
<u>BID ITEM NO. A-40 – GROUTED PIPE ENCASEMENT</u>	61
<u>BID ITEM NO. A-41 – MODIFY EXISTING MAINTENANCE HOLE</u>	67
<u>BID ITEM NO. A-42 – MODIFY EXISTING DRAINAGE INLET</u>	67
<u>BID ITEM NO. A-43 – MODIFY EXISTING TAILWALL</u>	67
<u>BID ITEM NO. A-44 – ABANDONMENT OF STORM DRAINAGE STRUCTURES</u>	69
<u>BID ITEM NO. A-45 – CAST IN DRILLED HOLE (CIDH) PIERS</u>	70
<u>BID ITEM NO. A-46 – OUTFALL DISSIPATER – CLASS 1 RSP</u>	72
<u>BID ITEM NO. A-47 – OUTFALL DISSIPATER – CLASS 3 RSP W/ CLASS 1 RSP and</u> <u>¾” DRAIN RACK</u>	72
<u>BID ITEM NO. A-48 – OUTFALL DISSIPATER – 50% CLASS 1 RSP AND 50%</u> <u>CLASS 3 RSP BY WEIGHT</u>	72
<u>BID ITEM NO. A-49 – OUTFALL DISSIPATOR – IMPERMEABLE LINER</u>	72
<u>BID ITEM NO. A-50 – COMPOSITE HEADWALL STRUCTURE – 15” OR</u> <u>SMALLER OUTLET</u>	74
<u>BID ITEM NO. A-51 – COMPOSITE HEADWALL STRUCTURE – 18” OR LARGER</u> <u>OUTLET</u>	74
<u>BID ITEM NO. A-52 – CHANNEL REINFORCEMENT MAT</u>	75
<u>BID ITEM NO. A-53 – REMOVE & REPLACE ROADSIDE SIGN AND POST</u>	77
<u>BID ITEM NO. A-54 – SLIDE REPAIR – EARTHWORK</u>	78
<u>BID ITEM NO. A-55 – SLIDE REPAIR – CLASS 3 RSP 2/ CLASS 1 RSP AND ¾”</u> <u>DRAIN ROCK</u>	78
<u>BID ITEM NO. A-56 – SLIDE REPAIR – STRUCTURAL CONCRETE WALL</u> <u>BETWEEN EXISTING PIERS</u>	81
<u>BID ITEM NO. A-57 – HYDROSEEDING</u>	85
<u>BID ITEM NO. A-58 – MONUMENT REPLACEMENT</u>	85
<u>BID ITEM NO. A-59 – MONUMENT PRESERVATION</u>	85
<u>BID ITEM NO. A-60 – SUPPLEMENTAL WORK</u>	87

TECHNICAL PROVISIONS

The Technical Provisions for the Wildcat Canyon Road Drainage Enhancement Project were prepared under the direction of:



Julia Harberson, P.E.

CSWST2

DESCRIPTION OF BID ITEMS

BID ITEM NO. A-1 – MOBILIZATION AND DEMOBILIZATION

GENERAL

Mobilization shall conform to the provisions in Section 9-1.16(D), “Mobilization,” of the State Standard Specifications, and shall consists of preparatory work and operations including, but not limited to, those necessary for the movement of personnel, equipment, supplies incidental to the project site, for the establishment of all staging areas and other facilities necessary for work on the project and for all other work and operations which must be performed or for project costs incurred prior to beginning work on the various Contract items. Mobilization shall include obtaining insurance and bonds, obtaining and paying for all permits by other agencies if applicable, furnishing temporary construction utilities, installing construction and other construction facilities all as required for the proper performance and completion of the work.

It is the responsibility of the Contractor to locate a staging area for office setup, construction laydown, or the like which is appropriate for storing materials and equipment. The staging area may be located inside or outside the Berkeley City Limits. Temporary utility controls shall be arranged solely by the Contractor. It is the Contractor’s responsibility to inspect the site to determine its suitability to house operations needed to execute this contract. The contractor is required to obtain and show proof of all permits required by the State and/or local agencies for the use of the staging area.

The City is not responsible for providing said staging area. However, the City will assist the Contractor in identifying City property available for the staging area though no guarantee can be

TECHNICAL PROVISIONS

made about the availability of City property. If City property is used for staging area temporary chain link fencing with privacy screening will be required on-site and shall be provided by the Contractor. The contractor is not required to obtain permits for the use of City property for the staging area.

Mobilization shall include the furnishing and providing for regular maintenance of temporary sanitary facilities on the job for the duration of the project. The Contractor's proposed locations for restroom facilities shall be reviewed with the Engineer prior to delivery of the restroom facility. If the Contractor and/or subcontractors are working at multiple sites simultaneously, then a restroom facility will be required at each site. Failure to provide sanitary restroom facilities is grounds for suspension of work. Contractor shall note that the count of working days will continue.

The Contractor's proposed staging area(s) shall be approved by the Engineer. If Contractor utilizes private property for a staging area, Contractor shall submit proof of an agreement for the use of said staging area with the private property owner(s) prior to mobilization. The staging area(s) shall be maintained throughout the duration of the project such that it is not construed as visual blight in the opinion of the Engineer. All adjoining streets, sidewalks, and gutters shall be swept free of construction materials tracked onto them at the end of each day. Failure to do so will result in City forces cleaning the area at the Contractor's expense. The City of Berkeley labor rate to be used shall be \$150 per hour per person.

The work of this bid item also includes demobilization. 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 AND PAYMENT

Full compensation for completing the requirements of this section shall be considered as included in the **lump sum** price paid for "**Mobilization and Demobilization**".

Partial payments for Mobilization shall not exceed the following:

- (1) When 5 percent of the original contract amount is earned, 50 percent of the amount bid for Mobilization, or 5 percent of the original contract amount, whichever is lesser, may be paid.
- (2) When 10 percent of the original contract amount is earned, 75 percent of the amount bid for Mobilization or 7.5 percent of the original contract amount, whichever is lesser, may be paid.
- (3) When 20 percent of the original contract amount is earned, 95 percent of the amount bid for Mobilization, or 9.5 percent of the original contract amount, whichever is lesser, may be paid.

TECHNICAL PROVISIONS

(4) When 50 percent of the original contract amount is earned, 100 percent of the amount bid for mobilization, or 10 percent of the original contract amount, whichever is lesser, may be paid.

(5) Upon completion of all work on the project, (including: punch list items, cleaning up and removal of all temporary facilities and equipment from the project site) payment of any amount bid for Mobilization in excess of 10 percent of the original contract amount will be paid.

BID ITEM NO. A-2 – TRAFFIC CONTROL

GENERAL

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 latest edition of the California Manual on Uniform Traffic Control Device 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>

Per Special Conditions, contract work is to be implemented in 3 phases corresponding to the sections below:

1. Wildcat Canyon Road between Grizzly Peak and Sunset Lane
2. Wildcat Canyon Road between Sunset Lane and Park Hills Rd.
3. Wildcat Canyon Road between Park Hills Road and Anza View Road

Lane closure requirements for each of these segments are listed in the table below.

	TIME	NORTHBOUND	SOUTHBOUND	EASTBOUND	WESTBOUND
Phase 1 - West Third of Wildcat Canyon Rd (SW-1 to SW-9)					
Grizzly Peak Blvd to Sunset Ln	8AM-9AM (M-F)	-	-	1@11' ↔	
	9AM-3PM (M-F)	-	-	FULL CLOSURE PERMITTED	FULL CLOSURE PERMITTED
	3PM-4PM (M-F)	-	-	1@11' ↔	
	At Other Times	-	-	FULL ROADWAY OPEN	FULL ROADWAY OPEN
Cross Streets for Wildcat Canyon Rd					
All Cross Streets	At All Times	FULL ROADWAY OPEN	FULL ROADWAY OPEN	-	-
Phase 2 - Middle Third of Wildcat Canyon Rd (SW-10 to W-16)					
Intersection of Wildcat	8AM-4PM (M-F)	1@11' ↔		1@11' ↔	

TECHNICAL PROVISIONS

	TIME	NORTHBOUND	SOUTHBOUND	EASTBOUND	WESTBOUND
Canyon Rd & Sunset Ln (SW-10)	At Other Times	-	-	FULL ROADWAY OPEN	FULL ROADWAY OPEN
Sunset Ln to Park Hills Rd	8AM-9AM (M-F)	-	-	1@11' ↔	
	9AM-3PM (M-F)	-	-	FULL CLOSURE WITH DETOUR PERMITTED	FULL CLOSURE WITH DETOUR PERMITTED
	3PM-4PM (M-F)	-	-	1@11' ↔	
	At Other Times	-	-	FULL ROADWAY OPEN	FULL ROADWAY OPEN
Cross Streets for Wildcat Canyon Rd					
Woodhaven Rd	9AM-3PM (M-F)	FULL CLOSURE PERMITTED	FULL CLOSURE PERMITTED	-	-
	At Other Times	FULL ROADWAY OPEN	FULL ROADWAY OPEN	-	-
The Spiral	8AM-4PM (M-F)	1@11'	1@11'	-	-
	At Other Times	FULL ROADWAY OPEN	FULL ROADWAY OPEN	-	-
All Other Cross Streets	At All Times	FULL ROADWAY OPEN	FULL ROADWAY OPEN	-	-
Phase 3 - East Third of Wildcat Canyon Rd (SW-16 to SW-24)					
Intersection of Wildcat Canyon Rd & Park Hills Rd / Central Park Dr (SW-17)	8AM-4PM (M-F)	FULL ROADWAY OPEN	FULL ROADWAY OPEN	1@12' ↔	
	At Other Times	FULL ROADWAY OPEN	FULL ROADWAY OPEN	FULL ROADWAY OPEN	FULL ROADWAY OPEN
Park Hills Rd to Anza View Rd	8AM-9AM (M-F)	-	-	1@11' ↔	
	9AM-3PM (M-F)	-	-	FULL CLOSURE WITH DETOUR PERMITTED	FULL CLOSURE WITH DETOUR PERMITTED
	3PM-4PM (M-F)	-	-	1@11' ↔	
	At Other Times	-	-	FULL ROADWAY OPEN	FULL ROADWAY OPEN
Cross Streets for Wildcat Canyon Rd					
All Cross Streets	At All Times	FULL ROADWAY	FULL ROADWAY	-	-

TECHNICAL PROVISIONS

↔ The Contractor must designate the lane for two-way traffic with a flagger at each end of the two-way road segment to control the flow of traffic.

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.

SUBMITTALS

Traffic Control Plans (TCPs) - The Contractor is required to submit Traffic Control Plans for each stage of construction and receive approval by the Engineer prior to starting work on an upcoming stage. The Contractor's TCPs shall take into consideration the roadway restrictions described in these Specifications. The Contractor shall submit site specific traffic control plans (1"=40' scale min. drawing) to the Engineer within fifteen (15) working days after the effective date of the Notice to Proceed. The traffic control plan shall include all locations, which involve all project improvements and shall indicate each stage of work, signage, flagman, detour routes, and any other pertinent information. It shall also show all proposed traffic controls to scale (e.g., widths and lengths of temporary barriers, lane and sidewalk widths, and roadway widths).

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 4 – City of Berkeley: Pedestrian, Bicycle, and Bus Facility Accommodation 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 addition to the above, the TCP shall include the following:

- Layout of the work areas including material storage
- Locations of all driveways, doors, and gates that front the sidewalks and roadways within the limits of traffic control implementation.
- Locations of temporary and relocated bus stops, if applicable.
- Contractor shall implement a traffic control program including providing detour in coordination with the Sequence of Work provided in Section 37 of the Special Provisions.
- For all streets that are closed to through traffic, the Contractor shall provide a flagger at each point of closure to direct motorists, pedestrians, and bicyclists to the detour route. For properties within the closure area, the Contractor shall facilitate access.

The traffic control plan shall be reviewed and approved by the Engineer before the Contractor shall be allowed to begin work. The City of Berkeley reserves the right to modify any portion of the submitted and approved plans.

TECHNICAL PROVISIONS

Public Notification Door Hanger – Contractor shall submit public notification “Door Hanger” for approval by the City prior to the distribution of notice to residents. The notice shall include project name, brief description of the project, description of project impacts to residents (lane closures, access restrictions, reduced parking, etc...), approximate date(s) of impacts, Contractor name, and name and phone number of designated Contractor public relations coordinator.

EXECUTION

Contractor shall take all necessary measures to obtain a normal flow of traffic to prevent accidents and to protect the work throughout the construction stages until completion of the work. The Contractor shall make the necessary arrangements to provide and maintain barriers, cones, guards, barricades, and construction warnings and regulatory signs in accordance with the Traffic Control Manual. The Contractor shall take measures necessary to protect all portions of the work during construction and until completion, providing and maintaining all necessary barriers, barricade lights, guards, temporary crossovers and flaggers.

If during construction activity, the closure of one lane of traffic is necessary, the Contractor shall utilize all necessary construction zone signage during the lane closure.

The Contractor shall be responsible for posting "No Parking" signs a minimum of four days in advance of concrete work, paving operations, earthwork operations, and/or 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. “No Parking” signs must be posted every twenty (20) feet. 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.

“No Parking” signs shall be removed by the contractor during inactive periods of three (3) or more days. Reposting of “No Parking” shall be done a minimum of four (4) days in advance of work as described in the preceding paragraph.

The Contractor shall initially (on the first working day) notify the U. S. Postal Service, the police, public transit (i.e., AC Transit, Bear Transit, Emery-Go-Round, and others with routes on project streets), fire, garbage and recycling collection (City’s Zero Waste), and Engineer of the need for road closure(s) and areas of construction delays. After the first working day, the Contractor shall continue notification to these entities every week in regards to road closures. After the first working day, the Contractor shall notify Berkeley Dispatch and the Engineer of road closure(s) and areas of construction delays daily.

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. If Contractor

TECHNICAL PROVISIONS

violates 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. Notices (door hangers) shall be provided to residents at least three (3) days in advance of lane closures.

When construction operations are not actively in progress, not less than two such lanes shall be open to public traffic.

Notwithstanding the above, the Traffic Engineer reserves the right to review and comment on each individual traffic control plan based on its own merits. Routine maintenance, inconvenience to construction method or schedule, or adverse impacts on cost of work will not generally be accepted as grounds for exceptions.

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.

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.

Where existing road signs are in conflict with the proposed work, the Contractor shall relocate such signs to temporary or permanent locations as directed by the Engineer.

If it becomes necessary, in the opinion of the City Engineer, to properly move traffic through the construction area, flagmen shall be present to slow down and reroute traffic, in which case flagmen shall be on duty the entire period the roadway is constructed. Where flagmen are not visible to each other, additional flagmen shall be added as required by the Engineer or the Contractor shall use radios.

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.

TECHNICAL PROVISIONS

All holes, trenches, etc., in pavement area, shall be covered with 1-inch steel plates, shimmed with temporary asphalt on edges, by 3 p.m. or at the end of each workday. As an option to the Contractor, the holes, trenches, etc., can be backfilled and all areas within pavement areas have temporary asphalt toppings. The temporary asphalt shall be regularly maintained. All areas shall be completely restored within ten (10) working days after the work has been completed at that location. All open excavations which are not actively involved in construction activity shall be adequately barricaded against entry by pedestrians or animals. Orange K-rail shall be provided by the Contractor at no additional cost upon request by the engineer.

In addition to the foregoing traffic control and safety measures, the Contractor shall undertake immediately to implement any measures requested by the Engineer, as deemed necessary to ensure the proper flow of traffic and the protection of the public and the safety of the workers. The Contractor shall maintain at all times the ability to respond to calls from the City of Berkeley Police and Fire Departments during non-working hours to replace or provide additional traffic control or safety devices as shall be required by the Police Department.

Truck routes must be approved the City's Traffic Engineer prior to start of work and shall comply with the City's truck movement restrictions:

<https://berkeleyca.gov/city-services/getting-around/heavy-truck-restrictions>

A map of the designated truck route system is available on the City's website at:

<https://berkeleyca.gov/sites/default/files/2022-02/Designated-Truck-Route-Map.pdf>

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

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.

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, traffic control system components may be stored at selected central locations approved by the Engineer within the limits of the public right-of-way.

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 area. Temporary concrete, asphalt, or wood ramps shall be installed where feasible, as determined by the project engineer, or pedestrians and vehicles routed around the project area in accordance with the approved traffic control plan.

TECHNICAL PROVISIONS

At the end of any working day when work operations have obscured existing traffic striping, the striping shall be restored via permanent reflective painting or other interim materials subject to the approval of the Engineer. Temporary delineation shall be of the same color and type, including nighttime reflectivity.

At the end of each day's work, and at other times when construction operations are suspended, all equipment and other obstructions shall be removed from that portion of roadway open for use by public traffic. No longitudinal joint shall be left during non-working hours.

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.

Access and Egress

Work shall be accomplished in such a manner as to provide access to all intersecting streets and adjacent properties whenever possible. The Contractor shall endeavor to 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 around the work site to the extent feasible.

An alternate circulation path shall be provided whenever the existing pedestrian access route in the public right-of-way is blocked by construction, alteration, maintenance, or other temporary conditions. Where possible, the alternate circulation path shall parallel the disrupted pedestrian access route, on the same side of the street.

Residential Pedestrian Traffic Control (Type A)

Pedestrian corridor shall be a nominal width of 6 feet whenever feasible, and shall conform to ADAAG guidelines. It shall not be less than 48-inches wide at single point of contact or obstruction. The Contractor shall work on one side of a street at a time so as to allow use of the opposing sidewalk by pedestrians during construction. Where approved by the Engineer, the Contractor shall block a pedestrian corridor and post signs at each corner of a block where sidewalk work is being done with the following wording in 3 inch black letters on an orange background: "SIDEWALK CLOSED TO THROUGH TRAFFIC, USE OTHER SIDE".

All driveways shall be opened between 5:00 p.m. and 8:00 a.m. on weekdays and at all times on weekends and public holidays. Before restricting access to driveways, the Contractor shall notify the affected residents and/or businesses, in writing, at least seventy-two (72) hours in advance.

If during the course of the work, the City agrees that it is necessary to restrict access to certain driveways for an extended period of time, the Contractor shall notify the affected residents and/or businesses, in writing, at least 5 working days in advance.

TECHNICAL PROVISIONS

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 accepted by the Engineer.

MEASUREMENT AND PAYMENT

The contract **lump sum** price paid for “**Traffic Control**” includes full compensation for furnishing all labor (including preparation of the Traffic Control Plans, and flaggers when necessary), materials (including barricades, banners, door hangers and temporary traffic delineation), tools, equipment, and incidentals required to implement traffic control for each phase of construction, complete in place, including all work necessary to provide for the convenience & safety of the public, as shown on the Plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

The Contractor shall be paid on pro rata basis for the work done per month, and said payment shall be for providing all labor, material, equipment, devices, supervision, and all incidentals as are needed to provide traffic control as specified herein, and as may be required to complete the work.

BID ITEM NO. A-3 – CONSTRUCTION INFO SIGN

GENERAL

Construction area info signs shall be furnished, installed, maintained, and removed when no longer required in conformance with the provisions in the latest edition of the California Manual on Uniform Traffic Control Devices (California MUTCD), these Specifications, and as directed by the Engineer.

SUBMITTALS

The Contractor shall provide a set of the following construction signs for this project:

- Type 3-barricade mounted – 3’ high x 4’ wide Construction Information Sign

Contractor shall submit Construction Information Sign format and content to City for review. Construction Information Sign shall include the following:

- Name of project
- Contractor Name
- 24/7 contact name and number for contractor
- City contact name and number
- Starting and completion dates of the contract.
- Funding info: “FUNDED BY MEASURE BB AND CLEAN STORM FEE”

EXECUTION

TECHNICAL PROVISIONS

The Construction Information Signs shall be erected 7 days in advance of any work. Locations of these signs shall be coordinated with the Engineer before installation of the sign post. Attaching signs to existing poles will not be permitted unless agreed in advance by the Engineer.

The Construction Information signs to be provided by the Contractor shall have white ASTM D4956 Type I retroreflective sheeting, black border, black lettering, and City logo. The type size for the Contractor information should be no more than half the size of the funding information. The exact wording and design of the sign shall be provided to the Contractor.

Sign substrates for stationary mounted construction area signs may be fabricated from fiberglass reinforced plastic.

The Contractor shall notify the appropriate regional notification center for operators of subsurface installations at least 2 working days, but not more than 14 calendar days, prior to commencing excavation for construction area sign posts.

Excavations required to install construction area signs shall be performed by hand methods without the use of power equipment, except that power equipment may be used if it is determined there are no utility facilities in the area of the proposed post holes.

The Contractor may be required to cover certain signs during the progress of the work. Signs that are no longer required or that convey inaccurate information to the public shall be immediately covered or removed, or the information shall be corrected. Covers for construction area signs shall be of sufficient size and density to completely block out the complete face of the signs. The retroreflective face of the covered signs shall not be visible either during the day or at night. Covers shall be fastened securely so that the signs remain covered during inclement weather. Covers shall be replaced when they no longer cover the signs properly.

MEASUREMENT AND PAYMENT

The contract unit price paid for “**Construction Info Sign**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in construction area signs, complete in place, including placing, maintaining, removing and disposing of construction area signs, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

TECHNICAL PROVISIONS

BID ITEM NO. A-4 – CHANGEABLE MESSAGE BOARDS

GENERAL

The Contractor shall provide portable changeable message boards for the duration of construction to inform the public of the work. The locations of these signs shall be adjusted as requested by the Engineer.

EXECUTION

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 three (3) weeks prior to the start of the Project or as directed by the Engineer.

Three (3) Changeable Message Boards are required for this Project.

MEASUREMENT AND PAYMENT

The contract unit price paid for “**Changeable Message Boards**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in changeable message boards, complete in place, including providing and properly maintaining changeable message boards for the duration of construction, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-5 – PRE-CONSTRUCTION AUDIO/VIDEO SURVEY

GENERAL

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.

SUBMITTAL

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.

MEASUREMENT AND PAYMENT

TECHNICAL PROVISIONS

The contract **lump sum** price paid for “**Pre-Construction Audio/Video Survey**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in providing pre-construction audio and video surveys, complete in place, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer. The contract lump sum price shall be paid on the basis of work completed as noted on the monthly submission of progress payment.

BID ITEM NO. A-6 – WATER POLLUTION CONTROL

GENERAL

The Contractor shall implement construction site best management practices for the control of non-storm water and point discharges, erosion and sediment control.

The Contractor shall be responsible for implementing and managing these systems during the life of the project. The Water Pollution Control Program shall conform to all applicable requirements in Section 13-2, “Water Pollution Control,” of the State Standard Specifications and “Stormwater Pollution Control” of the Special Provisions.

SUBMITTAL

The Contractor shall submit a **Water Pollution Control Program (WPCP)** to address the storm drain and various improvements to the Engineer for approval. The WPCP shall conform to the requirements of the City of Berkeley and these Specifications.

EXECUTION

Water pollution control work in the WPCP shall include but is not limited to:

1. Cleaning of vehicles by removing loose soil from the exterior of the equipment using brushes or brooms before leaving the Site.
2. Sweep adjacent streets as required by Engineer.
3. Installation of temporary inlet protection.
4. Installation of silt fences.
5. Installation of fiber rolls.
6. Installation of temporary construction entrance.
7. Use of concrete washout containment facility.
8. Sediment and erosion controls.
9. Covering of stockpiles.
10. Decontamination of construction equipment before leaving the premises.
11. Covering of soil loads taken offsite to prevent soil tracking.

TECHNICAL PROVISIONS

- 12. Suspension of work upon wind gust in excess of 25 mph. At the discretion of the Engineer, work can resume if the types of work being performed are not generating large amounts of dust.
- 13. Dewatering of excavations and disposal of water

The Contractor shall not perform work that may cause water pollution until the WPCP has been approved by the Engineer. The Engineer's review and approval shall not waive any contract requirements and shall not relieve the Contractor from complying with Federal, State and local laws, regulations, and requirements.

MEASUREMENT AND PAYMENT

The contract **lump sum** price paid for “**Water Pollution Control Program**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing a Water Pollution Control Program, complete in place, including, obtaining approval of, and amending the WPCP, and inspection and maintenance of water pollution control and erosion BMPs, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

Full compensation for implementation and maintenance of the WPCP shall be considered as included in the contract lump sum price paid for Water Pollution Control and no additional compensation will be allowed therefor.

Payment for the work involved under the bid item for the WPCP may be made on a partial payment system based on the completion of the following stages of the work:

<u>Work Description</u>	<u>Payment Percentage</u>
Develop plan	10% of bid price
Initial plan implementation	10% of bid price
Removal of BMP's at completion	10% of bid price
Inspection and Maintenance of WPCP	70% of bid price/contract time in calendar days

BID ITEM NO. A-7 – CONSTRUCTION STAKING

GENERAL

TECHNICAL PROVISIONS

This section specifies the work for construction staking which consists of providing all labor, tools, equipment, materials and incidentals necessary to locate by staking all improvements, to the line and grade shown on the Plans.

EXECUTION

Contractor shall furnish all land surveys, prepared by a California Licensed Land Surveyor, establish all base lines and bench marks and make sufficient detailed surveys needed for working points, lines and elevations. The Contractor shall develop all slope stakes and batter boards. Contractor shall also develop all additional working points, lines and elevations as he or she may desire to facilitate his or her methods and sequence of construction.

All work shall be staked in order to meet the lines and grades shown on the Plans.

Finished grade elevations, pipe flowlines, and walls shall be within minus five hundredths (-0.05) foot of elevation and plan location.

Prior to concrete pouring, formwork and survey staking shall be reviewed and approved by the City Engineer.

MEASUREMENT AND PAYMENT

The contract **lump sum** price paid for “**Construction Staking**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in construction staking, complete in place, as shown on the Plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-8 – POTHOLE AND PROTECT EX. UTILITIES

GENERAL

Protection and preservation of existing highway facilities, including utilities and preservation of public or private property shall conform to the provisions of Section 15 "Existing Facilities", Section 7 "Legal Relations and Responsibility", and Section 8-1.10 "Utility and Non-Highway Facilities," of the State Standard Specifications, and these Special Provisions.

EXECUTION

The Contractor shall pothole all existing utilities to identify potential conflicts. Existing utilities to be located shall include, but not limited to, street light conduit, storm drain, sanitary sewer, telecommunications, electrical, water gas lines.

TECHNICAL PROVISIONS

The Contractor shall verify the location of existing utility main lines and laterals, prior to starting pulverization and excavation for proposed storm drain lines, by potholing to verify the horizontal and vertical alignment of the utility main and lateral lines.

The Contractor shall expose by hand tool digging methods, and protect and support all existing utility mains and service laterals that cross or are within work areas.

Utility locations, if shown on the Plans, are approximate. There is no guarantee that the utilities shown on the Plans will be the only utilities encountered. The Contractor is hereby notified that during construction, it may be necessary to coordinate his/her operations with utility providers that may have lateral or main lines obstructing construction.

The Contractor shall assume that each property along each side of the project roadway has utility service lateral lines including, but not limited to, sewer, water, cable TV, telephone and gas which are not necessarily shown on the Plans. The Contractor shall perform potholing as needed to verify the location and depth of utilities.

Known utilities have been “potholed” where shown on the plans. The results of these potholes are shown on the plans. The Contractor shall be responsible for verifying the location and elevations of the previously located utilities during his potholing operations.

The City reserves the right to make adjustments in the grades and/or alignment of the proposed improvements to avoid obstructions. Where it becomes necessary to rearrange the obstructions for the construction of the proposed improvements, the Contractor shall assume responsibility for notifying the City and for coordination of this work. In either case, no additional compensation shall be allowed to the Contractor for delays or inconveniences. The Contractor may request the City to adjust the contract working days by an equal number of days that it takes to resolve the obstructions, if the controlling item of work is delayed.

Where an underground utility is at variance with the Plans the contractor shall proceed as follows:

TECHNICAL PROVISIONS

- A. Marked utility not shown on the Plans: If a utility is not shown on the Plans but marked in the field by the utility owner, the Contractor shall pothole the utility and proceed with the work providing the utility is not in conflict with the line or grade of the pipeline to be laid and report the discrepancy to the City.
- B. Utility shown on the Plans but not marked: If a utility is shown on the Plans, but not marked by the utility company or marked in a different location, then the Contractor shall consult with the utility company, pothole the utility, and then proceed with the work providing the utility is not in conflict with the foundation or grade of the pipeline to be laid.
- C. Unmarked utility: If a utility is not marked by the utility company and the contractor encounters it, then the contractor shall immediately notify the City and the utility company. The Contractor shall proceed with the work if the utility is not in conflict with the line or grade of the pipeline to be installed.

After potholing is complete, the Contractor shall backfill the potholing location.

Protect Existing Facilities

The Contractor shall work around and protect all existing improvements to remain, including but not limited to existing utilities, monumentation, storm drainage facilities, street lights and conduit, concrete and asphalt concrete pavement, pavement markings, landscaping and appurtenances that are within or adjacent to the construction areas.

The Contractor, prior to beginning any work on or adjacent to the utility, shall verify the location of all utilities. The Contractor shall protect existing facilities to stay in place, including existing electroliers, when placing construction signs.

When performing work over, around, or near existing utilities, whether they are shown on the plans or found in the field, Contractor shall exercise judicious use of proper equipment, appropriate for the prevailing conditions in the field and consistent with the protection of those existing facilities. It is the responsibility of the Contractor to mobilize the proper equipment to assure that existing facilities are not damaged by his operation. The Engineer reserves the right to suspend operations if, in his opinion, the Contractor's equipment is inappropriate for the prevailing field conditions and may potentially cause substantial damage to existing facilities. Such suspension shall not be grounds for complaint or claim of delay or loss of production by the Contractor. If the Contractor insists in continuing work with said equipment, he shall do so at his own risks and shall be responsible, at his sole expense, for the repair or replacement of any damaged facility or property, public or private, resulting from his operation.

This project includes work on streets with overhead and buried utility and service lines. In some locations, these utility and service lines may have minimal clearance with existing and new facilities within the limits of work. It is the Contractor's responsibility to conduct his/her operations around the facilities such that the work is accomplished without damage to the utility lines. The Contractor

TECHNICAL PROVISIONS

shall notify each utility at least forty-eight (48) hours in advance of any work around these overhead and buried facilities, and shall satisfy all applicable requirements and safety standards for working in close proximity to these utility and service lines. The Contractor shall protect these utility facilities and arrange for supporting utility facilities, with the utility companies, when necessary.

The Contractor's attention is directed to the existence of underground utility lateral lines, not shown on the Plans. No additional compensation shall be allowed for delays caused by the existence of conflicting underground utility lateral lines. The existence of underground utility lateral lines will not be considered an unforeseen site condition. Contractor shall adjust or replace laterals, or coordinate adjustment of laterals with respective owners.

MEASUREMENT AND PAYMENT

The contract **lump sum** price paid for "**Pothole and Protect Ex. Utilities**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in potholing complete in place, including but not limited to demolition, removal, excavation, backfill, off haul and surface restoration, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-9 – EXCAVATION SAFETY

GENERAL

This work shall consist of furnishing and installing temporary sheeting, shoring, benching, and bracing in accordance with the 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.

"Excavation Safety" shall conform to the provisions in Section 7-1.02K (6)(b) "Excavation Safety", and these Special Provisions.

SUBMITTALS

Sheeting, shoring, benching, and bracing plans and calculations shall be signed and sealed by a California Registered Professional Engineer and submitted to the City prior to the start of work.

EXECUTION

This work shall consist of furnishing and installing temporary sheeting, shoring, benching, and bracing in accordance with the 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, benching, and bracing plans and calculations shall be signed and sealed by a California Registered Professional Engineer and submitted to the City prior to the start of work.

TECHNICAL PROVISIONS

"Trench Safety" shall conform to the provisions in Section 7-1.02K (6)(b) "Excavation Safety", and these Special Provisions.

Attention is directed to the requirements in Section 6705 of the Labor Code concerning trench excavation safety plans. Excavations shall be adequately shored and braced so that the earth will not slide, move, or settle and so that all existing improvements of any kind will be fully protected from damage.

Attention is called to Article 6 of "Construction Safety Orders" of the California Division of Industrial Safety, that the Contractor is required by law to obey and which are adopted by reference as part of these special provisions.

Attention is directed to Public Contract Code Section 7104, which requires the Contractor to promptly notify the City of Berkeley when working on a contract involving the digging of trenches or excavations in excess of four feet below the surface, and when any of the following are encountered:

1. Material that the Contractor believes may be hazardous waste, as defined in Section 25117 of the Health and Safety Code that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing law.
2. Subsurface or latent physical conditions at the site differing from those indicated.
3. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for the contract. Such notification shall be in writing and shall be submitted to the Engineer prior to disturbing any of the above conditions.
4. Entry and receiving pits shall conform to the following requirements:
 - Protected by the placement of a 6-foot chain-link fence or Type K barrier.
 - Shoring in accordance with Cal-OSHA requirements.

The shoring method's choice shall be left to the Contractor's judgment based on experience, economic considerations, and adjacent improvements such as utilities, pavements, and foundation loads.

Temporary shoring should support adjacent improvements without distress and shall be the Contractor's responsibility.

In addition to soil earth pressures, the shoring system will need to support adjacent loads such as construction vehicles and incidental loading, existing structure foundation loads, and street loading. Heavy construction loads (cranes, etc.) and material stockpiles shall be kept at least 15 feet behind the shoring. Where this loading cannot be set back, the shoring will need to be designed to support

TECHNICAL PROVISIONS

the loading. The shoring designer shall provide for timely and uniform mobilization of soil pressures that will not result in excessive lateral deflections.

A California-licensed civil or structural engineer must design and be in responsible charge of the temporary shoring design. The Contractor is responsible for means and methods of construction, as well as site safety. Temporary shoring design calculations shall be submitted to the Engineer for review and approval prior to installation. The Contractor's attention is directed to Section 7-1.02K(6) (a, b and d), "Occupational Safety and Health Standards" of the Standard Specifications and these special provisions.

MEASUREMENT AND PAYMENT

The contract lump sum price paid for "**Excavation Safety**" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in providing excavation safety, complete in place, including shoring plans and calculations (prepared by a California- licensed Civil or Structural Engineer), installing and maintaining shoring, bracing, shielding, and sheeting, and include conformance to applicable safety orders, and any necessary subsurface investigations, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-10 – CLEARING AND GRUBBING

BID ITEM NO. A-11 – TREE PROTECTION, TREE PRUNING & ROOT PRUNING

BID ITEM NO. A-12 – TREE REMOVAL 12-INCH DIAMETER

BID ITEM NO. A-13 – TREE REMOVAL 24-INCH DIAMETER

GENERAL

Section includes clearing and grubbing, general protection, pruning, and removal, including disposal, and permitting thereof, of existing trees that are affected by execution of the Work, whether temporary or permanent construction.

Clearing and Grubbing:

Clearing and Grubbing shall consist of removal and disposal of all objectionable material from the construction site, including existing poison oak, weeds, brush, shrubs, trees (with trunks less than 4" dia at 5 foot height and as agreed with City Arborist), stumps, concrete, masonry, other unsuitable material, and obstructions interfering with the new construction. The limits of clearing and grubbing shall be of sufficient area and depth to complete the work as shown on the plans.

Clearing and grubbing shall conform to Section 17-2, "Clearing and Grubbing," of the Standard Specifications. Clearing, grubbing, tree protection, and root pruning shall include limb, trunk, and root protection and tree and root pruning.

TECHNICAL PROVISIONS

Bird Protection

The Contractor shall protect migratory and nongame birds, their occupied nests, and their eggs. The City anticipates nesting or attempting nesting from February 1 to September 30.

The federal Migratory Bird Treaty Act, 16 USC § 703–711, 50 CFR 10, and Fish & Game Code §§ 3503, 3513, and 3800 protect migratory and nongame birds, their occupied nests, and their eggs.

The federal Endangered Species Act of 1973, 16 USC § 1531 and § 1543, and the California Endangered Species Act, Fish & Game Code §§ 2050–2115.5, prohibit the take of listed species and protect occupied and unoccupied nests of threatened and endangered bird species.

The Bald and Golden Eagle Protection Act, 16 USC § 668, prohibits the destruction of bald and golden eagles and their occupied and unoccupied nests.

If an injured or dead bird is found, or migratory or nongame bird nests are discovered that may be adversely affected by construction activities, the Contractor shall immediately stop all work within a 100-ft radius of the discovery and notify the Engineer. The City will investigate the discovery and authorize when work can resume.

Pre-construction surveys for breeding and nesting birds shall be conducted prior to tree work. Qualified biologists shall also be involved in establishing work buffers for active nests. The City may require the Contractor to provide a qualified biologist for implementation of this work. Such work will be considered extra work.

Tree Protection and Root Pruning:

Tree preservation work is to be coordinated with all demolition, construction and landscaping activities in the vicinity of existing trees identified on the Plans for protection and preservation. Refer to the “Tree and Root Protection and Root Pruning” section of the Special Provisions for additional information.

All work shall conform to applicable federal, state and local regulations and industry standards.

Conduct operations in a manner that will prevent damage to trees to be preserved. Tree protection devices shall remain until all site work has been completed within the work area. Fences or other protection devices may not be relocated or removed without permission of the City Arborist.

Direct equipment exhaust away from trees as much as possible. Stationary equipment shall not exhaust directly under or towards trees. Contractor shall use appropriate equipment near trees to

TECHNICAL PROVISIONS

ensure that trees are not damaged by construction. Contractor shall provide any specialized equipment needed at no additional cost.

Publications listed herein are part of this work to extent referenced:

1. City of Berkeley Root Pruning Guidelines for When a Contractor Performs Root Pruning On City Trees;
2. ANSI A300 Standard Practices for Trees, Shrubs, and Other Woody Plant Maintenance
3. Part 1-2001, Tree Pruning;
4. Part 2-3004, Fertilization;
5. Part 3-2000, Cabling, Bracing, Guying of Established Trees;
6. Part 4-2002, Lightning Protection Systems.
7. ANSI Z133.1 - 1994 and most recent updates, Tree Care Operations - Safety Requirements

Definitions

Tree Protection Area (TPA or protection zone): Area of Critical Root Zone surrounding individual trees or groups of trees to be protected during construction.

Critical Root Zone (CRZ): Estimated area surrounding each tree based upon an industry standard “rule of thumb” of 1.5 feet of radius per inch of diameter at breast height (DBH). CRZ is described as the minimum area of tree roots required to be protected to maintain tree health and stability. Any impacts within the CRZ must be mitigated based on severity up to and including tree removal if the impact or disturbance is severe as determined by City Arborist.

Crown Pruning: Pruning specific tree limbs to improve tree health, remove hazardous conditions, and/or provide construction clearance.

Root Pruning: Provide a more suitable cut for protected tree roots to minimize ripped or torn roots during excavations and grading with standard construction equipment. Various methods may be used.

Field Conditions

The following practices are prohibited within TPA zones:

1. Storage, stockpiling, and dumping of construction materials, debris, excavated material, or other materials.
2. Moving or parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.

TECHNICAL PROVISIONS

7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
8. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

Tree Removal:

Tree removal shall conform to Section 17-2, "Clearing and Grubbing" of the Standard Specifications, "Clearing, Grubbing, Tree Protection, and Root Pruning" of the General Provisions, these Technical Provisions, as shown on the plans, and as directed by the Engineer.

Contractor shall apply and follow directions included in the City of Berkeley "Tree Pruning or Removal Permit" for trees to be removed as part of this project.

EXECUTION

Clearing and Grubbing

Clearing, grubbing, tree protection, and root pruning shall conform to Section 17-2, "Clearing and Grubbing," of the Standard Specifications. Clearing, grubbing, tree protection, and root pruning shall include limb, trunk, and root protection and tree and root pruning.

Clearing, grubbing, tree protection, and root pruning must be performed in advance of any other grading or construction operations. The area to be cleared and grubbed must be within the building work construction area.

Shrubs, hedges and small trees shall be designated for removal in the project plans or as directed by the Engineer. Poison oak shrubs, other shrubs, hedges and trees shall be removed. Existing landscaping and trees which are to remain in place must be protected from injury or damage. Existing trees must be protected with a temporary fence around the drip line, edge of the tree well or planting strip, or adhere to the requirements set forth in the "Tree and Root Protection and Root Pruning" section. Unless otherwise specified, the Contractor shall protect trees at the Contractor's expense.

Unless otherwise specified, all materials as shown on the drawings to be removed, or as field marked and as directed by the Engineer to be removed shall be disposed of outside the project limits. The work area shall be left with a neat and finished appearance.

The Contractor shall not store or permit debris to accumulate on site. If the Contractor fails to remove excess debris promptly, the City reserves the right to cause removal at the Contractor's expense.

TECHNICAL PROVISIONS

Residue from cutting operations shall not be permitted to flow into storm drains or across lanes occupied by traffic and shall be removed from the pavement surface, concurrent with the cutting operation.

Clearing, grubbing, tree protection, and root pruning must be conducted to ensure minimum interference with roads, street, walks, or other occupied areas.

When hauling is done over highways or City streets, and when directed by the Engineer, the loads must be trimmed and all material removed from shelf areas of the vehicles.

Protection-Zone Fencing

Plastic construction fencing (“snow fencing”) constructed of high-density extruded and stretched polyethylene fabric with 2-inch (50-mm) maximum opening in pattern and supported by tubular or T-shape galvanized-steel posts spaced not more than 96 inches (2400 mm) apart. High-visibility orange color.

Height to be 5’.

Placement to be along the dripline of the trees to be protected. Contractor to coordinate with City Arborist or designee prior to placement.

Excavation

Trenching within Protection Zones: Where utility trenches are required within protection zones, excavate under or around tree roots by hand or with air spade, or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning.

Do not allow exposed roots to dry out before placing permanent backfill.

Hand Excavation within Tree Protection Areas

Excavation must be performed using SSAT, hand tools (shovels, etc.), or other approved non-damaging methods. Roots must not be damaged by the excavation except for approved root pruning.

All work must be directly supervised by City Arborist or designee in collaboration with Engineer and Contractor. Excavate along the edge of the proposed trench closest to the trees to be protected as shown on the plans. Roots must be uncovered and care taken to avoid damage to roots and bark.

TECHNICAL PROVISIONS

Excavation must not extend beyond the line where roots were pruned. Proceed with conventional excavation methods or with hand excavation methods if clearance to the tree is inadequate for equipment access.

Supersonic Air Tool (SSAT) Excavation

At a minimum, all SSAT work shall include the use of a barrier system such as temporary walls or tents to protect property and pedestrians from flying debris. Excavate along the edge of the proposed trench closest to the trees to be protected as shown on the plans. Roots shall be uncovered and care taken to avoid damage to roots and bark.

Special Demolition of Improvements within Tree Protection Areas

No mechanized equipment must enter the TPAs. All work must be done by hand (with hand-operated equipment such as jackhammers) or with equipment staged outside the TPA. Alternatives for specific situations must be reviewed by City Arborist and Engineer. Methods of protection of overhead branches, trunks, and roots must be reviewed. Refer to specifications for approved methods of temporary wrapping or selective pruning.

Sequence of work shall be reviewed and coordinated with the work of the City Arborist by the construction manager, contractor, and Engineer as appropriate. Methods of protection of overhead branches, trunks, and roots shall be reviewed.

Small equipment may operate upon existing hardscape or upon designated root protection matting if approved by the City Arborist and Engineer. All staging or stockpiling of materials must occur outside the TPA.

Do not damage protected roots within or outside the limit of work nor below existing hardscape during demolition of paving. Approved options include jackhammer and pick up by hand or break up by small excavator operating upon existing hardscape. Once hardscape is removed, no equipment must operate upon stone base unless inspected and approved by City Arborist as roots may have grown into base below hardscape. Do not scatter chipped pavement or gravel subbase into tree wells or planting area. Limit work in exposed root zones.

Tree Protection and Root Pruning

The Contractor shall protect existing trees and protected coast live oak trees where the drip line of the tree extends over the area where the improvements are being made. The Contractor shall protect trees with a temporary fence around the drip line or the edge of the tree well or planting strip; or adhere to the requirements set forth in Section (II) – “Limb and Trunk Protection” below.

Should tree or root pruning be necessary to construct the improvements specified in these Special and Technical Provisions, and as directed by the Engineer, the Contractor shall inform the City’s Urban

TECHNICAL PROVISIONS

Forestry Representative of the schedule for when the roots will be exposed. The Contractor shall notify the Engineer and contact the City's Urban Forestry Representative at least three (3) business days in advance of tree or root pruning to allow for inspection of the roots prior to any work. If the Contractor determines that the tree or root inspection is no longer necessary, they must inform the Engineer at least 24 hours before the scheduled inspection time. Failure to do so will result in the Contractor bearing responsibility for the inspection costs.

For each round of inspection, the contractor shall prepare for inspection a minimum of five (5) trees, where practical. The Urban Forestry Representative will inspect each site to approve the tree or root pruning, or work with the Engineer and Contractor to modify the work to accommodate the tree roots. In cases where the proposed root pruning may jeopardize the health or structure of the tree, the Urban Forestry Representative may not allow the root pruning or may require the tree be removed in accordance with the appropriate bid item.

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

- a) The Contractor shall contact the Urban Forestry Representative at 510-981-6660 at least three (3) business days in advance if it is expected that root pruning will be necessary to facilitate performance of contract work.
- b) The Contractor shall contact USA North 811 Call before You Dig in accordance with all applicable requirements.
- c) The Contractor shall 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.
- d) Contractor shall adhere to USA timeline requirements prior to proceeding with any subsurface work.

II. Limb and Trunk Protection

This section shall apply 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/wattles, 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 approved equivalent 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 from contacting any part of the trees, or being placed or stored in the tree well or planting strip.

III. Root Protection and Preparation for Root Pruning

TECHNICAL PROVISIONS

Existing improvements 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.

- a) Where roots must be pruned, the area shall be excavated down to the depth required for the improvements prior to the Urban Forestry Representative inspecting the site; and all rock, concrete or other loose material removed.
- b) Contractor shall contact the Engineer and Urban Forestry Representative to request an inspection of no fewer than five (5) trees at a time, where practical.
- c) Exposed roots shall be covered with soil, mulch, or wet burlap if they will be exposed for more than 72 hours without measurable precipitation.

IV. Root Pruning Requirements

- a) Root pruning that has been approved by the Urban Forestry Representative 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) 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.
- c) Roots 2 inches in diameter or greater shall be pruned by the Contractor in accordance with these provisions.
- d) Roots smaller than 2 inches in diameter shall be pruned by the Contractor in accordance with these provisions, with the exception of contacting the Urban Forestry Representative.
- e) Large roots may be shaved to a depth of no more than one-third of their thickness, or as approved by the City's Urban Forestry Representative.
- f) At no time shall contractor cut into the root flare as defined by the City Arborist.
- g) Tree damage resulting from failure to adhere to these requirements is subject to the provisions of Section VI – Damages.

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

If root pruning would compromise the structural stability of the tree, the tree may be identified for removal the Urban Forestry Representative. Trees may also be removed based on their condition or location. Tree removal will be decided by the Urban Forestry Representative. Tree removal will be coordinated by the Urban Forestry Representative and scheduled in conjunction with the Contractor.

TECHNICAL PROVISIONS

Tree Canopy and Clearing Pruning

Size, health, species, and impact from proposed construction will be taken into consideration in determining pruning type for each designated tree. Do not remove interior green branching including sprouts unless approved by City Arborist. All work shall conform to ANSI A-300 arboricultural standards.

Contractor, City Arborist, and Engineer shall meet at site to assess trees and determine overhead clearance conflicts between trees and construction equipment/activities. City Arborist shall recommend either canopy pruning or alternative construction methods.

All pruning proposed by the Contractor shall first be reviewed and approved by the Engineer and City Arborist.

Tree Removal

Tree removal determinations are made in conjunction with root inspections. The contractor shall expose roots in accordance with Section (III) – “Root Protection and Preparation for Root Pruning,” and Section (IV) – “Root Pruning.” If upon inspection, a Certified Arborist identifies the tree for removal, this section shall apply.

Prior to any tree removal, there will be a mandatory Public Outreach Period as outlined below:

- 1) The City will post signage indicating the tree is planned for removal for a minimum of seven (7) days. Additionally:
 - a) If there is one tree identified for removal within one block, the City will notify the adjacent property owner
 - b) If there are multiple trees identified for removal within the same block, the City will notify all properties along the entire block
 - c) If the City receives more than 2 objections during the 7-day Public Outreach Period, the City will extend this period an additional 14 days in order to hold a community meeting.
- 2) At the conclusion of the Public Outreach Period, the City will inform the Contractor of its final determination with respect to the tree removal. Trees damaged or removed prior to receiving a final determination by the City is subject to the provisions of the section titled “Damages” below.
- 3) No additional compensation or time adjustment will be provided to the Contractor for the maintenance or protection of the site during this Public Outreach period.

TECHNICAL PROVISIONS

Tree identified for removal shall be removed in its entirety along with the stump and roots greater than 1-inch in diameter to a minimum of fifteen (15) inches below grade. Grade is defined as the elevation of surrounding soil that has not been displaced by the tree or its roots. The resultant void shall be backfilled with clean material free of organics and deleterious material, and compacted to 95% relative compaction.

MEASUREMENT AND PAYMENT

The contract **lump sum** price paid for “**Clearing and Grubbing**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in clearing and grubbing, poison oak removal, tree protection, and root pruning, complete in place, including coordination with the City’s arborist, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

The contract **lump sum** price paid for “**Tree Protection, Tree Pruning & Root Pruning**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in tree protection, and tree and root pruning, complete in place, including supervision, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer and/or the City’s Representative.

The contract **unit price** paid for “**Tree Removal**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in clearing, grubbing, tree protection, and root pruning, complete in place, including stump grinding, site restoration, and clean-up, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-14 – EARTHWORK - OUTFALLS

GENERAL

The Contractor shall complete earthwork as necessary to achieve the lines and grades as shown on the Plans. All earthwork shall be completed in accordance with Section 19 of the Standard Specifications and as detailed in this Section.

The earthwork will be measured and paid upon the areas designated on the Plans and as described as follows:

Mass grading for dissipater areas at storm drain outfalls and fill within the resulting cavities left after removal of the storm drain inlet structures which will be relocated to another area as part of the project.

TECHNICAL PROVISIONS

Upon completion of the mass grading, the Contractor shall complete fine grading to establish the subgrade for site work and dissipater areas at storm drain outfalls.

Any unsuitable material removed shall be removed and disposed of outside the City right-of-way in accordance with Section 12.02, below.

EXECUTION

The Contractor shall complete Clearing and Grubbing as described in these specifications to expose the terrain. The Engineer will complete a field survey, via visual observation, of the work area to confirm the topography. Should the existing topography vary from the Plans, the Engineer and Contractor shall coordinate to modify the lines and grades to achieve the improvements detailed in the Plans.

Prior to placing fill or base for surface improvements all soil surfaces shall be scarified to a depth of 6 inches, moisture conditioned, and compacted to 90% at least 2 percent above optimum in accordance with ASTM Test D1557.

On-site soils containing less than 3% organic material by volume in accordance with ASTM D2974 can be used for fill. The material shall not contain rocks larger than 6 inches in greatest dimension and no more than 15% larger than 2.5 inches. If fill is imported, it shall not have a Plasticity Index greater than 15 and be predominantly granular material. All fill materials shall be approved by the Engineer prior to use.

Fill material shall be placed in horizontal layers of depths compatible to the material being placed and the type of equipment being used. Each layer shall be evenly spread and moistened or aerated, as necessary. Unless otherwise approved by the Engineer, each layer spread for compaction shall not exceed 8 inches of compacted thickness.

Unless otherwise permitted by the Engineer, each layer of fill material shall cover the length and width of the area to be filled before the next higher layer of material is placed. The top surface of each layer shall be approximately level, but with a crown or crossfall of at least 1 vertical in 50 horizontal, but no more than 1 vertical in 20 horizontal, to provide adequate drainage at all times during the construction period.

The contractor shall bench and key excavation for all fill slopes that exceed 6 horizontal to 1 vertical. The width of the bench shall be as required to meet minimum compaction requirements.

At the time of compaction, the moisture content of fill material shall be such that the specified relative compaction will be obtained, and the fill will be firm, hard, and unyielding. Fill

TECHNICAL PROVISIONS

material which contains excessive moisture shall not be compacted until the material is dry enough to obtain the required relative compaction.

Each layer of earth fill shall be compacted by approved tamping or sheepsfoot rollers, pneumatic-tired rollers, or other mechanical means acceptable to the Engineer, to such extent as will produce the specified relative compaction. At locations where it would be impractical because of inaccessibility to use such compacting equipment, fill layers shall be compacted to the specified requirements by hand-directed compaction equipment.

Soils shall be compacted as shown in the following table in accordance with ASTM Test D1557

Item	Relative Compaction	Moisture Content
Scarified subgrade in areas to receive fill	90%	At least 2% above optimum
Areas of fill	92%	At least 2% above optimum
Pavement areas within the upper 6 inches of soil	90%	At least 2% above optimum

When soil types, or a combination of soil types, are encountered which tend to develop densely packed surfaces as a result of spreading or compacting operations, the surface of each layer of fill shall be sufficiently roughened after compaction to ensure bond to the succeeding layer.

The Contractor shall keep the soil sub-grade moist up until the base materials are placed.

Export

The mass grading for the site work will generate surplus material. The Contractor shall export all surplus soil. There is no analytical testing data available for soil within the project limits. The Contractor shall assume that all soil has levels of contamination that exceeds environmental screening levels listed by the California Regional Water Quality Control Board for residential land use or commercial/industrial land use but is non-regulated and non-hazardous. All material shall be disposed of in an appropriate landfill with all-weather access. The Contractor shall be responsible for testing soil as required by the disposal site.

The Contractor shall provide waste manifests produced by the receiver of the soil documenting the total volume of soil received.

3. Fine Grading

Fill and cut slopes shall be finished in conformance with the lines and grades shown on the Plans. When completed, the average plane of the slopes shall conform to the slopes indicated on the Plans and no point on the completed slopes shall vary from the designated plane by more than 6 inches measured at right angles to the slope.

TECHNICAL PROVISIONS

The Contractor shall cut and fill all ditches to the lines and grades shown on the Plans.

MEASUREMENT AND PAYMENT

The contract price paid **per cubic yard** for “**Earthwork - Outfalls**”, includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in completing earthwork, complete in place, including, cutting, transporting of soil, placing fill, mass- and fine-grading, shaping, and compacting, exporting surplus material, transporting of soil, and paying disposal fees, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

Payment for Earthwork will be the sum of cut and fills of in-place material. The Engineer will make no allowance for shrink or swell of the material.

BID ITEM NO. A-15 – PCC APRONS

BID ITEM NO. A-16 – PCC V-DITCH

BID ITEM NO. A-17 – PCC 8” CURB

GENERAL

Concrete aprons and v-ditches shall conform to the Plans and as directed by the Engineer. All Work shall be done to the satisfaction of the Engineer and all subgrade shall meet the acceptance of the designated representative of the Geotechnical Engineer.

Damage to the street, sidewalk, curbs and gutters and surrounding appurtenances from construction activities shall be repaired to the satisfaction of the City Engineer.

The construction of sidewalk, curb and gutters items shall conform to the requirements of City of Berkeley Detail Specifications and Standard Plans except as modified in these Special Provisions or as shown on the plans.

SUBMITTALS

The Contractor shall furnish concrete mix designs to the Engineer at least ten working days prior to the start of the work, based on the following guidelines.

Supplier's certificates showing conformance with this specification shall be delivered to the Engineer with each shipment of materials delivered to the job site.

MATERIALS

PCC shall be Type II

TECHNICAL PROVISIONS

Minor Concrete for curbs, curb and gutter, sidewalks, and commercial and private driveways must comply with Section 90-2 Minor Concrete of the Standard Specifications.

Concrete Mix Design – Aprons & Ditches

- Strength of concrete in place shall be 4,000 psi at 28 days.
- Bar reinforcement to be ASTM A615, Grade 60.
- Maximum Slump: 4 inches

Concrete Mix Design – Minor Concrete

- Strength of concrete in place shall be 2,500 psi at 28 days.
- Maximum Slump: 4 inches

EXECUTION

Concrete aprons, valley gutters and ditches shall be formed, placed and finished in conformance with the applicable requirements of Section 73 of the State Standard Specifications as modified herein.

Formwork

- a. Prior to forming for concrete surface improvements, the Contractor shall pass the compaction test for the subgrade from the Engineer.
- b. Forms for concrete surface improvements shall be subject to the approval of the Engineer. No concrete shall be placed prior to Contractor obtaining such approval.
- c. Forms for concrete surface improvements shall have a smooth and true upper edge and the side of the form to be placed next to concrete shall have a smooth finish. Forms shall be constructed rigid enough to withstand the pressure of the fresh concrete to be placed without any distortion.
- d. All forms shall have been thoroughly cleaned prior to placement and shall be coated with an approved form oil sufficient to prevent adherence of concrete prior to filling.
- e. Forms shall be carefully set to the alignment and grade required by the Plans. Forms shall be rigidly held in place by stakes set at intervals satisfactory to the Engineer. Sufficient clamps, spreaders and braces shall be installed to ensure the rigidity of the forms.

TECHNICAL PROVISIONS

- f. Forms for back and face of curbs, lip of gutters and edge of walks, valley gutters, or other surface slabs shall be equal to the full depth of the concrete as shown, noted or called for on the Plans or detail drawings. Composite forms made up from benders or thin planks of sufficient ply to ensure rigidity of the form in the shape required may be used on curves and curb returns.
- g. Curb and Gutter, sidewalks, driveways and PCC pads shall have forms removed and be backfilled within 3 days after pouring.

Concrete Placement

- a. Where a portion of existing concrete surface improvements is to be reconstructed, the section to be removed shall first be separated from that to remain by means of a cut with an approved concrete saw to a minimum depth of one and one-half (1-1/2) inches at the first score line beyond the area to be replaced.
- b. All repairs to concrete surface improvements shall be made by completely removing and replacing the entire portion between the score lines or joints.
- c. Prior to subgrade work and concrete placement, all debris and trash will be removed from all areas related to this work. Existing subgrade surface shall be re-graded (if necessary) and re-compacted to conform to the grades shown on the Plans.
- d. Any concrete discolored, defaced, or otherwise damaged before official acceptance shall be cleaned, repaired or replaced at the Contractor's expense.
- e. If existing utilities are found to interfere with the permanent facilities being constructed under this Contract, immediately notify the Engineer and secure instructions. Do not proceed with permanent relocation of utilities until written instructions are received from the Civil Engineer.
- f. Contractor shall accurately grade and prepare the site to the lines and grades called for on the Plans and detail drawings with due provision for future surface improvements.
- g. Surface tolerance: Finished paving surfaces shall not vary more than 1/4 inch measured with a 10-foot metal straight edge, except at grade changes. No birdbaths or other surface irregularities will be permitted. Correct irregularities to the satisfaction of the Engineer without additional cost to the project.
- h. Concrete shall be transported in truck mixers or agitators and discharged within 70 minutes of leaving the plant.

TECHNICAL PROVISIONS

- i. All new curb and gutter, sidewalk, driveways, and PCC driveway pads 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 (existing concrete).
- j. Curb and gutter, sidewalks, driveways, and PCC pad shall be given a medium 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.
- k. New concrete work shall match existing in finish, and score pattern, or as shown on the Plans, or as directed by the Engineer. Contractor shall pour at least four separate 1 foot square concrete samples of various concentrations of lamp black added. The intent is for all new concrete to appear aged.

Joints

- a. Expansion joints incorporating premolded joint fillers for fixed form concrete surface improvements shall be constructed at sixteen (16) foot intervals or as appropriate to match existing pattern and at the ends of curb returns. Expansion joint filler strip shall be an approved one piece premolded ½” thick strip conforming to the requirements of ASTM Designation D1751 or ASTM D 994. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated. Expansion joint material shall be shaped to fit the cross section of the concrete prior to being placed.
- b. Single-Component, Self-Leveling, Silicone Joint Sealant for Concrete: Joint sealant shall conform to ASTM D 5893, Type SL. Install per manufacturer’s guidelines.
- c. Scoring pattern and weakened plane joints (deep joints) shall be as indicated in the Plans and approved by the Engineer.
- d. Any tree well forming required by the engineer when placing concrete sidewalk or sawcutting necessary to conform to adjacent sidewalk shall be included in this bid item.
- e. 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-inches and class 2 aggregate base shall match existing thickness. As approved by the City Engineer, see plan 8148 “Curb and Gutter Retrofit” for additional requirements.

Testing

Field testing shall include testing for concrete slump as per ASTM C-143 and compressive strength (C39). Such testing shall be at a frequency determined by the Engineer and shall be performed by the Owner’s laboratory at the Owner’s expense. The Contractor shall furnish the concrete necessary for casting test cylinders.

TECHNICAL PROVISIONS

Inspection

- a. The Engineer shall inspect and approve formwork and reinforcing steel placement prior to concrete pours. The General Contractor shall provide at least 24 hours' notice that inspections are required.

MEASUREMENT AND PAYMENT

The contract unit price paid for "**PCC Aprons**" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in constructing the 5 foot by 3 foot concrete aprons, complete in place, including aggregate base or subbase as required, subgrade preparation, as shown on the Plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

The contract price paid **per linear foot** for "**PCC.V-Ditch**" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the concrete v-ditch, complete in place, including aggregate base or subbase as required, subgrade preparation, as shown on the Plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

The contract price paid **per linear foot** for "**PCC 8" Curb**" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the PCC 8" Curb, complete in place, including demolition and disposal of existing curb, aggregate base or subbase as required, subgrade preparation, as shown on the Plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-18 – ASPHALT REMOVAL

GENERAL

Specifications for providing asphalt removal as indicated.

EXECUTION

1. Protection: Protect concrete pavements and walks, curbs and bases, and other improvements adjacent to the operations with suitable materials. The Contractor shall be responsible for any damage caused by the Contractor's employees or equipment and shall make necessary repairs. All damage caused by the Contractor's operations shall be prepared or replaced as required. Damage to the existing curb and gutter resulting from equipment operations or the "hand" clearing operations shall be corrected, to the satisfaction of the Engineer, by the Contractor at the Contractor's expense. The required removal is to be

TECHNICAL PROVISIONS

performed without disturbing the existing curb and gutter and other existing improvements which may be cracked and fragile.

2. Preparation

a. Sawcutting shall be performed prior to the pavement removal.

3. Limits

a. Limits of removal shall be marked by the Contractor and reviewed by the Engineer prior to removal. The contractor shall be responsible to notify the Engineer for marking of limits a minimum of 48 hours prior to startup time.

b. No additional compensation shall be made for asphalt removal in excess of the limits marked or as shown on the plans unless so directed by the Engineer.

4. Operations

a. In those areas where the existing asphalt pavement extends to the curb face over the P.C. gutter pan and is left after the removal operation, the Contractor shall clear this residue asphalt pavement to the curb face. The Contractor shall use suitable methods to clear residue asphalt concrete from the gutter pan (lip to curb face).

b. At pavement removal conforms, immediately after performing the pavement removal, the Contractor shall place temporary cutback asphalt to provide a smooth ramp for vehicular traffic. The cutback asphalt shall be maintained by the Contractor until overlay work has begun at which time all cutback asphalt shall be removed and disposed of.

c. Residue material from the removal of pavement shall become the property of the Contractor who shall make arrangements for disposal outside the right-of-way.

g. If, in the course of pavement removal operations, the Engineer determines that the underlying base material is unsuitable and cannot be reworked/recompacted to effectively accommodate the subsequent new pavement, the Engineer may authorize the removal and/or stabilizing of base and/or subgrade material exposed by grinding.

MEASUREMENT AND PAYMENT

The contract price paid **per ton** for “**Asphalt Removal**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in removing asphalt pavement and asphalt dikes where indicated, complete in place, including

TECHNICAL PROVISIONS

sawcutting, removal and disposal of existing asphalt, and aggregate base or subbase as required, as shown on the Plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-19 – COLD PLANE 2-1/4”

GENERAL

Specifications for providing asphaltic concrete grinding as indicated.

EXECUTION

1. Protection: Protect concrete pavements and walks, curbs and bases, and other improvements adjacent to the operations with suitable materials. The Contractor shall be responsible for any damage caused by the Contractor's employees or equipment and shall make necessary repairs. Building and other surfaces shall be covered with paper or other protection, where required. All damage caused by the Contractor's operations shall be prepared or replaced as required. Damage to the existing curb and gutter resulting from operating the grinding machine or the "hand" clearing operations shall be corrected, to the satisfaction of the Engineer, by the Contractor at the Contractor's expense. The required grinding is to be performed without disturbing the existing curb and gutter and other existing improvements which may be cracked and fragile.

2. Preparation
 - a. Sawcutting shall be performed prior to the pavement grinding operations at intersections and conforms. The requirement to sawcut may be waived where a minimum one inch vertical face transverse to the conform point can be provided.

 - b. The Contractor shall notify homeowners forty-eight (48) hours in advance of grinding operations to cover parked vehicles or other personal items located in exposed areas.

3. Limits
 - a. Limits of grinding shall be marked by the Engineer prior to grinding operations. The contractor shall be responsible to notify the Engineer for marking of limits a minimum of 48 hours prior to startup time.

 - b. No additional compensation shall be made for Pavement Grinding in excess of the limits marked or as shown on the plans unless so directed by the Engineer.

4. Operations

TECHNICAL PROVISIONS

a. Pavement Grinding shall be in accordance with the applicable provisions of the Standard Specifications and shall involve:

- i. Wedge Grinding (to conform new paving to curbs and gutters and drainage facilities): Wedge Grinding shall provide a triangular wedge of the width shown on the plans and of the depth at the lip of gutter pan as shown on the plans below the pan edge. Some of the existing paving has an existing lip of asphalt along the edge of gutter pans, and thus the Contractor shall expect to grind a total depth of asphalt greater than shown on the plans in some places which can be determined by the Contractor in his/her pre-bid inspection.
- ii. Corrective Grinding (to improve drainage and provide a smoother ride): Corrective Grinding will be as directed by the Engineer.

b. In those areas where the existing asphalt pavement extends to the curb face over the P.C. gutter pan and is left after the grinding operation, the Contractor shall clear this residue asphalt pavement to the curb face. The area requiring "hand" clearing shall be that area between the edge of the grinding wedge left by operating the grinding machine to the curb face. The Contractor shall then use suitable methods to clear residue asphalt concrete from the gutter pan (grinding lip to curb face).

c. Pavement Grinding shall be accomplished by a grinding machine having a cutter head at least six feet wide and shall be operated so as not to produce excessive fumes or smoke.

d. At pavement grinding pavement conforms, immediately after performing the pavement grinding, the Contractor shall place temporary cutback asphalt to provide a smooth ramp for vehicular traffic. The cutback asphalt shall be maintained by the Contractor until overlay work has begun at which time all cutback asphalt shall be removed and disposed of.

e. Residue from grinding shall be removed from the roadbed by sweeping immediately after grinding.

f. The residue material ground from the roadway surface shall become the property of the Contractor who shall make arrangements for disposal outside the right-of-way.

g. If, in the course of Pavement Grinding operations, the Engineer determines that the underlying base material is unsuitable and cannot be reworked/recompacted to effectively accommodate the subsequent new pavement, the Engineer may authorize the removal and/or stabilizing of base and/or subgrade material exposed by grinding.

MEASUREMENT AND PAYMENT

TECHNICAL PROVISIONS

The contract price paid **per square foot** for “Cold Plane 2-1/4”” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in removing pavement via cold plane, complete in place, including protecting adjacent areas and improvements, sawcut, removal and disposal of pavement grindings and for “hand” clearing of pavement and residue from cold plane activities from adjacent areas, as shown on the Plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-20 – HOT MIX ASPHALT (TYPE A)

GENERAL

Specifications are for providing asphaltic concrete paving as indicated on drawings. Contractor shall protect concrete pavements and walks, curbs and bases, and other improvements adjacent to the operations with suitable materials. The Contractor shall be responsible for any damage caused by the Contractor’s employees or equipment and shall make necessary repairs. All damage caused by the Contractor’s operations shall be prepared or replaced as required.

Comply with Section 39, “Hot Mix Asphalt,” of the Standard Specifications except as modified in these special provisions.

SUBMITTALS

Contractor shall submit Certificate of Compliance from manufacturer for approval prior to installation.

Contractor shall provide submittal for each Respective manufacturer’s product data for manufactured products.

MATERIALS

Hot Mix Asphalt shall be Type A using the Method process and shall conform to the provision in Section 39 “Hot Mix Asphalt” of the Standard Specifications and these Specifications. Hot Mix Asphalt shall be compacted to a relative compaction of not less than 95 percent.

Aggregate grading for the hot mix asphalt shall conform to the grading specified in Section 39-2.02B “Aggregate Gradations” of the Standard Specifications. The base and leveling courses shall be dense graded, 3/4-inch maximum aggregate size and the surface course shall be medium graded 1/2-inch maximum aggregate size. When material used in the surface course is to be hand raked, 3/8-inch maximum size shall be used.

The amount of asphalt binder to be mixed with the aggregate shall be between 4 percent and 6 percent by weight of the dry aggregate. The exact amount of asphalt binder to be mixed with the

TECHNICAL PROVISIONS

aggregate will be approved by the Engineer. The Contractor must submit mix design for approval to the Engineer.

Asphalt binder to be mixed with aggregate shall be a steam-refined asphalt conforming to the provisions in Section 92, "Asphalt Binders" and have a viscosity grade of PG 64-10. The pavement surface upon which hot mix asphalt is to be placed and all adjacent vertical surfaces of existing pavement, curbs, gutters, etc. shall be thoroughly cleaned prior to paving. The Contractor shall furnish and operate a self-loading motor sweeper with spray nozzles before and after paving operations where feasible. All other areas will require hand sweeping. The pavement shall be free of dust, dirt, water, and vegetation prior to paving.

Asphaltic emulsion shall be applied to the surface of existing pavements preparatory to resurfacing with hot mix asphalt, and to all concrete surfaces which will be in contact with hot mix asphalt surfacing. Asphalt emulsion shall be SS-1H. The Contractor shall submit a copy of Certificate of Compliance for asphaltic emulsion

EXECUTION

1. Placing of Base Course

- a. The Contractor shall call for an inspection by the Engineer and obtain written approval of the subgrade before proceeding with the base course.
- b. Base course shall be minimum uniform thickness after compaction of dimensions indicated. Where not indicated, compacted thickness shall be six inches for parking stalls and eight inches for roads, driveways, and aisles of parking areas.
- c. Base course shall be placed over finished subgrade and compacted in accordance with Section 26-1.03E Compacting of the State Standard Specifications.
- d. After base course has been completed, the Contractor shall call for an inspection by the Engineer and obtain written approval before proceeding with application of the asphalt wearing surface.

2. Placing Asphalt Concrete

- a. The asphalt paving machine shall be equipped with an electronic "sonic ski" system with a minimum of three (3) sensors to be positioned a minimum of 10-foot in front, 10-foot behind and adjacent to the drum of the paving machine. The system shall be designed to optimize a smooth and consistent road profile. All settings and inputs shall be programmed and adjusted to yield an average thickness equivalent to the

TECHNICAL PROVISIONS

- paving thickness shown on the Plans. The engineer can cancel the use of the “sonic ski” system at any point without incurring any penalties by the contractor.
- b. Areas to be paved shall be covered with a layer of hot asphalt concrete surfacing not less than the thickness indicated after compaction. Where not indicated, compacted thickness shall three inches for roads, driveways, and aisles of parking areas.
 - c. Paving asphaltic concrete shall be delivered, laid, rolled, and finished in accordance with Section 39 of the Caltrans Standard Specifications.
 - d. Before placing asphalt concrete, a tack coat (paint binder) shall be applied to all vertical surfaces against which asphalt concrete surfacing will be placed. Asphaltic emulsion shall be applied to the surface of existing pavements at the approximate rate of one-sixteenth (1/16) gallon per square yard. Pools or unevenly distributed areas shall be redistributed by means of hand brooms. The emulsion shall be applied only so far in advance of the surfacing work that it has sufficient time to set, as required by the Engineer.
 - e. After a tack coat of asphalt emulsion has been applied, hot mix asphalt shall be spread and compacted. It is contemplated that hot mix asphalt will be laid to a compacted thickness as specified. All loose material tracked out onto the new compacted surface shall be removed before an adjacent pass is made by the asphalt paver. All layers of hot mix asphalt shall be laid using an asphalt paving machine as specified in Section 39, Hot Mix Asphalt, of the Standard Specifications.
 - f. The Contractor shall taper the new pavement thickness adjacent to the gutters in the streets designated by the Engineer. Tapering to the edge of the gutters shall be performed in such manner that adequate binding of the very fine asphalt material to the existing surface is obtained. Contractor shall, at the direction of the Engineer and pursuant to field conditions, apply additional binding material in these areas prior to the placement of the new hot mix asphalt, and shall adequately rake the coarse material so as to obtain the desired result. Crown heights may be adjusted at the direction of the Engineer. Aggregate segregation will be grounds for rejection.
 - g. The location of all utility and City-owned structures that are covered over by the new pavement shall be legibly marked with paint on the new pavement and on the adjacent curb and/or sidewalk. In addition, the Contractor must make a list of each utility cover that is paved over and not raised to grade during the paving job (e.g. PG&E utility covers) and must notify the utility in writing of the location of said utility cover and the date that it was paved over. A copy of this written notification must be sent to the City. If utility cover is paved over and not raised to grade during the paving job, the pavement must be at least 1-1/2 inches thick over the utility cover and no depression in the roadway surface can be left over the utility cover. If 1-1/2

TECHNICAL PROVISIONS

inches of pavement cannot be laid over a recessed utility cover, then the hot mix asphalt shall be feathered to the grade of the utility cover and arrangements with the utility must be made to raise it to grade. Hot mix asphalt rolled gutters shall be resurfaced as directed by the Engineer as part of the overlay resurfacing work and no additional payment will be made therefor.

- h. Hot mix asphalt shall not be placed when the atmospheric temperature is below 50 degrees F (10 degrees C) or during unsuitable weather.
- i. Compaction of the asphalt shall be achieved using mechanical rollers. Rolling shall be performed in such a manner that cracking, shoving, or displacement will be avoided. Any displacement occurring as a result of reversing the direction of the roller or from any cause shall at once be corrected by the use of rakes and fresh asphalt mixture where required.
- j. Areas inaccessible to the rollers shall be compacted by use of a power compactor of the high impact vibration plate type capable of attaining the same compaction as the rolled areas. An adequate number of rollers shall be used with each paving operation.
- k. The completed surface shall be thoroughly compacted, smooth, and true to grade and cross section, free from ruts, humps, depression, irregularities, or segregated material.
- l. Finish paving shall conform to finish elevations within plus or minus 0.01 of a foot and shall be level to within plus or minus 1/4 inch in 10 feet when measured with a 10 foot straightedge in any direction. Finish surface of the wearing course shall be thoroughly compacted, smooth, and free from ruts, humps, depressions, cold joints, or other irregularities.
- m. Public traffic shall be permitted the use of the street area providing that such traffic does not interfere with the continuity of the paving operations. When street operations are suspended, all equipment shall be removed from portions of the streets that are to be used by the public traffic. Where work is unfinished at a pedestrian crosswalk at the end of a working day, the edge of the paved surface to said crosswalk shall be feathered to provide a smooth pathway for foot traffic. The pavement shall be protected from traffic until thoroughly cooled and set. Hot mix asphalt rolled gutters shall be compacted as directed by the Engineer as part of the overlay resurfacing work and no additional payment will be made therefor.
- n. Any rollers shall be equipped with pads and water systems that prevent sticking of asphalt mixtures to the steel-tired wheels. A parting agent, which will not damage the asphalt mixture, as determined by the Engineer, may be used to aid in preventing the sticking of the mixture to the wheels.

TECHNICAL PROVISIONS

SUBMITTALS

Contractor shall provide submittal for each Respective manufacturer's product data for manufactured products.

MATERIALS

HMA used for the construction of AC dikes shall conform to Section 39-2.01B(11), "Miscellaneous Areas and Dikes," of the 2018 Caltrans Standard Specifications, latest edition except as altered in the Plans or these Specifications. Asphalt concrete shall be 1/2-inch HMA Type A with a minimum asphalt binder content of 6%. Asphalt binder shall be PG-64-10.

EXECUTION

The combined aggregate grading for asphalt concrete dikes placed shall conform to that specified for the asphalt concrete placed on the traveled way, unless otherwise directed by the Engineer. The amount of asphalt binder used in the asphalt concrete placed in dikes, unless otherwise directed by the Engineer, shall be increased one percent by weight of the aggregate over the amount of asphalt binder used in the asphalt concrete placed on the traveled way.

Dikes shall be shaped and compacted with an extrusion machine or other equipment capable of shaping and compacting the material to the required cross section.

AC dikes along the shoulder of the roadway shall not be installed directly upon subgrade. All AC dikes shall be placed upon a minimum 2" depth layer of HMA shoulder or as shown on Plans and the. HMA shoulder for the AC dike shall be placed, rolled, and compacted at the same time as other roadway paving to avoid creating a paving seam at the flowline of the AC Dike. HMA shoulders to receive AC dike shall have tack coat applied prior to placement of the AC Dike.

Subgrade preparation for HMA shoulders shall include compacting native subgrade to 90% relative density unless otherwise shown on the Plans.

MEASUREMENT AND PAYMENT

The contract unit price paid **per linear foot** for "**AC Dike (Type A)**" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in installing AC Dike, complete in place, including subgrade preparation, placing, rolling and compacting 2" depth HMA shoulder, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

TECHNICAL PROVISIONS

BID ITEM NO. A-22 – REMOVE AND REPLACE GUARDRAIL

GENERAL

The work performed in connection with various existing highway facilities shall conform to the provisions in Section 14-10, "Solid Waste Disposal and Recycling", Section 15, "Existing Facilities," Section 5-1.36, "Property and Facility Preservation", Section 7-1.05, "Indemnification", and Section 7-1.06, "Insurance", of the Standard Specifications, as well as these Technical Provisions. Nothing in these Technical Provisions shall relieve the Contractor of the Contractor's responsibilities as specified in Section 7-1.04, "Public Safety", of the Standard Specifications.

Guardrail and footings shall be constructed as indicated in Plans.

SUBMITTALS

Contractor shall provide submittal for each Respective manufacturer's product data for manufactured products.

Contractor shall provide detailed shop drawings.

MATERIALS

- Per Caltrans 2022 Standard Plan A77L1 – Midwest Guardrail System Standard Railing Section

EXECUTION

Metal post, footing and guardrail shall be removed and disposed of at the locations shown on the plans and as directed by the Engineer. The resultant void shall be backfilled as shown in the plans. Midwest Guardrail System (MGS) including end anchor assemblies shall be constructed as shown on the plans, per State Standard Drawings and State Standard Specifications (Section 83 "Railings and Barriers").

Steel components, hardware, bolt hole grease, and all other components necessary to construct guardrail system shall comply with the State Standard Specifications.

MEASUREMENT AND PAYMENT

TECHNICAL PROVISIONS

The contract price paid **per linear foot** for “**Remove and Replace Guardrail**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in removing and replacing guardrail, posts, and foundations, complete in place, including excavation, potholing at each post, backfill, disposal, transportation, storage and protection, cleanup, end anchor assemblies, and other incidental work, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-23 – 12” HDPE STORM DRAIN PIPE

BID ITEM NO. A-24 – 15” HDPE STORM DRAIN PIPE

BID ITEM NO. A-25 – 18” HDPE STORM DRAIN PIPE

GENERAL

The Contractor shall furnish, install and test all pipe and restore pavement sections as shown on the drawings and described in these Specifications as required to completely interconnect all utility structures with piping for complete and operable storm drainage systems.

SUBMITTAL

Contractor shall submit manufacturer’s product data for pipe and pipe connection materials.

MATERIALS

Pipe, Fittings, and Backfill

- High Density Polyethylene Pipe (HDPE) per ASTM F 2306t
- Fittings shall be the same material as pipe molded or formed to suit pipe sizes and end design.
- Aggregate base for backfill shall be Class 2 and conform to the grading and quality requirements for 3/4” maximum as specified in Section 26-1.02A of the State Standard Specifications.

EXECUTION

Specifications for excavating, backfilling and compacting for the installation of pipe shall be per City of Berkeley Standard Plan 8136 and as modified by these specifications. At locations SW2, SW5, SW 8, SW 12, SW 13, SW 20, SW 23 and SW24, the contractor shall coordinate with City staff for installation of storm drain pipe around trees. The Contractor shall use hand-held tools for excavation under the tree drip line or as directed by the Engineer.

TECHNICAL PROVISIONS

The Contractor shall be responsible for verifying the actual horizontal and vertical location of the existing utilities within the proposed alignment of the storm drain.

Contractor shall be cognizant of the existing utility lines in the proximity of the work area and take precautions, as necessary, to not disturb these facilities. The Contractor shall notify Underground Service Alert at (800) 227-2600 prior to excavation. The Contractor's attention is directed to the section entitled "Obstructions" of these Specifications.

Contractor shall keep sufficient steel plates on site to cover all active excavations in case Wildcat Canyon Road needs to be fully opened during an emergency.

The Contractor's attention is directed to the probability of encountering ground water during trenching excavation. This will include all water entering the existing storm drain inlet excavation and /or the trench excavation for new storm drain pipe. Any ground water which may be encountered shall be controlled and removed in accordance with the approved Groundwater Management Plan to be prepared by the Contractor per Section 36 of the Special Provisions.

The Contractor shall keep site excavations reasonably free from water during construction. The static water level shall be drawn down to maintain the undisturbed state of natural soils. Disposal of water shall proceed under required permits secured by the Contractor and meet all conditions imposed by all regulatory agencies having jurisdiction and shall not damage property or create a public nuisance. Dewatering systems shall not remove natural soils. The Contractor shall control surface runoff to prevent entry or collection of water excavations. Contractor shall provide a system to prevent water from entering the storm drain inlet excavation and/or trench excavation either from concrete gutter, inlet, or the surrounding surface.

Where the clear distance between an existing utility and the storm drain is less than 6 inches, a minimum of 1-1/2-inches of foam wrap shall be placed around the existing utility.

1. Laying Pipe

- a. Lay pipe to line and grade indicated. Bell and spigot type, lay bells in cross-cuts cut in trench. Lay pipe with the bell or grooved end uphill.
- b. Prevent dirt from getting into pipe joints.
- c. Remove pipe which is cracked, checked, spalled, or damaged from the work.
- d. Clean interior of pipe of cement, dirt, and extraneous material as the work progresses.

2. Pipe Joints

TECHNICAL PROVISIONS

- a. Pipe joints shall be made secure and watertight.
 - b. Employ appropriate equipment to draw the sections of the pipe tightly together.
3. Visual Test Method shall be performed as directed by the Engineer.
- a. Slowly pull a television camera through storm drain and inspect for visual leaks, separated joints and cracks in pipe and maintenance holes. Repair leaks and joints. Replace cracked pipe. Re-inspect pipe. Submit tape of entire length of system to Engineer for approval.
4. Backfilling
- a. Piping shall not be covered with backfill material, until inspected, and approved by the Engineer.
 - b. After making up pipe joints, fill space between pipe and sides of trench with backfill material half-way up the pipe. Both sides shall be filled for full width of trench at same time and carefully compacted so as to hold the pipe in its proper position.
 - c. After pipe has been installed, inspected, and approved, place and compact backfill as specified in Section 17 Trenching and Backfilling.
 - d. Backfill material for solid storm drain pipe shall be per City of Berkeley Standard Trench Excavation and Surface Restoration Plan 8136.

MEASUREMENT AND PAYMENT

The contract price paid **per linear foot** for “**HDPE Storm Drain Pipe**”, includes full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in installing the pipe, complete in place, including sawcutting, pavement removal, runoff bypass routing, trenching, excavation, placing pipe bedding, couplings, fittings, dewatering, backfill, pavement restoration, striping and applying pavement markers, as shown on the Plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

TECHNICAL PROVISIONS

BID ITEM NO. A-26 – 10” CMP STORM DRAIN PIPE

BID ITEM NO. A-27 – 12” CMP STORM DRAIN PIPE

BID ITEM NO. A-28 – 15” CMP STORM DRAIN PIPE

BID ITEM NO. A-29 – 18” CMP STORM DRAIN PIPE

BID ITEM NO. A-30 – 24” CMP STORM DRAIN PIPE

GENERAL

The Contractor shall furnish, install and test all pipe and restore pavement sections as shown on the drawings and described in these Specifications as required to completely interconnect all utility structures with piping for complete and operable storm drainage systems.

SUBMITTAL

Contractor shall submit manufacturer’s product data for pipe and pipe connection materials.

MATERIALS

- Corrugated Metal Pipe (CMP) Aluminized Steel Type pipe per ASTM A760 or approved equivalent
- Fittings shall be the same material as pipe molded or formed to suit pipe sizes and end design.
- Metal hanger strapping for anchoring pipe to concrete piers or retaining walls shall be 20 gauge or thicker, minimum 1” wide, galvanized steel per ASTM D3953 or approved equivalent.
- Bolts, fasteners and washers to affix strapping to concrete shall be galvanized steel per ASTM A153 and ASTM F2329 or approved equivalent.
- Aggregate base for tight line pipes shall be Class 2 and conform to the grading and quality requirements for 3/4” maximum as specified in Section 26-1.02A of the State Standard Specifications.

EXECUTION

Specifications for excavating, backfilling and compacting for the installation of pipe shall be per City of Berkeley Standard Plan 8136 and as modified by these specifications. At locations SW2, SW5, SW 8, SW 12, SW 13, SW 20, SW 23 and SW24, the contractor shall coordinate with City staff for installation of storm drain pipe around trees. The Contractor shall use hand-held tools for excavation

TECHNICAL PROVISIONS

under the tree drip line or as directed by the Engineer.

The Contractor shall be responsible for verifying the actual horizontal and vertical location of the existing utilities within the proposed alignment of the storm drain.

Contractor shall be cognizant of the existing utility lines in the proximity of the work area and take precautions, as necessary, to not disturb these facilities. The Contractor shall notify Underground Service Alert at (800) 227-2600 prior to excavation. The Contractor's attention is directed to the section entitled "Obstructions" of these Specifications.

Contractor shall keep sufficient steel plates on site to cover all active excavations in case Wildcat Canyon Road needs to be fully opened during an emergency.

The Contractor's attention is directed to the probability of encountering ground water during trenching excavation. This will include all water entering the existing storm drain inlet excavation and /or the trench excavation for new storm drain pipe. Any ground water which may be encountered shall be controlled and removed by pumping as necessary.

The Contractor shall keep site excavations reasonably free from water during construction. The static water level shall be drawn down to maintain the undisturbed state of natural soils. Disposal of water shall proceed under required permits secured by the Contractor and meet all conditions imposed by all regulatory agencies having jurisdiction and shall not damage property or create a public nuisance. Dewatering systems shall not remove natural soils. The Contractor shall control surface runoff to prevent entry or collection of water excavations. Contractor shall provide a system to prevent water from entering the storm drain inlet excavation and/or trench excavation either from concrete gutter, inlet, or the surrounding surface.

Where the clear distance between an existing utility and the storm drain is less than 6 inches, a minimum of 1-1/2-inches of foam wrap shall be placed around the existing utility.

1. Laying Pipe

- a. Lay pipe to line and grade indicated. Bell and spigot type, lay bells in cross-cuts cut in trench. Lay pipe with the bell or grooved end uphill.
- b. Prevent dirt from getting into pipe joints.
- c. Remove pipe which is cracked, checked, spalled, or damaged from the work.
- d. Clean interior of pipe of cement, dirt, and extraneous material as the work progresses.

TECHNICAL PROVISIONS

2. Pipe Joints
 - a. Pipe joints shall be made secure and watertight.
 - b. Employ appropriate equipment to draw the sections of the pipe tightly together.
3. Visual Test Method shall be performed as directed by the Engineer.
 - a. Slowly pull a television camera through storm drain and inspect for visual leaks, separated joints and cracks in pipe and maintenance holes. Repair leaks and joints. Replace cracked pipe. Re-inspect pipe. Submit tape of entire length of system to Engineer for approval.
4. Backfilling
 - a. Piping shall not be covered with backfill material, until inspected, and approved by the Engineer.
 - b. After making up pipe joints, fill space between pipe and sides of trench with backfill material half-way up the pipe. Both sides shall be filled for full width of trench at same time and carefully compacted so as to hold the pipe in its proper position.
 - c. After pipe has been installed, inspected, and approved, place and compact backfill as specified in Section 17 Trenching and Backfilling.
 - d. Backfill material for solid storm drain pipe shall be per City of Berkeley Standard Trench Excavation and Surface Restoration Plan 8136.
5. Anchoring
 - a. Where noted on the plan to be anchored to retaining walls or concrete piers, vertical Pipe shall be anchored with galvanized steel straps, bolts, and fasteners in accordance with the materials described in this section, above. Vertical pipe to be strapped to retaining wall or concrete pier, at 12 inches on-center in accordance with manufacturer's specifications for the type of material that the anchoring bolt will be embedded into.

MEASUREMENT AND PAYMENT

TECHNICAL PROVISIONS

The contract price paid **per linear foot** for “**CMP Storm Drain Pipe**”, includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the pipe, complete in place, including sawcutting, runoff bypass routing, trenching, excavation, backfill, placing pipe bedding, couplings, fittings, anchoring pipe to piers or retaining walls, dewatering, pavement restoration, striping and applying pavement markers, and temporary paving, as shown on the Plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-31 – STORM DRAIN PIPE (12” RCP)

GENERAL

The Contractor shall furnish, install and test all pipe and restore pavement sections as shown on the drawings and described in these Specifications as required to completely interconnect all utility structures with piping for complete and operable storm drainage systems.

SUBMITTAL

Contractor shall submit manufacturer’s product data for pipe and pipe connection materials.

MATERIALS

- Reinforced Concrete Pipe (RCP). Class IV per ASTM C76-22.
- Fittings shall be the same material as pipe molded or formed to suit pipe sizes and end design.
- Aggregate base for backfill shall be Class 2 and conform to the grading and quality requirements for 3/4” maximum as specified in Section 26-1.02A of the State Standard Specifications.

EXECUTION

Specifications for excavating, backfilling and compacting for the installation of pipe shall be per City of Berkeley Standard Plan 8136 and as modified by these specifications. At locations SW10, the contractor shall coordinate with City staff for installation of storm drain pipe around trees. The Contractor shall use hand-held tools for excavation under the tree drip line or as directed by the Engineer.

The Contractor shall be responsible for verifying the actual horizontal and vertical location of the existing utilities within the proposed alignment of the storm drain.

Contractor shall be cognizant of the existing utility lines in the proximity of the work area and take precautions, as necessary, to not disturb these facilities. The Contractor shall notify Underground

TECHNICAL PROVISIONS

Service Alert at (800) 227-2600 prior to excavation. The Contractor's attention is directed to the section entitled "Obstructions" of these Specifications.

Contractor shall keep sufficient steel plates on site to cover all active excavations in case Wildcat Canyon Road needs to be fully opened during an emergency.

The Contractor's attention is directed to the probability of encountering ground water during trenching excavation. This will include all water entering the existing storm drain inlet excavation and /or the trench excavation for new storm drain pipe. Any ground water which may be encountered shall be controlled and removed by pumping as necessary.

The Contractor shall keep site excavations reasonably free from water during construction. The static water level shall be drawn down to maintain the undisturbed state of natural soils. Disposal of water shall proceed under required permits secured by the Contractor and meet all conditions imposed by all regulatory agencies having jurisdiction and shall not damage property or create a public nuisance. Dewatering systems shall not remove natural soils. The Contractor shall control surface runoff to prevent entry or collection of water excavations. Contractor shall provide a system to prevent water from entering the storm drain inlet excavation and/or trench excavation either from concrete gutter, inlet, or the surrounding surface.

Where the clear distance between an existing utility and the storm drain is less than 6 inches, a minimum of 1-1/2-inches of foam wrap shall be placed around the existing utility.

1. Laying Pipe
 - a. Lay pipe to line and grade indicated. Bell and spigot type, lay bells in cross-cuts cut in trench. Lay pipe with the bell or grooved end uphill.
 - b. Prevent dirt from getting into pipe joints.
 - c. Remove pipe which is cracked, checked, spalled, or damaged from the work.
 - d. Clean interior of pipe of cement, dirt, and extraneous material as the work progresses.
2. Pipe Joints
 - a. Pipe joints shall be made secure and watertight.
 - b. Employ appropriate equipment to draw the sections of the pipe tightly together.
3. Visual Test Method shall be performed as directed by the Engineer.

TECHNICAL PROVISIONS

- a. Slowly pull a television camera through storm drain and inspect for visual leaks, separated joints and cracks in pipe and maintenance holes. Repair leaks and joints. Replace cracked pipe. Re-inspect pipe. Submit tape of entire length of system to Engineer for approval.
4. Backfilling
- a. Piping shall not be covered with backfill material, until inspected, and approved by the Engineer.
 - b. After making up pipe joints, fill space between pipe and sides of trench with backfill material half-way up the pipe. Both sides shall be filled for full width of trench at same time and carefully compacted so as to hold the pipe in its proper position.
 - c. After pipe has been installed, inspected, and approved, place and compact backfill as specified in Section 17 Trenching and Backfilling.
 - d. Backfill material for solid storm drain pipe shall be per City of Berkeley Standard Trench Excavation and Surface Restoration Plan 8136.

MEASUREMENT AND PAYMENT

The contract price paid **per linear foot** for “**Storm Drain Pipe (12” RCP)**”, includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing the pipe complete in place, including sawcutting, runoff bypass routing, trenching, excavation, backfill, placing pipe bedding, couplings, fittings, dewatering, pavement restoration, striping and applying pavement markers, and temporary paving, as shown on the Plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-32 – 10” CURED-IN-PLACE PIPE LINING

BID ITEM NO. A-33 – 15” CURED-IN-PLACE PIPE LINING

GENERAL

The Contractor shall furnish, install and test all pipe and restore pavement sections as shown on the drawings and described in these Specifications as required to completely interconnect all utility structures with piping for complete and operable storm drainage systems. It is the intent of this specification to provide for the reconstruction/relining of pipelines and conduits by the installation of a resin-impregnated flexible tube, which is inserted into the conduit by use of a hydrostatic head, compressed air, or by being pulled into the conduit. The resin, if applicable, is cured by circulating hot water or steam within the tube. When cured, the Cured-In-Place Pipe (CIPP) will be continuous and tight fitting.

TECHNICAL PROVISIONS

SUBMITTAL

Contractor shall submit

1. manufacturer's product data for
 - a, CIPP liner,
 - b. Resin,
 - c. method of installation
 - d. CIPP wall thickness structural calculations meeting structural requirements of in Section 22.03
2. Testing, inspection results and installation logs described in Sections 22.03 and 22.04

MATERIALS

The finished product shall be fabricated from materials, which when cured will be chemically resistant to withstand internal exposure to domestic sewage. The Contractor shall certify that the product used shall meet the chemical resistance requirements of ASTM F1216, Appendix X2. Samples for testing shall be of tube and resin system similar to that proposed for actual construction. It is required that samples with and without plastic coating meet these chemical testing requirements.

1. TUBE

- a) The tube shall meet the requirements of ASTM F1216.
- b) The tube shall have a relatively uniform thickness that when compressed at installation pressures will equal the specified nominal tube thickness with a -5% manufacturing tolerance allowed.
- c) The tube shall be fabricated to a size that when installed will tightly fit the internal circumference and length of the original pipe. Allowance should be made for circumferential stretching during insertion. The minimum length shall be that deemed necessary by the Contractor to effectively span the distance between respective access points unless otherwise specified. The Contractor shall verify the lengths and diameters in the field before fabricating the tube. Individual insertion runs can be made over one or more maintenance hole sections as determined in the field by the Contractor.
- d) The outside layer of the tube (before insertion) shall be translucent plastic coated with a flexible material that clearly allows inspection of the resin impregnation (wet-out) procedure. The plastic coating shall not be subject to de-lamination after curing of the CIPP.
- e) The tube shall be homogenous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No materials shall be included in the tube that are subject to de-lamination of the cured CIPP.

TECHNICAL PROVISIONS

- f) The wall color of the interior pipe surface of the CIPP after installation shall be white or light brown so that a clear detail examination with closed circuit television inspection equipment may be made.

2. RESIN

Corrosion resistant polyester or vinylester system, or epoxy resin system, that when cured creates a composite satisfying the requirements of ASTM F1216, ASTM D5813 and ASTM F1743 and is styrene-free.

A minimum nominal thickness is required with a -5% tolerance allowed.

The wall thickness will be measured in accordance with the applicable sections of ASTM Test Method D2122. Sufficient readings, a minimum of eight, will be made to ensure that the minimum thickness has been determined. A cylindrical anvil tubing micrometer accurate to +0.02 mm (+0.001 in.) will be used. The minimum wall thickness tests will be performed by a Certified Independent Laboratory, approved by the City. All costs shall be borne by the Contractor.

The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers; nor shall separation of the layers occur during testing performed under the requirements of this Specification.

The cured pipe material (CIPP) shall conform to the structural properties, as listed below.

Flexural Stress (ASTM D790)	4,500 psi
Modulus of Elasticity (ASTM D790)	250,000 psi Tensile Strength
(Pressure Pipe ASTM D638)	3,000 psi Tensile Strength
(Gravity Sewer ASTM D638)	2,500 psi

EXECUTION

CLEANING

The Contractor shall be required to remove all internal debris from the storm sewer line with the use of water jet equipment.

The cleaning operation shall remove any and all debris so that each joint of pipe can be thoroughly inspected and successfully reconstructed.

All sludge, dirt, sand, rocks, grease and other solid or semi-solid material resulting from the cleaning operation shall be removed at the downstream end of the section being cleaned. Passing material

TECHNICAL PROVISIONS

from one maintenance hole section to another and discharge to downstream areas shall not be permitted.

BYPASS PUMPING

The Contractor shall provide for the flow of water around the section or sections of pipe designated for reconstruction CIPP Lining. The bypass shall be made by plugging the line at an existing upstream maintenance hole, inlet or adjacent system. The pump and bypass lines shall be of adequate capacity and size to handle the flow. Complete backup bypass pump and lines shall be provided. Bypassing includes all mainline and service line bypassing required.

GROUNDWATER

The Contractor's attention is directed to the probability of encountering ground water during trenching excavation. This will include all water entering the existing storm drain inlet excavation and /or the trench excavation for new storm drain pipe. Any ground water which may be encountered shall be controlled and removed by pumping as necessary.

The Contractor shall keep site excavations reasonably free from water during construction. The static water level shall be drawn down to maintain the undisturbed state of natural soils. Disposal of water shall proceed under required permits secured by the Contractor and meet all conditions imposed by all regulatory agencies having jurisdiction and shall not damage property or create a public nuisance. Dewatering systems shall not remove natural soils. The Contractor shall control surface runoff to prevent entry or collection of water excavations. Contractor shall provide a system to prevent water from entering the storm drain inlet excavation and/or trench excavation either from concrete gutter, inlet, or the surrounding surface.

INSPECTION OF PIPELINES

Inspections of pipelines shall be performed by experienced personnel trained in locating breaks, obstacles, and service connections by closed circuit television. The interior of the pipeline shall be carefully inspected to determine the locations of any conditions which may prevent proper installation of the liner into the pipelines, and it shall be noted so that these conditions can be corrected. A video tape and suitable log shall be kept for later reference by the Engineer.

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 or compatible format.

TECHNICAL PROVISIONS

LINE OBSTRUCTIONS

It shall be the responsibility of the Contractor to clear the line of obstructions such as solids and roots that will prevent the insertion of the liner. If pre-installation inspection reveals an obstruction such as a protruding service connection, dropped joint, or a collapse that will prevent the lining process, and it cannot be removed by conventional pipe maintenance equipment, then the Contractor shall make a point repair excavation to uncover and remove or repair the obstruction.

INSTALLATION

CIPP installation shall be in accordance with ASTM F1216, Section 7, with the following requirements. The Contractor shall designate a location where the tube will be impregnated prior to installation. The Contractor shall notify the City representative of proposed "wet-outs" in order to inspect the materials and procedure. A resin and catalyst system compatible with the requirements of this method shall be used.

The heat source shall be fitted with suitable monitors to gauge the temperature of the incoming and outgoing heat supply. Another such gauge shall be placed at the remote maintenance hole to determine the temperature at that location during cure. If air pressure and steam are used, a Safety Gas Detector, to ensure that it does not reach the explosive limit, is required.

FINISH

The finished liner shall be continuous over the entire length of an insertion run between two maintenance holes and be free from visual defects such as foreign inclusions, dry spots, pinholes, and de-laminations. On runs that the liner is running through a maintenance hole the liner in that maintenance hole shall be intact with the existing invert and bench and sealed if needed to insure that no water runs between the liner and the existing bench and invert. It shall also meet the leak/pressure test requirements specified in sections below.

REQUIRED PRESSURES

Before the insertion process begins, the minimum pressure required to hold the tube tight against the existing conduit and the maximum allowable pressure so as not to damage the tube shall be provided by the tube manufacturer, and it will be the Contractor's responsibility to obtain and submit this information to the Engineer. Once the insertion has started, the pressure shall be maintained between the minimum and maximum pressures until the operation has been completed. If air pressure is used for the operation, the equipment shall be fitted with a pressure gauge accurate to 0.01 psi. Should the pressure deviate from within the range of the minimum and maximum pressures, the installed tube shall be rejected and the Contractor will remove and dispose of the tube at no cost to the City.

Before the curing begins, the pressure required to hold the tube tight against the existing conduit shall

TECHNICAL PROVISIONS

be provided by the tube manufacturer and submitted to the Engineer prior to any insertion process. Once the cure has started and dimpling for laterals is completed, the required pressure shall be maintained until the cure has been completed. Should the pressure deviate more than 1 psi (2.3 feet of water) from the required pressure during the critical curing period, the tube will be rejected and the Contractor will be responsible for the removal of the liner and replacement with a new tube at no cost to the City. A complete log of the pressures shall be maintained on the site and shall be furnished to the Engineer after each insertion.

The plastic coating on the tube shall be translucent to allow visual proof that the resin has wet out the entire tube and that there are no dry areas. Vacuum shall be used to ensure the resin fills all dry areas.

SEALING CIPP AT MAINTENANCE HOLES

If due to broken or misaligned pipe at the maintenance hole wall, the liner fails to make a tight seal, the Contractor shall apply a seal at the point with a material compatible with the tube.

SERVICE CONNECTIONS

After the curing of the liner has been completed, the Contractor shall reopen/restore the existing lateral connections. It is the intent of these specifications that lateral connections be reopened without excavation, and in the case of non-man entry pipes, from the interior of the pipeline utilizing a remotely controlled cutting device, monitored by a closed circuit television camera, that re-establishes them to not less than 95 percent capacity, while conforming to the shape of the existing opening.

No additional payment will be made for excavations for the purpose of reopening connections and the Contractor will be responsible for all costs and liability associated with such excavation and restoration work.

WATER TIGHTNESS

Leakage testing the liner shall be accomplished during cure while under a positive head. The liner products in which the pipe wall is cured while not in direct contact with the pressurizing fluid (e.g., a removable bladder) must be tested by an alternative method approved by the Engineer.

TESTING

Material samples shall be prepared and tested in accordance with ASTM F1216, Section 8.1, using both methods 8.1.1 and 8.1.2 and ASTM D638. The test will be performed by a Certified Independent Laboratory, approved by the City. Tests are to be submitted to the Engineer and all costs shall be borne by the Contractor.

VISUAL INSPECTION

Visual inspection of the liner shall be in accordance with ASTM F1216, Section 8.4. The Contractor will provide the Engineer with a color digital video, which will include both the before and after conditions, and restored connections with addresses each connection serves, in audio, on the video. All

TECHNICAL PROVISIONS

live service entrances shall be accounted for and be unobstructed.

MEASUREMENT AND PAYMENT

The contract price paid **per linear foot** for “**Cured-in-Place Pipe (CIPP) Lining**”, includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing Cured-in-Place Pipe (CIPP) lining, complete in place, including sawcutting, trenching, excavation, backfill, flushing and cleaning, debris disposal, runoff bypass routing, dewatering, CIPP installation, pavement restoration, striping, connection to existing and new facilities, inspecting, testing and temporary paving, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-34 – CUSTOM DRAINAGE INLET

BID ITEM NO. A-35 – PRECAST DRAINAGE INLET (1.5' x 1.5')

BID ITEM NO. A-36 – PRECAST DRAINAGE INLET (2' x 2')

BID ITEM NO. A-37 – PRECAST DRAINAGE INLET (2' x 3')

BID ITEM NO. A-38 – PRECAST DRAINAGE INLET (3' x 3')

BID ITEM NO. A-39 – PRECAST DRAINAGE INLET (4' x 4')

BID ITEM NO. A-40 – GROUTED PIPE ENCASUREMENT

GENERAL

Specifications for the furnishing and installing of cast-in-place concrete and/or precast concrete structures for custom storm drain inlets, existing inlet and tail wall modification, inlet pier supports.

SUBMITTALS

Contractor shall provide Shop Drawings and Manufacturer's Concrete Structure product specifications. When not indicated on the Contract Drawings in sufficient detail or definition, submit detailed drawings of cast-in-place and precast concrete utility structures and related metal work.

MATERIALS

1. Precast Concrete Structures
 - a. General - The Contractor may provide concrete junction box structure per Type G1 of Caltrans Standard Plan D73B, or approved equivalent, per which conform to the general configuration, capacities, and inverts indicated.

TECHNICAL PROVISIONS

- b. Materials - Provide fine and coarse aggregates conforming to ASTM C33, in size commensurate with structure and reinforcement clearances.
 - c. Portland Cement Concrete - Class 4000 minimum Concrete may be polymer or latex modified to achieve higher strengths and denser concrete. Concrete shall not deteriorate from chemical attack of sanitary waste.
 - d. Quality Control
 - i. Quality Assurance and Control: The Engineer shall perform such inspections and tests as required to verify compliance with these Specifications.
 - ii. Furnish samples of materials and their handling as needed by the Engineer for analyses of materials.
2. Cast-in-Place Concrete Structures
- a. Portland Cement
 - i. Clean, fresh, Type II, low alkali, Portland cement conforming with ASTM C150.
 - b. Pozzolan fly ash to be in conformance with ASTM C618
 - c. Aggregates
 - i. Aggregates to be uniformly graded with a one inch maximum size for all concrete mixes.
 - ii. Natural aggregates to be free from deleterious materials, conforming to ASTM C33. Aggregate is not to be potentially reactive as defined in Appendix XI of ASTM C33. Aggregates to be thoroughly and uniformly washed before use.
 - d. Mixing Water
 - i. Fresh, clean, potable and free from oil, acid, alkali, organic matter or other deleterious substances
 - e. Admixtures
 - i. Admixtures, if used to be of a type conforming to ASTM C494 that increases the workability of the concrete, will not impair the strength of the concrete, and is not used to reduce the cement content of the mix. Do not use Calcium Chloride.
 - f. Liquid Membrane-Forming Curing Compound
 - i. Is to be clear or translucent, suitable for spray application and is to conform to ASTM C309, Type 1
 - g. Cement Grout
 - i. Non-shrink type composed of one part cement, two parts sand and the minimum amount of water necessary to obtain the desired consistency.
 - h. Properties
 - i. 28 day strength of concrete in place to be a minimum of:

TECHNICAL PROVISIONS

- a. 3,000 psi for walls and abutments
 - b. 2,500 psi for drilled piers
 - ii. The maximum water/cement ratio to be 0.44 for bridge deck.
 - iii. Slump of concrete and not to exceed four (4) inches unless otherwise authorized by Owner.
 - iv. 15% of cement weight may be Pozzolan Fly-ash. Pozzolan Fly-Ash to be in conformance with ASTM C618.
 - i. Reinforcing Steel
 - i. Bar reinforcement to be ASTM A615, Grade 60
3. Metal Covers, Grates, and Inlets
- a. Ferrous Castings
 - i. Metal used in manufacture of castings shall conform to ASTM A48, Class 35B for Gray Iron, or ASTM A536, Grade 65-45-12 for Ductile Iron.
 - ii. Castings shall be of uniform quality, free from blowholes, shrinkage, distortion or other defects. Castings shall be smooth and cleaned by shot blasting.
 - iii. Minimum tensile strength shall be 35,000 psi.
 - iv. Castings shall be manufactured true to pattern; component parts shall fit together in a satisfactory manner. Round frames and covers shall have continuously machined bearing surfaces to prevent rocking and rattling. Covers shall be of a type that overlaps box edges.
 - v. Where castings will be subjected to loads of H20 or greater, as indicated, provide ductile iron castings.
 - b. Aluminum Castings - Where required to reduce weights of larger covers for ease of handling, such covers may be manufactured of aluminum castings conforming to ASTM B26/B26M, Alloy No. 713.0. Minimum tensile strength shall be 32,000 psi. All covers with an opening four feet or larger shall be Bilco Type JAL-H20 or equivalent and shall have slip resistant surface (course) that meets ADA, NFPA, ASTM D-2047, F-1679 and C-1028. Coatings shall be Traxplate by Jensen or equivalent.

TECHNICAL PROVISIONS

- c. Cast Ferrous Grates: Grates for area drains and catch basins shall be heavy duty, bicycle safe inlet grates and frames of size and configuration indicated. Grates in roadways and parking areas shall withstand H20 loadings when proof-tested in accordance with Caltrans Bridge Design Specifications Manual, Section 3. Gratings shall be bicycle proof per state standard plan D77B.
4. Miscellaneous Metal
- a. Steel Materials - Standard structural sections, shapes, plates, bars, and rods, as indicated, conforming to ASTM A36/A36M. Bars conforming to ASTM 108 will be acceptable.
 - b. Anchors and Bolts - ASTM A 307, A449, A563, and F436, as applicable. Bolts and studs, nuts, and washers shall be hot-dip galvanized in accordance with ASTM A153.
 - c. Fabrication - Form and fabricate the work as indicated. Include anchors, fasteners, and accessories to anchor and secure the work in place.
 - d. Galvanizing - All items shall be galvanized after fabrication by the hot-dip process in accordance with ASTM A123. Weight of the zinc coating shall conform with the requirements specified under "Weight of Coating" in ASTM A123.
5. Mortar
- a. Cement mortar for the sealing of openings for pipe penetrations, for cementing of joints of component parts of precast structures, for providing of flow characteristics for the bottoms of drainage structures, and other features as indicated shall conform with the California Building Code, Chapter 21, Type S (without Lime), with a minimum compressive strength at 28 days of 1,800 psi.
 - b. Mortar shall comply with applicable requirements of ASTM C270, including measurement, mixing, proportioning and water retention. Ten percent by volume of the cement content of the mortar shall be fly ash or pozzolanic material confirming with ASTM C618.
 - c. Use mortar within 90 minutes after mixing. Discard mortar which has been mixed longer or which has begun to set. Retempering of mortar will not be permitted.
6. Grout

TECHNICAL PROVISIONS

- a. Nonshrink hydraulic-cement grout must comply with ASTM C1107/C1107M. You may use clean, uniform, rounded aggregate filler to extend the grout. Aggregate filler must not exceed 60 percent of the grout mass or the maximum described in the manufacturer's instructions, whichever is less. The moisture content of the aggregate filler must not exceed 0.5 percent when tested under California Test 223 or California Test 226. When tested under California Test 202, aggregate filler must comply with the gradation requirements shown in the following table:

Aggregate Filler Gradation

Sieve size	Percentage Passing
½”	100
3/8”	85-100
No. 4	10-30
No. 8	0-10
No. 16	0-5

EXECUTION

1. At least 72 hours in advance of picking up the materials, notify the Engineer of the time and day the materials will be picked up.
2. Requirements – Construct storm drain inlet and related utility structures in connection with the installation of pipe and utility trenches, as indicated.
3. Cast-In-Place Concrete Structures - Provide formwork, steel reinforcement, and concrete in accordance with applicable requirements of Cast-In-Place Concrete.
4. Precast Concrete Structures - Comply with applicable requirements of ASTM C891. Provide such appurtenances and installation accessories, including cement mortar and sealants, as required for a complete installation.
5. Metal Components - Install maintenance hole covers, grates and frames, curb and gutter inlets, channel inserts, and pulling eyes as indicated and in accordance with the respective manufacturer’s instructions. Covers and grates in roadways, parking areas, and concrete walks shall be installed flush with adjacent, abutting pavement.

TECHNICAL PROVISIONS

6. Install City-provided City Standard “No Dumping...” medallion.
7. At locations SW2, SW5, SW 8, SW 12, SW 13, SW 20, SW 23 and SW24, the contractor shall coordinate with City staff for installation of improvements around trees. The Contractor shall use hand-held tools for excavation under the tree drip line or as directed by the Engineer.
8. The Contractor shall be responsible for verifying the actual horizontal and vertical location of the existing utilities within the proposed alignment of the storm drain.
9. Contractor shall be cognizant of the existing utility lines in the proximity of the work area and take precautions, as necessary, to not disturb these facilities. The Contractor shall notify Underground Service Alert at (800) 227-2600 prior to excavation. The Contractor’s attention is directed to the section entitled “Obstructions” of these Specifications.
10. Contractor shall keep sufficient steel plates on site to cover all active excavations in case Wildcat Canyon Road needs to be fully opened during an emergency.
11. The Contractor's attention is directed to the probability of encountering ground water during trenching excavation. This will include all water entering the existing storm drain inlet excavation and /or the trench excavation for new storm drain pipe. Any ground water which may be encountered shall be controlled and removed by pumping as necessary.
12. The Contractor shall keep site excavations reasonably free from water during construction. The static water level shall be drawn down to maintain the undisturbed state of natural soils. Disposal of water shall proceed under required permits secured by the Contractor and meet all conditions imposed by all regulatory agencies having jurisdiction and shall not damage property or create a public nuisance. Dewatering systems shall not remove natural soils. The Contractor shall control surface runoff to prevent entry or collection of water excavations. Contractor shall provide a system to prevent water from entering the storm drain inlet excavation and/or trench excavation either from concrete gutter, inlet, or the surrounding surface.

MEASUREMENT AND PAYMENT

The contract unit price for “**Custom Drainage Inlet**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for all work involved installing custom drainage inlets, complete in place, including removal and disposal of existing drainage structures, runoff bypass routing, excavation, dewatering, backfill, forming, furnishing and placing all bar reinforcement steel and miscellaneous iron and steel (metal frames, grates, hasps, hinges, and covers), pipe connections and grout sealing, Portland cement concrete, and temporary and final

TECHNICAL PROVISIONS

Portland cement concrete paving, installation of base material, asphalt pavement restoration, and installing City-provided medallion, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

The contract unit for “**Precast Drainage Inlets**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for all work involved in installing precast drainage inlets, complete in place, including removal and disposal of existing drainage structures, runoff bypass routing, excavation, dewatering, backfill, forming, furnishing and placing all miscellaneous iron and steel (metal frames, grates, hasps, hinges, and covers), pipe connections and grout sealing, Portland cement concrete, and temporary and final Portland cement concrete paving, installation of base material, asphalt pavement restoration, striping, including extension of “fog line” at location SW10, and installing City-provided medallion, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

The contract unit price **per each** for “**Grouted Pipe Encasement**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for all work involved in encasing pipe with grout, complete in place, including removal and disposal of existing drainage structures, runoff bypass routing, excavation, dewatering, backfill, forming, furnishing and placing all bar reinforcement steel and miscellaneous iron and steel, pipe connections and grout sealing, Portland cement concrete, installation of base material, asphalt pavement restoration, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-41 – MODIFY EXISTING MAINTENANCE HOLE

BID ITEM NO. A-42 – MODIFY EXISTING DRAINAGE INLET

BID ITEM NO. A-43 – MODIFY EXISTING TAILWALL

GENERAL

Specification for the modification of existing drainage structures to accommodate new and /or larger pipe connections.

MATERIALS

1. Mortar

- a. Cement mortar for the sealing of openings for pipe penetrations, for cementing of joints of component parts of precast structures, for providing of flow characteristics for the bottoms of drainage structures, and other features as indicated shall conform with the California Building Code, Chapter 21, Type S (without Lime), with a minimum compressive strength at 28 days of 1,800 psi.

TECHNICAL PROVISIONS

- b. Mortar shall comply with applicable requirements of ASTM C270, including measurement, mixing, proportioning and water retention. Ten percent by volume of the cement content of the mortar shall be fly ash or pozzolanic material conforming with ASTM C618.

- c. Use mortar within 90 minutes after mixing. Discard mortar which has been mixed longer or which has begun to set. Retempering of mortar will not be permitted.

EXECUTION

Construct and/or enlarge openings in existing drainage structures to accommodate new and/or larger openings for proposed pipe connections, as indicated. Remove and properly dispose of debris and tailings from any demolition to enlarge openings prior to grout-sealing pipe connections with mortar. Ensure mortar at interior of joint in pipe system is smooth after application of mortar to seal connections. Remove and properly dispose of debris and tailings from operations to smooth mortar.

At locations SW2, SW5, SW 8, SW 12, SW 13, SW 20, SW 23 and SW24, the contractor shall coordinate with City staff for construction around trees. The Contractor shall use hand-held tools for excavation under the tree drip line or as directed by the Engineer.

The Contractor shall be responsible for verifying the actual horizontal and vertical location of the existing utilities within the proposed alignment of the storm drain.

Contractor shall be cognizant of the existing utility lines in the proximity of the work area and take precautions, as necessary, to not disturb these facilities. The Contractor shall notify Underground Service Alert at (800) 227-2600 prior to excavation. The Contractor's attention is directed to the section entitled "Obstructions" of these Specifications.

Contractor shall keep sufficient steel plates on site to cover all active excavations in case Wildcat Canyon Road needs to be fully opened during an emergency.

The Contractor's attention is directed to the probability of encountering ground water during trenching excavation. This will include all water entering the existing storm drain inlet excavation and /or the trench excavation for new storm drain pipe. Any ground water which may be encountered shall be controlled and removed by pumping as necessary.

The Contractor shall keep site excavations reasonably free from water during construction. The static water level shall be drawn down to maintain the undisturbed state of natural soils. Disposal of water shall proceed under required permits secured by the Contractor and meet all conditions imposed by all regulatory agencies having jurisdiction and shall not damage property or create a public nuisance. Dewatering systems shall not remove natural soils. The Contractor shall control surface runoff to prevent entry or collection of water excavations. Contractor shall provide a system

TECHNICAL PROVISIONS

to prevent water from entering the storm drain inlet excavation and/or trench excavation either from concrete gutter, inlet, or the surrounding surface.

MEASUREMENT AND PAYMENT

The contract unit price for “**Modify Existing Maintenance Hole**”, “**Modify Existing Drainage Inlet**”, and “**Modify Existing Tailwall**”, includes full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for all work involved in modifying existing drainage structures, complete in place, including runoff bypass routing, excavation, dewatering, backfill, forming, furnishing and placing all miscellaneous iron and steel (metal frames, grates, hasps, hinges, and covers), pipe connections and grout sealing, Portland cement concrete, and temporary and final Portland cement concrete paving, installation of base material, and pavement restoration, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-44 – ABANDONMENT OF STORM DRAINAGE STRUCTURES

GENERAL

This section applies to the abandonment of existing storm drain piping.

SUBMITTALS

The Contractor shall provide a submittal for cement slurry.

MATERIALS

Cement slurry placed within pipe
Minor concrete plug on either end of pipe.

EXECUTION

Upon completion of installation of the new culvert, the Contractor shall completely fill the existing pipe with cement slurry. At each end, the Contractor shall install a concrete plug that seals the cement slurry.

MEASUREMENT AND PAYMENT

The contract **lump sum** price for “**Abandonment of Storm Drainage Structure**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for all work

TECHNICAL PROVISIONS

involved in abandoning storm drainage structures and piping, complete in place, including removal and disposal of existing drainage structures, runoff bypass routing, excavation, dewatering, backfill, forming, filling with cement slurry, grout sealing, installation of compacted fill material, and pavement restoration, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-45 – CAST IN DRILLED HOLE (CIDH) PIERS

GENERAL

Concrete piling shall conform to the provisions in Section 49, "Piling," of the Standard Specifications, and these Technical Provisions.

SUBMITTALS

Contractor shall provide submittal for each Respective supplier's product data for products.

MATERIALS

1. Portland Cement
 - a. Clean, fresh, Type II, low alkali, Portland cement conforming with ASTM C150.
2. Pozzolan Fly-ash to be in conformance with ASTM C618.
3. Aggregates
 - a. Aggregates to be uniformly graded with a one inch maximum size for all concrete mixes.
 - b. Natural aggregates to be free from deleterious materials, conforming to ASTM C33. Aggregate is not to be potentially reactive as defined in Appendix XI of ASTM C33. Aggregates to be thoroughly and uniformly washed before use.
4. Mixing Water
 - a. Fresh, clean, potable and free from oil, acid, alkali, organic matter or other deleterious substances.
5. Admixtures
 - a. Admixtures, if used to be of a type conforming to ASTM C494 that increases the workability of the concrete, will not impair the strength of the concrete, and is not used to reduce the cement content of the mix. Do not use Calcium Chloride.

TECHNICAL PROVISIONS

6. Liquid Membrane-Forming Curing Compound
 - a. Is to be clear or translucent, suitable for spray application and is to conform to ASTM C309, Type 1.
7. Cement Grout
 - a. Non-shrink type composed of one part cement, two parts sand and the minimum amount of water necessary to obtain the desired consistency.
8. Properties
 - a. 28 day strength of concrete in place to be a minimum of 2,500 psi for drilled piers
 - b. The maximum water/cement ratio to be 0.44.
 - c. Slump of concrete and not to exceed four (4) inches unless otherwise authorized by Owner.
 - d. 15% of cement weight may be Pozzolan Fly-ash. Pozzolan Fly-Ash to be in conformance with ASTM C618.
9. Reinforcing Steel
 - a. Bar reinforcement to be ASTM A615, Grade 60.
10. Expansion Joint
 - a. Fiber Expansion Joint in conformance with ASTM D1751 or Asphaltic Expansion Joint in conformance with ASTM D994

EXECUTION

The City's representative Geotechnical Engineer shall observe drilling operations for construction of CIDH Concrete Piling when required by Engineer. Contractor shall notify Engineer at least 72 hours in advance of construction of CIDH Concrete Piling.

Drilling operations and concrete placement shall be coordinated so that pier holes are left open a minimum amount of time. The Contractor shall be prepared to remoisten the sides of the holes immediately prior to placing of concrete, taking care to control ponding. Pier holes shall be drilled in alternate sequence. At no time shall there be consecutive open pier holes.

Casing and dewatering may be required during installation of the CIDH Concrete Pilings.

TECHNICAL PROVISIONS

The Contractor's attention is directed to the probability of encountering ground water during drilling and excavation. This will include all water entering the excavation for the drilled pier. Any ground water which may be encountered shall be controlled and removed by pumping as necessary.

The Contractor shall keep site excavations reasonably free from water during construction. The static water level shall be drawn down to maintain the undisturbed state of natural soils. Disposal of water shall proceed under required permits secured by the Contractor and meet all conditions imposed by all regulatory agencies having jurisdiction and shall not damage property or create a public nuisance. Dewatering systems shall not remove natural soils. The Contractor shall control surface runoff to prevent entry or collection of water in excavations. Contractor shall provide a system to prevent water from entering the pier excavation either from the surrounding surface.

26.05 MEASUREMENT AND PAYMENT

Full compensation for furnishing all reinforcement in concrete piles and concrete pile extensions, including reinforcement required to extend beyond the pile or extension as shown on the plans, shall be considered as included in the contract price paid per linear foot for cast-in-drilled-hole concrete piling of various diameters, and no additional compensation will be allowed therefor.

The contract **price** paid per linear foot for each “**18-inch CIDH Pier**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in installing CIDH Piers, complete in place, including drilling holes, disposing of material resulting from drilling holes, temporarily casing holes and removing water when necessary, furnishing and placing concrete and reinforcement, and constructing reinforced concrete extensions, to the required penetration, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-46 – OUTFALL DISSIPATER – CLASS 1 RSP

BID ITEM NO. A-47 – OUTFALL DISSIPATER – CLASS 3 RSP W/ CLASS I RSP and ¾” DRAIN RACK

BID ITEM NO. A-48 – OUTFALL DISSIPATER – 50% CLASS 1 RSP AND 50% CLASS 3 RSP BY WEIGHT

BID ITEM NO. A-49 – OUTFALL DISSIPATOR – IMPERMEABLE LINER

GENERAL

Specifications for rock rip rap outfall protection.

SUBMITTALS

TECHNICAL PROVISIONS

Contractor shall provide submittal for each Respective supplier's product data for products including rock for rock slope protection in accordance with Section 72 of the Standard Specifications.

MATERIALS

ROCK

1. Size as specified in the plans and in accordance with Section 72 of the Standard Specifications.
2. All rock products shall be clean, hard, sound, durable, uniform in quality and free from any detrimental quantity of soft, friable, thin elongated or laminated pieces, disintegrated material, organic matter, oil alkali, or other deleterious substance.
3. Rock shall be of such character that it shall not disintegrate from the action of air, water or from conditions to be met during handling and placing. Rock rip-rap shall be dense, sound, resistant to abrasion and free from cracks or weak cleavage planes.

GEOTEXTILE

1. Impermeable Liner: 60mil HDPE plastic sheeting in accordance with GRI-GM13
2. Impermeable liner shall be free of folds, tears, and wrinkles.

EXECUTION

ROCK

1. A footing trench shall be excavated along the toe of the slope as shown on the plans.
2. Rocks shall be so placed as to provide a minimum of voids and the larger rocks shall be placed in the toe course and on the outside surface of the slope protection.
3. Local surface irregularities of the slope protection shall not vary from the planned slopes by more than one foot measured at right angles to the slope.
4. Where the rip rap is placed on a slope, the placing shall commence at the toe of the slope and progress up the slope. The larger pieces of rip rap shall be placed in the bottom courses.
5. The rip rap shall be laid closely such that a reasonable semblance of courses is achieved. Smaller pieces of rip rap shall be used to fill the voids.
6. Where rip rap is placed on a geotextile, it shall be undertaken so that there is no tearing or damage to the geotextile.

TECHNICAL PROVISIONS

7. Orient ends of key at a 30-degree angle to the direction of flow.

GEOTEXTILE

1. The geotextile shall be joined so that the material laps and shall be pinned together.
2. On slopes, the upper portion of the geotextile shall be fixed to prevent sliding during installation.
3. The placement operation shall be such that the geotextile is not exposed to daylight for more than three days.

MEASUREMENT AND PAYMENT

The contract price paid **per ton** for “**Outfall Dissipater – Class 1 RSP**”, “**Outfall Dissipater – Class 3 RSP w/Class I RSP and 3/4inch Drain Rock**“ and “**Outfall Dissipater – 50% Class 1 RSP and 50% Class 3 RSP by weight**“ includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing rip-rap outfall protection, complete in place, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

The contract price paid **per square foot** for “**Outfall Dissipater – Impermeable Liner**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing impermeable liner for rip-rap outfall protection, complete in place, as shown on the Plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-50 – COMPOSITE HEADWALL STRUCTURE – 15” OR SMALLER OUTLET

BID ITEM NO. A-51 – COMPOSITE HEADWALL STRUCTURE – 18” OR LARGER OUTLET

GENERAL

Specifications for Composite Headwall Structure product and installation.

MATERIALS

Composite reinforced polymer concrete headwall structure for outfall transparency, retention of backfill and flow dissipation, such as the CIF Composites, Inc. Pro-Eco-Lite™ Fixed Spigot Headwall Structure or approved equivalent.

SUBMITTALS

TECHNICAL PROVISIONS

Contractor shall submit product data sheet and indicate size and type of composite headwall structure to be provided at each location proposed.

EXECUTION

1. Pre-Installation

- a. Soil, ground and drainage conditions vary by region. After clearing and grubbing, Engineer to review outfall locations and confirm composite headwall structure installation, ground conditions and backfill materials...
- b. Aprons shall be included at each location. Tie backs are to be installed to improve anchorage.
- c. Prior to ordering refer to the manufacturer's installation drawings. Check the headwall offset and ditch depth to ensure bank slopes are within retention units of the composite headwall.
- d. Refer to manufacturer's installation drawings during installation.
- e. Place riprap on bank slopes per plans and specifications.
- f. Placed Riprap on apron of headwall.

MEASUREMENT AND PAYMENT

The contract unit price paid for “**Composite Headwall Structure**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installation of the composite headwall structure, complete in place, including excavation, material removal and disposal, connection to pipe end, sealing, tie-back, compaction and final grading, as shown on the Plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-52 – CHANNEL REINFORCEMENT MAT

GENERAL

Specifications for channel reinforcement mat.

MATERIALS

TECHNICAL PROVISIONS

Channel reinforcement mat for shall be a vegetated concrete block mat which is typically installed for outlet protection and stabilizing slopes. An example of the type of channel reinforcement mat is the Flexamat Plus UV-T blanket system.

SUBMITTALS

Contractor shall submit product data sheet for channel reinforcement mat product.

EXECUTION

1. Prior to installing channel reinforcement mat, prepare the subgrade as detailed in the plans. All subgrade surfaces to be smooth and free of rocks, roots, debris, or other protrusions that would prevent intimate contact between the block of the mat and the subgrade.
2. Ensure the prepared subgrade provides a smooth, firm, and unyielding foundation for the mats.
3. Distribute seed on prepared subgrade before installation of the tied concrete block mats in accordance with the manufacturer's specifications.
4. Install mats to the line and grade shown on the plans and per the specification.
5. Provide a minimum 18 in. deep concrete mat embedment toe trench at all edges exposed to concentrated flows. Recess exterior edges subject to sheet flow a minimum of 6 in.
6. Areas that require mat seams parallel to concentrated flows are required to install mats with an interlocking geogrid and underlayment extension on the long edge for overlapping and anchoring the adjacent mat.
7. Extensions shall be comprised of the mat's interlocking geogrid and all layers of the underlayment system.
8. Provide fastening or anchoring as recommended by the manufacturer or Engineer for the site conditions.

MEASUREMENT AND PAYMENT

The contract unit price paid **per square foot** for "**Channel Reinforcement Mat**" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing the channel reinforcement mat, complete in place, including preparing the subgrade surface (including clearing, grubbing and disposal of existing vegetation, scarification and compaction of subgrade), installation and anchoring of the channel reinforcement

TECHNICAL PROVISIONS

mat, furnishing topsoil and bedding,, as shown on the Plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-53 – REMOVE & REPLACE ROADSIDE SIGN AND POST

GENERAL

Specifications for removing and salvaging existing roadside signs and removing and disposing existing post and foundation.

SUBMITTALS

Contractor shall provide submittal for each Respective manufacturer’s product data for manufactured products.

EXECUTION

Existing signs shall be relocated at the locations shown on the Plans and as directed by the Engineer.

Each roadside sign shall be reinstalled on the same day if removed unless directed otherwise by the Engineer.

Roadside sign posts shall be the Ulti-Mate sign support system, with EZ Installation anchor, as manufactured by Western Highway Products or approved equal. Ulti-Mate posts for roadside signs shall conform to State Standard Plan RS1. Posts shall have a bolt installed at the base of the post, as recommended by the manufacturer and as directed by the Engineer.

Posts shall be 12-gage galvanized steel 1.75-inch square tube with perforations, weighing 2.09 pounds per linear foot.

The Contractor, at their expense, shall repair materials to be salvaged that are damaged as a result of the Contractor’s operations to the satisfaction of the Engineer.

Nothing in these Specifications shall relieve the Contractor from his responsibilities as provided in Section 7-1.09, “Public Safety,” of the Standard Specifications.

MEASUREMENT AND PAYMENT

The contract **unit price** paid for “**Remove & Replace Roadside Sign and Post**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in removing, relocating and placing roadside signs and sign foundations,

TECHNICAL PROVISIONS

complete in place, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-54 – SLIDE REPAIR – EARTHWORK

BID ITEM NO. A-55 – SLIDE REPAIR – CLASS 3 RSP 2/ CLASS 1 RSP AND ¾” DRAIN ROCK

GENERAL

The Contractor shall complete earthwork as necessary to achieve the lines and grades as shown on the Plans for slide repair. All earthwork shall be completed in accordance with Section 19 of the Standard Specifications and as detailed in this Section.

Upon completion of the mass grading, the Contractor shall complete fine grading to establish the subgrade for rock slope protection to be placed upon.

Any unsuitable material removed shall be removed and disposed of outside the City right-of-way in accordance with Section 12.02.

MATERIALS

ROCK

1. Size as specified in the plans.
2. All rock products shall be clean, hard, sound, durable, uniform in quality and free from any detrimental quantity of soft, friable, thin elongated or laminated pieces, disintegrated material, organic matter, oil alkali, or other deleterious substance.
3. Rock shall be of such character that it shall not disintegrate from the action of air, water or from conditions to be met during handling and placing. Rock rip-rap shall be dense, sound, resistant to abrasion and free from cracks or weak cleavage planes.

GEOTEXTILE

1. Material as specified in the plans.
2. Geotextile shall be free of folds, tears, and wrinkles.

EXECUTION

TECHNICAL PROVISIONS

The Contractor shall remove slide debris, stockpile material, export material, and place rock rip-rap, as well as fine grade the slope as shown on the Plans.

1. The Contractor shall follow the recommendations of the Geotechnical Engineer (Fisher Geotechnical) in their letter “Roadway Embankment Stabilization and Drainage Consultation Wildcat Canyon Road at Sunset Lane and Park Hills Drive, Berkeley California” dated November 15, 2022 and any subsequent addenda.

The Contractor shall complete Clearing and Grubbing as described in Section 10 of these specifications to expose the terrain. The Engineer will complete a field survey, via visual observation, of the work area to confirm the topography. Should the existing topography vary from the Plans, the Engineer and Contractor shall coordinate to modify the lines and grades to achieve the improvements detailed in the Plans.

Prior to placing fill or base for surface improvements all soil surfaces shall be scarified to a depth of 6 inches, moisture conditioned, and compacted to 90% at least 2 percent above optimum in accordance with ASTM Test D1557.

On-site soils containing less than 3% organic material by volume in accordance with ASTM D2974 can be used for fill. The material shall not contain rocks larger than 6 inches in greatest dimension and no more than 15% larger than 2.5 inches. If fill is imported, it shall not have a Plasticity Index greater than 15 and be predominantly granular material. All fill materials shall be approved by the Engineer prior to use.

Fill material shall be placed in horizontal layers of depths compatible to the material being placed and the type of equipment being used. Each layer shall be evenly spread and moistened or aerated, as necessary. Unless otherwise approved by the Engineer, each layer spread for compaction shall not exceed 8 inches of compacted thickness.

Unless otherwise permitted by the Engineer, each layer of fill material shall cover the length and width of the area to be filled before the next higher layer of material is placed. The top surface of each layer shall be approximately level, but with a crown or crossfall of at least 1 vertical in 50 horizontal, but no more than 1 vertical in 20 horizontal, to provide adequate drainage at all times during the construction period.

At the time of compaction, the moisture content of fill material shall be such that the specified relative compaction will be obtained, and the fill will be firm, hard, and unyielding. Fill material which contains excessive moisture shall not be compacted until the material is dry enough to obtain the required relative compaction.

Each layer of earth fill shall be compacted by approved tamping or sheepsfoot rollers, pneumatic-tired rollers, or other mechanical means acceptable to the Engineer, to such extent as will produce the specified relative compaction. At locations where it would be impractical

TECHNICAL PROVISIONS

because of inaccessibility to use such compacting equipment, fill layers shall be compacted to the specified requirements by hand-directed compaction equipment.

Soils shall be compacted as shown in the following table in accordance with ASTM Test D1557

Item	Relative Compaction	Moisture Content
Scarified subgrade in areas to receive fill	90%	At least 2% above optimum
Areas of fill	92%	At least 2% above optimum
Pavement areas within the upper 6 inches of soil	90%	At least 2% above optimum

When soil types, or a combination of soil types, are encountered which tend to develop densely packed surfaces as a result of spreading or compacting operations, the surface of each layer of fill shall be sufficiently roughened after compaction to ensure bond to the succeeding layer.

The Contractor shall keep the soil sub-grade moist up until the base materials are placed.

2. Fine Grading

Fill and cut slopes shall be finished in conformance with the lines and grades shown on the Plans. When completed, the average plane of the slopes shall conform to the slopes indicated on the Plans and no point on the completed slopes shall vary from the designated plane by more than 6 inches measured at right angles to the slope.

3. Rock Slope Protection

- a. A footing trench shall be excavated along the toe of the slope as shown on the plans.
- b. Rocks shall be so placed as to provide a minimum of voids and the larger rocks shall be placed in the toe course and on the outside surface of the slope protection.
- c. Local surface irregularities of the slope protection shall not vary from the planned slopes by more than one foot measured at right angles to the slope.
- d. Where the rip rap is placed on a slope, the placing shall commence at the toe of the slope and progress up the slope. The larger pieces of rip rap shall be placed in the bottom courses.
- e. The rip rap shall be laid closely such that a reasonable semblance of courses is achieved. Smaller pieces of rip rap shall be used to fill the voids.
- f. Where rip rap is placed on a geotextile, it shall be undertaken so that there is no

TECHNICAL PROVISIONS

tearing or damage to the geotextile.

g. Orient ends of key at a 30-degree angle to the direction of flow.

EXPORT

The Contractor shall export all surplus soil. There is no analytical testing data available for soil within the project limits. The Contractor shall assume that all soil has levels of contamination that exceeds environmental screening levels listed by the California Regional Water Quality Control Board for residential land use or commercial/industrial land use but is non-regulated and non-hazardous. All material shall be disposed of in an appropriate landfill with all-weather access. The Contractor shall be responsible for testing soil as required by the disposal site.

The Contractor shall provide waste manifests produced by the receiver of the soil documenting the total volume of soil received.

MEASUREMENT AND PAYMENT PROCEDURES

The contract **lump sum** price paid for “**Slide Repair - Earthwork**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in the earthwork for repairing an unstable slope, complete in place, including excavation, stockpiling material, export of material, testing, transporting of soil, and paying disposal fees, as shown on the plans, as specified in the Standard Specifications and these technical specifications, and as directed by the Engineer.

The contract price paid **per ton** for “**Slide Repair – Class 3 RSP w/Class I RSP and 3/4inch Drain Rock**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing rip-rap outfall protection, complete in place, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-56 – SLIDE REPAIR – STRUCTURAL CONCRETE WALL BETWEEN EXISTING PIERS

GENERAL

The Contractor shall install retaining walls as part of slide repair activities as indicated in the plans and specified herein. These wall shall be reinforced concrete installed in between, and connected to, existing concrete piers. Contractor shall document the condition of existing piers prior to construction activities in accordance with Section 5 of these Specifications. Damage to existing piers as a result of Contractor’s activities shall be repaired to the satisfaction of the City Engineer.

TECHNICAL PROVISIONS

All work, including compaction of subgrade and fill materials, shall be done to the satisfaction of the Engineer.

The Contractor shall submit the concrete mix design and strength data to the Engineer for favorable review prior to ordering materials. Supplier's certificates showing conformance with this specification shall be delivered to the Engineer with each shipment of materials to the job site.

MATERIALS AND SUBMITTALS

1. Materials

a. Portland Cement Concrete for fixed form concrete surface improvements shall be minor concrete conforming to the requirements of Section 90-2 "Minor Concrete" of the Standard Specifications with at least 505 pounds of cementitious material per cubic yard and 1-inch maximum graded coarse aggregate. No bagged mix is permitted. Hand mixing of Portland Cement Concrete for use in concrete improvements shall not be permitted. Strength of concrete in place shall be 4,000 psi at 28 days. No admixtures shall be used without approval of the Engineer. Maximum slump of fresh concrete permitted in these items shall be 4". Slump shall be determined by either ASTM C-143 or California Test Method No. 520 at the Engineer's discretion.

b. Concrete walls shall be secured to existing piers by No. 5 dowels drilled into the piers at with length, spacing and embedment depth as indicated in the Plans. The Contractor shall reinforce the wall horizontally with No. 5 rebar and vertically with No. 4 rebar as indicated in the Plans.

c. Epoxy Coating A934 (Purple) rebar conforming to the requirements of ASTM Designation A615 for Grade 40 bars.

d. Tie wire for reinforcement shall be eighteen (18) gauge or heavier black annealed conforming to the requirements of ASTM Designation A82.

e. Bar reinforcement to be ASTM A615, Grade 60.

g. Class 2 permeable aggregate base

2. Submittals

The Contractor shall submit the concrete mix design and strength data to the Engineer for favorable review prior to ordering materials.

Product Specifications for the following shall be submitted to the Engineer for favorable review prior to ordering materials:

TECHNICAL PROVISIONS

- a. Rebar including dowels
- b. Drainage panel
- c. Backfill
- d. PVC pipe
- e. Couplings
- f. Epoxy Coating
- g. Expansion Joint

Supplier's certificates showing conformance with this specification shall be delivered to the Engineer with each shipment of materials to the job site.

EXECUTION

1. Formwork

- a. Prior to forming for concrete surface improvements, the Contractor shall pass the compaction test for the subgrade from the Engineer.
- b. Forms for concrete improvements shall be subject to the approval of the Engineer. No concrete shall be placed prior to Contractor obtaining such approval.
- c. Forms for concrete surface improvements shall have a smooth and true upper edge and the side of the form to be placed next to concrete shall have a smooth finish. Forms shall be constructed rigid enough to withstand the pressure of the fresh concrete to be placed without any distortion.
- d. All forms shall have been thoroughly cleaned prior to placement and shall be coated with an approved form oil sufficient to prevent adherence of concrete prior to filling.
- e. Forms shall be carefully set to the alignment and grade required by the Plans. Forms shall be rigidly held in place by stakes set at intervals satisfactory to the Engineer. Sufficient clamps, spreaders and braces shall be installed to ensure the rigidity of the forms.
- f. Forms shall be equal to the full depth of the concrete as shown, noted or called for on the Plans or detail drawings.
- g. Forms shall be removed and be backfilled within 3 days after pouring.

2. Concrete Placement

- a. Prior to subgrade work and concrete placement, all debris and trash will be removed from all areas related to this work. Existing subgrade surface shall be re-graded (if necessary) and re-compacted to conform to the grades shown on the Plans.

TECHNICAL PROVISIONS

- b. Any concrete defaced, or otherwise damaged before official acceptance shall be cleaned, repaired or replaced at the Contractor's expense.
- c. If existing utilities are found to interfere with the permanent facilities being constructed under this Contract, immediately notify the Engineer and secure instructions. Do not proceed with permanent relocation of utilities until written instructions are received from the Civil Engineer.
- d. Contractor shall accurately grade and prepare the site to the lines and grades called for on the Plans and detail drawings.
- e. Surface tolerance: Finished surfaces shall not vary more than 1/4 inch. Correct irregularities to the satisfaction of the Engineer without additional cost to the project.
- f. Concrete shall be transported in truck mixers or agitators and discharged with 70 minutes of leaving the plant.
- g. All new walls shall be dowelled to the existing concrete piers. The dowels shall be #5 rebar, 36 inches long at 24 inches maximum vertical spacing. Dowels shall be embedded a minimum of 10-inches into the existing concrete.
- h. New concrete work shall match existing in finish, and color, or as shown on the Plans, or as directed by the Engineer. Concrete shall contain 1.5 pound of lampblack per cubic yard.

Joints

- a. Expansion joints shall be placed between existing piers and edge of new wall. Existing pier shall be cleaned to remove mud, dirt and debris prior to placement of expansion joint material. Expansion joint material shall meet the requirements of the Standard Specifications and shaped to fit the form of the existing concrete pier.
- b. Single-Component, Self-Leveling, Silicone Joint Sealant for Concrete: Joint sealant shall conform to ASTM D 5893, Type SL. Install per manufacturer's guidelines.

The Contractor shall provide samples to the City for the performance of Quality Control tasks, including slump tests and compressive strength tests. Slump tests in accordance with current ASTM C-143 or California Test Method No. 520, at the Engineer's discretion, shall be performed in the presence of the Engineer at the beginning of each day's pour and at such additional times as required by the Engineer. The Contractor shall provide, including but not limited to, three (3) cylinders for testing in accordance with ASTM C39/C39M.

The Engineer shall inspect and approve formwork and reinforcing steel placement prior to concrete pours. The Contractor shall provide at least 24 hours' notice that inspections are required.

TECHNICAL PROVISIONS

MEASUREMENT AND PAYMENT

The contract lump sum price paid for “**Structural Concrete Wall between Existing Piers**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing retaining walls, complete in place, including excavation, connection to existing piers, formwork, reinforcement, wall back-drainage system, drain outlet, drain rock, select engineered backfill, compaction, and disposal of unsuitable materials, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-57 – HYDROSEEDING

The Contractor shall procure a native seed mix to the hills of Alameda County and implement hydroseeding consistent with Section 21-2 of the Standard Specifications.

MEASUREMENT AND PAYMENT

The contract lump sum price paid for “**Hydroseeding**”, includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in hydroseeding, complete in place, as shown on the Plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer.

BID ITEM NO. A-58 – MONUMENT REPLACEMENT

BID ITEM NO. A-59 – MONUMENT PRESERVATION

GENERAL

The Contractor shall be responsible for the preservation of existing survey monuments, benchmarks, reference points, and stakes. Monument preservation includes pre-construction referencing of monuments and post-construction checking of at risk monuments identified in the Plans, Specifications, and as directed by City in the field during construction.

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.

SUBMITTALS

TECHNICAL PROVISIONS

Pre-construction corner records for the referenced at risk monuments and monuments designated for replacement shall be provided to the City prior to the start of construction.

Corner records for the post-construction monument checking and for replacement monuments shall be filed with the County and copies provided to the City.

EXECUTION

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, 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. Corner records for the replacement monuments shall be filed with the County and copies provided to the City.

In the event that any unreferenced 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 AND PAYMENT

The Contract unit price paid for “**Monument Replacement**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved to install the monument, complete in place, as shown on the plans, as specified in the Standard Specifications and these technical provisions, and as directed by the Engineer. The Contractor shall

TECHNICAL PROVISIONS

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.

The Contract lump sum price paid for “**Monument Preservation**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, for doing all work involved in the preservation of at-risk monuments, including referencing and post-construction checking.

BID ITEM NO. A-60 – SUPPLEMENTAL WORK

GENERAL

The City may authorize payment under the “Supplemental Work” item for extra work related to changes or deviations in the scope of work as described in the Project Plans and Special Provisions. The Engineer shall determine such changes. The General Provisions for extra work mark-up shall apply.

All work performed under “Supplemental Work” must be authorized by the Engineer’s written order. Payment may be made following the execution of a Supplemental Work Authorization.

MEASUREMENT AND PAYMENT

“**Supplemental Work**” is shown as a lump sum item in the Bid Schedule. The amount of this item shall represent the value of extra work items performed and authorized via Supplemental Work Authorization. The Contractor shall be paid on pro rata basis for the work done per month, and said payment shall be for providing all labor, material, equipment, devices, supervision, and all incidentals as are needed and as may be required to complete the work.

PART D
TECHNICAL PROVISIONS

SPECIFICATIONS

FOR

SCHEDULE B
FY 2024 STORM DRAIN IMPROVEMENTS

SPECIFICATION NO. 25-11677-C

PART D – TECHNICAL PROVISIONS FOR FY 2024 STORM DRAIN IMPROVEMENT PROJECT

BID ITEM NO. B-1 – MOBILIZATION 1

BID ITEM NO. B-2 – TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS3

BID ITEM NO. B-3 – CHANGEABLE MESSAGE BOARDS3

BID ITEM NO. B-4 – PRE-CONSTRUCTION AUDIO/VIDEO SURVEY 8

BID ITEM NO. B-5 – STORM WATER POLLUTION CONTROLS9

BID ITEM NO. B-6 – EXCAVATION SAFETY10

BID ITEM NO. B-7 – CLEARING, GRUBBING, TREE PROTECTION, AND ROOT PRUNING12

BID ITEM NO. B-8 – TREE REMOVAL – 24” to 36” DIAMETER12

BID ITEM NO. B-9 – STUMP GRINDING – 0” TO 18” DEPTH (REVOCABLE)12

BID ITEM NO. B-10 – STUMP GRINDING – 18” TO 36” DEPTH (REVOCABLE)12

BID ITEM NO. B-11 – POT HOLE AND PROTECT EXISTING UTILITIES..... 18

BID ITEM NO. B-12 – MONUMENT PRESERVATION.....20

BID ITEM NO. B-13 – REMOVE PCC SIDEWALK23

BID ITEM NO. B-14 – REMOVE PCC DRIVEWAY23

BID ITEM NO. B-15 – REMOVE PCC CURB & GUTTER23

BID ITEM NO. B-16 – REMOVE STORM DRAIN CATCH BASIN.....23

BID ITEM NO. B-17 – PCC SIDEWALK.....26

BID ITEM NO. B-18 – PCC DRIVEWAY.....26

BID ITEM NO. B-19 – PCC CURB & GUTTER (1’ GUTTER)26

BID ITEM NO. B-20 – PCC CURB & GUTTER (2’ GUTTER)26

BID ITEM NO. B-21 – PCC VERTICAL CURB26

BID ITEM NO. B-22 – PCC RETAINING CURB26

BID ITEM NO. B-23 – PCC VALLEY GUTTER.....26

BID ITEM NO. B-24 – PCC 1’ TRANSITION FROM FLUSH CURB TO 6” CURB.....26

BID ITEM NO. B-25 – PCC 2’ TRANSITION FROM 6” CURB TO FLUSH CURB.....26

BID ITEM NO. B-26 – PCC 4’ TRANSITION TO ROLLED CURB26

BID ITEM NO. B-27 – PCC THROUGH DRAIN26

BID ITEM NO. B-28 – PCC THROUGH DRAIN TRANSITIONS26

BID ITEM NO. B-29 – PCC MISCELLANEOUS26

BID ITEM NO. B-30 – CURB RAMP CASE A.....26

BID ITEM NO. B-31 – CURB RAMP CASE G.....26

BID ITEM NO. B-32 – REMOVE CROSS DRAIN PIPE UNDER SIDEWALK/CURB RAMP34

BID ITEM NO. B-33 – REMOVE CROSS DRAIN PIPE UNDER STREET.....34

BID ITEM NO. B-34 – INSTALL CROSS DRAIN PIPE UNDER SIDEWALK/CURB RAMP34

BID ITEM NO. B-35 – INSTALL CROSS DRAIN PIPE UNDER STREET.....34

BID ITEM NO. B-36 – REMOVE SIDEWALK CROSS DRAIN CHECKER PLATE34

BID ITEM NO. B-37 – INSTALL SIDEWALK CROSS DRAIN CHECKER PLATE.....34

BID ITEM NO. B-38 – REMOVE JUNCTION BOX34

BID ITEM NO. B-39 – INSTALL JUNCTION BOX.....34

BID ITEM NO. B-40 – REMOVE & REPLACE 8-INCH HMA36

BID ITEM NO. B-41 – STORM DRAIN MAINTENANCE HOLE.....44

BID ITEM NO. B-42 – STORM DRAIN MAINTENANCE HOLE (SHALLOW).....44

BID ITEM NO. B-43 – STORM DRAIN STANDARD CATCH BASIN.....44

BID ITEM NO. B-44 – STORM DRAIN CATCH BASIN 18” X 24”44

BID ITEM NO. B-45 – STORM DRAIN CATCH BASIN 24” X 24”44

BID ITEM NO. B-46 – LOW PROFILE DRAIN INLET.....44

BID ITEM NO. B-47 – 6” HDPE (TYPE S).....47

BID ITEM NO. B-48 – 12” HDPE (TYPE S).....47

BID ITEM NO. B-49 – 15” HDPE (TYPE S).....47

BID ITEM NO. B-50 – 12” HDPE (ASTM F714, SDR 17)47

BID ITEM NO. B-51 – TWIN 8” HDPE (ASTM F714, SDR 11).....47

BID ITEM NO. B-52 – 6” HDPE PERFORATED PIPE.....47

BID ITEM NO. B-53 – SLIPLINE EXISTING 18” CMP WITH 16” HDPE SDR-2152

BID ITEM NO. B-54 – FLUSH AND INVESTIGATE EXISTING 12” CMP STORM DRAIN PIPE54

FY 24 STORM DRAIN IMPROVEMENTS

SPECIFICATION NO. 25-11677-C

BID ITEM NO. B-55 – ABANDON EXISTING STORM DRAIN INFRASTRUCTURE 55

BID ITEM NO. B-56 – ENERGY DISSIPATION ASSEMBLY 57

BID ITEM NO. B-57 – POST-CONSTRUCTION CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION..... 57

BID ITEM NO. B-58 – ADJUST WATER METER TO FINISHED GRADE 58

BID ITEM NO. B-59 – ADJUST SEWER MAINTENANCE HOLE TO FINISHED GRADE..... 58

BID ITEM NO. B-60 – ADJUST SEWER CLEANOUT TO FINISHED GRADE 58

BID ITEM NO. B-61 – RELOCATE SEWER CLEANOUT 58

BID ITEM NO. B-62 – RELOCATE PRIVATE BUBBLE UP DRAIN 58

BID ITEM NO. B-63 – REPLACE EXISTING JUNCTION BOX METAL LID..... 61

BID ITEM NO. B-64 – BOLT DOWN MAINTENANCE HOLE FRAME AND COVER..... 61

BID ITEM NO. B-65 – REMOVE AND REPLACE WOOD WALL 63

BID ITEM NO. B-66 – MONUMENT REPLACEMENT..... 63

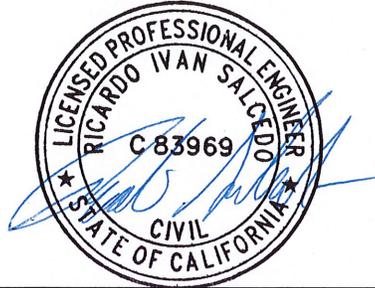
BID ITEM NO. B-67 – PAINTED CURB 64

BID ITEM NO. B-68 – 12” CURED-IN-PLACE PIPE (CIPP) LINER (REVOCABLE)..... 65

BID ITEM NO. B-69 – SUPPLEMENTAL WORK..... 83

TECHNICAL PROVISIONS

The Technical Provisions for the FY 2024 Storm Drain Improvements Project were prepared under the direction of:



Ricardo Salcedo, P.E.
Acting Supervising Civil Engineer

DESCRIPTION OF BID ITEMS**BID ITEM NO. B-1 – MOBILIZATION**

The provisions of Section 9-1.16D, “Mobilization,” of the Standard Specifications shall apply in their entirety except as modified or supplemented herein.

When the final contract price for which the Contractor has bonded for a project increases by over twenty-five percent (25%) of the original base bid price due to change orders and/or increases in the quantities of items incorporated into the project, the Contractor shall be entitled to payment for additional bonding costs that have been paid to the surety company due to this increase. Payment for this cost shall be made via change order and included on the final project billing statement with supporting documentation from the Contractor.

When the final contract price decreases by over twenty-five percent (25%) of the original base bid price due to change orders and/or a decrease in the quantities of items incorporated into the project, the City shall be entitled to a reimbursement of the decrease in bonding costs paid by the Contractor. The refund of these costs shall be made via change order and deducted from the final payment for the release of retention.

It is the responsibility of the Contractor to locate a staging area for office setup, construction laydown areas, or the like and is an appropriate area for mixing and storing materials and equipment. The staging area may be located inside or outside the Berkeley City Limits. Temporary utility controls shall be arranged solely by the Contractor. It is the Contractor’s responsibility to inspect the site to determine its suitability for his operations to execute this contract. The contractor

is required to obtain and show proof of all permits required by the State and/or local agencies for the use of the staging area.

The City is not responsible for providing said staging area. However, the City will assist the Contractor in identifying City property available for the staging area. If City property is used for staging area temporary chain link fencing with privacy screening will be required on-site and shall be provided by the Contractor.

It is the Contractor's responsibility to secure a staging area for contract work, and any associated costs are considered to be included in the various contract prices paid, with no additional compensation allowed therefor. However, if the Contractor only uses City property for a staging area, no additional costs associated with securing a staging area shall be covered by the City. The contractor is not required to obtain permits for the use of City property for the staging area.

The Contractor's proposed staging site(s) shall be approved by the Engineer. If Contractor utilizes the private property for a staging area, Contractor shall submit proof of an agreement for the use of said staging area with the private property owner(s) prior to mobilization.

The staging area(s) shall be maintained throughout the duration of the project such that it is not construed as visual blight in the opinion of the Engineer. All adjoining streets, sidewalks, and gutters shall be swept free of construction materials tracked onto them at the end of each day. Failure to do so will result in City forces cleaning the area at the Contractor's expense. The City of Berkeley labor rate to be used shall be \$150 per hour per person.

Sanitary restroom facilities shall be provided and maintained by the Contractor. The Contractor's proposed locations for restroom facilities shall be reviewed with the Engineer prior to delivery of the restroom facility. If the Contractor and/or subcontractors are working at multiple sites simultaneously, then a restroom facility will be required at each site. Failure to provide sanitary restroom facilities is grounds for suspension of work. Contractor shall note that the count of working days will continue.

For job sites in the hills and/or those with narrow roadway access, only ten-wheel type dump trucks or "transfer" type trucks with trailers will be allowed for off-hauling material from the job site or hauling material to the job site, as directed by the Engineer. For job sites in the hills and/or those with narrow roadway access, ten-wheel trucks with extra axles, or "super-dumps," will not be allowed, as directed by the Engineer.

Measurement and Payment

The contract **Lump Sum** price paid for “**Mobilization**” shall include full compensation for furnishing all labor, supervision, materials, tools, equipment, and incidentals, and for all the work involved in mobilization, including, but not limited to, furnishing all specified contract bonds and insurance certificates, public notification, furnishing and installing project identification signs and signposts, transporting equipment, establishing a storage area (revocable item), sanitary restroom facilities and all other work as specified in the Caltrans Standard Specifications and these Specifications and as directed by the Engineer and no additional compensation will be allowed therefor. Payment will be made as follows:

- a) When 5 percent (5%) of the original contract amount is earned, 50 percent (50%) of the amount bid for mobilization, or 5 percent (5%) of the original contract amount, whichever is lesser, may be paid.
- b) When 10 percent (10%) of the original contract amount is earned, 75 percent (75%) of the amount bid for mobilization or 7.5 percent (7.5%) of the original contract amount, whichever is lesser, may be paid.
- c) When 20 percent (20%) of the original contract amount is earned, 95 percent of the amount bid for mobilization, or 9.5 percent (9.5%) of the original contract amount, whichever is lesser, may be paid.
- d) When 50 percent (50%) of the original contract amount is earned, 100 percent (100%) of the amount bid for mobilization, or 10 percent (10%) of the original contract amount, whichever is lesser, may be paid.
- e) Upon completion of all work on the project, payment of any amount bid for mobilization in excess of 10 percent (10%) of the original contract amount will be paid.

BID ITEM NO. B-2 – TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS**BID ITEM NO. B-3 – CHANGEABLE MESSAGE BOARDS**

Traffic control during construction shall be the responsibility of the Contractor. All traffic control devices shall be in accordance with the latest edition of the 2014 California Manual on Uniform Traffic Control Devices (CA-MUTCD) herein after referred to as Traffic Control Manual.

The Contractor shall submit to the City Traffic Engineer project specific traffic control plans prior to implementing traffic control measures for sidewalk construction. The City of Berkeley reserves the right to modify any portion of the submitted and approved traffic control plans.

In general, the following guidelines for traffic control plans shall be followed:

- Detailed traffic control plans shall be prepared professionally in accordance with the Traffic Control Manual.
 - Specify if the work will be scheduled one block at a time or several blocks at a time.

- Specify if side streets will remain open or if the work will affect the intersections.
- Specify how the traffic will be handled with flaggers, if required.
- The traffic control plan shall identify a traffic coordinator responsible for responding to complaints related to traffic, parking, and driveway access.
- Submit a complete set of Traffic Control Plans for approval at least one (1) month prior to the start of construction.
- “No Parking Signs” must be posted no later than a minimum 72 hours in advance for restricted parking.
- Berkeley Dispatch shall be notified by the contractor by calling (510) 981-5900 prior to implementation of this plan by 8:15 a.m. daily of work locations.
- The lane closure is not permitted on major/collector/arterial roadways during the peak morning period (7:00-9:00 AM) and evening peak period (4:00-6:00 PM).

All holes, trenches, etc., in project area, shall be covered with 1-inch steel plates, shimmed with temporary asphalt on edges, by 3 p.m. or at the end of each workday. As an option to the Contractor, the holes, trenches, etc., can be backfilled and all areas within pavement areas have temporary asphalt toppings. The temporary asphalt shall be regularly maintained. All areas shall be completely restored within ten (10) working days after the work has been completed at that location. All open excavations which are not actively involved in construction activity shall be adequately barricaded against entry by pedestrians or animals.

At the end of any working day when work operations have obscured existing traffic striping, the striping shall be restored via permanent reflective painting or other interim materials subject to the approval of the Engineer. Temporary delineation shall be of the same color and type, including nighttime reflectivity.

At the end of each day's work, and at other times when construction operations are suspended, all equipment and other obstructions shall be removed from that portion of roadway open for use by public traffic. No longitudinal joint shall be left during non-working hours.

Where existing road signs conflict with the proposed work, the Contractor shall relocate such signs to temporary or permanent locations as directed by the Engineer.

If it becomes necessary, in the opinion of the City Engineer, to properly move traffic through the construction area, flagmen shall be present to slow down and reroute traffic, in which case flagmen shall be on duty the entire period the roadway is constructed. Where flagmen are not visible to each other, additional flagmen shall be added as required by the Engineer or the Contractor shall use radios.

Contractor shall take all necessary measures to obtain a normal flow of traffic to prevent accidents and to protect the work throughout the construction stages until completion of the work. The Contractor shall make the necessary arrangements to provide and maintain barriers, cones, guards, barricades, and construction warnings and regulatory signs. The Contractor shall take measures necessary to protect all other portions of the work during construction and until completion, providing and maintaining all necessary barriers, barricade lights, guards, temporary crossovers and watchmen.

In addition to the preceding traffic control and safety measures, the Contractor shall undertake immediately to implement any measures requested by the Engineer, as they deem necessary to ensure the proper flow of traffic and the protection of the public and the safety of the workers. The Contractor shall maintain at all times the ability to respond to calls from the City of Berkeley Police and Fire Departments during non-working hours to replace or provide additional traffic control or safety devices as shall be required by the Police Department.

The Contractor shall be responsible for posting "No Parking" signs a minimum of seventy-two (72) hours in advance of saw cutting, demolition, tree work, concrete work, and resurfacing operations, to comply with the City's construction notification requirement of seventy-two (72) hours. Cones shall not be used as barricades. "No Parking" signs may be obtained from the City at no cost to the Contractor. "No Parking" signs must be posted every twenty (20) feet. 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 regularly 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/Zero Waste 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 three (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 the start of work.

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 twelve (12) feet wide, shall remain open for use by public traffic during construction operations unless noted otherwise in the contract traffic control plans. When construction operations are not actively in progress, not less than two such lanes shall be open to public traffic. No work that interferes with public traffic shall be performed between 5:00 p.m. and 8:00 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. If the Contractor violates 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.

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

Major Streets:

- University Avenue
- San Pablo Avenue
- Shattuck Avenue
- Sacramento Street
- Martin Luther King Jr. Way
- Ashby Avenue
- College Avenue
- Gilman Street
- Adeline Street

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.

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.

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.

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

Access and Egress

Work shall be accomplished in such a manner as to provide access to all intersecting streets and adjacent properties whenever possible. The Contractor shall endeavor to cooperate with all business owners and residents occupying properties fronting on the streets in the matter of access and egress.

If during the course of the work, it is necessary to restrict access to certain driveways for an extended period of time, the Contractor shall notify the affected residents, in writing, at least forty-eight (48) hours in advance.

Contractor shall maintain a clear and accessible pedestrian corridor through the work site at all times.

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

Construction Area Signs

Construction area signs shall be furnished, installed, maintained, and removed when no longer required in conformance with the provisions in the latest edition of the 2014 California Manual on Uniform Traffic Control Devices (California MUTCD), these Technical Provisions, and as directed by the Engineer.

The Contractor may be required to cover certain signs during the progress of the work. Signs that are no longer required or that convey inaccurate information to the public shall be immediately covered or removed, or the information shall be corrected. Covers for construction area signs shall be of sufficient size and density to completely block out the complete face of the signs. The retroreflective face of the covered signs shall not be visible either during the day or at night. Covers shall be fastened securely so that the signs remain covered during inclement weather. Covers shall be replaced when they no longer cover the signs properly.

Changeable Message Boards

The Changeable Message Boards are 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 12-3.12. Message board shall be installed as directed by the Engineer one (1) week prior

to start of construction and shall be relocated to the next street location as the job progresses or as directed by the Engineer. The board shall be maintained to the satisfaction of the Engineer.

Changeable Message Boards are required on the major streets and/or collector streets where the project construction activities occur adjacent to these major/collector streets, and any other locations identified by the Traffic Engineer during construction. The base bid quantity assumes four locations where changeable message signs are to be placed. The changeable message sign locations and types shall be included on the Traffic Control Plans.

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

Measurement and Payment

The contract **Lump Sum** price paid for “**Traffic Control and Construction Area Signs**” shall include full compensation for furnishing all labor including preparation of the Traffic Control Plan; flaggers when necessary; materials including barricades, door hangers and temporary traffic delineation; placing, maintaining, removing and disposing of construction area signs; and for doing all the work, complete in place, and all work necessary to provide for the convenience and safety of the public and to facilitate the performance of the contract work as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

The Contractor will be paid on pro-rata basis for the work done per month and said payment shall be for providing all labor, material, equipment, devices, supervision, and all incidentals as are needed to provide traffic control as specified herein, and as required to complete the work.

The contract unit price paid per **Each** for “**Changeable Message Boards**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in providing and properly maintaining changeable message boards for the duration of construction as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

BID ITEM NO. B-4 – PRE-CONSTRUCTION AUDIO/VIDEO SURVEY

General

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 sites, staging areas, and other areas affected by the work.

Submittal

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.

Measurement and Payment

The contract **Lump Sum** price paid for “**Pre-Construction Audio/Video Survey**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in providing pre-construction audio and video surveys, complete in place, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer. The contract lump sum price shall be paid on the basis of work completed as noted on the monthly submission of progress payment.

BID ITEM NO. B-5 – STORM WATER POLLUTION CONTROLS

This work includes the project area and stormwater pollution controls in the project area, in accordance with Section 13, “Water Pollution Control,” of the Standard Specifications.

Temporary storm drain inlet protection shall be constructed, installed, maintained, and removed at all drainage inlets within the boundaries of the project. The Contractor shall use sediment filter bags to protect the drainage inlet. Throughout the duration of the contract, the Contractor shall maintain and protect to meet the changing conditions around the drainage inlet.

Sediment filter bags shall be installed by removing the drainage inlet grate, placing the sediment bag in the opening, and replacing the grate to secure the sediment filter bag in place. Sediment Filter Bags shall be installed at all storm drain inlets within or adjacent to the project limits. Sediment Filter Bags shall be obtained from a commercial manufacturer, as approved by the Engineer.

When the temporary drainage inlet protection is no longer required the protection materials shall be removed immediately and disposed of in accordance with the provisions in Section 14-10, “Solid Waste Disposal and Recycling,” of the Standard Specifications.

Temporary drainage inlet protection shall be maintained to provide sediment holding capacity and to reduce runoff velocities. Temporary drainage inlet protection shall be repaired or replaced immediately if damage occurs.

Sediment deposits, trash, and debris shall be removed from temporary drainage inlet protection as needed or when directed by the Engineer. Removed sediment shall be deposited within the project limits so that the sediment is not subject to erosion by wind or by water. Trash and debris shall be

removed and disposed of in accordance with the provisions in Section 14-10, "Solid Waste Disposal and Recycling," of the Standard Specifications. All Sediment Filter Bags shall be removed at the conclusion of the project.

Cleanup, repair, removal, disposal, or replacement due to improper installation or as a result of the Contractor's negligence shall not be considered as included in the cost of performing maintenance.

Measurement and Payment

The contract **Lump Sum** price paid for "**Storm Water Pollution Controls**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing and implementing a Water Pollution Control Plan, installing temporary drainage inlet protection in the project area, complete in place, including but not limited to maintenance, replacement, and removal of materials, cleanup and disposal of retained sediment and debris, and removal of all Sediment Filter Bags at the conclusion of the project, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

Payment for Stormwater Pollution controls will be made as follows:

- a) Fifty percent (50%) of the total amount bid for Stormwater Pollution Controls will be paid with the first progress payment after at least five percent (5%) of the original Contract Amount for other items of work has been performed.
- b) When at least ten percent (10%) of the original Contract Amount for other items of work has been performed, an amount will be included in the next monthly progress payment to increase the total amount of Stormwater Pollution Controls paid to seventy-five percent (75%) of the total amount bid for Stormwater Pollution Controls.
- c) When at least twenty percent (20%) of the original Contract Amount for other items of work has been performed, an amount will be included in the next monthly progress payment to increase the total amount of Stormwater Pollution Controls paid to ninety percent (90%) of the total amount bid for Stormwater Pollution Controls.
- d) Upon substantial completion, one-hundred percent (100%) of the remaining contract price paid for Stormwater Pollution Controls will be included in the estimate for payment.

BID ITEM NO. B-6 – EXCAVATION SAFETY

This work shall consist of furnishing and installing temporary sheeting, shoring, benching, and bracing in accordance with the 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, benching, and bracing plans and calculations shall be signed and sealed by a California Registered Professional Engineer and submitted to the City prior to the start of work.

"Excavation Safety" shall conform to the provisions in Section 7-1.02K (6)(b) "Excavation Safety", and these Special Provisions.

Attention is directed to the requirements in Section 6705 of the Labor Code concerning trench excavation safety plans. Excavations shall be adequately shored and braced so that the earth will not slide, move, or settle and so that all existing improvements of any kind will be fully protected from damage.

Attention is called to Article 6 of "Construction Safety Orders" of the California Division of Industrial Safety, that the Contractor is required by law to obey and which are adopted by reference as part of these special provisions.

Attention is directed to Public Contract Code Section 7104, which requires the Contractor to promptly notify the City of Berkeley when working on a contract involving the digging of trenches or excavations in excess of four feet below the surface, and when any of the following are encountered:

- 1) Material that the Contractor believes may be hazardous waste, as defined in Section 25117 of the Health and Safety Code that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing law.
- 2) Subsurface or latent physical conditions at the site differing from those indicated.
- 3) Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for the contract. Such notification shall be in writing and shall be submitted to the Engineer prior to disturbing any of the above conditions.
- 4) Entry and receiving pits shall conform to the following requirements:
 - Protected by the placement of a 6-foot chain-link fence or Type K barrier.
 - Shoring in accordance with Cal-OSHA requirements.

The shoring method's choice shall be left to the Contractor's judgment based on experience, economic considerations, and adjacent improvements such as utilities, pavements, and foundation loads. Temporary shoring should support adjacent improvements without distress and shall be the Contractor's responsibility.

In addition to soil earth pressures, the shoring system will need to support adjacent loads such as construction vehicles and incidental loading, existing structure foundation loads, and street loading. Heavy construction loads (cranes, etc.) and material stockpiles shall be kept at least 15 feet behind the shoring. Where this loading cannot be set back, the shoring will need to be designed to support

the loading. The shoring designer shall provide for timely and uniform mobilization of soil pressures that will not result in excessive lateral deflections.

A California-licensed civil or structural engineer must design and be in responsible charge of the temporary shoring design. The Contractor is responsible for means and methods of construction, as well as site safety. Temporary shoring design calculations shall be submitted to the Engineer for review and approval prior to installation.

The Contractor's attention is directed to Section 7-1.02K(6) (a, b and d), "Occupational Safety and Health Standards" of the Standard Specifications and these special provisions.

Measurement and Payment

The contract **Lump Sum** price paid for "**Excavation Safety**" shall include total compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in providing excavation safety, including shoring plans and calculations (prepared by a California-licensed Civil or Structural Engineer); installing and maintaining shoring, bracing, shielding, and sheeting; and conformance to applicable safety orders, and any necessary subsurface investigations, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

BID ITEM NO. B-7 – CLEARING, GRUBBING, TREE PROTECTION, AND ROOT PRUNING

BID ITEM NO. B-8 – TREE REMOVAL – 24” to 36” DIAMETER

BID ITEM NO. B-9 – STUMP GRINDING – 0” TO 18” DEPTH (REVOCABLE)

BID ITEM NO. B-10 – STUMP GRINDING – 18” TO 36” DEPTH (REVOCABLE)

Clearing, Grubbing, Tree Protection, and Root Pruning shall consist of (but not limited to) removal and disposal of all objectionable material from the project site, including existing vegetable growth, deleterious materials in tree wells, tree roots, grass, weeds, brush, shrubs, asphalt concrete fill in driveways and planter areas, masonry, other unsuitable material, and obstructions interfering with the new construction.

The limits of the clearing, grubbing, tree protection, and root pruning shall be of sufficient area and depth to complete the work as suggested by City's Urban Forestry Representative.

Clearing, grubbing, tree protection, and root pruning shall conform to Section 17-2, "Clearing and Grubbing," of the Standard Specifications. Clearing, grubbing, tree protection, and root pruning shall include limb, trunk, and root protection and tree and root pruning.

Clearing, grubbing, tree protection, and root pruning must be performed in advance of any other grading or construction operations. The area to be cleared and grubbed must be within the building work construction area.

Prior to starting clearing and grubbing operations, the Contractor shall inform the Engineer of the intended limits of his/her clearing and grubbing operations and shall obtain the Engineer's approval on such proposed limits. The Contractor shall not clear and grub any area not essential to their construction obligations and protect from injury or damage resulting from his/her operations all vegetation, facilities, or improvements, which are to remain. All edges of existing paving to remain shall be sawcut in a neat, clean manner.

Shrubs and hedges shall be designated for removal in the project plans or as directed by the Engineer. Existing landscaping and trees which are to remain in place must be protected from injury or damage. Existing trees must be protected with a temporary fence around the drip line, the edge of the tree well or planting strip, or adhere to the requirements set forth in the "Tree and Root Protection and Root Pruning" section. Unless otherwise specified, the Contractor shall protect trees at the Contractor's expense.

Unless otherwise specified, all materials as field marked and as directed by the Engineer to be removed shall be disposed of outside the project limits. The work area shall be left with a neat and finished appearance.

The Contractor shall not store or permit debris to accumulate on site. If the Contractor fails to remove excess debris promptly, the City reserves the right to cause removal at the Contractor's expense.

Residue from cutting operations shall not be permitted to flow into storm drains or across lanes occupied by traffic and shall be removed from the pavement surface, concurrent with the cutting operation.

When hauling is done over highways or City streets, and when directed by the Engineer, the loads must be trimmed and all material removed from shelf areas of the vehicles.

Contractor is advised of the existence of overhead utility lines that may interfere with tree removal operations.

Clearing, grubbing, tree protection, and root pruning must be conducted to ensure minimum interference with sidewalks, or other occupied areas.

Bird Protection

The Contractor shall protect migratory and nongame birds, their occupied nests, and their eggs. The City anticipates nesting or attempting nesting from February 1 to September 30.

The federal Migratory Bird Treaty Act, 16 USC § 703–711, 50 CFR 10, and Fish & Game Code §§ 3503, 3513, and 3800 protect migratory and nongame birds, their occupied nests, and their eggs.

The federal Endangered Species Act of 1973, 16 USC § 1531 and § 1543, and the California Endangered Species Act, Fish & Game Code §§ 2050–2115.5, prohibit the take of listed species and protect occupied and unoccupied nests of threatened and endangered bird species.

The Bald and Golden Eagle Protection Act, 16 USC § 668, prohibits the destruction of bald and golden eagles and their occupied and unoccupied nests.

If an injured or dead bird is found, or migratory or nongame bird nests are discovered that may be adversely affected by construction activities, the Contractor shall immediately stop all work within a one hundred (100) ft radius of the discovery and notify the Engineer. The City will investigate the discovery and authorize when work can resume.

The City may require the Contractor to supply a qualified biologist or implement protection measures for a portion or remainder of the work. Such work will be considered extra work.

Tree and Root Protection and Root Pruning

The Contractor shall protect existing street, park, or median trees, and protected coast live oak trees where the drip line of the tree extends over the area where the improvements are being made. The Contractor shall protect trees with a temporary fence around the drip line or the edge of the tree well or planting strip; or adhere to the requirements set forth in Section (II) – “Limb and Trunk Protection” below.

Should tree or root pruning be necessary to construct the improvements specified in these Special and Technical Provisions, and as directed by the Engineer, the Contractor shall inform the City’s Urban Forestry Representative of the schedule for when the roots will be exposed. The Contractor shall notify the Engineer and contact the City’s Urban Forestry Representative at least three (3) business days in advance of tree or root pruning to allow for inspection of the roots prior to any work. If the Contractor determines that the tree or root inspection is no longer necessary, they must inform the Engineer at least twenty-four (24) hours before the scheduled inspection time. Failure to do so will result in the Contractor bearing responsibility for the inspection costs.

For each round of inspection, the contractor shall prepare for inspection a minimum of five (5) trees, where practical. The Urban Forestry Representative will inspect each site to approve the tree

or root pruning, or work with the Engineer and Contractor to modify the work to accommodate the tree roots. In cases where the proposed root pruning may jeopardize the health or structure of the tree, the Urban Forestry Representative may not allow the root pruning or may require the tree be removed in accordance with the appropriate bid item.

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

- a) The Contractor shall contact the Urban Forestry Representative at 510-981-6660 at least three (3) business days in advance if it is expected that root pruning will be necessary to facilitate the repairs.
- b) The Contractor shall contact USA North 811 Call before You Dig in accordance with all applicable requirements.
- c) The Contractor shall 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.
- d) Contractor shall adhere to USA timeline requirements prior to proceeding with any subsurface work.

II. Limb and Trunk Protection

This section shall apply 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/wattles, or vertical wood slats (ex. 2x4), up to a minimum of eight (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 approved equivalent shall be used to protect the trunk of the tree where it contacts the slats. Lateral branches below eight (8) feet shall also be protected. Contractor shall keep deleterious materials from contacting any part of the trees, or being placed or stored in the tree well or planting strip.

III. Root Protection and Preparation for Root Pruning

Existing sidewalk 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.

- a) Where roots must be pruned, the area shall be excavated down to the depth required for the improvements prior to the Urban Forestry Representative inspecting the site; and all rock, concrete or other loose material removed.
- b) Contractor shall contact the Engineer and Urban Forestry Representative to request an inspection of no fewer than five (5) trees at a time.
- c) Exposed roots shall be covered with soil, mulch, or wet burlap if they will be exposed for more than seventy-two (72) hours without measurable precipitation.

IV. Root Pruning Requirements

- a) Root pruning that has been approved by the Urban Forestry Representative 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) 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.
- c) Roots two (2) inches in diameter or greater shall be pruned by the Contractor in accordance with these provisions.
- d) Roots smaller than two (2) inches in diameter shall be pruned by the Contractor in accordance with these provisions, with the exception of contacting the Urban Forestry Representative.
- e) Large roots may be shaved to a depth of no more than one-third of their thickness, or as approved by the City's Urban Forestry Representative.
- f) At no time shall contractor cut into the root flare as defined by the City Arborist.
- g) Tree damage resulting from failure to adhere to these requirements is subject to the provisions of Section VI – Damages.

The size of the tree well or planting strip will be assessed by the City Engineer or his/her designee to determine if it can be increased in size and still meet the minimum requirements. **All debris resulting from root pruning shall be removed by the Contractor.**

If root pruning would compromise the structural stability of the tree, the tree may be identified for removal the Urban Forestry Representative. Trees may also be removed based on their condition or location. Tree removal will be decided by the Urban Forestry Representative. Tree removal will be coordinated by the Urban Forestry Representative and scheduled in conjunction with the Contractor.

Tree Removal

Tree removal determinations are made in conjunction with root inspections. The contractor shall expose roots in accordance with Section (III) – “Root Protection and Preparation for Root Pruning,” and Section (IV) – “Root Pruning.” If upon inspection, a Certified Arborist identifies the tree for removal, this section shall apply.

Prior to any tree removal, there will be a mandatory Public Outreach Period as outlined below:

- 1) The City will post signage indicating the tree is planned for removal for a minimum of seven (7) days. Additionally:

- a. If there is one (1) tree identified for removal within one block, the City will notify the adjacent property owner
 - b. If there are multiple trees identified for removal within the same block, the City will notify all properties along the entire block
 - c. If the City receives more than two (2) objections during the seven (7) day Public Outreach Period, the City will extend this period an additional fourteen (14) days in order to hold a community meeting.
- 2) At the conclusion of the Public Outreach Period, the City will inform the Contractor of its final determination with respect to the tree removal. Trees damaged or removed prior to receiving a final determination by the City is subject to the provisions of the section titled “Damages” below.
 - 3) No additional compensation or time adjustment will be provided to the Contractor for the maintenance or protection of the site during this Public Outreach period.

Tree identified for removal shall be removed in its entirety along with the stump and roots greater than one (1) inch in diameter to a minimum of fifteen (15) inches below grade. Grade is defined as the elevation of surrounding soil that has not been displaced by the tree or its roots. The resultant void shall be backfilled with clean material free of organics and deleterious material, and compacted to 95% relative compaction.

Stump Grinding

Where existing tree stumps are identified for removal, contractor shall grind the stump and roots greater than one (1) inch in diameter to a minimum depth of fifteen (15) inches below grade. Grade is defined as the elevation of surrounding soil that has not been displaced by the stump or its roots. The resultant void shall be backfilled with clean material free of organics and deleterious material, and compacted to 95% relative compaction.

Measurement and Payment

The contract **Lump Sum** price paid for “**Clearing, Grubbing, Tree Protection, and Root Pruning**” will include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in clearing, grubbing, tree protection, and root pruning, including, but not limited to, removal and disposal of plantings, implementing tree protection measures, and limb pruning as shown on the plans and all other work as specified in the Caltrans Standard Specifications and these Specifications and as directed by the Engineer.

The contract unit price paid per **Each** for “**Tree Removal – 24” to 36” Diameter**” will include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in tree removal complete in place, including but not limited to, root and stump removal, off-haul and disposal including all debris resulting from removal, associated regrading of

the subgrade, import material, backfill, grading and compaction, as specified in the Standard Specifications and these Specifications and as directed by the Engineer.

The contract price paid per **Diameter-Inch** for “**Stump Grinding – 0 to 18” Depth (Revocable)**”, “**Stump Grinding – 18” to 36” Depth (Revocable)**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in stump removal complete in place, including but not limited to, root and stump removal, off-haul and disposal including all debris resulting from removal, associated regrading of the subgrade, import material, backfill, grading and compaction, as specified in the Standard Specifications and these Specifications and as directed by the Engineer. For each stump, diameter-inch shall be the average of the minimum and maximum diameter as measured at the exposed root flare at existing grade. Grade is defined as the elevation of surrounding soil that has not been displaced by the stump or its roots. Depth is defined as the final measured distance from grade to the subgrade elevation required to construct the new improvements. Grinding depth shall be categorized into only one of the stump grinding bid items for which the contract is to be paid and shall not compound in price.

BID ITEM NO. B-11 – POTHOLE AND PROTECT EXISTING UTILITIES

General

Protection and preservation of existing highway facilities, including utilities and preservation of public or private property shall conform to the provisions of Section 15 "Existing Facilities", Section 7 "Legal Relations and Responsibility", and Section 8-1.10 “Utility and Non-Highway Facilities,” of the Standard Specifications, and the Special Provisions.

Execution

The Contractor shall pothole all existing utilities to identify potential conflicts. Existing utilities to be located shall include, but not limited to, street light conduit, storm drain, sanitary sewer, telecommunications, electrical, water gas lines.

The Contractor shall verify the location of existing utility main lines and laterals, prior to starting pulverization and excavation for proposed storm drain lines, by potholing to verify the horizontal and vertical alignment of the utility main and lateral lines.

The Contractor shall expose by hand tool digging methods, and protect and support all existing utility mains and service laterals that cross or are within work areas.

Utility locations, if shown on the Plans, are approximate. There is no guarantee that the utilities shown on the Plans will be the only utilities encountered. The Contractor is hereby notified that during construction, it may be necessary to coordinate his/her operations with utility providers that may have lateral or main lines obstructing construction.

The Contractor shall assume that each property along each side of the project roadway has utility service lateral lines including, but not limited to, sewer, water, cable TV, telephone and gas which are not necessarily shown on the Plans. The Contractor shall perform potholing as needed to verify the location and depth of utilities.

The City reserves the right to make adjustments in the grades and/or alignment of the proposed improvements to avoid obstructions. Where it becomes necessary to rearrange the obstructions for the construction of the proposed improvements, the Contractor shall assume responsibility for notifying the City and for coordination of this work. In either case, no additional compensation shall be allowed to the Contractor for delays or inconveniences. The Contractor may request the City to adjust the contract working days by an equal number of days that it takes to resolve the obstructions, if the controlling item of work is delayed.

Where an underground utility is at variance with the Plans the contractor shall proceed as follows:

- A. Marked utility not shown on the Plans: If a utility is not shown on the Plans but marked in the field by the utility owner, the Contractor shall pothole the utility and proceed with the work providing the utility is not in conflict with the line or grade of the pipeline to be laid and report the discrepancy to the City.
- B. Utility shown on the Plans but not marked: If a utility is shown on the Plans, but not marked by the utility company or marked in a different location, then the Contractor shall consult with the utility company, pothole the utility, and then proceed with the work providing the utility is not in conflict with the foundation or grade of the pipeline to be laid.
- C. Unmarked utility: If a utility is not marked by the utility company and the contractor encounters it, then the contractor shall immediately notify the City and the utility company. The Contractor shall proceed with the work if the utility is not in conflict with the line or grade of the pipeline to be installed.

After potholing is complete, the Contractor shall backfill the potholing location.

Protect Existing Facilities

The Contractor shall work around and protect all existing improvements to remain, including but not limited to existing utilities, monumentation, storm drainage facilities, street lights and conduit, concrete and asphalt concrete pavement, pavement markings, landscaping and appurtenances that are within or adjacent to the construction areas.

The Contractor, prior to beginning any work on or adjacent to the utility, shall verify the location of all utilities. The Contractor shall protect existing facilities to stay in place, including existing electroliers, when placing construction signs.

When performing work over, around, or near existing utilities, whether they are shown on the plans or found in the field, Contractor shall exercise judicious use of proper equipment, appropriate for the prevailing conditions in the field and consistent with the protection of those existing facilities. It is the responsibility of the Contractor to mobilize the proper equipment to assure that existing facilities are not damaged by his operation. The Engineer reserves the right to suspend operations if, in his opinion, the Contractor's equipment is inappropriate for the prevailing field conditions and may potentially cause substantial damage to existing facilities. Such suspension shall not be grounds for complaint or claim of delay or loss of production by the Contractor. If the Contractor insists in continuing work with said equipment, he shall do so at his own risks and shall be responsible, at his sole expense, for the repair or replacement of any damaged facility or property, public or private, resulting from his operation.

This project includes work on streets with overhead and buried utility and service lines. In some locations, these utility and service lines may have minimal clearance with existing and new facilities within the limits of work. It is the Contractor's responsibility to conduct his/her operations around the facilities such that the work is accomplished without damage to the utility lines. The Contractor shall notify each utility at least forty-eight (48) hours in advance of any work around these overhead and buried facilities, and shall satisfy all applicable requirements and safety standards for working in close proximity to these utility and service lines. The Contractor shall protect these utility facilities and arrange for supporting utility facilities, with the utility companies, when necessary.

The Contractor's attention is directed to the existence of underground utility lateral lines, not shown on the Plans. No additional compensation shall be allowed for delays caused by the existence of conflicting underground utility lateral lines. The existence of underground utility lateral lines will not be considered an unforeseen site condition. Contractor shall adjust or replace laterals, or coordinate adjustment of laterals with respective owners.

Measurement and Payment

The contract **Lump Sum** price paid per for "**Pothole and Protect Existing Utilities**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in potholing complete in place, including but not limited to demolition, removal, excavation, backfill, off haul and surface restoration, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

BID ITEM NO. B-12 – MONUMENT PRESERVATION

The Contractor shall be responsible for the referencing and preservation of existing survey monuments depicted on the plans.

Pre-Construction Monument Referencing

All City of Berkeley Survey Monuments located within the project area must be referenced, prior to work commencing, by a land surveyor licensed in the State of California pursuant to the requirements of State of California Streets and Highways Code Sections 732.5, 1492.5 and 1810.5

and Business and Professions Code Section 8771. Corner Records of this work must be submitted for filing to both the County Surveyor of Alameda County, and the City of Berkeley, Public Works Department, Engineering Division, Survey Section.

The Contractor shall file the applicable Corner Records. Corner Records **MUST BE COMPLETED PRIOR TO MOBILIZATION ON SITE**.

Should the Contractor, during the course of construction, encounter a survey monument or benchmark, they shall promptly notify the Engineer, in writing, so that the monument or benchmark may be properly referenced, preserved and/or restored.

The Contractor's surveyor shall search the project area to confirm the location of the monuments. The Contractor and Engineer shall meet to review the locations to define the following:

1. A monument that could be disturbed and a corner record shall be completed and filed.
2. A monument that will be disturbed and corner records shall be completed and monument re-set.

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, hired by the Contractor, 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 shall be the best site for setting reference points. Brass or bronze disks, Mag Nails (or similar concrete nail) with washers, surveyor's nails & tags, etc., shall be used in those cases where the reference can be set on sound concrete curb, gutter, sidewalk, wall, etc.

If no suitable concrete is available, a metal bar or pipe, with a tagged cap or plug, shall be used provided that it is set flush in sound soil or pavement. No reference point shall be set on private property without the surveyor performing the referencing first obtaining permission from the property owner.

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, included as an Appendix to these Specifications. 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.

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 Engineer.

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, shall not be used as a reference point.

No reference point may be set on any fire hydrant or similarly temporary fixture.

Post-Construction Monument Checking

After construction is complete, the contractor's surveyor shall submit a surveyor's report, signed and stamped. The report shall detail 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.

Post-Construction Monument Replacement

Should any monument be found disturbed, the contractor shall replace said monument and file the associated Post-Construction Corner Record with the County and provide a copy to the City.

Measurement and Payment

The contract **Lump Sum** price paid for “**Monument Preservation**” will include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work.

BID ITEM NO. B-13 – REMOVE PCC SIDEWALK

BID ITEM NO. B-14 – REMOVE PCC DRIVEWAY

BID ITEM NO. B-15 – REMOVE PCC CURB & GUTTER

BID ITEM NO. B-16 – REMOVE STORM DRAIN CATCH BASIN

Protection and preservation of existing facilities, including utilities and preservation of public or private property shall conform to the provisions of Section 15 "Existing Facilities", Section 7 "Legal Relations and Responsibility", and Section 8-1.10 “Utility and Non-Highway Facilities,” of the Standard Specifications, and these Special Provisions.

Nothing in these Special Provisions shall relieve the Contractor of the Contractor's responsibilities as specified in Section 7-1.04, “Public Safety,” of the Standard Specifications.

The work shall include removing existing facilities as shown on the plans. Removed facilities shall be disposed of or salvaged as specified in the Standard Specifications, these Special Provisions, as shown on the Plans and as directed by the Engineer. Removed facilities to be disposed of shall become the property of the Contractor.

Material shown on the Plans or designated in these Special Provisions which is to be salvaged or used in the reconstruction work and which has been damaged or destroyed as a result of the Contractor’s operations, shall be repaired or replaced by the Contractor, at his expense.

Contractor shall restore all landscaping around the work area after construction is complete as shown on the Plans and as directed by the Engineer.

The Contractor shall protect from damage, any utilities and other nonhighway facilities that are to remain in place, be installed, relocated, or otherwise rearranged. City-owned electrical facilities may be shallow in the sidewalk, curb ramp, curbs, and driveway areas. The Contractor shall protect such facilities during construction. Damage to such facilities and required repairs to return functionality shall be at the Contractor's expense.

Removals

Existing facilities to be removed under this section and as shown on the Plans shall include, but not be limited to, removing existing concrete driveways, sidewalk, curb ramps, curb, gutter, cross-drain culverts, cross drain inlets/outlets, catch basins, and junction boxes.

Existing street facilities shown on the plans or marked in the field to be removed shall be removed in accordance with the provisions of Section 15-2, "Miscellaneous Facilities" and Section 15-1.03B, "Removing Concrete," of the Standard Specifications, the contract drawings, these Special Provisions, and as directed by the Engineer.

Items to be removed shall be removed and disposed of in accordance with Section 7-1.13, "Disposal of Material Outside the Highway Right of Way", of the Standard Specifications.

Existing concrete to be removed shall be sawcut on the nearest joint or score line. Sawcuts must go entirely through concrete. Cut concrete shall be removed without damaging the concrete that is to remain in place, or any other structures or improvements adjacent to the cut concrete. All sawcut lines shall be approved by the Engineer prior to sawcutting. Concrete removal shall include removing enough existing native or base material to allow for placement of the specified thickness of new base material.

After removal, excavations which are within the limits of new improvements or are in the roadway area shall be backfilled with Class II aggregate base, $\frac{3}{4}$ " maximum, conforming to Section 26, "Aggregate Base", of the Standard Specifications and these Special Provisions. Aggregate base shall be compacted to 95% relative compaction.

After removal, excavations which are outside the limits of new improvements or outside of the roadway area shall be backfilled with, native material free of organic material and free of material greater than four (4) inches in greatest dimension and approved by the Engineer for use as backfill material. Native material shall be compacted to 90% relative compaction.

Sawcut line on the pavement in front of curb or gutter lip, including gutter for curb ramps and driveways, shall be at least 12 inches beyond the concrete edge to allow for construction of forms and eight (8) inches deep.

Damage to concrete or any adjacent existing structure or improvement, which is to remain in place, shall be repaired to a condition satisfactory to the Engineer. Repairing or removing and replacing structures, improvements, and/or the concrete to remain in place, that are damaged outside the limits of concrete to be replaced, shall be at the Contractor's expense and will not be measured nor paid for.

Where no joint exists between concrete to be removed and concrete to remain in place, the concrete shall be cut on a neat line to a minimum depth of four (4) inches with a power-driven saw before the concrete is removed.

Slurry from saw cut operation shall be removed sufficiently by vacuuming or similar method from the concrete surface and shall be prevented from entering any waterway or storm drain system in accordance with best management practices.

Pavement Striping, Marking and Marker Removals

Markers, stripes, or legends which are removed shall be replaced with temporary markers, stripes and legends prior to opening the roadway to vehicular or pedestrian traffic. Removal by sandblasting will not be allowed.

The Contractor shall restore all sewer, gas and waterline system markings on the top of curbs and elsewhere. All markings shall be referenced prior to curb or other removals.

Measurement and Payment

The contract price paid per **Linear Foot** for “**Remove Curb & Gutter**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in removing concrete curb and gutter, base and underlying material as needed to construct new improvements including but not limited to saw cutting, demolition and removal of concrete curb and gutter, hauling, recycling, disposal, cleanup and other incidental work, as shown on the Plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price paid per **Square Foot** for “**Remove Sidewalk**” and “**Remove Driveway**”, shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in removing concrete sidewalk, curb ramp, driveway, pavers, base and underlying material as needed to construction new improvements including but not limited to saw cutting, demolition and removal of concrete and pavers, hauling, recycling, disposal, as shown on the Plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract unit price paid per **Each** for “**Remove Storm Drain Catch Basin**”, shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all

the work involved in the removal of existing catch basins, including but not limited to sawcutting, demolition, hauling, recycling, and disposal of concrete, metal frames and grates, and appurtenances of the structures, backfill, and paving as shown on the Plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

BID ITEM NO. B-17 – PCC SIDEWALK

BID ITEM NO. B-18 – PCC DRIVEWAY

BID ITEM NO. B-19 – PCC CURB & GUTTER (1' GUTTER)

BID ITEM NO. B-20 – PCC CURB & GUTTER (2' GUTTER)

BID ITEM NO. B-21 – PCC VERTICAL CURB

BID ITEM NO. B-22 – PCC RETAINING CURB

BID ITEM NO. B-23 – PCC VALLEY GUTTER

BID ITEM NO. B-24 – PCC 1' TRANSITION FROM FLUSH CURB TO 6" CURB

BID ITEM NO. B-25 – PCC 2' TRANSITION FROM 6" CURB TO FLUSH CURB

BID ITEM NO. B-26 – PCC 4' TRANSITION TO ROLLED CURB

BID ITEM NO. B-27 – PCC THROUGH DRAIN

BID ITEM NO. B-28 – PCC THROUGH DRAIN TRANSITIONS

BID ITEM NO. B-29 – PCC MISCELLANEOUS

BID ITEM NO. B-30 – CURB RAMP CASE A

BID ITEM NO. B-31 – CURB RAMP CASE G

General

Concrete work including but not limited to curb, gutter, sidewalk, curb ramps and driveways shall be constructed at the locations shown on the plans and on Part E and F of the Specifications. Work shall be in accordance with the City's Standard Details, Section 40 "Concrete Pavement", Section 51 "Concrete Structures", Section 73 "Concrete Curbs and Sidewalks", and Section 90 "Concrete" of the Standard Specifications, as directed by the Engineer, and as provided by these Special Provisions.

The construction of these items shall be as shown on the Plans and shall conform to the requirements of City of Berkeley, Standard Plans Nos. 8144, 8145, 8146, 8147, 8148, 8151, 8153 and 8154 except as modified in the Plans and Special Provisions.

Materials**Concrete**

Portland cement concrete for curbs, gutters, sidewalk, and driveway, shall be minor concrete conforming to the requirements of Section 90-2 "Minor Concrete" of the Standard Specifications with at least 505 pounds of cementations material per cubic yard and 1-inch maximum graded coarse aggregate. No bagged mix is permitted.

Concrete mixture design and proportions shall be approved by the Engineer. The maximum slump of fresh concrete permitted in these items shall be four (4) inches. Slump shall be determined by ASTM C143. Placement and consolidation of concrete shall be in accordance with Section 73 of the Standard Specifications.

New work shall match existing in the finish, score pattern, and color, or as shown on the Plans, or as directed by the Engineer. The Engineer reserves the right to change the colored concrete specification without any additional compensation to the Contractor.

- 1) Concrete shall contain 1-1/2 pounds of lampblack per cubic yard.
- 2) Rose colored concrete shall contain six (6) pounds of Davis #160 (rose) per cubic yard. Any concrete discolored, defaced, or otherwise damaged before official acceptance shall be cleaned, repaired or replaced at the Contractor's expense.

Reinforcing Steel

Reinforcing steel bars (Rebar) shall be of Grade 40 or higher and conform to Section 52, "Reinforcement", of the Standard Specifications. Tie wire shall be 18-gauge steel.

Through Drain Plate and Hardware

Through drain steel plates shall be ADA compliant, galvanized, and slip-resistant. Through drain angles, screw, and anchors shall be per the Contract Plans.

Placement of Concrete

Existing subgrade surface shall be re-graded (if necessary) and re-compacted to conform to the grades shown on the plans. Final Grade of the concrete work shall conform to the adjacent existing concrete grade.

Sidewalks, Curb & Gutter and ramps shall be four (4) inches thick, and driveways shall be six (6) inches thick. A four- (4) inch thick class 2 aggregate base shall be installed under new concrete sidewalk and curb ramp, and six- (6) inch aggregate base under new driveway. Class 2 aggregate

base shall conform to Section 26, "Aggregate Bases," of the Standard Specifications and these Special Provisions. The aggregate base must be Class 2, ¾" maximum.

Where the shown aggregate base thickness is 0.50 foot or less you may spread and compact the aggregate base in one layer. Where the shown thickness is more than 0.50 foot, spread and compact the aggregate base in two or more layers approximately equal in thickness. Compact each aggregate base layer to at least 95 percent relative compaction under California Test 231.

No concrete shall be placed until the Engineer has inspected and approved forms and subgrade. Concrete placed without approval by the Engineer is subject to rejection.

All new curb, sidewalk, and driveways constructed adjacent to existing concrete curb or sidewalk shall be dowelled to the existing concrete in accordance with Alameda County Standard Detail No. SD-518, "Joint and Dowel Details."

Concrete shall be poured in such a manner as to complete all pours by 2:00 p.m. the same day unless authorized by the Engineer. The Contractor shall protect the concrete from being defaced during the curing period. Any defaced concrete shall be repaired or replaced by the Contractor at the Contractor's expense. The City may reject any work that is defaced. The Contractor shall dispose of demolition debris offsite at the end of each day.

Joints between existing and new concrete (except existing cold joints) shall be saw cut in a neat, true and straight line.

Weakened plane joints at least 1-1/2 inches deep shall be placed to match joints in existing concrete pavement. If the pavement is not concrete, weakened plane joints at least 1-1/2 inches deep shall be placed at ten (10) feet on center.

Any concrete discolored, defaced, or otherwise damaged before official acceptance shall be cleaned, repaired or replaced at the Contractor's expense.

The Contractor shall adhere to the following timeline for each site:

- The Contractor shall pour concrete no later than 7 calendar days from the date of initial demolition
- For curb ramps, the Contractor shall pour concrete no later than 3 calendar days from the date of initial demolition
- The Contractor shall place HMA plug or complete shoulder paving no later than 7 calendar days from the date of final concrete pour

- The Contractor shall clean up and remove all construction-related debris no later than 5 calendar days from the date of HMA plug placement or shoulder paving completion

Adjustment of Existing Facilities

The Contractor shall be responsible for adjusting all utility boxes, public or private to new finish grades unless noted otherwise on the plans. If a utility or City owned facility has existing damage or is damaged by the contractor, the contractor must coordinate with the utility owner to procure a new box from the respective utility company. It shall be the Contractor's responsibility to coordinate with the utility agencies for adjustment of utilities or new boxes in an expedient manner. New boxes are not paid for by City.

When replacement materials are long-lead items, at the direction of the Engineer, the Contractor shall block out the immediate vicinity of the facility and implement measures to protect the facility in place. When the replacement material is procured, the Contractor shall return to the site to complete the surface restoration in accordance with the appropriate bid item, and no additional compensation for demobilization/remobilization or loss in efficiency will be allowed therefor.

Maintenance hole frames shall be raised by removing any existing concrete collar, raising the frame and cover to finished grade using riser rings, and if required constructing a new concrete collar as shown on the Plans and directed by the Engineer.

Covers shall be adjusted so that there will not be any perceptible difference in elevation between the finished surface and the cover. The Engineer shall be the sole judge of the acceptable degree of smoothness of passage of a motor vehicle or pedestrians over the adjusted covers.

Portland cement concrete used for adjusting covers shall be 3,000 psi concrete conforming to the provisions in Standard Specification Section 51, "Concrete Structures," and shall be one (1) inch maximum grading specified in Section 90-1.02C(4)(d), "Combined Aggregate Gradation," of the Standard Specifications.

Mortar used in resetting maintenance hole covers shall conform to the provisions in Section 51-1.02F, "Mortar," of the Standard Specifications.

Conformance to Adjacent Landscaping Features

Where construction of concrete improvements requires adjustments to adjacent landscaping features shown on the plans (including rock walls), the Contractor shall coordinate the relocation of these features with the property owner. Required adjustment to these features shall be considered as included in the various concrete work items.

Area Restoration and Protection of Existing Facilities

Any voids left between new concrete and existing unpaved areas adjacent to sidewalks and curbs resulting from excavation, removal, or other construction-related activities, shall be filled with topsoil as approved by the Engineer. Backfill work shall be completed within three (3) days of excavation.

Contractor shall adjust adjacent flagstones, bricks or stones in the parking strip and behind the back of walk to the new sidewalk level. Contractor must take pictures and notes to place existing improvements in the original location to extent feasible.

Landscape areas behind new concrete work shall be backfilled with soil that is free of refuse, roots, heavy or stiff clay, lumps of soil larger than 1-inch in size, aggregate, grasses, weeds and other contaminants that would be deleterious to the health of plants, animals or people.

HMA (Type A) placed adjacent to curb shall comply with Section 39, "Asphalt Concrete," of the Standard Specifications and these special provisions.

Any lateral riser damaged by the Contractor shall be repaired in conformance with Berkeley Standards at the Contractor's expense. If any lateral riser is encountered that does not have a frame for the cap, the Contractor shall request a frame from the City before reinstalling the cap. No lateral riser cap shall be installed without a frame.

Sprinkler systems damaged by the Contractor shall be repaired at the Engineer's discretion and tested for functionality at the Contractor's expense.

Restoration work of disturbed grounds or improvements including pavement around new concrete must be done as soon as practicable but no later than seven (7) days after concrete placement.

Curb Ramps

Curb Ramp of the various types shall comply with Caltrans Standard Plan No. RSP A88A, RSP A88B, as shown on the plans, these Special Provisions, and as directed by the Engineer.

Detectable Warning Surface shall consist of raised truncated domes constructed or installed on curb ramps, in conformance with the details shown on the plans and these special provisions. The detectable warning surface shall be prefabricated. The color of the detectable warning surface shall be yellow conforming to Federal Standard 595B, Color No. 33538.

Prefabricated detectable warning surface shall be constructed of an epoxy polymer composite with an ultra-violet stabilized coating employing aluminum oxide particles in the truncated domes, in

conformance with the requirements established by the Department of General Services, Division of State Architect and be installed in conformance with the manufacturer's recommendations.

The finished surfaces of the detectable warning surface shall be free from blemishes.

The manufacturer shall provide a written 5-year warranty for prefabricated detectable warning surfaces, guaranteeing replacement when there is defect in the dome shape, color fastness, sound-on-cane acoustic quality, resilience, or attachment. The warranty period shall begin upon acceptance of the contract.

Prefabricated detectable warning surface shall meet or exceed the following criteria:

1. Water Absorption: 0.35% maximum, when tested in accordance with ASTM D570.
2. Slip Resistance: 0.90 minimum combined wet/ dry static coefficient of friction on top of domes and field area, when tested in accordance with ASTM C1028.
3. Compressive Strength: 18,000 psi minimum, when tested in accordance with ASTM D695.
4. Tensile Strength: 10,000 psi minimum, when tested in accordance with ASTM D638.
5. Flexural Strength: 24,000 psi minimum, when tested in accordance with ASTM C293.
6. Gardner Impact: 450 inch-pounds per inch minimum, when tested in accordance with Geometry "GE" of ASTM D5420.
7. Chemical Stain Resistance: No reaction to 1% hydrochloric acid, urine, calcium chloride, stamp pad ink, gum and red aerosol paint, when tested in accordance with ASTM D543.
8. Wear Depth: 0.03" maximum, after 1000 abrasion cycles of 40 grit Norton Metallite sandpaper, when tested in accordance with ASTM D2486-Modified.
9. Flame Spread: 25 maximum, when tested in accordance with ASTM E84.
10. Accelerated Weathering: No deterioration, fading or chalking for 2000 hours, when tested in accordance with ASTM D2565.

In addition to the requirements above, prefabricated detectable warning surface adhered to concrete shall meet or exceed the following performance criteria:

1. Accelerated Aging and Freeze Thaw of Adhesive System: No cracking, delamination, warping, checking, blistering, color change, loosening, etc. when tested in accordance with ASTM D1037.
2. Salt and Spray Performance: No deterioration after 100 hours of exposure, when tested in accordance with ASTM B117.

All protective plastic coverings shall be removed from the detectable warning surface prior to opening for pedestrian traffic.

Pedestrian and Bicyclist Safety

The Contractor shall provide a safe path of travel for pedestrians when replacing curb ramps, sidewalks, or driveways. Curb ramps shall be replaced within a maximum of three (3) days from the demolition of the existing improvements.

At intersections, only two (2) curb ramps at a time shall be removed and replaced. These two (2) curb ramps shall be the ones located diagonally from each other. Curb ramps on one street across from each other shall be removed and replaced at different times to allow for a safe path of travel for pedestrians. The sequencing of removal and replacement of curb ramps shall be addressed in the traffic control plans.

Measurement and Payment

The contract price paid per **Linear Foot** for the “**PCC Curb & Gutter (1’ Gutter)**”, “**PCC Curb & Gutter (2’ Gutter)**”, “**PCC Vertical Curb**”, and “**PCC Retaining Curb**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in furnishing and placing concrete, complete in place including, excavation, aggregate base, and native material; subgrade preparation; backfill; sand slurry and/or aggregate base; compaction; dowelling; rebar; score marks; weakened plane joints; expansion joints; reconnecting curb drains; furnishing and applying curing compound; HMA conforms; irrigation repairs; salvaging and resetting brick pavers; site restoration; and clean-up, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

The contract price paid per **Square Foot** for “**PCC Sidewalk**”, “**PCC Driveway**”, “**PCC Miscellaneous**”, and “**PCC Valley Gutter**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing concrete sidewalks, driveways and valley gutters including, excavation; subgrade preparation; providing and placing aggregate base; compaction; rebar; wire mesh; score marks; weakened plane joints; expansion joints; furnishing and applying curing compound; HMA conforms; site restoration; irrigation repairs; and clean-up, as shown on the plans, as specified in the Standard Specifications and these Specifications and as directed by the Engineer.

The contract unit price paid per **Each** for “**PCC 1’ Transition from Flush Curb to 6” Curb**”, “**PCC 2’ Transition from 6” Curb to Flush Curb**”, “**PCC 4’ Transition to Rolled Curb**”, and “**PCC Through Drain Transitions**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in furnishing and placing concrete, complete in place including excavation, concrete, aggregate base, and native material; subgrade preparation; backfill; sand slurry and/or aggregate base; compaction; dowelling; rebar; score marks; weakened plane joints; expansion joints; reconnecting curb drains; furnishing and applying curing compound; HMA conforms; irrigation repairs; salvaging and resetting brick pavers; site restoration; and clean-up, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

The contract price paid per **Linear Foot** for “**PCC Through Drain**” shall include full compensation for furnishing all labor, materials, tools, formwork, testing, equipment, and incidentals, including galvanized slip-resistant, ADA accessible steel plate and all angles, screws and anchors and for doing all the work involved in constructing the PCC through drain with steel plate complete in place including reinforcement and aggregate base or subbase as required, subgrade preparation as shown on the Plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

The contract unit price paid per **Each** for “**Curb Ramp Case A**” and “**Curb Ramp Case G**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing curb ramp, complete in place, including but not limited to, field layout, excavation, formwork, adjusting forms for grades, concrete and aggregate base for retaining curbs, cast-in-place detectable warning surfaces, and adjusting utility features and boxes (e.g. water meter box, street light and other electrical box, etc.), relocating roadside signs and posts outside curb ramp limits, finishing and curing, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

Full compensation for concrete installed within a curb ramp shall be measured and paid for as “**PCC Sidewalk**” and no additional compensation will be allowed therefor.

Full compensation for concrete curb and/or gutter installed adjacent to curb ramps and roadway will be measured and paid for as “**PCC Curb & Gutter (2' Gutter)**” and no additional compensation will be allowed therefor.

Full compensation for curb ramp retaining curbs and detectable warning surfaces shall be included in the contract unit price paid for curb ramp of the various types and no additional compensation will be allowed therefor.

Full compensation for protecting-in-place and adjusting to finished grade all utility boxes (public and private), coordination with utility agencies, and replacement of damaged public utility boxes, shall be considered as included in the contract prices paid for the various PCC bid items of work, and no additional compensation will be allowed therefor.

HMA conforms placed within 2 feet of concrete construction shall be considered as included in the contract price paid for the various PCC bid items of work and no additional compensation will be allowed therefor. HMA which extends beyond the 2 foot conform line shall be paid under bid item “**Remove and Replace 8-inch HMA**”.

BID ITEM NO. B-32 – REMOVE CROSS DRAIN PIPE UNDER SIDEWALK/CURB RAMP**BID ITEM NO. B-33 – REMOVE CROSS DRAIN PIPE UNDER STREET****BID ITEM NO. B-34 – INSTALL CROSS DRAIN PIPE UNDER SIDEWALK/CURB RAMP****BID ITEM NO. B-35 – INSTALL CROSS DRAIN PIPE UNDER STREET****BID ITEM NO. B-36 – REMOVE SIDEWALK CROSS DRAIN CHECKER PLATE****BID ITEM NO. B-37 – INSTALL SIDEWALK CROSS DRAIN CHECKER PLATE****BID ITEM NO. B-38 – REMOVE JUNCTION BOX****BID ITEM NO. B-39 – INSTALL JUNCTION BOX**

This work shall consist of removal and/or installation of new cross drains and related structures, protection of existing facilities to remain in place, and modifications to existing storm drain features as shown on the Plans and Part E and Part F of the Specifications; as specified in these Technical Provisions, the City of Berkeley Standard Details and Detail Specifications; and as directed by the Engineer.

Cross drains located at curb returns shall be removed and/or replaced if the curb ramp is to be reconstructed. Contractor shall consider possible long lead time for hollow structural section (HSS) pipes and checkered steel plate non-skid surface when scheduling ramp replacement work.

Where cross drain replacement is required at locations of curb ramp construction, the layout, profile, and alignment of both the curb ramp and cross drain shall be conducted concurrently so that ADA requirements are met, stormwater drainage patterns maintain a positive flow in the gutter and cross drain flowlines, and sumps are avoided in the gutter flowline.

Trenching

Trench excavation, backfill, and shaped bedding shall conform to the provisions in the Standard Details and Detail Specifications of the City of Berkeley.

The pipe shall be laid in a trench excavated to the lines and grades as shown on the Plans or as directed by the Engineer. The bottom of the trench shall be graded and prepared to provide a firm and uniform bearing throughout the entire length of the pipe or culvert. Backfill shall be placed as described in Standard Details and Detail Specifications of the City of Berkeley.

Existing Utilities

The Contractor shall locate existing utilities before any excavation to ensure that the proposed cross drain layout can be constructed. Minor adjustments of drain inlet locations are allowed but need to be brought to the City's attention in the form of a red-lined plan sheet. Water, sewer, or gas utility lines may be relocated after obtaining approval from the City or utility owner.

Cross Drain Pipe

Unless otherwise specified in the plans cross drain underlying curb ramps or sidewalk shall be galvanized 14"x4"x5/16" hollow structural section (HSS). Unless otherwise specified in the plans cross drains connection to junction boxes located in the street or cross drains crossing the street shall be galvanized 14"x6"x1/2" hollow structural section (HSS). Cross drain repair at curb ramps shall include replacement of checkered steel plate at curb inlet and outlets. Proof of order/purchase shall be submitted to the Engineer.

If the required cross drain pipe run is between 20 feet and 30 feet, a 30-foot pipe shall be used and cut the required length. The Contractor shall not be allowed to use two separate pipes to make up a pipe run that is between 20 to 30 feet.

Inlet and outlet structure and checkered steel plate non-skid surface for cross drain at curb ramps shall conform to details on plans. Existing metal castings from cross drain inlet and outlet structures that are to be removed shall be salvaged and delivered to City Corporation Yard, as directed by the Engineer.

HSS culvert joints and junctions shall be welded and fitted with aluminum joint tape and high strength concrete. HSS culvert joint shall be free of loose material and fixed for a clean, tight seal. Joint tape shall be 555 FlexFix UL Listed Tape, or approved equivalent, and high strength concrete shall be Quikrete 5000 Concrete Mix or approved equivalent.

Backfill cross drains trench with Class 2 AB, concrete, and HMA Type A, as indicated on the Plans.

Junction Boxes

Junction boxes shall be constructed and adjusted according to the details shown on the plans.

Measurement and Payment

The contract price paid per **Linear Foot** for **"Remove Cross Drain Pipe under Sidewalk/Curb Ramp"**, **"Install Cross Drain Pipe under Sidewalk/Curb Ramp"**, **"Remove Cross Drain Pipe under Street"** and **"Install Cross Drain Pipe under Street"**, shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in removing and/or replacing cross drain pipe, complete in place, including but not limited to sawcutting, demolition, excavation, shoring, pipe removal, furnishing and placing new pipes, connecting pipes to existing and/or new pipes and facilities, pipe bedding and backfill, compaction, trench restoration and paving, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

The contract unit price paid per **Each** for **"Remove Sidewalk Cross Drain Checker Plate"**, **"Install Sidewalk Cross Drain Checker Plate"**, **"Remove Junction Box"**, and **"Install Junction Box"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals,

and for doing all the work involved in removing and replacing junction boxes and cross drain inlet/outlet checker plates, complete in place, including but not limited to box removal and disposal, trench excavation, bedding and backfill, furnishing and installing new inlets, frames and covers, connecting existing and new cross drain pipes, adjusting new junction boxes to finished grade, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

BID ITEM NO. B-40 – REMOVE & REPLACE 8-INCH HMA

General

This work includes 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 2010 Standard Specifications (Non-revised Edition) except as modified in these special provisions.

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.

Materials

Asphalt Binder

The grade of asphalt binder mixed with aggregate for HMA Type A (except speed tables and dikes) must be PG 64-10.

The grade of asphalt binder mixed with aggregate for Speed Tables and HMA Dikes must be PG 70-10.

Aggregate

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

Base Courses:	3/4 inch Type A, hot mix asphalt
Leveling Courses:	3/8 inch Type A hot mix asphalt
Surface Courses:	1/2 inch Type A, hot mix asphalt
Speed Tables:	3/8 inch Type A, hot mix asphalt
HMA Dikes:	3/8 inch Type A, hot mix asphalt

Mix voids shall be targeted at 3.5%.

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

Tensile Strength Ratio (TSR) shall be 70 minimum in accordance with CTM 371.

Construction

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, "Asphalt Binder" of the current Standard Specifications.

Seal all cracks prior to placing HMA. 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. 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.

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.

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

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.

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

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

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 subplot.

If multiple streets are paved in a day, each street will be considered its own subplot 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 subplot. 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 subplot and the average of the three cores for each subplot 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. The contractor will pay for failing cores. If the core testing produces both passing and failing cores, the cost will be prorated between the contractor and the owner.

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

Reduced Payment Factors for Percent of Maximum 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

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 completed. Hand-compaction includes vibraplates and hand tampers. Hand torches shall be available for rework of areas that 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 discussed satisfactorily unless otherwise allowed by the Engineer.

Measurement & Payment

“Remove & Replace HMA” will be measured and paid for by the square foot. HMA replacement limits shown on the plans are approximate. Limits of replacement shall be as directed by the Engineer in the field and as agreed upon during Construction.

The contract price paid per **Square Foot** for “**Remove & Replace 8-inch HMA**” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in Remove & Replace HMA, complete in place, including, cold planing, excavation, removal, off-haul and disposal of all asphalt concrete, aggregate base, native materials, and/or unsuitable materials; proof rolling; tack coat; furnishing, placing and compacting HMA; and clean-up as shown on the plans, as specified in the Standard Specifications and in these Specifications, and as directed by the Engineer.

This item does not include paving associated with trench restoration or for drainage structure conforms (maintenance holes and catch basins). HMA for this work shall be included in the respective pipe and drainage structure installation bid items.

BID ITEM NO. B-41 – STORM DRAIN MAINTENANCE HOLE**BID ITEM NO. B-42 – STORM DRAIN MAINTENANCE HOLE (SHALLOW)****BID ITEM NO. B-43 – STORM DRAIN STANDARD CATCH BASIN****BID ITEM NO. B-44 – STORM DRAIN CATCH BASIN 18” X 24”****BID ITEM NO. B-45 – STORM DRAIN CATCH BASIN 24” X 24”****BID ITEM NO. B-46 – LOW PROFILE DRAIN INLET****General**

The Contractor shall construct reinforced concrete catch basins, concrete maintenance holes, and other drainage structure at the locations and of the types shown on the plans, and as directed by the Engineer.

Submittals

Contractor shall provide Shop Drawings. When not indicated on the Contract Drawings in sufficient detail or definition, submit detailed drawings of cast-in-place and precast concrete utility structures and related metal work.

Materials

1. Precast Concrete Structures
 - a. Materials - Provide fine and coarse aggregates conforming to ASTM C33, in size commensurate with structure and reinforcement clearances.
 - b. Portland Cement Concrete - Class 4000 minimum Concrete may be polymer or latex modified to achieve higher strengths and denser concrete. Concrete shall not deteriorate from chemical attack of sanitary waste.
 - c. Quality Control
 - i. Quality Assurance and Control: The Engineer shall perform such inspections and tests as required to verify compliance with these Technical Provisions.
 - ii. Furnish samples of materials and their handling as needed by the Engineer for analyses of materials.
2. Metal Covers, Grates, and Inlets
 - a. Ferrous Castings
 - i. Metal used in manufacture of castings shall conform to ASTM A48, Class 35B for Gray Iron, or ASTM A536, Grade 65-45-12 for Ductile Iron.
 - ii. Castings shall be of uniform quality, free from blowholes, shrinkage, distortion or other defects. Castings shall be smooth and cleaned by shot blasting.
 - iii. Minimum tensile strength shall be 35,000 psi.
 - iv. Castings shall be manufactured true to pattern; component parts shall fit together in a satisfactory manner. Round frames and covers shall have continuously machined bearing surfaces to prevent rocking and rattling. Covers shall be of a type that overlaps box edges.

- v. Where castings will be subjected to loads of H20 or greater, as indicated, provide ductile iron castings.
 - b. Cast Ferrous Grates: Grates for area drains and catch basins shall be heavy duty, bicycle safe inlet grates and frames of size and configuration indicated. Grates in roadways and parking areas shall withstand H20 loadings when proof-tested in accordance with Caltrans Bridge Design Specifications Manual, Section 3. Gratings shall be bicycle proof per state standard plan D77B.
3. Miscellaneous Metal
 - a. Steel Materials - Standard structural sections, shapes, plates, bars, and rods, as indicated, conforming to ASTM A36/A36M. Bars conforming to ASTM 108 will be acceptable.
 - b. Anchors and Bolts - ASTM A 307, A449, A563, and F436, as applicable. Bolts and studs, nuts, and washers shall be hot-dip galvanized in accordance with ASTM A153.
 - c. Fabrication - Form and fabricate the work as indicated. Include anchors, fasteners, and accessories to anchor and secure the work in place.
 - d. Galvanizing - All items shall be galvanized after fabrication by the hot-dip process in accordance with ASTM A123. Weight of the zinc coating shall conform with the requirements specified under "Weight of Coating" in ASTM A123.
4. Mortar
 - a. Cement mortar for the sealing of openings for pipe penetrations, for cementing of joints of component parts of precast structures, for providing of flow characteristics for the bottoms of drainage structures, and other features as indicated shall conform with the California Building Code, Chapter 21, Type S (without Lime), with a minimum compressive strength at 28 days of 1,800 psi.
 - b. Mortar shall comply with applicable requirements of ASTM C270, including measurement, mixing, proportioning and water retention. Ten percent by volume of the cement content of the mortar shall be fly ash or pozzolanic material confirming with ASTM C618.
 - c. Use mortar within 90 minutes after mixing. Discard mortar which has been mixed longer or which has begun to set. Retempering of mortar will not be permitted.

Execution

1. At least 72 hours in advance of picking up the materials, notify the Engineer of the time and day the materials will be picked up.
2. Requirements – Construct storm drain inlet and related utility structures in connection with the installation of pipe and utility trenches, as indicated.
3. Cast-In-Place Concrete Structures - Provide formwork, steel reinforcement, and concrete in accordance with applicable requirements of Cast-In-Place Concrete.
4. Precast Concrete Structures - Comply with applicable requirements of ASTM C891. Provide such appurtenances and installation accessories, including cement mortar and sealants, as required for a complete installation.
5. Metal Components - Install maintenance hole covers, grates and frames, curb and gutter inlets, channel inserts, and pulling eyes as indicated and in accordance with the respective manufacturer's instructions. Covers and grates in roadways, parking areas, and concrete walks shall be installed flush with adjacent, abutting pavement.

When a maintenance hole is located in the pavement area, it shall not be constructed to final grade until the pavement has been completed.

Storm drain drop inlet and maintenance hole installation operations shall be performed without damage to any portion of the storm drain system or other utilities in the vicinity that are to remain. Damage to existing storm drain facilities or other utilities in the vicinity that are to remain in place shall be repaired to a condition equal to or better than that existing prior to the beginning of removal operations. The cost of repairing existing storm drain facilities or other utilities in the vicinity damaged by Contractor's operations shall be at the Contractor's expense.

All new and/or modified inlets shall be stenciled with "NO DUMPING, DRAINS TO BAY" medallion.

Measurement and Payment

The quantity of various types of maintenance holes and drainage structures to be paid for will be determined by counting the completed maintenance hole structures, complete in place.

The contract price paid per **Each** for "**Storm Drain Maintenance Hole**", "**Storm Drain Maintenance Hole (Shallow)**", "**Storm Drain Standard Catch Basin**", "**Storm Drain Catch Basin 24" x 24"** and "**Storm Drain Catch Basin 18" x 24"** shall include full compensation for furnishing all labor, materials tools, equipment and incidentals and for doing all work involved in constructing drainage structures including concrete, mortar, structure excavation, disposal of excavated material, structure backfill, crushed rock below the structure base, connection to existing storm drain pipes, furnishing and placing frames and grates or covers, restoring full depth asphalt concrete and concrete sub-slab around the structures, concrete apron, complete in place, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Resident Engineer.

The contract unit price paid per **Each** for "**Low Profile Drain Inlet**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals required to install the inlet complete in place, including saw cutting; excavation; removal and disposal of excavated material; aggregate base; backfill; couplings; pipe riser; fittings; surface restoration; as shown on the plans, as specified in the Standard Specifications, these Specifications, and as directed by the Engineer.

Full compensation for surface restoration per specifications, including but not limited to HMA, concrete conforms and landscaping restoration, shall be considered as included in the contract prices for the various drainage structure items and no separate payment will be made therefor as part of any other contract bid items unless otherwise specified in the plans or specifications.

BID ITEM NO. B-47 – 6” HDPE (TYPE S)**BID ITEM NO. B-48 – 12” HDPE (TYPE S)****BID ITEM NO. B-49 – 15” HDPE (TYPE S)****BID ITEM NO. B-50 – 12” HDPE (ASTM F714, SDR 17)****BID ITEM NO. B-51 – TWIN 8” HDPE (ASTM F714, SDR 11)****BID ITEM NO. B-52 – 6” HDPE PERFORATED PIPE****General**

The Contractor shall furnish and install by open cut excavation all storm drain pipe as shown on the drawings and described in these Specifications and as required to completely interconnect all utility structures with piping.

High density polyethylene pipe shall conform to the provisions in Section 64, "Plastic Pipe", of the Standard Specifications and these Technical provisions. High density polyethylene pipe (HDPE) shall be furnished and installed at the locations shown on the plans, as specified in these Technical Provisions, and as directed by the Engineer.

Submittals

Contractor shall submit manufacturer's product data for pipe, fittings, and pipe connection materials.

Materials**Pipe materials**

Pipe material shall be as noted on the Plans.

1. HDPE Type S – Corrugated exterior and smooth interior
 - a. Pipes 12-inch diameter and larger per AASHTO M294 and ASTM 2306
 - b. Pipes smaller than 12-inch diameter per AASHTO M252 and ASTM 2648
 - c. Water-tight joints per ASTM D2312
2. Solid walled HDPE per ASTM D 3350 or ASTM F 714, butt-fused in accordance with ASTM F 2620. Standard dimension ratio shall be as called out on the plans.
3. 6” Perforated Pipe – (For valley gutters with underdrain)
 - a. 6” perforated Subdrain shall be High Density Polyethylene Pipe (HDPE) pipe conforming to ASTM F2648 (ADS N-12 1B WT pipe or equivalent), Perforated Class II, joints meeting ASTM D3212, F2487 and F1417.

- b. A cleanout shall be installed at the ends of Subdrain runs. The cleanout shall be installed to match new finish grade and shall be per the details shown on the contract plans and shall be paid for separately as provided elsewhere in these Special Provisions.
 - c. Unless otherwise permitted by the Engineer, any over-deflected pipe shall be uncovered and, if not damaged (as determined by the Engineer), it shall be reinstalled. Damaged pipe shall be removed and replaced with new pipe.
4. Fittings shall be the same material as pipe molded or formed to suit pipe sizes and end design.

Backfill

Structure backfill shall comply with the provisions in Section 19-3.02C, “Structure Excavation and Backfill”, of the Standard Specifications. The contractor shall backfill open trench (roadway) in conformance with the City of Berkeley Standard Plan No. 8136 “Trench Excavation and Surface Restoration.” Backfill in landscaping areas, as shown on the project plans, shall comply with the City of Berkeley Standard Plan No. 8136, with the exception of native soil used in place of aggregate base above the “Bedding Material.”

Backfill perforated pipe trench with Class 1, Type B permeable material, as indicated on the Plans.

Concrete Encasement

Concrete for encasement or shallow pipe installation shall comply with the plans.

Reinforcing Steel

Reinforcing steel bars (Rebar) for encasement or shallow trench installations were shown on plans shall be of Grade 40 or higher and conform to Section 52, “Reinforcement”, of the Standard Specifications. Tie wire shall be 18-gauge steel.

Filter Fabric

Subgrade shall not be compacted or permanently covered with geotextile unless approved by the Engineer of Record and shall be as follows:

- a. Material Type: Geotextile shall be non-woven, needle-punched continuous filament geotextile
- b. Material Standards: Survivability - AASHTO M288 Class 2, Flow Rate - Range from 110 to 330 gpm/sf when tested according to ASTM D 4491
- c. Style: Flat and Sock

Protection of Existing Facilities

The Contractor shall locate existing utilities before any excavation to ensure that the proposed storm drain layout can be constructed. Minor adjustments of maintenance hole locations are allowed but need to be brought to the City's attention in form of a red-lined plan sheet. The Contractor shall be responsible for verifying the actual horizontal and vertical location of the existing utilities within the proposed alignment of the proposed storm drain pipe.

The Contractor's attention is directed to the section entitled "Pothole and Protect Ex. Utilities" of these Special Provisions. Contractor shall be cognizant of the existing utility lines in the proximity of the work area and take precautions, as necessary, to not disturb these facilities. The Contractor shall notify Underground Service Alert prior to excavation. Where the clear distance between an existing utility and the storm drain is less than 6 inches, a minimum of 1-1/2-inches of foam wrap shall be placed around the existing utility.

Quality Assurance

Exercise special care during the unloading, handling, and storage of all HDPE pipe to ensure that the pipe is not cut, gouged, scored, or otherwise damaged. Any pipe segment, which has cuts in the pipe wall exceeding 10 percent of the wall thickness, shall be cut out and removed from the site at the Contractor's expense.

The pipe shall be stored so that it is not deformed axially or circumferentially, which may hinder pipe installation. After the unloading of any pipe material, ordered to the project site, and before installation of the pipe, inspect all pipe to verify its condition prior to installation with the Engineer and/or the project inspector. A pipe condition inspection report shall be filed with and approved by the Engineer prior to installation.

All HDPE pipe, without an ultraviolet inhibitor, shall not be stored unprotected against the outside elements.

Execution

The Contractor shall begin his work at the point of downstream connection to the existing storm drain, and lay pipe upgrade. Storm Drains shall be constructed as shown on the plans and shall conform to the details shown in the contract plans except as modified by these Special Provisions, or as directed by the Engineer.

Excavation

Trench excavation and backfill shall conform to City of Berkeley Standard Details and Specifications, Section 19, "Earthwork," of the Standard Specifications, as shown on the Plans and as directed by the Engineer.

The Contractor's attention is directed to the probability of encountering ground water during trenching excavation. This will include all water entering the existing storm drain inlet excavation and /or the trench excavation for new storm drain pipe. Any ground water which may be encountered shall be controlled and removed in accordance with the approved Groundwater Management Plan to be prepared by the Contractor per Section 36 of the Special Provisions.

Trenches or other excavations shall be kept free from water while the pipe or structures are being installed, while concrete is setting, and until backfill has progressed to a sufficient height to anchor the work against possible flotation or leakage.

Disposal of water shall proceed under required permits secured by the Contractor and meet all conditions imposed by all regulatory agencies having jurisdiction and shall not damage property or create a public nuisance. Dewatering systems shall not remove natural soils.

Unless otherwise specified in these Special Provisions, open excavations shall be backfilled at the end of each working day or covered with a steel trench plate, 1 inch minimum in thickness. Excavated material shall be removed from the job site as it is excavated.

Pipe Installation

1. Lay pipe to line and grade indicated. Bell and spigot type, lay bells in cross-cuts cut in trench. Lay pipe with the bell or grooved end uphill.
2. The bottom of the trench shall be graded and prepared to provide a firm and uniform bearing throughout the entire length of the pipe.
3. Prevent dirt from getting into pipe joints.
4. Clean interior of pipe of cement, dirt, and extraneous matter as the work progresses.
5. Joints
 - a. Pipe joints shall be made secure and watertight.
 - b. Employ appropriate equipment to draw the sections of the pipe tightly together.

Backfilling

Piping shall not be covered with backfill material, until inspected, and approved by the Engineer.

After making up pipe joints, fill space between pipe and sides of trench with backfill material half-way up the pipe. Both sides shall be filled for full width of trench at same time and carefully compacted so as to hold the pipe in its proper position.

After pipe has been installed, inspected, and approved, place and compact backfill as specified in Section 17 Trenching and Backfilling.

Backfill material for solid storm drain pipe shall be per City of Berkeley Standard Trench Excavation and Surface Restoration Plan 8136.

When concrete backfill is to be placed the Contractor shall take the necessary precautions so as to not "float" the pipe while placing lean concrete backfill in the trench

Measurement and Payment

The contract price paid per **Linear foot** for "**6-inch HDPE (Type S)**", "**12-inch HDPE (Type S)**", "**15-inch HDPE (Type S)**", "**12-inch HDPE (ASTM F714, SDR 17)**", shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals required to install the pipe complete in place, including saw cutting; excavation; removal and disposal of existing pipe and excavated material; aggregate base; backfill; pipe bedding; couplings; fittings; connections to structures including concrete coring; temporary support; surface restoration; as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract price paid per **Linear Foot** for "**Twin 8-inch HDPE (ASTM F714, SDR 11)**" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals required to install the pipes complete in place, including saw cutting; excavation; removal and disposal of existing pipe; aggregate base; concrete encasement; surface restoration including concrete pavement to the limits shown on plans and per Special Provision "Concrete Pavement"; and other related work as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

Full compensation for trench pavement restoration per specifications shall be considered as included in the contract prices for the various pipe installation items and no separate payment will be made therefor as part of any other contract bid items.

The contract price paid per **Linear Foot** for "**6-inch HDPE perforated pipe**" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals required to install underdrain drainage pipe, including trenching; removal and disposal of excavated material; perforated pipe and fittings; filter fabric; permeable bedding material; connections to structures including concrete coring; and other related work as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

BID ITEM NO. B-53 – SLIPLINE EXISTING 18” CMP WITH 16” HDPE SDR-21

Sliplining shall comply with Section 71-3 – “Rehabilitate Drainage Structures” of the Standard Specifications. The Contractor shall construct a liner inside the existing concrete pipe as shown on the plans. At each end of the pipe the annular space between the new pipe and existing concrete pipe shall be closed with packing mortar to form a plug that it is at least 3-ft long on each side of the casing pipe.

Submittals

Contractor shall provide a submittal of proposed pipe material, packing mortar, and annular space grout for review and approval.

Contractor shall submit pre-construction CCTV documenting the condition of the existing pipe and all connections to the existing storm drain pipe to be sliplined.

Material

Pipe material for sliplining shall be solid walled HDPE SDR 21 per ASTM D 3350 or ASTM F 714, butt-fused in accordance with ASTM F 2620. Fittings shall comply with ASTM D3261.

The annular space between the two pipes may be filled with cement slurry along the entire length of the pipe run if alternated bid item is added. Filling, monitoring and inspection of the annular space shall comply with Section 71-3 of the Standard Specifications. The pre-work for the installation of the new pipe inside of the existing pipe shall include completely cleaning the existing storm drain pipe of all debris, rocks, and silt; and dewatering or diverting water to remove all water from the pipe invert. Grout for the annular space shall comply with section 71-3.01 B (2) of the Standard Specifications and shall have a minimum compressive strength (28 days) of 100 Psi. Grouting pressure must not exceed the pipe liner manufacturer instructions. Grout shall be placed in lifts to avoid flotation or dislocation of inserted pipe liner.

Backfill for entry pits in roadways shall conform to the City of Berkeley Standard Plan No. 8136 “Trench Excavation and Surface Restoration”. Entry pits outside of the roadway area shall be backfilled with native material free of organic material and free of material greater than four (4) inches in greatest dimension and approved by the Engineer for use as backfill material. Native material shall be compacted to 90% relative compaction.

Execution**Camera Inspection**

Contractor shall perform inspections with CCTV equipment to document deficiencies in the existing pipes and locate drainage connections.

The Contractor's attention is directed to the existence of corrosion and holes in the invert of corrugated metal pipe. Holes can be expected to span up to a third of the pipe inside diameter. Contractor shall choose pipe inspection crawler suitable to navigate this type of defect.

Inspection 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 log 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 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.

The Contractor shall identify all defects in the existing pipe requiring corrective action prior to 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 Engineer 2 weeks prior to the start of sliplining work.

Pipe Fusing and Installation

HDPE pipe length must be field connected into continuous lengths above ground with butt-fused joints that do not increase the outside diameter or reduce the inside diameter when assembled.

Attention shall be given to the ambient temperature and resulting contraction or expansion of HDPE pipe during installation. The Contractor is responsible for making necessary adjustments to length of pipe due to the effects of temperature.

Perform trial fusion welds in the field and submit samples to the Engineer for review prior to installation of the pipe. Full penetration welds shall provide a homogeneous material across the cross section of the weld. The fusion machine employed for the trial welds shall be the same machine to be utilized for the complete project installation work.

Contractor shall replace and restore in-kind any landscaping and vegetation disturbed by performance of the sliplining operation.

Measurement and Payment

The contract price paid per **Linear Foot** for “**Slipline Existing 18” CMP with 16” HDPE SDR-21**” shall include full compensation for furnishing all labor, supervision, materials, tools, equipment and incidentals necessary to perform all work involved as shown on the plans, including but not limited to, pipe cleaning; CCTV inspection to document defects and connections; furnishing and installation of the HDPE pipe; flow bypassing; excavation and surface restoration at entry pits; reconnecting existing drainage connections; excavation and in-kind restoration of any existing improvements including landscaping disturbed by reconnection of drainage connections; dewatering of excavations; installation of mortar plugs and annular space grouting; and all other work required for proper rehabilitation of the pipeline as specified in the Standard Specifications, these Specifications, and as directed by the Engineer.

The contract price paid for “**Slipline Existing 18” CMP with 16” HDPE SDR-21**” shall include reconnection of existing drainage connections shown in the plans plus an allowance for 1 additional connection per site. Additional drainage connections beyond this allowance shall be considered extra work.

BID ITEM NO. B-54 – FLUSH AND INVESTIGATE EXISTING 12” CMP STORM DRAIN PIPE

The Contractor shall perform pipe investigation work included in the plans for Site 3. This work includes cleaning of existing 12” corrugated metal pipe, disposal of removed material, and CCTV investigation to confirm the condition of the existing pipe. The Contractor shall notify the City’s Representative upon completion of the investigation and submit video(s) and report(s) documenting the condition of the investigated pipe.

Trash and debris generated by cleaning operations shall be removed and disposed of in accordance with the provisions in Section 14-10, “Solid Waste Disposal and Recycling,” of the Standard Specifications.

Jetting and Rodding

Contractor shall assume cleaning will involve hand tools, mechanically powered rodding machine, and jet flushing with high-velocity hydraulic cleaning equipment. Cleaning requiring the use of other, heavier duty equipment shall be considered extra work.

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 500 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 nozzles shall be capable of producing flows from a fine spray to a solid stream.

Camera Inspection

Contractor shall perform inspections with CCTV equipment to document deficiencies in the existing pipes and locate drainage connections.

The Contractor's attention is directed to the existence of corrosion and holes in the invert of corrugated metal pipe. Holes can be expected to span up to a third of the pipe inside diameter. Contractor shall choose pipe inspection crawler suitable to navigate this type of defect.

Inspection 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 log 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 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.

Measurement and Payment

The contract Lump Sum price paid for “**Flush and Investigate Existing 12” CMP Storm Drain Pipe**” shall be paid on the basis of work completed as noted on the monthly submission of progress payment.

The contract **Lump Sum** price paid for “**Flush and Investigate Existing 12” CMP Storm Drain Pipe**” shall include full compensation for furnishing all labor, supervision, materials, tools, equipment and incidentals for jet flushing; disposal of material removed during jetting operations; CCTV inspection; and all other work required for documenting the condition of existing 12” CMP storm drain as specified in the Standard Specifications, these Specifications, and as directed by the Engineer.

BID ITEM NO. B-55 – ABANDON EXISTING STORM DRAIN INFRASTRUCTURE

This work shall abandon existing storm drain pipes and structures as shown on the plans and as directed by the Engineer. Abandonment shall include filling of pipes and structures with “Controlled

Low-Strength Material” in conformance with Section 19-3.02G of the Standard Specifications; the installation of concrete plugs on each exposed end of the pipe with minor concrete conforming to “Minor Concrete,” Section 90-2 of the Standard Specifications, and in accordance with these special provisions and as directed by the Engineer; disposal of removed material in accordance with the provisions in Section 14-10, “Solid Waste Disposal and Recycling,” of the Standard Specifications; and restoration.

Controlled low-strength material must be a fluid workable mixture of aggregate, cement, and water. The controlled low-strength material must have a 28-day compressive strength of 30 psi minimum. The cement must be one of the following: Cement complying with ASTM C150 or blended hydraulic cement complying with either of the following: ASTM C595 or ASTM C1157.

The material used for the backfill must be installed in accordance with these special provisions, the Standard Specifications, as shown on the plans, and as directed by the Engineer.

The Contractor shall remove and salvage castings from the drainage structures to be abandoned and deliver them to a location as ordered by the Engineer.

The ends of pipes within the drainage structure shall be totally plugged at locations indicated on the plans in a manner approved by the Engineer.

Drainage structures to be abandoned shall be demolished to a depth of at least 2 feet below the subgrade elevation and the demolished material shall be removed for disposal. The bottom slab shall be broken up in such a manner as to prevent water from being trapped. The cavity within the drainage structure shall be filled solidly with.

Any pavement, curbs, or sidewalks or other existing improvements removed or damaged during the work of abandoning drainage structures shall be replaced in kind; areas previously occupied by the removed structures shall be restored with pavement, sidewalk, or curbs, similar to those adjacent to them as directed by the Engineer.

The Contractor shall protect from damage any utilities and other facilities that are to remain in place. Work shall be done in conformance with the provisions of Section 15, “Existing Facilities,” of the Standard Specifications.

Measurement and Payment

The contract **Lump Sum** price paid for “**Abandon Existing Storm Drain Infrastructure**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in abandoning existing drainage pipes in place, including the installation of concrete plugs and filling pipes with CLSM; abandoning drainage structures including, hauling, recycling, disposal of removed materials; backfilling; surface restoration; cleanup; and other

incidental work, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

BID ITEM NO. B-56 – ENERGY DISSIPATION ASSEMBLY

This work includes the installation of all components of the energy dissipation assembly to be installed at the drainage outfall at 2768 Shasta Road, including but not limited to 12”x12” precast box with overflow, wye, cleanout, and pop-up emitter.

Measurement and Payment

The contract **Lump Sum** price paid for “**Energy Dissipation Assembly**” shall include full compensation for furnishing all labor, supervision, materials, tools, equipment and incidentals necessary to perform all work involved in installing all components of the energy dissipation assembly, including but not limited to, excavation, backfill, restoration of any existing improvements disturbed by construction, protection of existing utilities, and all other work required for installation as specified in the plans, these Specifications, and as directed by the Engineer;

BID ITEM NO. B-57 – POST-CONSTRUCTION CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION

General

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 storm drainage pipes.

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 drainage structure and the front lens of the camera. The camera shall provide a view of the inside of the insertion drainage structure, then move through the pipeline in a downstream direction stopping at the center of the end structure. 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 structure identification numbers, direction of view, direction of flow, surface material, pipe size, pipe material, lateral connections, 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 and Payment

The contract price paid per **Linear Foot** for “**Post-Construction Closed Circuit Television (CCTV) Inspection**” includes the submission of the post-construction video and report of the inspected pipes (regardless of pipe size).

BID ITEM NO. B-58 – ADJUST WATER METER TO FINISHED GRADE

BID ITEM NO. B-59 – ADJUST SEWER MAINTENANCE HOLE TO FINISHED GRADE

BID ITEM NO. B-60 – ADJUST SEWER CLEANOUT TO FINISHED GRADE

BID ITEM NO. B-61 – RELOCATE SEWER CLEANOUT

BID ITEM NO. B-62 – RELOCATE PRIVATE BUBBLE UP DRAIN

This work shall consist of lowering, referencing and adjusting to new final grade, and relocating existing facilities including but not limited to storm drain, sanitary sewer and other utility maintenance hole frames and covers, gas and water valve boxes, water meter boxes, sanitary sewer cleanouts within pavement inlay and reconstruction areas, and private drains in conflict with proposed improvements. Facilities located within the new paving areas shall be raised following the placement of the final lift of asphalt concrete. Work shall be done in conformance with the provisions of Section 15, “Existing Facilities,” of the Standard Specifications.

Where encountered, existing covers that are currently not at grade shall be adjusted to the roadway grades as for the various stages of work.

The work also includes coordination with respective facility owners, prior to the adjustment of the facility. The Contractor shall coordinate and cooperate with the utility companies and schedule work in accordance with the order of work specified in these Special Provisions and as directed by the Engineer.

Work by the Contractor shall include locating the facility structures and referencing and setting sufficient marks prior to paving to enable their subsequent retrieval by the Contractor or respective owner. References shall be made using spray chalk or similar non-permanent marking media and the locations of the facility covers shall be painted on the pavement surface immediately after paving to assure they can be found in an emergency.

The Contractor shall submit a plan to the Engineer at least forty-eight (48) hours in advance of any asphalt concrete paving showing all reference points and offset distances set for referenced facilities. In addition, the Contractor must make a list of each utility cover that is paved over and not raised to grade during the paving job (e.g., Sewer, Storm, PG&E, EBMUD and AT&T utility covers) and must notify the utility in writing of the location of said utility cover and the date that it was paved over. A copy of this written notification must be sent to the City.

If a utility cover is paved over and not raised to grade during the paving job, the pavement must be at least 1-1/2 inches thick over the utility cover, and no depression in the roadway surface can be left over the utility cover. If 1-1/2 inches of pavement cannot be laid over a recessed utility cover, then the asphalt concrete shall be feathered to the grade of the utility cover and arrangements with the utility must be made to raise it to grade.

This work shall also include placement of temporary asphalt concrete around the raised maintenance holes if the permanent asphalt concrete patching cannot be placed the same day the facility is raised to grade.

Where frames and covers cannot be lowered flush after cold planing or before replacing asphalt surfacing, frames and covers shall be protected utilizing the following alternatives:

- a) ramp section (cut-back) around “iron” and paint white
- b) place lighted Portable Barricade over iron

If during the performance of raising structures, the Contractor or their subcontractor(s) excavate at a location where a utility does not exist the Contractor will be responsible for repaving that location following moratorium paving standards in accordance with City of Berkeley Standard Plan 8136.

Construction Methods

Facilities including but not limited to storm drain, sanitary sewer and other utility maintenance hole frames and covers, gas and water valve boxes, water meter boxes, and sanitary sewer cleanouts shall be adjusted to grade per utility provider’s standards, as shown on the plans, and as directed by the Engineer.

Maintenance hole frames shall be raised by removing the existing concrete collar, raising the frame and cover to finished grade using riser rings, and constructing a new concrete collar and asphalt concrete patch paving as shown on the Plans and directed by the Engineer.

For all raised structures, the top surface of the raised facility shall be within 1/8-inch of the adjacent finished grade. The Engineer shall be the sole judge of the acceptable degree of smoothness of passage of a motor vehicle over the adjusted covers.

Portland cement concrete used for adjusting covers shall be 3,000 psi concrete conforming to the provisions in Standard Specification Section 51, "Concrete Structures," and shall be one (1) inch maximum grading specified in Section 90-1.02C(4)(d), "Combined Aggregate Gradation," of the Standard Specifications.

Mortar used in resetting maintenance hole covers shall conform to the provisions in Section 51-1.02F, "Mortar," of the Standard Specifications.

Salvaged materials which are undamaged may be reinstalled as directed by the Engineer. Structures built of cast-in-place or precast concrete and brick or vitrified clay pipe parts shall be replaced in kind unless otherwise permitted by the owners of the facilities.

Dirt, rocks or debris shall not be permitted to enter sewer or storm drain lines. When maintenance hole adjustment involves excavation or concrete removal, a temporary cover shall be placed to prevent entry of material into the maintenance hole and sewer pipe.

During paving operations, all surface structures shall be protected, and no adhesive material shall be permitted to fill the joint between the frame and cover.

Work by Utility Companies

Utility companies reserve the right to perform the work using their own forces after the contract is awarded. The Contractor shall notify the utility agencies prior to the start of construction for any coordination effort and to determine if the utility owners will perform the work using their own forces.

The work associated with the lowering and raising of utility maintenance hole covers may be partially eliminated if the utility agencies owning the structure elects to perform these adjustments themselves. The City may grant additional working days for delays caused by utility company work; however, no other compensation will be allowed.

Relocation of Private Sewer and Storm Facilities

When relocating privately owned drains and cleanouts, the Contractor shall coordinate the relocation work with owner as needed to facilitate the work and minimize disruption to sewer service and drainage.

Sanitary sewer cleanout frame and cover shall be constructed as shown on the plans. Sewer lateral and pipe riser materials shall match existing. A new two-way cast iron tee shall be furnished and installed at the base of the riser. Couplings used to join lower lateral, upper lateral, and riser to two-

way tee shall be shielded repair couplings with 316 stainless steel clamp bands meeting the requirements of the CSA B602, ASTM D5926, and ASTM C1173.

Relocated private drains and bubble ups shall be constructed in-kind, matching material of existing, and shall function as intended to the satisfaction of the private property owner.

Measurement & Payment

The contract unit price paid per **Each** for “**Adjust Water Meter to Finished Grade**”, “**Adjust Sewer Maintenance Hole to Finished Grade**”, and “**Adjust Sewer Cleanout to Finished Grade**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in lowering and adjusting existing utility facilities to grade, complete in place, including coordination with the utility companies, disposing or returning old water valve frame and covers, concrete, mortar and HMA (Type A), as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

The contract unit price paid per **Each** for “**Relocate Sewer Cleanout**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in relocating sewer cleanout where shown on plans, complete in place, including coordination with private property owner, new frame and cover, new two-way cast iron tee, riser, concrete collar, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

The contract price paid for **Each** for “**Relocate Private Bubble Up Drain**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in relocating drainage structures where shown plans, complete in place, including coordination with private property owner; pipe, fittings, and related appurtenances; concrete collar, as specified in these Specifications and as directed by the Engineer.

BID ITEM NO. B-63 – REPLACE EXISTING JUNCTION BOX METAL LID

BID ITEM NO. B-64 – BOLT DOWN MAINTENANCE HOLE FRAME AND COVER

This work shall consist of the fabrication of custom junction box metal lid (see Site 3 in plans) and the installation of bolt down maintenance hole (see Site 7 in plans). Work shall be done in conformance with the provisions of Section 75, “Miscellaneous Metal” of the Standard Specifications.

Work includes modifications to concrete structure as needed to install new bolt down maintenance hole frame and cover.

Removed castings shall be disposed of or salvaged as specified in the Standard Specifications, these Technical Provisions, as shown on the Plans and as directed by the Engineer. Removed facilities to be disposed of shall become the property of the Contractor.

Materials

Bolt Down Maintenance Hole Frame and Cover

- Sized to match
- Frame and cover metal shall conform to ASTM A48, Class 35B for Gray Iron, or ASTM A536, Grade 65-45-12 for Ductile Iron.
- Minimum tensile strength shall be 35,000 psi.
- Bolted cover and gasket shall form water-tight seal.
- Bolts shall be stainless steel

Miscellaneous Metal

- Steel Materials - Standard structural sections, shapes, plates, bars, and rods, as indicated, conforming to ASTM A36/A36M. Bars conforming to ASTM 108 will be acceptable.
- Anchors and Bolts - ASTM A 307, A449, A563, and F436, as applicable. Bolts and studs, nuts, and washers shall be hot-dip galvanized in accordance with ASTM A153.
- Fabrication - Form and fabricate the work as indicated. Include anchors, fasteners, and accessories to anchor and secure the work in place.
- Galvanizing - All items shall be galvanized after fabrication by the hot-dip process in accordance with ASTM A123. Weight of the zinc coating shall conform with the requirements specified under "Weight of Coating" in ASTM A123.

Measurement & Payment

The contract unit price paid per **Each** for **"Replace Existing Junction Box Metal Lid"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved with fabricating and installing custom junction box metal lid, complete in place, including removal and disposal of existing metal lid, as shown on the plans, as specified in the these Specifications, and as directed by the Engineer.

The contract unit price paid per **Each** for **"Bolt Down Maintenance Hole Frame and Cover"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved with furnishing and installing of bolt down maintenance hole frame and cover, complete in place, including modification to existing maintenance hole chimney

and removal and disposal of existing manhole frame and cover; as shown on the plans, as specified in the these Specifications, and as directed by the Engineer.

BID ITEM NO. B-65 – REMOVE AND REPLACE WOOD WALL

Work includes the removal and in-kind replacement of existing treated lumber retaining wall as needed to facilitate the regrading and construction of valley gutters on Site 8.

Measurement & Payment

The contract **Lump Sum** price paid for “**Remove and Replace Wood Wall**” shall include full compensation for providing and furnishing all labor, supervision, materials, tools, equipment, and incidentals for doing all work involved in the removal and replacement of treated lumber retaining wall including, but not limited to benching and laying back hillside prior to retaining wall removal, resetting posts, furnishing and installation of timber lagging, and backfill, as shown on the plans, and as directed by the Engineer.

BID ITEM NO. B-66 – MONUMENT REPLACEMENT

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, 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. Corner records for the replacement monuments shall be filed with the County and copies provided to the City.

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, included as an Appendix to these Specifications. 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 and Payment

The contract unit price paid per **Each** for “**Monument Replacement**” will include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing monuments, complete in place, including pre-construction and post-construction monument researching, referencing, and field locating; corner records; coordination with City Surveyor Staff or Project Inspector, removal and disposal of existing railroad spikes; and clean-up; as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

The Contractor will 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. B-67 – PAINTED CURB

Paint for curbs shall be applied in conformance with the provisions in Section 84-2, "Traffic Stripes and Pavement Markings", of the Standard Specifications and these Technical Provisions at the locations shown on the plans and as directed by the Engineer.

Application shall consist of two separate coats of traffic paint of the appropriate color applied to the face and top of the curb.

If painted curb is removed and replaced with new curb, Contractor shall paint new curb in the same color and length as the removed curb. The paint should be Ennis Flint Paints, or an approved equivalent. Color codes for Ennis Flint Paints are as follows:

- Red 985204
- White 985201
- Blue 985205

- Yellow 985202
- Green 985206

For red painted curb at curb ramp returns, Contractor shall paint 20' min. new curb per the guidelines of the latest edition of the 2014 California Manual on Uniform Traffic Control Devices and as approved by the Engineer in the field.

Use mechanical wire brushing to remove dirt, contaminants, and loose material from the surface that is to receive the curb paint.

Use abrasive blast cleaning to remove laitance and curing compound from the surface of new concrete that is to receive the curb paint.

Measurement and Payment

The contract price paid per **Linear Foot** for "**Painted Curb**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in two coats of curb paint, complete in place, as shown on the plans, as specified in the Standard Specifications, these Specifications, and as directed by the Engineer.

BID ITEM NO. B-68 –12" CURED-IN-PLACE PIPE (CIPP) LINER (REVOCABLE)

I. FELT BASED CURED-IN-PLACE PIPE (CIPP) LINER

PART 1 - PRODUCTS

1. 1 GENERAL

It is the intent of this specification to provide for the reconstruction of pipelines and conduits by the installation of a resin-impregnated flexible tube that is either inverted or pulled into the original pipeline/conduit and expanded to fit tightly against said pipeline/conduit by the use of water or air pressure. The resin system shall then be cured by elevating the temperature of the water or air used for the inflation to a sufficient enough level for the initiators in the resin to affect a reaction. The finished cured-in-place pipe (CIPP) shall be such that when the thermosetting resin cures, the total wall thickness shall be a homogeneous and monolithic felt and resin composite matrix, chemically resistant to withstand internal exposure to domestic sewage or stormwater.

The Contractor shall provide Felt based or Fiberglass/Ultraviolet light pipe cured-in-place liner thickness calculations in accordance with ASTM F 1216, Appendix X1. The minimum liner thickness shall be 0.10-inches for 6-inch diameter pipes and 0.75-inches for 45-inch diameter pipes.

The CIPP 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.

1.2 REFERENCED STANDARDS

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 Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)

ASTM D5813: Standard Specification for Cured-in Place Thermosetting Resin Sewer Piping Systems

ASTM D790: Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

ASTM D2990: Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics

1.3 QUALIFICATIONS

Since sewer products are intended to have a 50-year design life, and in order to minimize the Owner's risk, only proven products with substantial successful long-term track records will be approved.

In order for the CIPP and Installation Contractors to be deemed commercially acceptable and approved for this project they must meet the following criteria:

A. CIPP

1. The CIPP product must have been installed in a minimum of 100,000 linear feet or 500 maintenance hole to maintenance hole sections of successful storm/wastewater collection system installations in the U.S. and must be documented to the satisfaction of the Owner.
2. The CIPP shall comply with the latest versions of ASTM D5813, ASTM F1216 or ASTM F1743, including appendices.
3. For the CIPP to be considered Commercially Proven, it shall have been successfully in service in an application similar to this project for a minimum of 5 years and documented to the satisfaction of the Owner.
4. The lining tube manufacturer shall operate under a quality management system that is third party certified to ISO 9001 or other internationally recognized

organization standards. Proof of certification shall be submitted with the Bidder's bid and required for approval.

Third-party test results supporting the structural properties and long-term performance of the CIPP shall be submitted for approval, and such data shall be satisfactory to the Owner. No CIPP will be approved without independent third-party testing verification.

B. Installation Contractor

1. The Installation Contractor shall satisfy all insurance, financial and bonding requirements of the Owner, and shall have installed within the United States a minimum of 100,000 linear feet of the same CIPP being represented by the bidder. In addition, the Installation Contractor shall have had at least 5 years active experience in the installation of the proposed CIPP.
2. The Installation Contractor superintendent(s) designated for the project shall have installed a minimum of 100,000 linear feet and shall have 5 years of installation experience of the same CIPP being represented by the bidder. This shall be documented to the Owner's satisfaction in the form of a resume of work experience detailing scope of work (linear footage and pipe diameters), location of work, and reference contact information for each project listed.
3. The Installation Contractor shall operate under a quality management system that is third party certified to ISO 9001 or other internationally recognized organization standards. Proof of certification shall be submitted with the Bidder's bid and required for approval.

1.4 STRUCTURAL REQUIREMENTS

- A. Each CIPP shall be designed to withstand internal and/or external loads as dictated by the site and pipe conditions. Unless specified differently by the Owner/Engineer in the contract documents, the design thickness of the CIPP shall be derived using the standard engineering methodology as found in ASTM F1216, Appendix X1. The long-term flexural modulus shall not exceed 50 percent of the short-term value for the CIPP and shall be substantiated through third-party testing. The thickness calculations, signed and sealed by a registered professional engineer, shall be submitted to the Owner prior to CIPP installation.
- B. The layers of the finished CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or such that the knife blade moves freely between the layers. If

separation of the layers occurs during testing of the field samples, new samples will be cut from the work. Any reoccurrence may be cause for rejection of the work.

- C. The Enhancement Factor ‘K’ to be used in the CIPP design shall be assigned a value of 7.
- D. Long-term testing in general accordance with ASTM D2990 must have been performed for flexural creep of the CIPP pipe material to be installed. Such testing results are to be used to determine the long-term, time dependent flexural modulus to be utilized in the product design. This is a performance test of the materials (CIPP Tube and Resin) and general workmanship of the installation and curing as defined within the relevant ASTM standard. A percentage of the instantaneous flexural modulus value (as measured by ASTM D790 testing) will be used in design calculations for external buckling. The percentage, or the long-term creep retention value utilized, will be verified by this testing. Retention values exceeding 50% of the short-term test results shall not be applied unless substantiated by qualified third party test data to the Owner's satisfaction. The materials utilized for the contracted project shall be of a quality equal to or better than the materials used in the long-term test with respect to the initial flexural modulus used in the CIPP design.
- E. The CIPP shall meet the following minimum strength requirements:

MINIMUM PHYSICAL PROPERTIES

	ASTM	Polyester	Filled Polyester
Vinyl Ester			
Property	Test Method	System	System
Flexural Strength	D790	4,500 psi	4,500 psi
Flexural Modulus (initial)	D790	250,000 psi	400,000 psi
Flexural Modulus (50-year)	D790	125,000 psi	200,000 psi

- A. The required CIPP wall thickness shall be based as a minimum on the physical properties in Section 1.4.E. above (or greater values if substantiated by third-party testing) and in accordance with the design equations in the Appendix X1 of ASTM F1216, and the following design parameters:

- Design Safety Factor (typically used value) = **2.0**
- Retention Factor for Long-Term Flexural Modulus to be used in Design (or as determined by long-term tests described in Section 1.4.D and approved by the Owner) = **50% max**
- Ovality* (calculated from (X1.1 of ASTM F1216) = **Min 2 %** ⁽¹⁾
- Enhancement Factor, K = **7.0**

Groundwater Depth (above invert of pipe)	=	feet ⁽¹⁾
Soil Depth (above crown of pipe)	=	feet
Soil Modulus (only required for fully deteriorated design conditions)	=	psi ⁽¹⁾
Soil Density (only required for fully deteriorated design conditions)	=	lb/ft ³ (1)
Live Load (only required for fully deteriorated design conditions)	=	e.g. H20 Highway
Design Condition (partially or fully deteriorated)*	=	*

* Based on review of video logs, design conditions of pipeline can be fully or partially deteriorated. (See ASTM F1216 Appendix X1) The Owner will be sole judge as to pipe conditions and parameters utilized in design.

⁽¹⁾ In the absence of other information and to ensure uniformity in bidding, the following assumptions shall be used: ovality = 2%; groundwater depth at half depth to invert; soil modulus = 1000 psi; soil density = 120 lb/ft³.

1.5 MATERIALS

A. CIPP Tube

1. The CIPP tube shall consist of one or more layers of a flexible needled felt or an equivalent nonwoven or woven material, or a combination of nonwoven and woven materials, capable of carrying resin, withstanding installation pressures and curing temperatures. The CIPP tube should be compatible with the resin system to be used on this project. The material should be able to stretch to fit irregular pipe sections and negotiate bends.
2. The CIPP tube should be fabricated under controlled conditions to a size that, when installed, will tightly fit the internal circumference and the length of the original conduit. Allowances should be made for the longitudinal and circumferential stretching that occurs during placement of the CIPP tube. Maximum stretching allowances shall be as defined in ASTM F1216 or ASTM F1743. The Installation Contractor shall verify the lengths in the field before cutting the CIPP tube to length. Continuous individual liners can be made over one or more maintenance hole to maintenance hole sections.
3. The CIPP tube shall be uniform in thickness and when subjected to the installation pressures shall meet or exceed the designed wall thickness.
4. Any plastic film applied to the CIPP tube on what will become the interior wall of the finished CIPP shall be compatible with the resin system used, translucent enough that the resin is clearly visible, and shall be firmly bonded to the felt material.

5. At time of manufacture, each lot of CIPP tube shall be inspected and certified to be free of defects. The CIPP tube shall be marked for distance at regular intervals along its entire length, not to exceed five feet. Such markings shall also include the CIPP tube Manufacturer's name or identifying symbol.
6. The CIPP tube may be made of single or multiple layer construction where any layer must not be less than 1.5 mm thick. A suitable mechanical strengthener membrane or strip may be placed in between layers where required to control longitudinal stretching.

B. Resin Components

1. The resin system shall be a corrosion-resistant styrene-free resin or epoxy, unless using UV-cure technology.
2. The resin used shall not contain non-strength enhancing fillers.
3. When combined with the CIPP tube, the resin system shall provide a CIPP that meets the structural requirements of ASTM F1216 or ASTM F1743, the minimum physical properties specified in Section 1.4.E., and those properties which are to be utilized in the design of the lining system for this project.
4. When combined with the CIPP tube, the resin system shall provide a CIPP that complies with the chemical resistance requirements specified in ASTM F1216 or ASTM F1743.

PART 1 - PRODUCTS

2. 1 EXECUTION

- A. The Installation Contractor shall deliver the resin impregnated CIPP tube to the site and provide all equipment required to insert and cure the CIPP within the host pipe. The Installation Contractor shall designate a location where the CIPP tube will be vacuum impregnated with the resin prior to installation. If requested by the Owner, the Installation Contractor shall notify the Engineer at least 48 hours prior to wet out to allow the Engineer to observe the materials and wet out procedure. All procedures to prepare the CIPP for installation shall be in strict accordance with the Manufacturer's recommendations.
- B. The CIPP shall be vacuum impregnated with resin not more than 120 hours before the time of installation and stored out of direct sunlight at a temperature of less than 70° F.

2.2 NOTIFICATION AND PREPARATION

- A. The Installation Contractor shall notify all residents affected by this construction at least 24 hours prior to any service disruption affecting their service connection. The Installation Contractor shall make every effort to maintain service usage throughout the duration of the project.
- B. The Installation Contractor shall perform cleaning, video, and inspection prior to installation of the CIPP. The Installation Contractor, when required, shall remove all debris from within the pipe that will interfere with the installation of the CIPP. The Owner shall provide a dumpsite for such debris removed during the cleaning operations.
- C. It shall be the responsibility of the Installation Contractor to notify the Owner of line obstructions, offset joints or collapsed pipe that will prevent the insertion of the tube or significantly reduce the capacity of the sewer. The Owner, with input from the Installation Contractor, shall determine the method of pipe repair required and shall address these concerns on a case-by-case basis.
- D. Protruding laterals or services shall be trimmed flush with the inside of the main sewer wall prior to installation of the CIPP. Trimming shall not cause damage to the lateral or service beyond the inside face of the main sewer.

2.4 TELEVISION INSPECTION

- A. The Installation Contractor shall provide video equipment capable of properly documenting the conditions as found within the pipe. Lighting for the video camera shall illuminate the entire periphery of the sewer. The camera shall be radial view type capable of viewing 360° within the pipe and shall provide an unobstructed view of the full pipe.
- B. The video shall begin with a clear identification of the pipeline location, upstream and downstream maintenance hole designation, and pipe diameter. The video shall provide an accurate length measurement of the entire segment and of the distance to each lateral connection. The Installation Contractor shall pan all lateral connections on both the pre and post videos.
- C. Reverse video set-ups shall be utilized when line obstructions prevent full segment televising from the initial set-up direction.
- D. Both a pre-lining and post-lining video shall be submitted to the Owner for approval. The discs shall be clearly and properly labeled.

2.5 INSTALLATION

- A. The CIPP shall be installed in accordance with the practices given in ASTM F1216 (for direct inversion installations) or ASTM F1743 (for pulled-in-place installations). The quantity of resin used for the CIPP tube's impregnation shall be

sufficient to fill the volume of air voids in the CIPP tube with additional allowances being made for polymerization shrinkage and the loss of any resin through cracks and irregularities in the original pipe wall. A vacuum impregnation process shall be used in conjunction with a roller system to achieve a uniform distribution of the resin throughout the CIPP tube.

- B. The resin-impregnated CIPP tube shall be installed into the host pipe by methods specified in ASTM F1216 or ASTM F1743 and proven through previous successful installations. The insertion method shall not cause abrasion or scuffing of the CIPP tube. Hydrostatic or air pressure shall be used to inflate the CIPP tube and mold it against the walls of the host pipe. There will be no use of sewage in place of clean water for insertion of the CIPP tube, or for the curing of the CIPP.
- C. Temperature gauges shall be placed between the CIPP tube and the host pipe's invert position to monitor the temperatures during the cure cycle.

2.6 CURING

- A. After the CIPP tube installation is completed the Installation Contractor shall supply a suitable heat source and recirculation equipment (if required). The equipment shall be capable of delivering hot water or steam throughout the section to uniformly raise the temperature above the temperature required to affect a cure of the resin.
- B. The heat source shall be fitted with suitable monitors to gauge the temperature of the incoming and outgoing heat supply (for water cure) and outgoing heat supply (for steam cure). Water or air temperature in the pipe during the cure period shall be as recommended by the resin Manufacturer.
- C. Initial cure shall be deemed to be completed when inspection of the exposed portions of CIPP appears to be hard and sound and the remote temperature sensor(s) indicates that the temperature is of a magnitude to realize an exotherm. The cure period shall be of a duration recommended by the resin Manufacturer, as modified for the installation process, during which time the recirculation of the heat and/or cycling of the heat exchanger to maintain the temperature continues.

2.7 COOL DOWN

Cool down may be accomplished by the introduction of cool water or air to replace water or pressurized air being relieved. Care shall be taken in the release of the hydrostatic head so that a vacuum will not be developed.

2.8 FINISH

- A. The finished CIPP shall be continuous over the entire length of an insertion run and be as free as commercially practical from visual defects such as foreign inclusions,

dry spots, pinholes, and delamination. The CIPP shall be homogeneous and free of any leakage from the surrounding ground to the inside of the CIPP.

- B. Where the CIPP is installed through an intermediate maintenance hole uninterrupted, the invert shall be maintained smooth through the maintenance hole, with approximately the bottom half of the CIPP continuous through the maintenance hole. The invert of the maintenance hole shall be shaped and grouted as necessary to support the liner. The cost of this work shall be included in the CIPP unit price.
- C. During the warranty period, any defects which will affect the integrity or strength of the CIPP, collect solids, or reduce hydraulic flow capabilities of the product shall be repaired at the Installation Contractor's expense in a manner mutually agreed upon by the Owner and the Installation Contractor.

2.9 REINSTATE LATERALS AND SERVICES

- A. Accurate location of the lateral and service connections shall be made by inspection of the pre-installation video or sewer walk.
- B. After the CIPP has been installed, all existing active lateral sewers and services shall be reinstated unless otherwise indicated by the Owner or on the plans. The reinstatement of laterals and services shall be done without excavation unless otherwise specified by the Engineer. Reinstatement of laterals and services will be accomplished from the interior of the CIPP by means of a video camera directed cutting device or by direct man entry when feasible.
- C. All cut lateral and service connections shall be free of burrs, frayed edges, or any restriction preventing free flow of wastewater. Laterals shall be reinstated to a minimum of 90% of their original diameter and no more than 100% of their minimum diameter. The CIPP shall be tightly sealed at the cut openings with no gaps.

2.10 QUALITY ASSURANCE PROCEDURES

- A. For every two thousand five hundred (2,500) lineal feet of liner installed, two (2) flat plate samples shall be processed and tested. For pipe diameters less than 18 inches, restrained end samples may also be utilized. The CIPP physical properties shall be tested in accordance with ASTM F1216, Section 8, using either allowed sampling method. The flexural properties must meet or exceed the values listed in Section 1.4.E. of this specification and the values submitted to the Owner by the Installation Contractor for this project's CIPP wall design, whichever is greater.
- B. Testing shall be completed by an accredited, independent laboratory. Testing results shall be provided to the Owner within 7 days of receipt of such results.
- C. Wall thickness of samples shall be determined in a manner consistent with 8.1.2 of ASTM D5813. The minimum wall thickness at any point shall not be less than

87.5% of the specified design thickness calculated in 1.4.F of this document. The average wall thickness shall not be less than the specified thickness calculated in 1.4.F. of this document.

- D. Flexural testing of the collected samples shall be conducted in accordance with ASTM D790, latest version, with only the structural portion of the CIPP being tested.
- E. CIPP installation shall be inspected by post-lining video inspection. Variations from true line and grade may be inherent because of the conditions of the original piping. No infiltration of groundwater should be observed. All service entrances should be unobstructed and accounted for.

II. FIBERGLASS/ULTRAVIOLET LIGHT CURED-IN-PLACE PIPE (CIPP) LINER

PART 1 - PRODUCTS

1.1 GENERAL

It is the intent of this specification to provide for the reconstruction of pipelines and conduits by the installation of a resin-impregnated, glass fiber reinforced flexible liner that is pulled into the original pipeline/conduit and expanded to fit tightly against said pipeline/conduit by air pressure. The liner shall be cured with ultraviolet light and the finished cured-in-place pipe (CIPP) shall be such that when the resin cures, the total wall thickness shall be a homogeneous and monolithic fiberglass and resin composite matrix, chemically resistant to withstand internal exposure to domestic sewage, stormwater or the defined waste stream.

1.2 REFERENCED STANDARDS

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 Thermosetting 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 Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)

ASTM D5813: Standard Specification for Cured-in Place Thermosetting Resin Sewer Piping Systems

ASTM D543: Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents.

ASTM D790: Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

ASTM D2990: Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics

1.3 QUALIFICATIONS

A. Since sewer products are intended to have a 50-year design life, and in order to minimize the Owner's risk, only products with substantial, successful, long-term track records will be approved. In order for the CIPP and Installation Contractors to be deemed commercially acceptable and approved for this project they must meet the following criteria:

1. The CIPP product manufacturer shall have at least 10 years of experience in the successful manufacturing of glass fiber, UV cured-in-place liners.
2. The CIPP product must have been installed in a minimum of 5,000,000 linear feet or 4,000 maintenance hole to maintenance hole line sections of successful wastewater collection system installations worldwide, of which 1,000,000 LF shall be within the U.S. and must be documented to the satisfaction of the Owner.
3. The CIPP shall comply with the applicable sections of the latest versions of ASTM D2019, D5813, F1216 and F1743, including appendices.
4. For the CIPP to be considered Commercially Proven, it shall have been successfully in service in an application similar to this project for a minimum of 10 years and documented to the satisfaction of the Owner.
5. The lining tube manufacturer shall operate under a quality management system that is third party certified to ISO 9001 or other internationally recognized organization standards. Proof of certification shall be submitted with the Bidder's bid and is required for approval.
6. Third-party test results supporting the structural properties and long-term performance of the CIPP shall be submitted for approval, and such data shall be satisfactory to the Owner. No CIPP will be approved without independent third party testing verification.

B. Installation Contractor

1. The Installation Contractor shall satisfy all insurance, financial and bonding requirements of the Owner, and shall have installed within the United States a minimum of 100,000 linear feet shall be the exact glass fiber reinforced, UV light cured product represented by the bidder. In addition, the Installation Contractor shall have had at least 5 years active experience in the installation of CIPP.

2. The Installation Contractor's superintendent(s) designated for the project shall have installed a minimum of 100,000 linear feet and shall have 5 years of installation experience with CIPP, of which 5,000 linear feet must be with the exact glass fiber reinforced, UV cured product represented by the bidder. This shall be documented to the Owner's satisfaction in the form of a resume of work experience detailing scope of work (linear footage and pipe diameters), location of work, and reference contact information for each project listed.
3. The Installation Contractor shall operate under a quality management system that is third party certified to ISO 9001 or other internationally recognized organization standards. Proof of certification shall be submitted with the Bidder's bid and required for approval.

1.4 STRUCTURAL REQUIREMENTS

- A. Each CIPP shall be designed to withstand internal and/or external loads as dictated by the site and pipe conditions. Unless specified differently by the Owner/Engineer in the contract documents, the design thickness of the CIPP shall be derived using the standard engineering methodology as found in ASTM F1216, Appendix X1, but in no case shall be less than 3 mm. The thickness should be increased in 1.0 mm increments as necessary to meet ASTM F1216/F2019 design formula. The thickness calculations, signed and sealed by a registered professional engineer, shall be submitted to the Owner prior to CIPP installation.
- B. The layers of the finished CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or such that the knife blade moves freely between the layers. If separation of the layers occurs during testing of the field samples, new samples will be cut from the work. Any reoccurrence may be cause for rejection of the work.
- C. The Enhancement Factor 'K' to be used in the CIPP design shall be assigned a value of 7.
- D. Long-term testing in general accordance with ASTM D2990 must have been performed for flexural creep of the CIPP pipe material to be installed. Such testing results are to be used to determine the long-term, time dependent flexural modulus to be utilized in the product design. This is a performance test of the materials (CIPP Tube and Resin) and general workmanship of the installation and curing as defined within the relevant ASTM standard. A percentage of the instantaneous flexural modulus value (as measured by ASTM D790 testing) will be used in design calculations for external buckling. The percentage, or the long-term creep retention value utilized, will be verified by this testing. Retention values exceeding 50% of the short-term test results shall not be applied unless substantiated by qualified third party test data to the Owner's satisfaction. The materials utilized for the contracted project shall be of a quality equal to or better than the materials used in the long-term test with respect to the initial flexural modulus used in the CIPP design.

E. The CIPP shall meet the following minimum strength requirements:

$$\begin{aligned} \text{Flexural Strength (ASTM D790)} &= 6,500 \text{ psi} \\ \text{Flexural Modulus of Elasticity (ASTM D790)} &= 725,000 \text{ psi} \end{aligned}$$

F. The required CIPP wall thickness shall be based at a minimum on the physical properties in Section 1.4.E. above (or greater values if substantiated by third-party testing) and in accordance with ASTM F2019 and the design equations in the Appendix X1 of ASTM F1216, with the following design parameter considerations:

$$\text{Design Safety Factor (typically used value)} = 2.0$$

$$\begin{aligned} \text{Retention Factor for Long-Term Flexural Modulus to be used in Design} &= 50\% \\ \text{max} & \\ \text{(or as determined by long-term tests described in Section 1.4.D and approved by} & \\ \text{the Owner)} & \end{aligned}$$

$$\text{Ovality* (calculated from (X1.1 of ASTM F1216))} = \%^{(1)}$$

$$\text{Enhancement Factor, K} = 7.0$$

$$\text{Groundwater Depth (above invert of pipe)} = \text{feet}^{(1)}$$

$$\text{Soil Depth (above crown of pipe)} = \text{feet}$$

$$\text{Soil Modulus (only required for fully deteriorated design conditions)} = \text{psi}^{(1)}$$

$$\text{Soil Density (only required for fully deteriorated design conditions)} = \text{lb/ft}^3^{(1)}$$

$$\text{Live Load (only required for fully deteriorated design conditions)} = \text{e.g. H20 Highway}$$

$$\text{Design Condition (partially or fully deteriorated)*} = *$$

* Based on review of video logs, design conditions of pipeline can be fully or partially deteriorated. (See ASTM F1216 Appendix X1) The Owner will be sole judge as to pipe conditions and parameters utilized in design.

(1) In the absence of other information and to ensure uniformity in bidding, the following assumptions shall be used: ovality = 2%; groundwater depth at half depth to invert; soil modulus = 1000 psi; soil density = 120 lb/ft³.

1.5 MATERIALS

A. CIPP Tube

1. The CIPP tube shall consist of one or more layers of glass fiber reinforced materials capable of carrying resin, withstanding installation pressures and

curing temperatures. The CIPP tube should be compatible with the resin system to be used on this project. The material should be able to stretch to fit minor irregular pipe sections.

2. The CIPP tube should be fabricated under controlled conditions to a size that, when installed, will tightly fit the internal circumference and the length of the original conduit. The tube shall have sufficient strength to bridge missing pipe sections, with the use of a reinforcing cloth sleeve if necessary.
3. The Installation Contractor shall verify the lengths in the field before cutting the CIPP tube to length. Continuous individual liners can be made over one or more maintenance hole to maintenance hole sections.
4. The CIPP tube shall be uniform in thickness and when subjected to the Manufacturer recommended installation pressures shall meet or exceed the designed wall thickness.
5. Interior and exterior plastic foil layers shall be styrene barriers, as well as protect and contain the resin used in the liner.
6. A third layer of protective foil shall be installed on the exterior of the liner to prevent liner damage during the installation process and block external UV light penetration causing the liner to cure prematurely.
7. The liner is to be constructed of with an inner fleece layer giving the exposed inside surface a resin rich layer.
8. 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.
9. 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 ensure minimal longitudinal stretching during the pull-in process.
10. At time of manufacture, each lot of CIPP tube shall be inspected and certified to be free of defects.

B. Resin Components

1. The resin used to impregnate the liner shall produce a cured liner pipe resistant to shrinkage, corrosion, abrasion and shall have a proven resistance to municipal wastewater. The impregnation equipment shall contain devices to secure a proper distribution of resin. Following impregnation, the fabric liner shall be exposed to a resin thickening procedure.

2. The resin shall be a chemically resistant, UV cured, isophthalic polyester resin or vinyl ester resin (as determined by the Engineer).
3. When combined with the CIPP tube, the resin system shall provide a CIPP that meets the structural requirements of ASTM F2019, the minimum physical properties specified in Section 1.4.E., and those properties which are to be utilized in the design of the lining system for this project.
4. When combined with the CIPP tube, the resin system shall provide a CIPP that complies with the chemical resistance requirements specified in ASTM F2019, Section 5.2.6. The chemical resistance tests shall be completed in accordance with ASTM D543.
5. During impregnation and application of the UV barrier foil, the CIPP liner shall be marked for distance at regular intervals along its entire length, not to exceed five feet.

PART 2 - EXECUTION

2.1 GENERAL

- A. The Installation Contractor shall deliver the resin impregnated CIPP liner to the site and provide all equipment required to insert and cure the CIPP within the host pipe. The Installation Contractor shall designate a location where the CIPP tube will be impregnated with resin prior to installation. All procedures to prepare the CIPP for installation shall be in strict accordance with the Manufacturer's recommendations.
- B. The tube shall be saturated with the appropriate resin using a vacuum-assisted resin bath to allow for the lowest possible amount of air entrapment. An inner and outer foil material will be added that are both styrene barrier layers.
- C. The hydraulic profile shall be maintained as large as possible to maximize capacity. The finished CIPP liner shall have a capacity equal to or greater than the full pipe capacity of the host pipe. Calculated capacities may be derived using the commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.

2.2 NOTIFICATION AND PREPARATION

- A. The Installation Contractor shall notify all residents affected by this construction at least 24 hours prior to any service disruption affecting their service connection. The Installation Contractor shall make every effort to maintain service usage throughout the duration of the project.
- B. The Installation Contractor shall perform cleaning, video, and inspection prior to installation of the CIPP. The Installation Contractor, when required, shall remove all debris from within the pipe that will interfere with the installation of the CIPP.

The Owner shall provide a dumpster for such debris removed during the cleaning operations.

- C. It shall be the responsibility of the Installation Contractor to notify the Owner of line obstructions, offset joints or collapsed pipe that will prevent the insertion of the liner or significantly reduce the capacity of the stormwater/sewer. The Owner, with input from the Installation Contractor, shall determine the method of pipe repair required and shall address these concerns on a case-by-case basis.
- D. Protruding laterals or services shall be trimmed flush with the inside of the main storm drain/sewer line wall prior to installation of the CIPP. Trimming shall not cause damage to the lateral or service beyond the inside face of the main sewer.

2.4 TELEVISION INSPECTION

- A. The Installation Contractor shall provide video equipment capable of properly documenting the conditions as found within the pipe. Lighting for the video camera shall illuminate the entire periphery of the sewer. The camera shall be radial view type capable of viewing 360° within the pipe and shall provide an unobstructed view of the full pipe.
- B. The video shall begin with a clear identification of the pipeline location, upstream and downstream maintenance hole designation, and pipe diameter. The video shall provide an accurate length measurement of the entire segment and of the distance to each lateral connection. The Installation Contractor shall pan all lateral connections on both the pre and post videos.
- C. Reverse video set-ups shall be utilized when line obstructions prevent full segment televising from the initial set-up direction.
- D. Both a pre-lining and post-lining video shall be submitted to the Owner for approval.

2.5 INSTALLATION

The CIPP liner shall be installed in the host pipe per the manufacturer's specifications. CIPP installation shall be in accordance with ASTM F2019, Section 6.4, and the following:

- A. Final Cleaning and Inspection: The existing host pipe shall be cleaned just prior to insertion of the liner. After the cleaning is complete, a recorded video inspection shall be made to verify the cleanliness of the line and shall be available to the Engineer upon request.
- B. Liner protection: Prior to inserting the liner, and if required based on the condition of the host pipe surface, a plastic sheet at least 10 mils thick shall 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 maintenance hole or approved access point and shall fully extend to the next designated maintenance

hole or termination point. The pulling speed and pressures shall not exceed manufacturer's recommended limits. Care shall be exercised not to damage the liner 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. Reinforcing cloth sleeves capable of withstanding installation air pressures shall be used on exposed liner outside the host pipe to prevent over expansion and damage to liner.
- F. Liner Inspection: After insertion and inflation, the Contractor will inspect the entire length of liner prior to commencement of the curing process.

2.6 CURING

CIPP curing shall be in accordance with applicable ASTM F2019, Section 6.6 and 6.7, with the following modifications:

- A. The ultraviolet curing lamps shall operate in a sufficient frequency range to ensure the curing of the resin.
- B. A camera must be located on the ultraviolet light assembly to enable the video inspection of the liner and to ensure that the liner has been properly inflated and any liner problems can be identified before curing begins.
- C. The Contractor will submit a documented record of time, rate of travel of the ultraviolet light assembly, and internal temperatures and pressures during the curing process to the Engineer upon request.

2.7 FINISH

- D. The finished CIPP shall be continuous over the entire length of an insertion run and be as free as commercially practical from visual defects such as foreign inclusions, dry spots, pinholes, and delamination. The CIPP shall be homogeneous and free of any leakage from the surrounding ground to the inside of the CIPP.
- E. Where the CIPP is installed through an intermediate maintenance hole uninterrupted, the invert shall be maintained smooth through the maintenance hole, with approximately the bottom half of the CIPP continuous through the maintenance hole. The invert of the maintenance hole shall be shaped and grouted as necessary to support the liner. The cost of this work shall be included in the CIPP unit price.
- F. During the warranty period, any defects which will affect the integrity or strength of the CIPP, collect solids, or reduce hydraulic flow capabilities of the product shall be repaired at the Installation Contractor's expense in a manner mutually agreed upon by the Owner and the Installation Contractor.

2.8 REINSTATE LATERALS AND SERVICES

- D. Accurate location of the lateral and service connections shall be made by inspection of the pre-installation video or sewer walk.
- E. After the CIPP has been installed, all existing active lateral services shall be reinstated unless otherwise indicated by the Owner or on the plans. The reinstatement of laterals and services shall be done without excavation unless otherwise specified by the Engineer. Reinstatement of laterals and services will be accomplished from the interior of the CIPP by means of a video camera directed cutting device or by man entry when feasible.
- F. All cut lateral and service connections shall be free of burrs, frayed edges, or any restriction preventing free flow of wastewater. Laterals shall be reinstated to a minimum of 90% of their original diameter and no more than 100% of their minimum diameter. The CIPP shall be tightly sealed at the cut openings with no gaps.

2.9 QUALITY ASSURANCE PROCEDURES

- F. CIPP installation shall be inspected by post-lining video inspection in accordance with ASTM D2019, Section 7.3. Variations from true line and grade may be inherent because of the conditions of the original piping. No infiltration of groundwater should be observed. All service entrances should be unobstructed and accounted for.
- G. The Contractor shall submit to the Engineer, for acceptance and approval, two (2) copies of unedited post-installation inspection data (videos, inspection reports, etc., on CD/DVD/flash drive) 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 curing report.
- H. Field sampling procedures shall be in accordance with ASTM F2019 and D5813.
- I. For every two thousand five hundred (2,500) linear feet of liner installed, two samples shall be processed and tested. The CIPP physical properties shall be tested in accordance with ASTM F2019, Section 7. The flexural properties must meet or exceed the values listed in Section 1.4.E. of this specification and the values submitted to the Owner by the Installation Contractor for this project's CIPP wall design, whichever is greater.
- J. Testing shall be completed by an accredited, independent laboratory. Testing results shall be provided to the Owner within 7 days of receipt of such results.
- K. Wall thickness of samples shall be determined in a manner consistent with 7.1.4 of ASTM D2019. The minimum wall thickness at any point shall not be less than

87.5% of the specified design thickness calculated in 1.4.F of this document. The average wall thickness shall not be less than the specified thickness calculated in 1.4.F. of this document.

- L. Flexural testing of the collected samples shall be conducted in accordance with ASTM D790, latest version, with only the structural portion of the CIPP being tested.

Measurement and Payment

The contract price paid per **Linear Foot** for “**12-inch Cured In Place Pipe (CIPP) Liner (Revocable)**”, shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals required to install the Felt based or Fiberglass/Ultraviolet light pipe/liner complete in place, cleaning, removing roots inside the pipe, includes point repair to correct sags, curing, reinstatement of lateral connections, excavation, backfill connection to existing and new facilities, testing, pre-construction and post-construction CCTV, and as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

BID ITEM NO. B-69 – SUPPLEMENTAL WORK

The City may authorize supplemental work in the form of Supplemental Work Authorizations for changes or deviations in the scope of work as described in the Project Plans and Specifications. The Engineer shall determine such changes. The City may compensate the contractor the actual cost plus 10% to cover overhead.

All work performed under a Supplemental Work Authorization shall be authorized by the Engineer in writing. All additional work shall be paid for at the unit cost bid for the various items.

The Contractor is not entitled to the full amount of this bid item. Payment will be made on an as-authorized and as-needed basis, with the total compensation not to exceed the specified lump sum amount. The actual amount paid under this item will range from zero to the full not-to-exceed amount.

Measurement and Payment

The contract **Lump Sum** price paid for “**Supplemental Work**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in supplemental work, complete in place, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer.

The Contractor shall be paid on pro rata basis for the work done per month, and said payment shall be for providing all labor, material, equipment, devices, supervision, and all incidentals as are needed and as may be required to complete the work.

PART E
CURB RAMP AND CROSS DRAIN
LOCATIONS AND QUANTITIES

FOR

SCHEDULE B
FY 2024 STORM DRAIN IMPROVEMENTS

SPECIFICATION NO. 25-11677-C

CROSS DRAIN REPAIR AND CURB RAMP REPLACEMENT LOCATIONS AND QUANTITIES

No.	Main Street	Cross Street	Quadrant	Ramp Case	R&R PCC Sidewalk	R&R PCC Curb & Gutter	R&R HMA	Remove Cross Drain Pipe (Under SW)	Install Cross Drain Pipe (Under SW)	Remove Cross Drain Pipe (Under Street)	Install Cross Drain Pipe (Under Street)	Remove Cross Drain Structure	Install Cross Drain Structure	Remove Junction Box	Install Junction Box	Curb Paint (R=Red)
					(SF)	(LF)	(SF)	(LF)	(LF)	(LF)	(EA)	(EA)	(EA)	(EA)	(LF)	
1	Russell St	Lorina St	SW	A	150	30	120	20	20	35	35	2	2			0
2	Russell St	Lorina St	SE	G	125	30	120	13	13	20	20	2	2	1	1	20
3	Benvenue Ave	Parker Street	NW	A	150	30	120	17	17	47	47	2	2			20
4	Benvenue Ave	Parker Street	NE	A	150	30	120			31	31	2	2	1	1	20
5	Benvenue Ave	Parker Street	SE	A	150	30	120	20	20			2	2			20
6	Cornell Ave	Camelia St	NW	A	125	25	100	15	15	40	40	2	2			20
7	Cornell Ave	Camelia St	NE	A	150	25	100			20	20	2	2	1	1	20
8	Cornell Ave	Camelia St	SW	A	150	25	100			55	55	1	1			20
9	Cornell Ave	Camelia St	SE	A	150	25	100					1	1			20
10	McGee Ave	Allston Way	NW	A	125	20	80	22	22			2	2			20
11	McGee Ave	Allston Way	NE	A	150	25	100			77	77	1	1			20
12	Russell St	Wheeler St	SW	A	125	25	100	16	16	41	41	2	2	1	1	20
13	Russell St	Wheeler St	SE	A	120	25	100			33	33	2	2			20
14	Walnut St	Eunice St	NE	A	125	25	100			30	30	2	2	1	1	20
15	Walnut St	Eunice St	SE	G	125	25	100			52	52	2	2	1	1	20

PART F
CURB RAMP AND CROSS DRAIN
LOCATION MAP

FOR

SCHEDULE B
FY 2024 STORM DRAIN IMPROVEMENTS

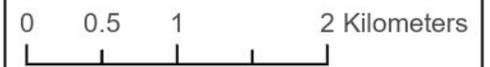
SPECIFICATION NO. 25-11677-C

FY 2024 STORM DRAIN IMPROVEMENTS - CROSS DRAIN REPLACEMENT LOCATIONS

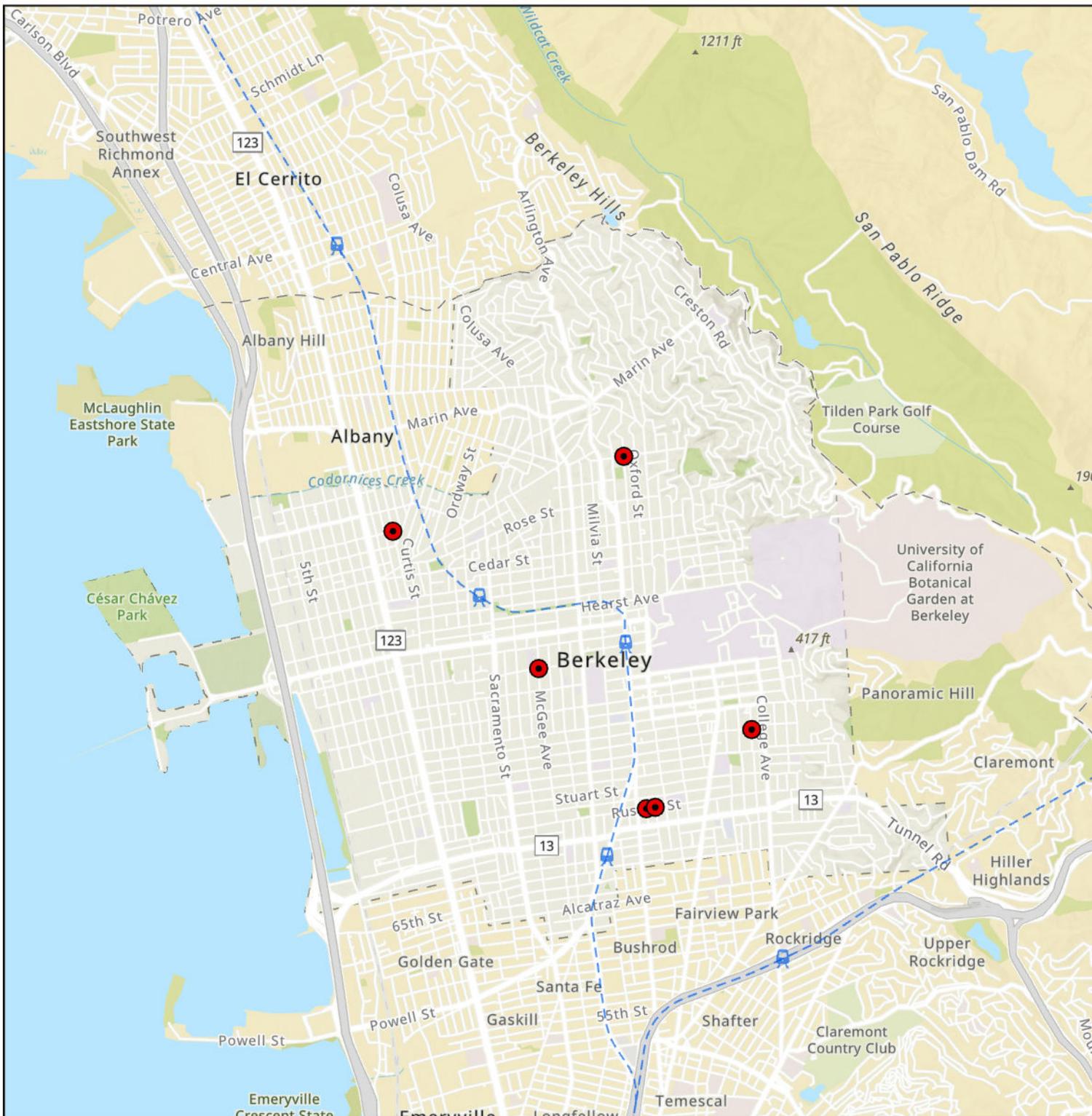
-  Cross Drain Replacement Locations
-  BART Station
-  BART Line

This map is for reference purposes only. Data are not survey precise.

Care was taken in the creation of this map, but it is provided "AS IS". Please contact the City of Berkeley to verify map information or to report any errors.
May 5, 2025



CITY OF BERKELEY
Engineering Division
1947 Center Street
Berkeley CA 94704



PART G

CITY STANDARD DETAILS

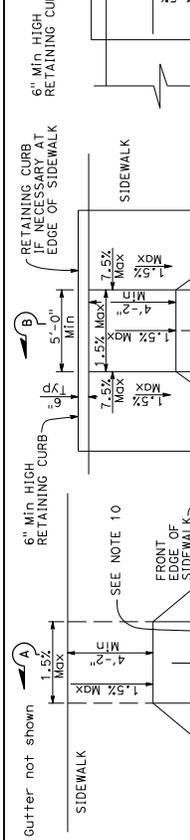
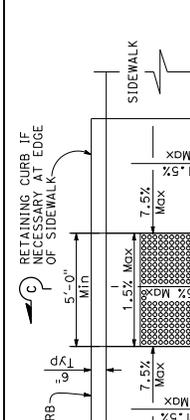
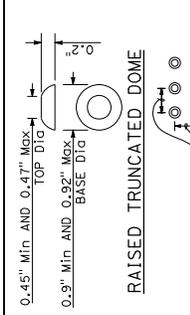
Download the City of Berkeley Construction Standard Details below:

<https://berkeleyca.gov/construction-development/permits-design-parameters/design-parameters/construction-standards-public>

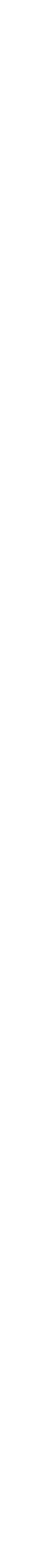
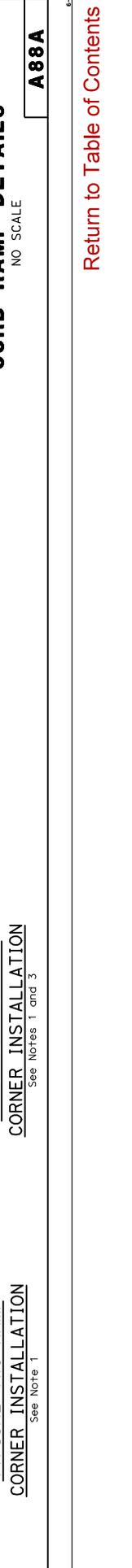
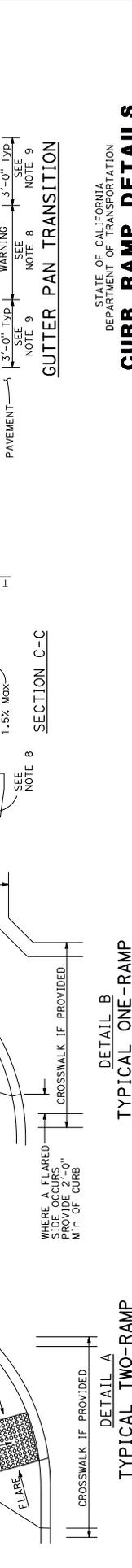
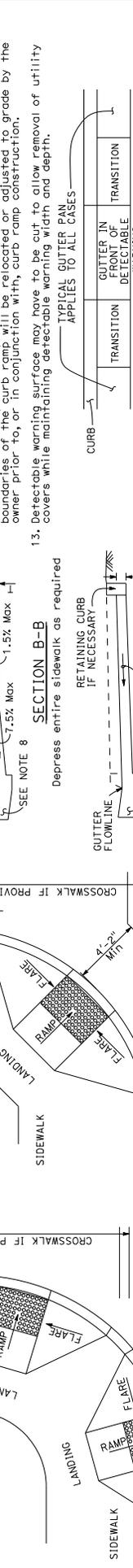
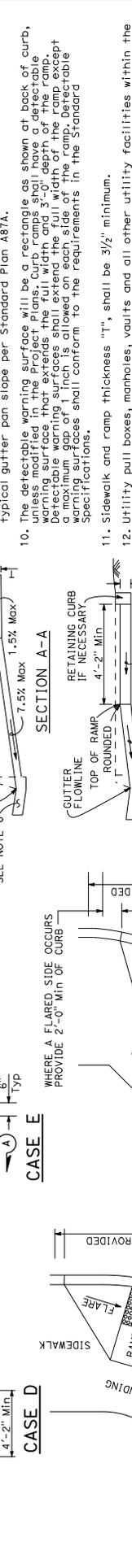
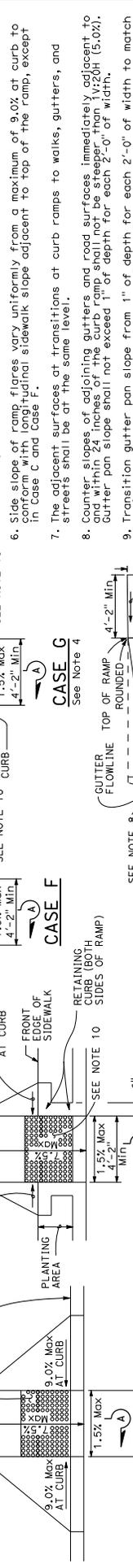
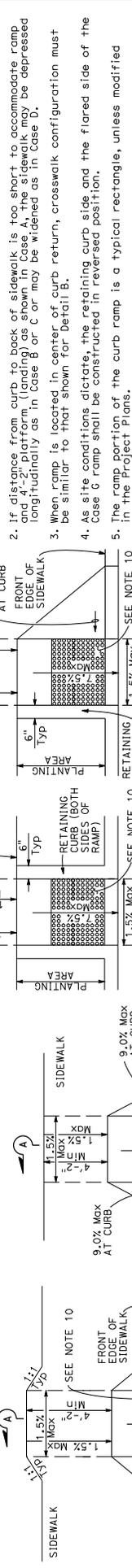
DI#	COUNTY	ROUTE	POST MILES	SHEET TOTAL	NO. SHEETS

REGISTERED CIVIL ENGINEER
 AUGUST 1, 2022
 REISSUE PERMITS DATE 1/25/2023
 THE CIVIL ENGINEER'S SEAL AND SIGNATURE SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OF THIS PLAN SHEET.

REBECCA LYNN MORRY
 CIVIL ENGINEER
 STATE OF CALIFORNIA



- NOTES:** See Note 10
- As site conditions dictate, Case A through Case G curb ramps may be used. The case of curb ramps used in a detail does not have to be the same. Case A through Case G curb ramps also may be used at mid-block locations, as site conditions dictate. For specific site condition configuration, including the conform to existing sidewalk, see Project Plans.
 - If distance from curb to back of sidewalk is too short to accommodate ramp and 4'-2" platform (landing) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B or C or may be widened as in Case D.
 - When ramp is located in center of curb return, crosswalk configuration must be similar to that shown for Detail B.
 - As site conditions dictate, the retaining curb side and the flared side of the Case G ramp shall be constructed in reversed position.
 - The ramp portion of the curb ramp is a typical rectangle, unless modified in the Project Plans.
 - Side slope of ramp flares vary uniformly from a maximum of 9.0% at curb to conform with longitudinal sidewalk slope adjacent to top of the ramp, except in Case C and Case F.
 - The adjacent surfaces at transitions at curb ramps to walks, gutters, and streets shall be at the same level.
 - Counter slopes of adjoining gutters and road surfaces immediately adjacent to and within 24 inches of the curb ramp shall not be steeper than 1v:20h (5.0%). Gutter pan slope shall not exceed 1" of depth for each 2'-0" of width.
 - Transition gutter pan slope from 1" of depth for each 2'-0" of width to match typical gutter pan slope per Standard Plan A87A.
 - The detectable warning surface will be a rectangle as shown at back of curb, unless modified in the Project Plans. Curb ramps shall have a detectable warning surface that extends the full width and 3'-0" depth of the ramp. Detectable warning surfaces shall extend the full width of the ramp except a maximum gap of 1/4 inch is allowed on each side of the ramp. Detectable warning surfaces shall conform to the requirements in the Standard Specifications.
 - Sidewalk and ramp thickness "T", shall be 3/2" minimum.
 - Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
 - Detectable warning surface may have to be cut to allow removal of utility covers while maintaining detectable warning width and depth.



CURB RAMP DETAILS
 NO SCALE
 A88A

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION

Return to Table of Contents

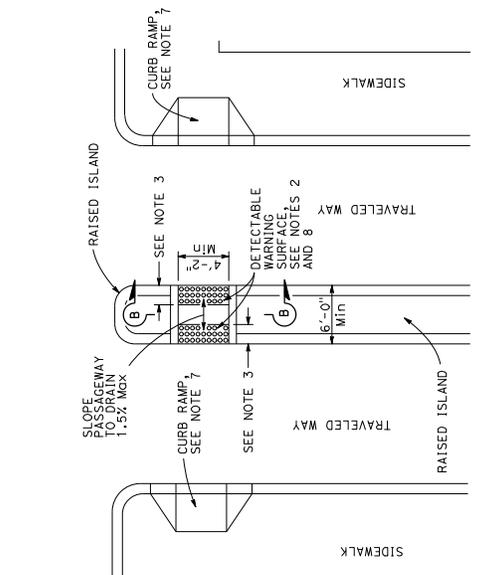
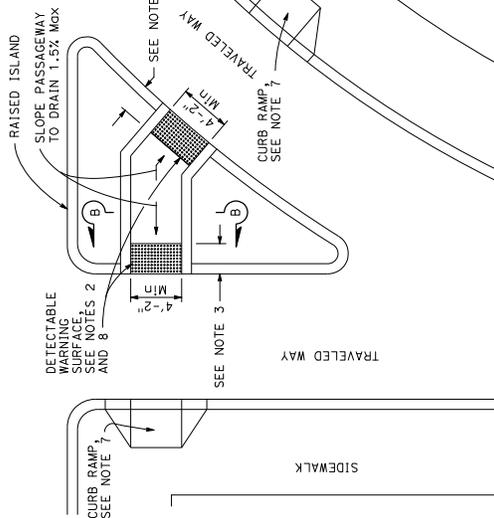
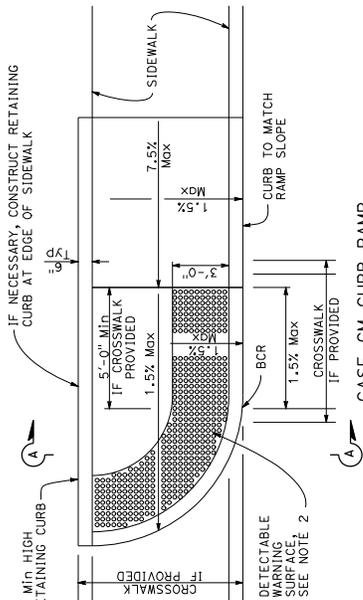
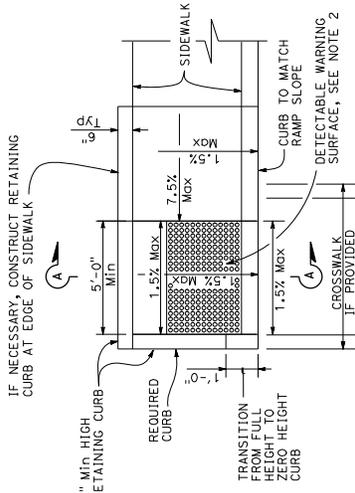
DIST	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET TOTAL SHEETS

REGISTERED CIVIL ENGINEER
 August 1, 2022
 LICENSE NO. C54415
 EXPIRES 12-31-23
 PROFESSIONAL ENGINEER
 REBECCA LYNN MORRY
 CIVIL
 STATE OF CALIFORNIA

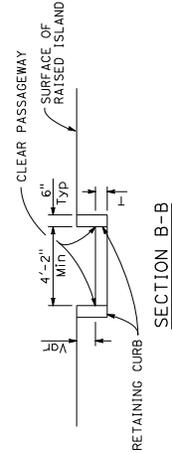
DATE OF THIS SHEET: AUGUST 1, 2022
 DATE OF PREVIOUS EDITION: N/A
 THIS SHEET OR ANY PART THEREOF OR ANYTHING SHOWN THEREON SHALL NOT BE RESPONSIBLE FOR THE CONSEQUENCES OF THIS PLAN SHEET.

NOTES:

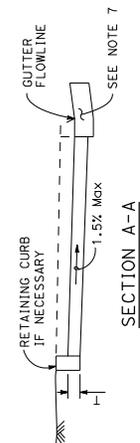
1. Sidewalk, ramp and passageway thickness "t", shall be 3/2" minimum.
2. For details of detectable warning surfaces, see Standard Plan A88A.
3. Where an island passageway length is greater than the full width of the passageway, the detectable warning surface shall extend the full width and 2'-0" depth of the passageway length. Where an island passageway length is greater than or equal to 8'-0", each detectable warning surface shall extend the full width and 2'-0" depth of the passageway length. The island passageway shall extend the full width of the island passageway except a maximum gap of 1 inch is allowed on each side of the passageway.
4. The adjacent surfaces at transitions at curb ramps to walks, gutters, and streets shall be at the same level.
5. Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated and adjusted to grade by the contractor prior to, or in conjunction with, curb ramp construction.
6. Detectable warning surface may have to be cut to allow removal of utility covers while maintaining detectable warning width and depth.
7. For additional curb ramp details, see Standard Plan A88A.
8. The detectable warning surface will be a rectangle as shown at the face of curb, unless modified in the Project Plans.



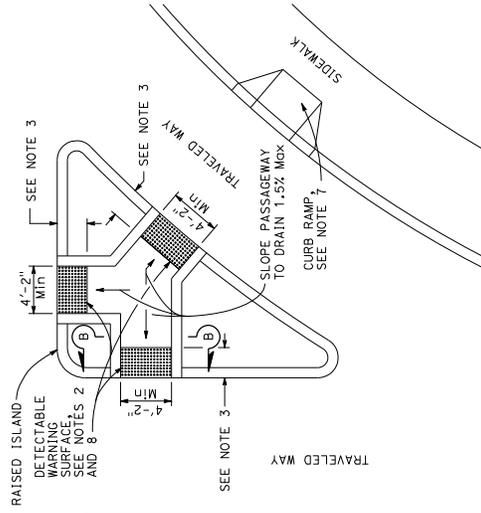
TYPE B PASSAGEWAY



TYPE A PASSAGEWAY



TYPE C PASSAGEWAY



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
CURB RAMP AND ISLAND PASSAGEWAY DETAILS
 NO SCALE

A88B

APPENDICES

APPENDIX A

COMMUNITY WORKFORCE AGREEMENT

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



CITY OF BERKELEY

BIDDING & CONTRACTING UNDER THE COMMUNITY WORKFORCE AGREEMENT (CWA)

- **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.



CITY OF BERKELEY

BIDDING & CONTRACTING UNDER THE COMMUNITY WORKFORCE AGREEMENT (CWA)

- **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

*Department of Health, Housing and
Community Services
2180 Milvia Street, 2nd floor
Berkeley, CA 94704
localhire@cityofberkeley.info*

CITY OF BERKELEY
COMMUNITY WORKFORCE AGREEMENT

Table of Contents

Preamble

Purpose

Recitals

Article 1 Definitions

Article 2 Scope of Agreement

Article 3 Effect of Agreement/Subcontractors

Article 4 Work Stoppages, Sympathy Strikes and Lockouts

Article 5 Pre-Job Conference

Article 6 No Discrimination

Article 7 Union Security

Article 8 Referral and Local Hiring Program

Article 9 Helmets to Hardhats

Article 10 Grievance Procedure

Article 11 Joint Administrative Committee

Article 12 Grievance Arbitration Procedure

Article 13 Jurisdictional Disputes

Article 14 Apprentices

Article 15 Management Rights

Article 16 Wage/ Benefits

Article 17 Modified Master Labor Agreements

Article 18 Drug and Alcohol Testing

Article 19 Savings Clause

Article 20 Entire Agreement

Article 21 Term

Signatures

Agreement to be Bound

COMMUNITY WORKFORCE AGREEMENT
For the
City of Berkeley

This Agreement is made and entered into retroactively from July 1, 2020, 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

21 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.

22 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.

23 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.

24 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.

36 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.

37 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. Contractor(s) shall promptly notify the Union(s) of any applicants hired from other sources. This provision does NOT affect core employees as defined below.

8.15 Unions shall exert their utmost efforts to recruit sufficient numbers of skilled craft persons to fulfill the requirements of the Contractor(s).

8.16 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.

8.17 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.

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**

131 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.

132 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.

133 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.

134 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 June 30, 2020 through June 30, 2023 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

Dee Williams-Ridley, City of Berkeley City Manager

Date: 2/10/21

Alameda County Building & Construction Trades Council, AFL-CIO

DocuSigned by:
Andreas Cluver
By: 5C9F6AE6571848E

Andreas Cluver, Secretary-Treasurer for the Building Trades Council of Alameda County on behalf of the Signatory Unions

Date: 1/26/2021

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) #: _____

APPENDIX B

CITY OF BERKELEY PEDESTRIAN, BICYCLE, AND BUS FACILITY ACCOMMODATION IN CONSTRUCTIONS ZONES

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 permit² 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>

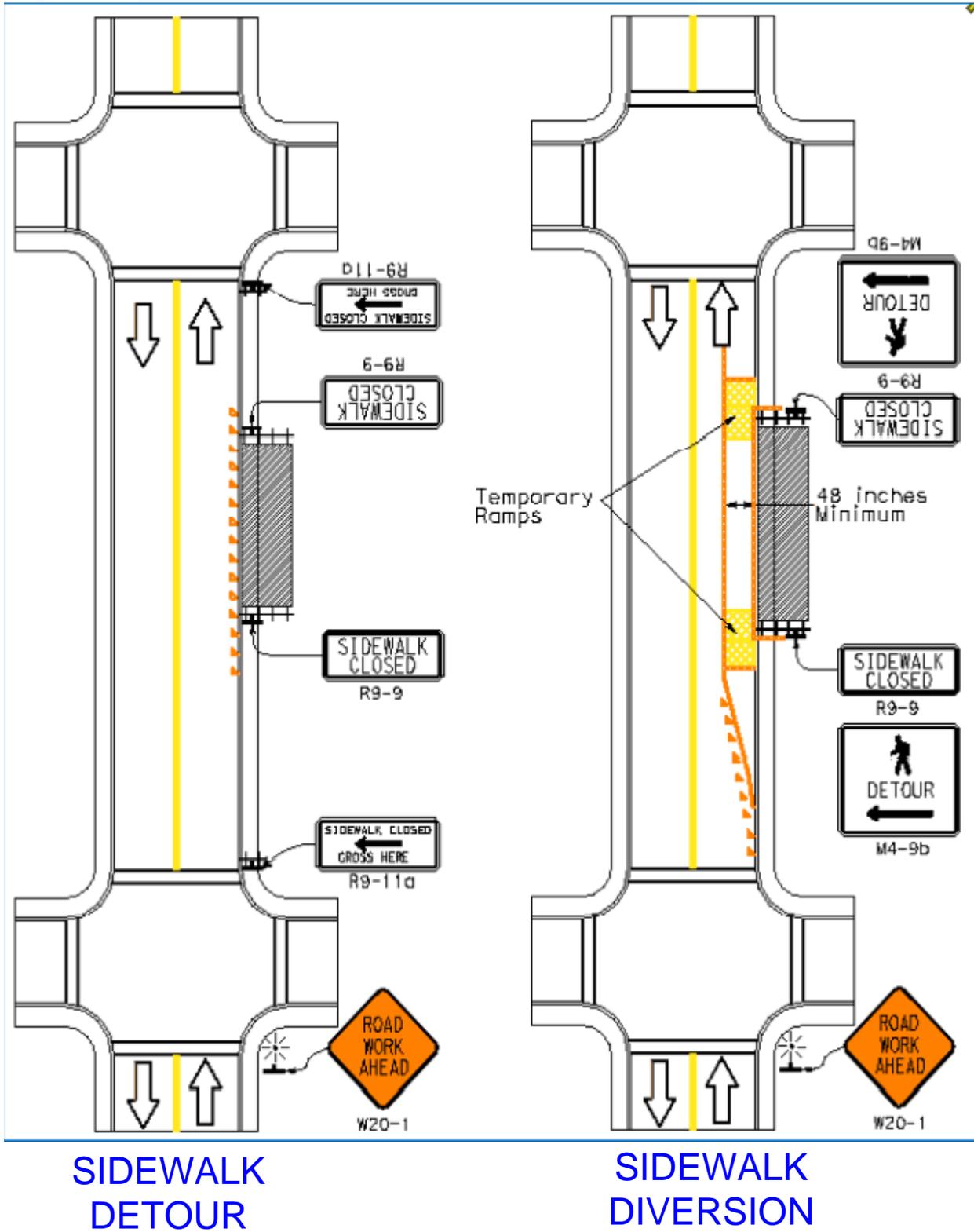
Table 1: Reasonable Accommodation for Pedestrians

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 Diversion⁵



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.

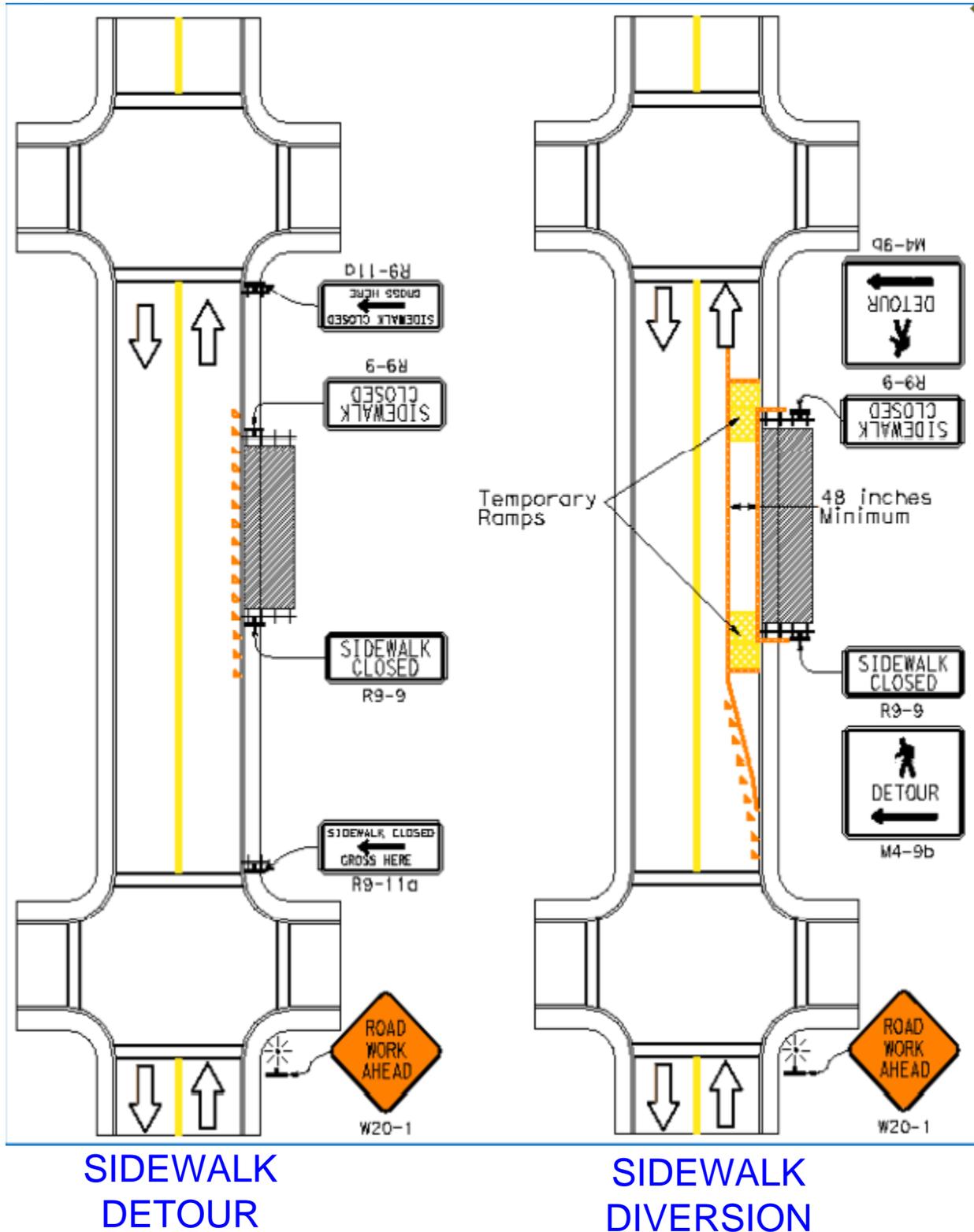
Planning Appropriately for Temporary Traffic Control Plan Review

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.

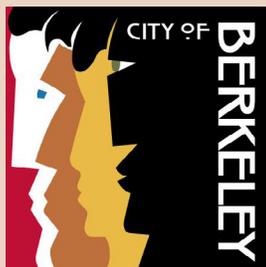
Attachments

- *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>



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

PEDESTRIAN ACCESS DURING CONSTRUCTION PROJECTS

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 ACCESSIBILITY 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 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.

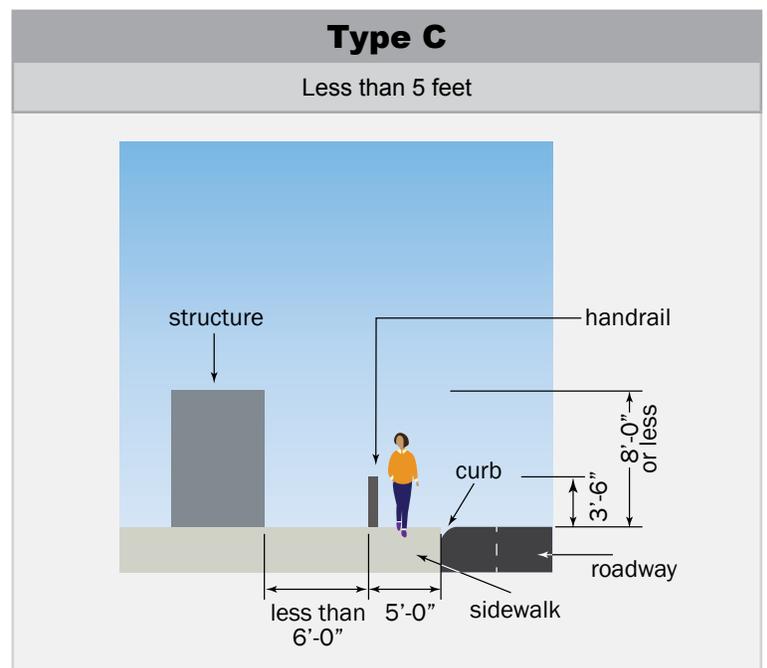
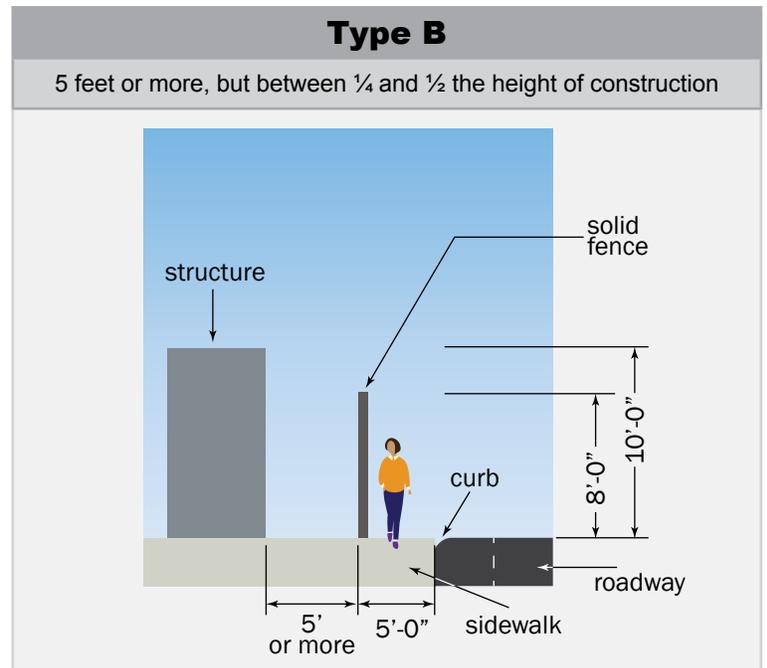
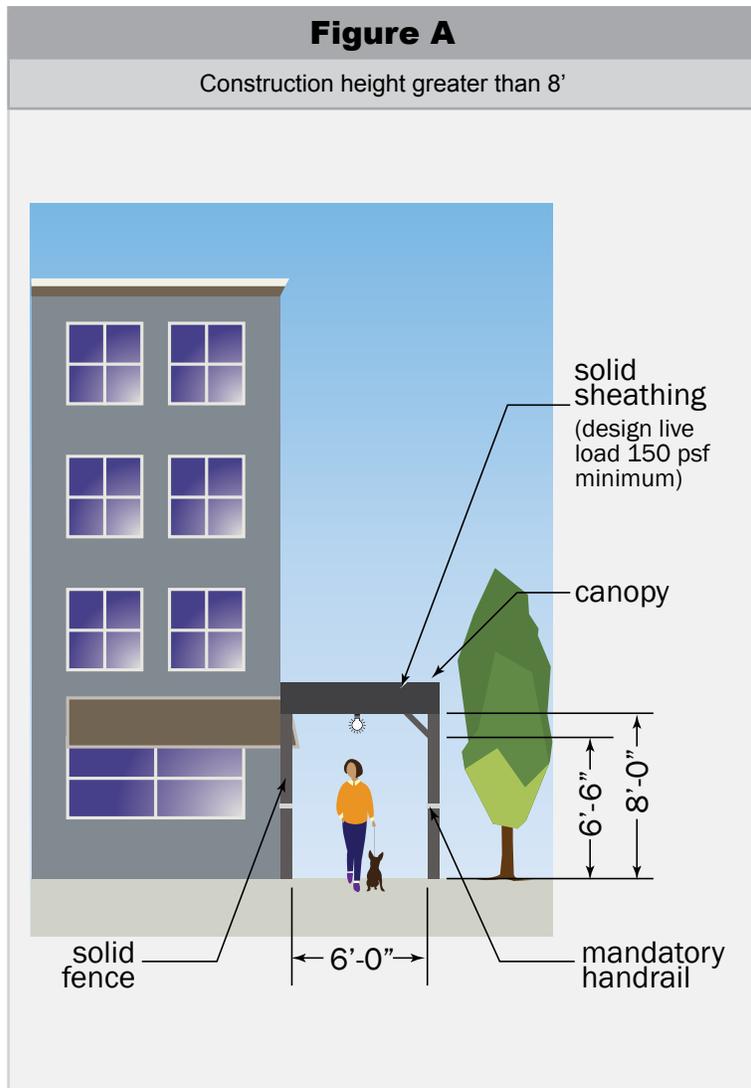
Temporary ramps shall be removed as soon as construction and approval of permanent ramp is completed.

After work is completed, surface of the pedestrian path shall be restored free 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



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 accommodate 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/m²).

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).

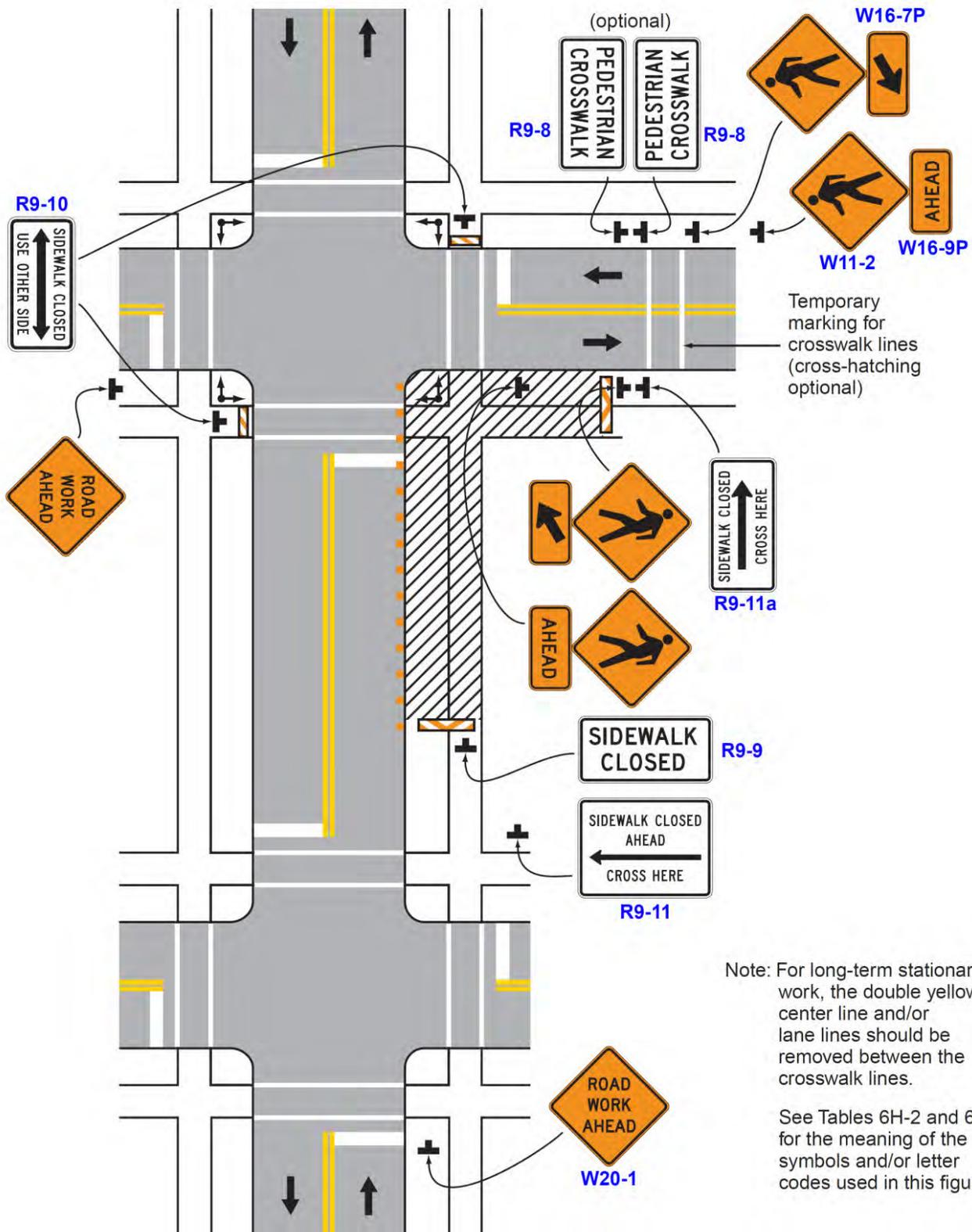
Check One: Contractor Owner Owner's Agent

Name

Signature

Date

Figure 6H-29. Crosswalk Closures and Pedestrian Detours (TA-29)

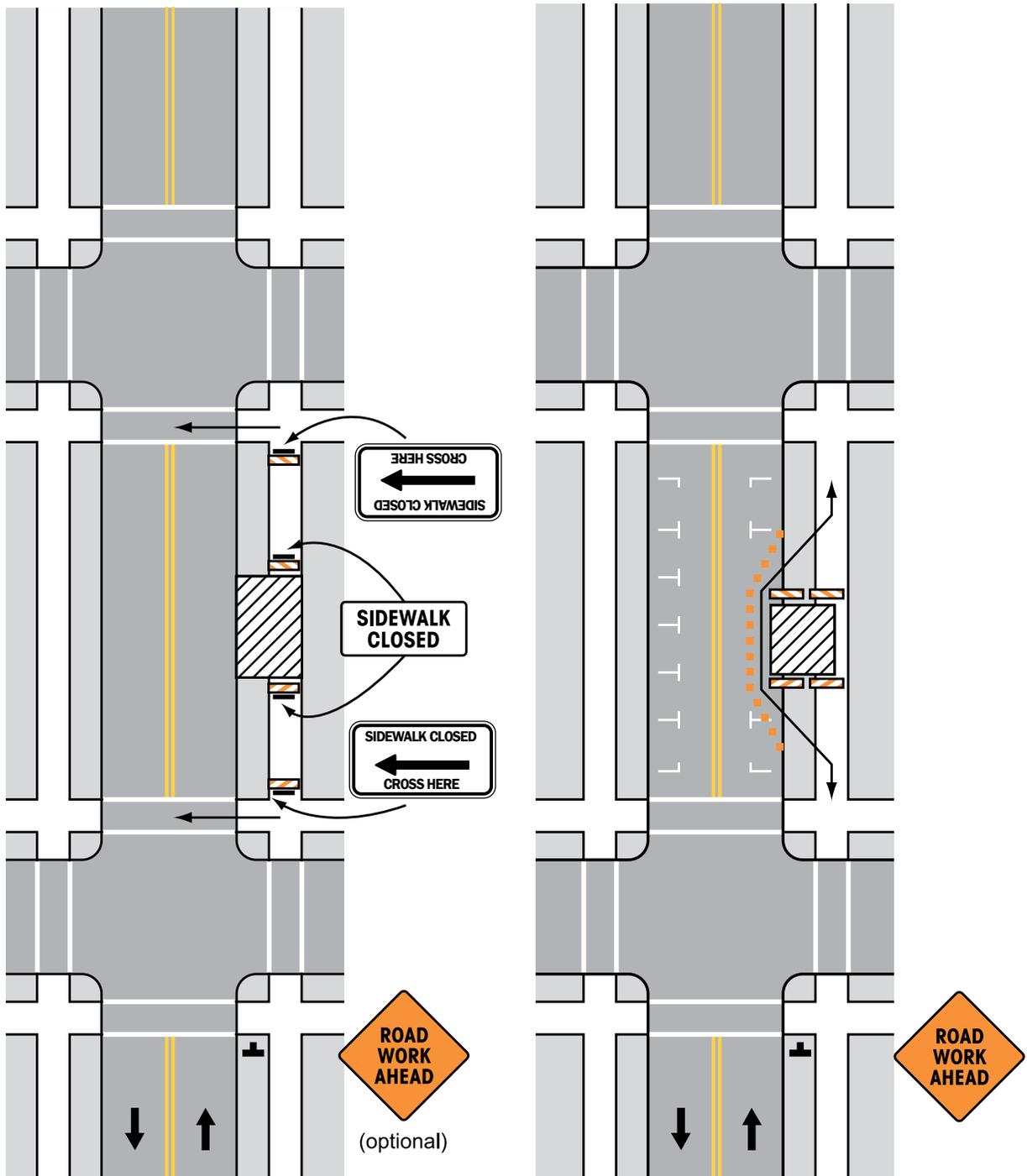


Note: For long-term stationary work, the double yellow center line and/or lane lines should be removed between the crosswalk lines.

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)

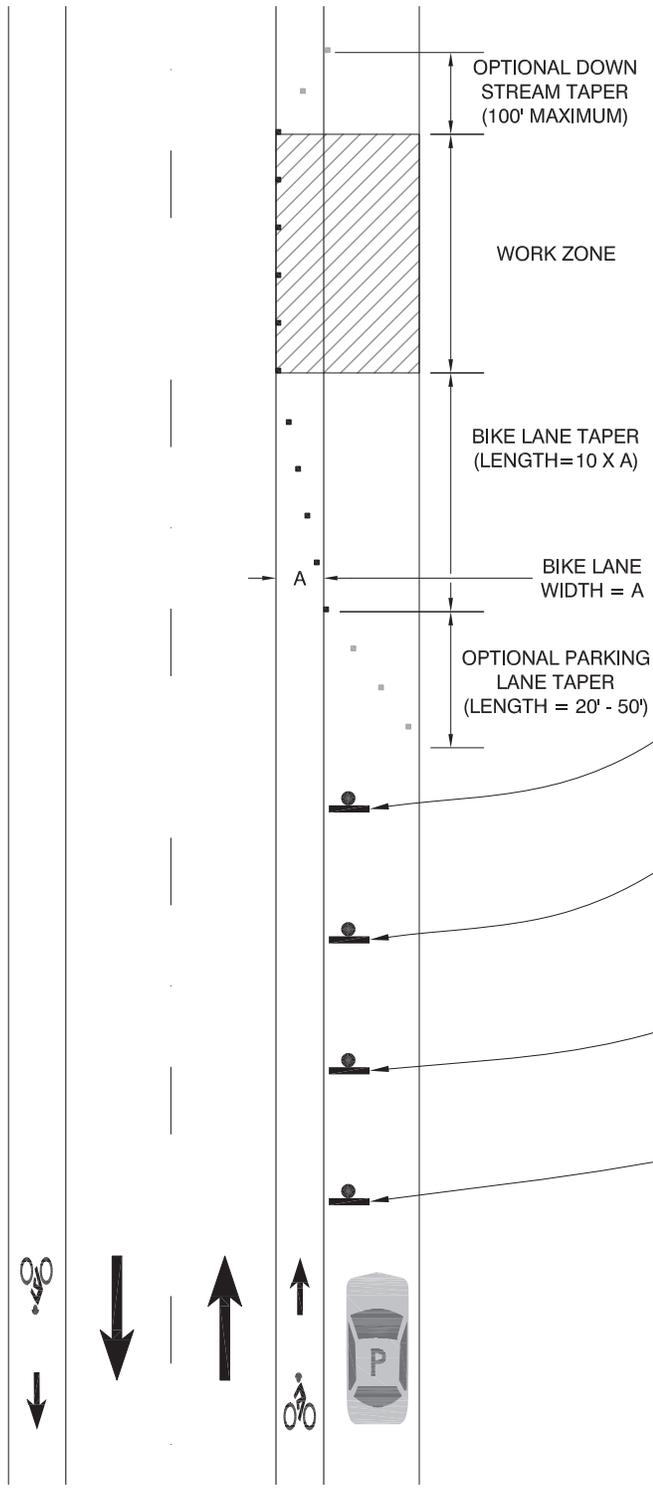


SIDEWALK DETOUR

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.



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.



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

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

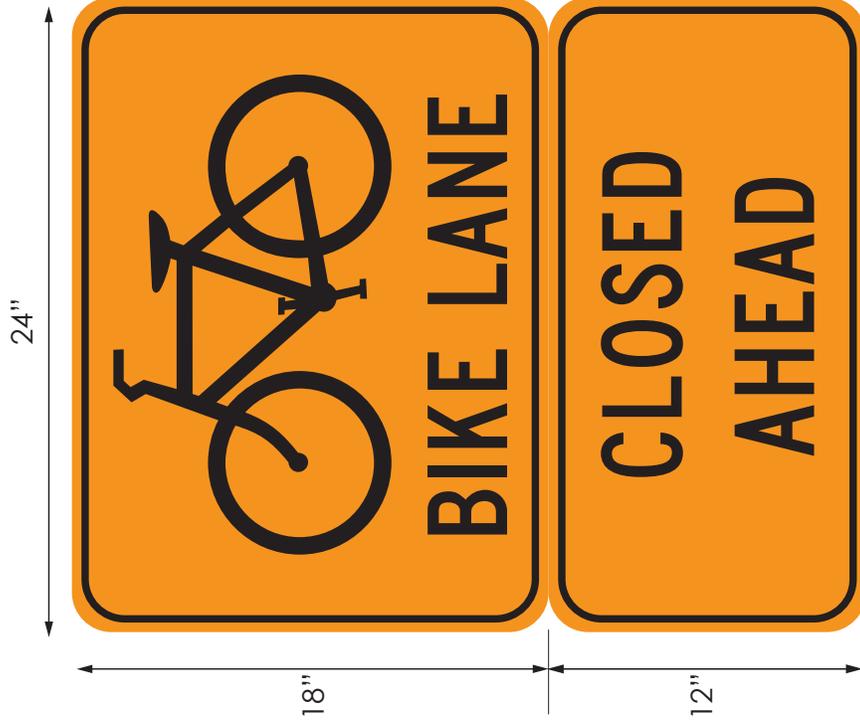


**Assemblies for Long-Term
Bike Lane Closures**

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





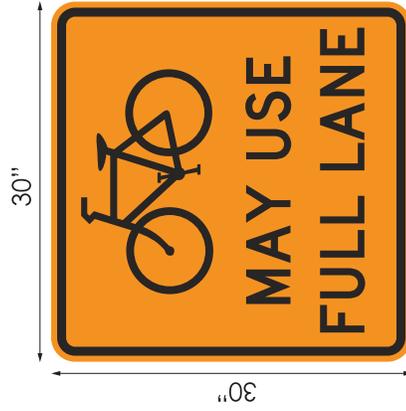
City of Oakland, Temporary Traffic Control Sign Details for Bikeway Detours and Long-Term Bike Lane Closures

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.

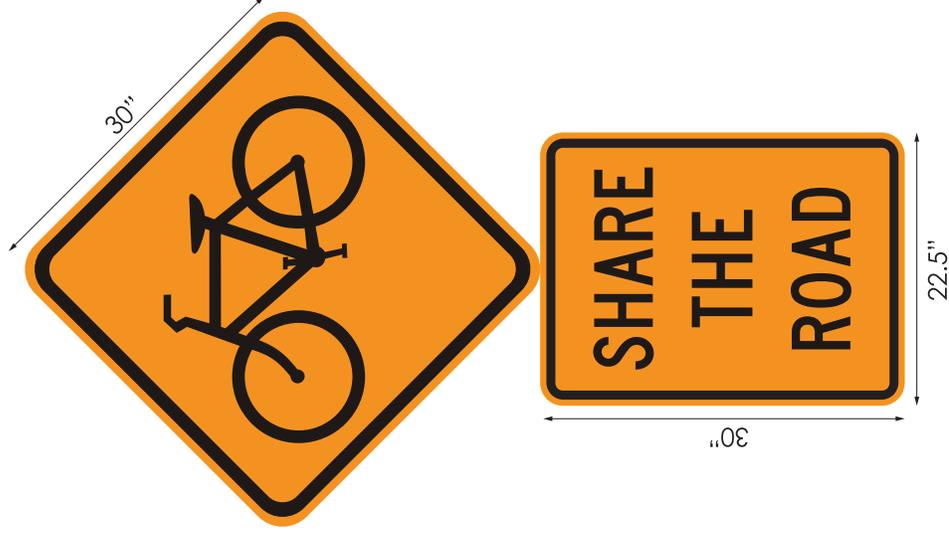
R4-11 (BIKES MAY USE FULL LANE)

- 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



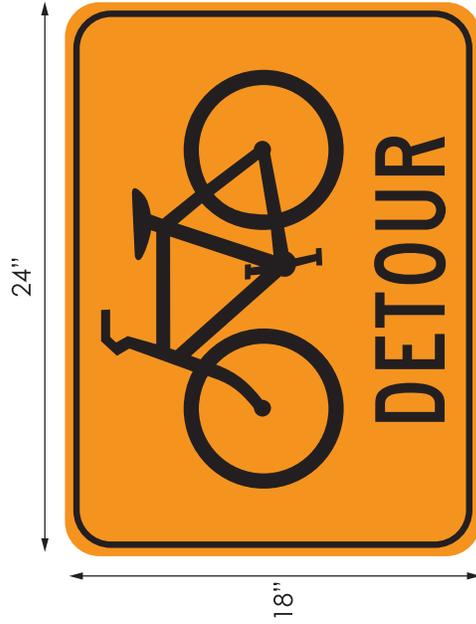


Blade Layout Details

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



S17 (CA)

- 2.5" letter height, CAPS
(example route name shown)



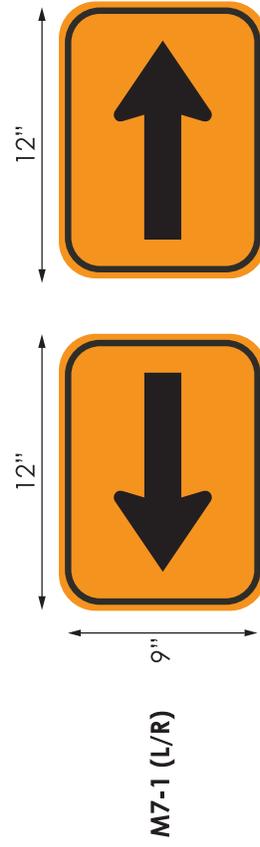
D1-1b

- 24" wide, 6" high (one-line);
10" high (two-line, not shown)
- 2" letter height, Title Case
(example text shown)



M4 series

- 3" letter height, CAPS

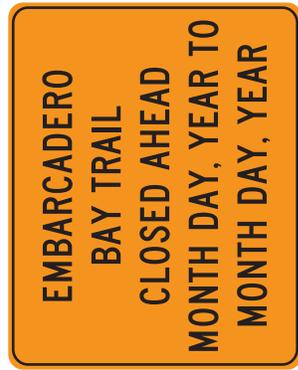




City of Oakland, Temporary Traffic Control Sign Details for Bikeway Detours and Long-Term Bike Lane Closures

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.



- 30" wide; height varies based on content
- Min 2.5 letter height, all CAPS

A



- 24" wide x 36" high

B



- 24" wide x 33" high

C



- 24" wide x 30" high

D



- 24" wide x 30" high

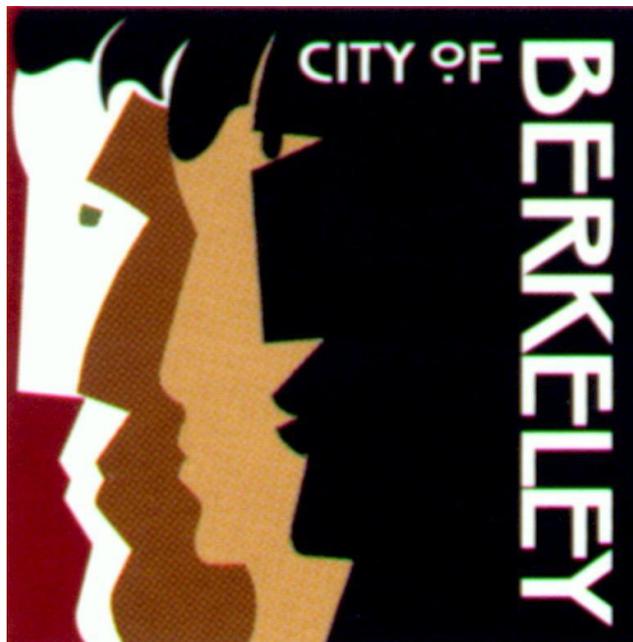
E

* Example assemblies shown above are from a project-specific detour. Assemblies will vary by project.

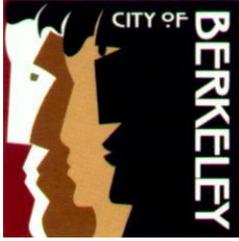
APPENDIX C

CITY OF BERKELEY MONUMENT REFERENCE GUIDELINES

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 periodically recalculates its position.

APPENDIX D

TWO WEEK LOOK-AHEAD SCHEDULE EXAMPLE

