

CITY OF SAN FERNANDO, CA



CONTRACT DOCUMENTS FOR SAN FERNANDO PACOIMA WASH BIKEWAY AND PEDESTRIAN PATH Federal Project No. ATPL-5202(020) Job No. 7615, Plan No. P-737

Prepared by:



TETRA TECH

www.tetratech.com

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Under the Supervision of:



Mountains Recreation &
Conservation Authority

Approved By:


Patsy Orozco, Civil Engineering Assistant II

Date: 12/16/2021


Matthew Baumgardner, P.E., Director of Public Works

Date: 12/16/2021
RCE 71932

NOTICE TO BIDDERS FEDERAL REQUIREMENTS

Proposal Phase

For your bid to be considered responsive, you must submit the following form, either with your bid or within five (5) business days after bid opening:

- ☐ Construction Contract DBE Commitment, Exhibit 15-G (p. F-32)

In addition, you are strongly encouraged, and may be required, to submit the following form as a supplement to Exhibit 15-G:

- ☐ DBE Information – Good Faith Efforts, Exhibit 15-H (p. F-34)

Upon execution and submission of your bid, you are agreeing to be bound by the following (but do not need to return the forms):

- Equal Employment Opportunity Certification (p. F-26)
- Public Contract Code Requirements (p. F-27)
- Debarment and Suspension Certification (p. F-28)
- Nonlobbying Certification for Federal-Aid Contracts (p. F-29)

If applicable, the following form must be submitted with the bid:

- ☐ Disclosure of Lobbying Activities (p. F-30)

Construction Phase

Contractors who are awarded a public works project must submit electronic payroll records to the DIR's Compliance Monitoring Unit (CMU) in addition to providing wet-ink original copies to the City or its designated labor compliance enforcement officer.

If applicable, you will be required to submit the following forms each month during construction:

- ☐ Disadvantaged Business Enterprise Running Tally of Payments (p. F-37)
- ☐ Monthly DBE Trucking Verification (p. F-38)

Post-Construction Phase

When construction is completed, you will be required to submit the following forms to the City:

- ☐ Final Report – Utilization of Disadvantaged Businesses (p. F-40)
- ☐ Disadvantaged Business Enterprises (DBE) Certification Status Change (p. F-42)

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NOTICE INVITING BIDS

SEALED PROPOSALS will be received at the Office of the City Clerk, City Hall, 117 Macneil Street, San Fernando, California until **11:00 A.M. on Thursday, September 1, 2022**, and said bids will be publicly opened and declared for performing work on the following project:

SAN FERNANDO PACOIMA WASH BIKEWAY AND PEDESTRIAN PATH
Federal Project No. ATPL-5202(020)
JOB NO. 7615, PLAN NO. P-737

The project consists of constructing a 12 foot wide, 1.34 mile long Class 1 asphalt concrete bikeway within the Pacoima Wash, constructing ramps, retaining wall, installing fence, guardrail, prefabricated bridge, lighting, rectangular rapid flashing beacons, striping, markings, signage, bollards, and miscellaneous appurtenant work. The bid items, corresponding estimated quantities, and time allowed to complete the work are listed in the Contractor's Proposal. The definitions of bid items are described in the Technical Provisions.

The contract time for the project is **Three Hundred Forty (340) working days**.

A pre-bid meeting is scheduled **10:00 A.M. on Wednesday, August 17, 2022 at 120 Macneil Street, San Fernando, CA 91340, PW Ops Room**. This meeting is to inform bidders of project requirements and subcontractors of subcontracting and material supply opportunities. **Bidders' attendance at this meeting is mandatory.**

Pursuant to Federal law, Disadvantaged Business Enterprise (DBE) requirements shall include all DBEs, as described in the Specifications. This project is subject to state contract nondiscrimination and compliance requirements pursuant to Government Code Section 12990, and in any contract entered into pursuant to this advertisement, DBEs will be afforded full opportunity to submit bids in response to this invitation.

The DBE contract goal for this project is 27%.

PREVAILING WAGE REQUIREMENTS: Pursuant to California Labor Code Sections 1770, 1773, 1773.1, 1773.6, and 1773.7, as amended, the applicable prevailing wages for this project have been determined. It shall be mandatory upon the contractor to whom the contract is awarded and upon any subcontractor under him to pay not less than the higher of the Federal and the State prevailing wage rates to all workers employed by them in the execution of the contract. The applicable Federal prevailing wage rates are those that are in effect ten (10) calendar days prior to bid opening; they are set forth on the U.S. Department of Labor website: <http://www.wdol.gov/wdol/scafiles/davisbacon/ca33.dvb> but are not printed in the Specifications. Lower State wage rates for work classifications not specifically listed in the Federal wage decision are not acceptable. The applicable State prevailing wage rates are set forth on the California Department of Industrial Relations website: <http://www.dir.ca.gov/DLSR/PWD> but are not printed in the Specifications; these rates are subject to predetermined increases.

The U.S. Department of Transportation (DOT) provides a toll-free hotline service to report bid rigging, bidder collusion, or other fraudulent activities. The hotline is available Mondays through Fridays between 8:00 a.m. and 5:00 p.m. eastern time, at (800) 424-9071. The hotline is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially, and caller anonymity will be respected.

Conflict of Interest: in the procurement of supplies, equipment, construction, and services by sub-recipients, the conflict of interest provisions in 24 CFR 85.36, OMB Circular A-110, and 24 CFR 570.611 shall apply. No employee, officer, or agent of the sub-recipient shall participate in the selection, award, or administration of a contract supported by federal funds if a conflict of interest, real or apparent, would be involved.

This project is subject to the "Buy America" provisions of the Surface Transportation Assistance Act of 1982 as amended by the Intermodal Surface Transportation Efficiency Act of 1991.

This project is subject to the requirements of the Cargo Preference Act, as described in the Specifications.

It is the policy of the City, as directed by City Council, to encourage the use of local area businesses in construction contracts including vendors, suppliers, labor, etc.

The City reserves the right to reject any and all bids and to waive any minor irregularities in the bid documents. Bidders may not withdraw their bid for a period of ninety (90) days after date set for opening thereof.

The Contractor must follow the procedures as set forth in the Instructions to Bidders for acceptance of bids. Bids will be accepted only if submitted on a proposal form furnished by the City. Each bid must be accompanied by cash, certified check, cashier's check, or bidder's bond made payable to the City of San Fernando or issued by a surety admitted to do business in California, for an amount equal to at least ten percent (10%) of the amount bid. Such guaranty to be forfeited to the City should the bidder to whom the contract is awarded fail to enter into the contract.

Bids will be accepted only from contractors licensed in accordance with the provisions of the Business and Professional Code of the State of California. Prior to contract execution, the Contractor and his/her subcontractors shall obtain a City business license. At the time of bidding, the Contractor must possess a valid California **Class A** Contractor's License.

AB44 EFFECTIVE JULY 1, 2014. If a bidder submits a bid that includes a subcontractor who would be performing work in amount in excess of ½ of 1% of the bidder's total bid or in the case of bids for the construction of streets or highways, including bridges, in excess of ½ of 1% of the bidder's total bid or \$10,000, whichever is greater, then in addition to the subcontractor's name and business address, the subcontractor's State contractor's license number must be included as part of the information submitted for that proposed subcontractor. Failure to provide the subcontractor's license number shall render the bid non-responsive.

SB854 EFFECTIVE MARCH 1, 2015. Contractors and Subcontractors wishing to work on a public works project must be registered with the State of California, Department of Industrial Relations. All public works projects with bids submitted after March 1, 2015, or awarded on or after April 1, 2015, shall use only registered contractors and subcontractors. No bid will be accepted nor any contract entered into without proof of the Bidder's and its subcontractors' current registration with the Department of Industrial Relations. If awarded a contract, the Bidder and its subcontractors of every tier shall maintain active registration with the Department of Industrial Relations for the duration of the Project.

At the request and expense of the Contractor, securities equivalent to the five percent (5%) to be withheld from progress payments pursuant to the City's Standard General Conditions shall be deposited with the City Clerk or a state or federally chartered bank as the escrow agent, who shall pay such monies to the contractor upon satisfactory completion of the contract. Securities eligible for investment shall include those listed in Section 16430 of the Government Code or bank or savings and loan certificates of deposit. The contractor shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereof.

Copies of the plans and specifications, including the approved proposal form, are available on the City website, www.sfcity.org, for downloading at no charge. **In order to be eligible to submit a bid for the project, you MUST contact Patsy Orozco, Civil Engineering Assistant II, via e-mail at POrozco2@sfcity.org to be placed on the plan holders list.**

Any questions pertaining to the project shall be submitted by Friday, August 19, 2022 by 4:00 p.m.

Addenda, if any, will NOT be distributed to the planholders, and will ONLY be posted on the City website. **It shall be the Bidder's responsibility to check the City website for any addenda.**

City of San Fernando

Date: _____

By: Matthew Baumgardner, P.E.
Director of Public Works

Sun
7/21/2022
8/21/2022

INSTRUCTIONS TO BIDDERS

1. GENERAL Proposals under these Contract Documents shall be submitted on the blank forms furnished herewith. When presented, the proposal forms must be completely made out in the manner and form indicated therein and must be properly signed by the bidder. The bidder's address, telephone number, and California State Contractor's License number must be included. To be eligible to perform work, the bidder must be a state licensed contractor in good standing prior to beginning work. The City Council reserves the right to reject any bid if all the above information is not furnished.

Each proposal submitted must be presented in a sealed cover and must be filed prior to the time and at the place designated in the Notice Inviting Bids. All proposals submitted as prescribed will be publicly opened and read at the time and place designated in the Notice Inviting Bids.

Bid Quotes and Unit Price Extensions – The unit prices and the lump sum prices quoted by the bidder must be entered in the spaces provided on the Contractor's Proposal form. In case there is a discrepancy between the unit price and the item total, the unit price shall govern and will be considered as representing the Bidder's intention. The bid total will be corrected to conform to the specified unit price.

Bid Retention and Award – The City reserves the right to retain all bids for a period of ninety (90) days for examination and comparison. The City also reserves the right to waive non-substantial irregularities in any bid, to reject any and all proposals, to reject or delete one part of a proposal and accept the other, except to the extent that the bids are qualified by specific limitations, and to make award to the lowest responsible bidder as the interest of the City may require.

Communications Regarding Bid – All timely requests for information submitted in writing will receive a written response from the City. Telephone communications with City staff are not encouraged but will be permitted. However, any such oral communication shall not be binding on the City.

2. EXAMINATION OF PLANS, CONTRACT DOCUMENTS, AND WORK SITE The Contract Documents and plans, if any, are on file and available for inspection in City Hall.

The Bidders are required to carefully examine the site and the proposal, plans, Contract Documents, and contract forms. The Bidders must satisfy themselves as to the requirements of the Contract Documents and the contract; as to the location of the proposed work and by such other means as they may prefer; and as to the actual conditions and requirements of the work, and shall not, at any time after submission of the bid, dispute, complain, or assert that there was any misunderstanding in regard to the nature or amount of work to be done. It is mutually agreed that submission of a proposal shall be considered prima facie evidence that the bidder has made such examinations.

3. DISQUALIFICATION OF BIDDERS AND PROPOSALS More than one proposal for the same work from any individual, firm, partnership, corporation or association under the same or different names will not be accepted and reasonable grounds for believing that any bidder is

interested in more than one proposal for the work will be cause for rejecting all proposals in which such bidders are interested.

Proposals which show obviously unbalanced prices, and those which are incomplete or show any alteration of form or contain any additions or conditional or alternate bids that are not called for or otherwise permitted, may be rejected. Proposals that do not bear the Bidder's signature will be rejected.

4. AWARD AND EXECUTION OF CONTRACT The award of the contract, if awarded, will be made to the lowest responsive bidder whose proposal complies with all the prescribed requirements. The right is reserved, however, to reject any or all bids and to waive technical errors or discrepancies if it is deemed to best serve the interests of the City. An award will be made only until all necessary investigations are made as to the responsiveness of the low bidder.

Failure to execute a contract and file acceptable bonds as provided herein within the above timeline, not including Sundays, shall be just cause for the annulment of the award and the forfeiture of the proposal guaranty.

The Contractor will be required to obtain a City Business License prior to award of the contract.

5. SIGNATURE OF CONTRACTOR

- a. Corporation Any bids submitted by a corporation must include the name of the corporation, and must be signed by the President and Secretary or Assistant Secretary, and the corporate seal must be affixed. Other persons may sign for the corporation in lieu of the above if a certified copy of a resolution of the corporate board of directors so authorizing them to do so is on file in the City Clerk's Office.
- b. Partnerships Any bids submitted by a partnership must contain the names of all persons comprising the partnership or co-partnership. The bid must be signed by all partners comprising the partnership unless proof in the form of a certified copy of a certificate of partnership acknowledging the signer to be a general partner is presented to the City Clerk.
- c. Joint Ventures Any bids submitted by a joint venture must so state that and must be signed by each joint venturer.
- d. Individuals Any bids submitted by an individual must be signed by that individual unless an up-to-date power of attorney is on file in the City Clerk's Office, in which case the person indicated in the power of attorney may sign for the individual.

The above rules also apply in the case of a fictitious firm name. In addition, however, where the fictitious name is used, it must be so indicated where the signature appears.

6. BONDS

- a. Bid Bonds Bid must be accompanied by cash, cashier's check, certified check, or

surety bond in an amount equal to ten percent (10%) of the total amount in the Contractor's Proposal. Checks and bonds shall be made payable to the City of San Fernando.

- b. Contract Bonds The Contractor simultaneously with execution of the Agreement shall furnish a surety bond in an amount equal to one hundred percent (100%) of the contract price as security for the faithful performance of this contract and a separate surety bond in an equal to one hundred percent (100%) of the contract price as security for the payment of all persons performing labor and furnishing materials in connection with this contract, as required by the terms of an Act entitled:

"An Act to secure the payment of the claim of persons employed by Contractors upon Public Works, and the claims of persons who furnish materials, supplies, teams, implements; or machinery used or consumed by such Contractors in the performance of such works, and prescribing the duties of certain public officers with respect thereto," approved May 10, 1919, as amended.

Bond Forms required are included in these specifications. Copies will be furnished to prospective bidders upon request.

Whenever any Surety or Sureties on any such bonds, or any bonds required by Law for the protection of the claims of laborers and material men become insufficient or the City Engineer has cause to believe that such Surety or Sureties have become insufficient, a demand in writing may be made of the Contractor for each further bond or bonds or additional surety, not exceeding that originally required, as is considered necessary, considering the extent of the work remaining to be done. Thereafter, no payment shall be made upon such contract to the Contractor or any assignee of the Contractor until such further bond or bonds or additional surety has been furnished.

7. RETURN OF BIDDER'S GUARANTIES Within ten (10) days after the award of the contract, the City will return the proposal guaranties accompanying those proposals which are not to be considered in making award. All other proposals which are to be held until the contract has been finally executed, will be returned to the respective bidders after award of contract.
8. CONFLICT OF INTEREST In the procurement of supplies, equipment, construction, and services by sub-recipients, the conflict of interest provisions in 24 CFR 85.36, OMB Circular A-110, and 24 CFR 570.611, respectively, shall apply. No employee, officer or agent of the sub-recipient shall participate in selection, or award or administration of a contract supported by Federal funds if a conflict of interest, real or apparent, would be involved.

The following documents in the PROPOSAL section of these Contract Documents must be completed and submitted with the bid package:

- P-1&2 Contractor's Proposal
 - P-3 Bidder's Bond
 - P-4 Contractor Information
 - P-5 List of References
 - P-6 List of Subcontractors
 - P-7 Minority, Women, Small Business Enterprise Form
 - P-8 Certificate of Secretary of Adoption of Resolution
 - P-9 List of Subcontractors, Suppliers, & Vendors Contacted to Receive Prices in Preparation of Bid Proposal
 - P-10 Non-Collusion Affidavit
-

PROPOSAL

CONTRACTOR'S PROPOSAL

CITY OF SAN FERNANDO
117 MACNEIL STREET
SAN FERNANDO, CALIFORNIA 91340

HONORABLE MAYOR AND
MEMBERS OF THE CITY COUNCIL:

The undersigned declares that this proposal was prepared by carefully examining the location of the proposed work, the Plans, the Specifications, and the Contract Documents entitled:

SAN FERNANDO -PACOIMA WASH BIKEWAY AND PEDESTRIAN PATH
Federal Project No. ATPL-5202(020)
Job No. 7515, Plan No. P-737

The undersigned hereby proposes to furnish all labor, materials, equipment, tools, transportation, and services to perform all work required and to complete said work within **Three Hundred Forty (340)** working days after the commencement date stated in the Notice to Proceed. All work shall be performed in accordance with the Plans, Specifications, and Contract Documents, including the Special Provisions and Technical Provisions, for the prices set forth in the bid schedule.

Dated

Bidder

Signature

Name (Print/Type)

Title

BID SCHEDULE

SAN FERNANDO PACOIMA WASH BIKEWAY AND PEDESTRIAN PATH Federal Project No. ATPL-5202(020) Job No.7615, Plan No. P-737

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	ITEM TOTAL
1	Mobilization, Demo & Clean-Up	LS	1		
2	Traffic Control	LS	1		
3	Stormwater Protection Plan	LS	1		
4	Remove Sidewalk	CY	14		
5	Remove Gate	EA	2		
6	Remove Curb & Gutter	LF	145		
7	Unclassified Excavation	CY	2473		
8	Asphalt Concrete	TON	1670		
9	Base Material	CY	1648		
10	Concrete Ramp	CY	17		
11	Retaining Wall	LF	655		
12	Structural Backfill	CY	864		
13	Structural Excavation	CY	1412		
14	Bridge	LS	1		
15	Concrete Curb	LF	146		
16	Striping	LF	16489		
17	Pavement Markings	EA	60		
18	Signs	EA	31		
19	Rectangular Rapid Flashing Beacon	EA	2		
20	Headwall and Wingwall	EA	2		
21	Guardrail	LF	84		
22	Welded Wire Fence	LF	5658		
23	Welded Wire Gate	EA	7		
24	Bollards	EA	6		
25	Lighting Poles	EA	65		
26	Excavation for Bioretention Areas	CY	4178		
27	Bioretention Areas-Soil Media	CY	2549		
28	Bioretention Areas- Drainage Stone	CY	1595		
				BID TOTAL	\$

Total Base Bid in numbers \$ _____

Total Base bid in words: _____

	Dollars
And _____	Cents

The Contract shall then be awarded to the lowest qualified bidder based on the Total Bid. However, the City reserves the right to remove any and/or all of the Additive Bid Items at the time of the City's issuance of its Notice to Proceed. Said Notice to Proceed shall

determine/specify which of the Additive Bid Items, if any, shall be remain as part of this contract.

The bidder acknowledges receipt of the following addendum issued for the above project. If no addendum has been received, write "None". FAILURE TO ACKNOWLEDGE RECEIPT OF ANY ADDENDA ISSUED WILL RENDER THE CONTRACTOR'S BID NON-RESPONSIVE.

List of Addendum Received: _____

The City does not expressly or by implication agree that the actual amount of work will correspond with the foregoing quantities but reserves the right to increase or decrease the amount of any class or portion of the work or to omit portions of the work as may be deemed necessary or advisable by the Engineer.

The bidder further agrees that in case of not executing the required contract with necessary bonds within ten (10) days, not including Sundays, after having received notice that the contract is ready for signature, the proceeds of the check or bond accompanying his bid shall become the property of the City of San Fernando.

By submission of the Contractor's Proposal, the bidder also certifies that the bid is a balanced bid.

BIDDER'S BOND

KNOW ALL MEN BY THESE PRESENTS:

that we, _____ as Principal,
and _____ as Surety,
are held and firmly bound unto the City of San Fernando in the sum of _____
(\$_____)

to be paid to the said City of its certain Attorney, its successors and assigns; for the payment of which sum well and truly made, we bind ourselves, our heirs, executors and administrators, successors or assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the certain proposal of the above bounden _____
to construct _____
(insert names of streets and limits to be improved) dated _____ is accepted by the City of San Fernando, and if the above bounden his heirs, executors, administrators, successors and assigns, shall duly enter into and execute a contract for such construction, and shall execute and deliver the two bonds described within ten (10) days (not including Sunday) from the date of the mailing of a notice to the above bounden _____
by and from the said City of San Fernando that said contract is ready for execution, then this obligation shall become null and void; otherwise it shall be and remain in full force and virtue.

IN WITNESS WHEREOF, we hereunto set our hands and seals this _____ day of _____, 2022.

Principal

Surety

By _____

By _____

Its _____

Its _____

By _____

By _____

Its _____

Its _____

Surety signatures on this bond must be acknowledged before Notary Publics, and a sufficiently power of attorney must be attached to the bond to verify the authority of any party signing on behalf of a surety.

All notices and demands to the surety shall be delivered via first class mail to the following:

CONTRACTOR INFORMATION

Company Name _____

Address _____

Telephone _____ Fax _____ E-mail _____

Type of Firm: Individual () Partnership () Corporation ()

Corporation organized under the laws of the State of _____

Contractor's License Number _____ State _____ Classification _____ Expiration Date _____

DIR Registration Number _____ Expiration Date _____

Names and titles of all officers of the firm

LIST OF REFERENCES

(To be submitted by contractors who have not worked with the City of San Fernando.)

1. NAME OF CITY OR BUSINESS _____
CONTACT PERSON AND PHONE NO. _____
TYPE/DATE OF WORK PERFORMED _____
TOTAL CONTRACT AMOUNT \$ _____
2. NAME OF CITY OR BUSINESS _____
CONTACT PERSON AND PHONE NO. _____
TYPE/DATE OF WORK PERFORMED _____
TOTAL CONTRACT AMOUNT \$ _____
3. NAME OF CITY OR BUSINESS _____
CONTACT PERSON AND PHONE NO. _____
TYPE/DATE OF WORK PERFORMED _____
TOTAL CONTRACT AMOUNT \$ _____
4. NAME OF CITY OR BUSINESS _____
CONTACT PERSON AND PHONE NO. _____
TYPE/DATE OF WORK PERFORMED _____
TOTAL CONTRACT AMOUNT \$ _____
5. NAME OF CITY OR BUSINESS _____
CONTACT PERSON AND PHONE NO. _____
TYPE/DATE OF WORK PERFORMED _____
TOTAL CONTRACT AMOUNT \$ _____
6. NAME OF CITY OR BUSINESS _____
CONTACT PERSON AND PHONE NO. _____
TYPE/DATE OF WORK PERFORMED _____
TOTAL CONTRACT AMOUNT \$ _____

LIST OF SUBCONTRACTORS

The bidder is required to fill in the following blanks in accordance with the provisions of Section 4100 to 4108, inclusive, of the Government Code of the State of California.

Name under which subcontractor is licensed: _____

Address of office, mill or shop: _____

Specific description of subcontract: _____

License No.: _____ Amount of Subcontract: _____

DIR Registration Number: _____ Expiration Date: _____

Name under which subcontractor is licensed: _____

Address of office, mill or shop: _____

Specific description of subcontract: _____

License No.: _____ Amount of Subcontract: _____

DIR Registration Number: _____ Expiration Date: _____

Name under which subcontractor is licensed: _____

Address of office, mill or shop: _____

Specific description of subcontract: _____

License No.: _____ Amount of Subcontract: _____

DIR Registration Number: _____ Expiration Date: _____

Name under which subcontractor is licensed: _____

Address of office, mill or shop: _____

Specific description of subcontract: _____

License No.: _____ Amount of Subcontract: _____

DIR Registration Number: _____ Expiration Date: _____

MINORITY, WOMEN, SMALL BUSINESS ENTERPRISES

BUSINESS NAME: _____

ADDRESS (P.O. BOX NOT ACCEPTABLE): _____

CITY, STATE, ZIP CODE: _____

PHONE NUMBER (____) _____ CONTACT PERSON: _____

1. MINORITY OWNED

Composition of ownership (more than 50% of ownership of the organization):
Please check one of the following:

_____ Black American _____ Asian/Pacific American

_____ Native American _____ Hispanic American _____ Other ethnicity

2. WOMEN OWNED

More than 50% of this business is owned by women:

_____ Yes _____ No

3. SMALL BUSINESS ENTERPRISE

This business enterprise collects \$1,000,000 or less in gross revenue per year.

_____ Yes _____ No

Does your firm intend to use subcontractors or independent contractors for this project?

_____ Yes _____ No

If yes, all others must fill out the bidder's application also.

Has this business been certified by any other agency as a minority/women owned enterprise or small business enterprise?

_____ Yes _____ No

If yes, please list name(s) and telephone number(s) of certifying agencies.

Is this a joint venture proposal?

_____ Yes _____ No

CERTIFICATE OF SECRETARY OF ADOPTION OF RESOLUTION

I, _____ (insert name of Secretary), do hereby certify that I am the Secretary of _____ (insert name of corporation) a California corporation, and do hereby certify that the following resolution is a full, true and correct copy of a resolution passed by the Board of Directors of said corporation at a meeting thereof held on the _____ day of _____, 2022 (insert proper date), in accordance with the bylaws of said corporation, and that said resolution has not to the date of this certificate been in any manner amended, modified, revoked, rescinded or annulled, and the same is now in full force and effect.

"RESOLVED, that any of the following officers of this corporation, _____, _____ President
_____, Vice President and
_____, secretary
(insert names of officers and capacity where not shown), (any two acting together) (any one acting alone) (strike out inapplicable portion), be and they are hereby authorized to execute and deliver in the name of and for and on behalf of this corporation, any and all bids, authorizations, contracts, bonds and agreements of any nature or sort whatsoever.

BE IT FURTHER RESOLVED, that any and all persons, firms, corporations and other entities, including public entities, shall be entitled to rely on the authority of (any one of such officers) (any two of such officers acting together) (strike out inapplicable portion), above named, to bind this corporation by the execution and delivery of any such bids, authorizations, contracts, bonds and agreements.

BE IT FURTHER RESOLVED, that the authority herein contained shall remain effective until the person, corporation, or public entity relying upon the authority herein contained, receives written notice to the contrary signed by duly authorized officers of this corporation, that all previous authorizations theretofore given with respect to the matters herein contained are revoked. That the revocation of the authority herein contained shall not affect the validity of any instrument herein referred to signed by any person or persons at the time authorized to act."

IN WITNESS WHEREOF, the undersigned has hereunto set (his/her) hand as Secretary and affixed the seal of this corporation this _____ day of _____, 2022.

Secretary

Affix Seal

**LIST OF SUBCONTRACTORS, SUPPLIERS, & VENDORS CONTACTED TO
RECEIVE PRICES IN PREPARATION OF BID PROPOSAL**

1. NAME & LOCATION OF BUSINESS _____

CONTACT PERSON AND PHONE NO. _____
ITEM OR TYPE OF WORK PROPOSED _____
PRICE OR AMOUNT \$ _____
2. NAME & LOCATION OF BUSINESS _____

CONTACT PERSON AND PHONE NO. _____
ITEM OR TYPE OF WORK PROPOSED _____
PRICE OR AMOUNT \$ _____
3. NAME & LOCATION OF BUSINESS _____

CONTACT PERSON AND PHONE NO. _____
ITEM OR TYPE OF WORK PROPOSED _____
PRICE OR AMOUNT \$ _____
4. NAME & LOCATION OF BUSINESS _____

CONTACT PERSON AND PHONE NO. _____
ITEM OR TYPE OF WORK PROPOSED _____
PRICE OR AMOUNT \$ _____
5. NAME & LOCATION OF BUSINESS _____

CONTACT PERSON AND PHONE NO. _____
ITEM OR TYPE OF WORK PROPOSED _____
PRICE OR AMOUNT \$ _____
6. NAME & LOCATION OF BUSINESS _____

CONTACT PERSON AND PHONE NO. _____
ITEM OR TYPE OF WORK PROPOSED _____
PRICE OR AMOUNT \$ _____

SAN FERNANDO PACOIMA WASH BIKEWAY AND PEDESTRIAN PATH
Federal Project No. ATPL-5202(020)
Job No. 7615, Plan No. P-737

P-11

CONTRACT/ AGREEMENT



CONSTRUCTION CONTRACT/AGREEMENT

(NAME OF CONTRACTOR)

San Fernando Pacoima Wash Bikeway and Pedestrian Path
Federal Project No. ATPL-5202(020), Job No. 7615, Plan No. P-737

THIS AGREEMENT, made and entered into this _____ day of _____, 2022, by and between CITY OF SAN FERNANDO, a municipal corporation of the State of California, hereinafter referred to as "CITY" and _____ "CONTRACTOR."

WITNESSETH:

That the CITY and the CONTRACTOR, for the consideration hereinafter named, mutually agree as follows:

1. The complete contract consists of the Contract Documents which includes all of the following documents incorporated herein by this reference: Approved **San Fernando Pacoima Wash Bikeway and Pedestrian Path, Federal Project No. ATPL-5202(020), Project No. 7615, Plan No. P-737**, Notice Inviting Bids, Instructions to Bidders, Contractor's Proposal, Contract/Agreement, Special Provisions, Technical Provisions, and all modifications and amendments thereto.

2. CONTRACTOR shall perform everything required to be performed, shall provide and furnish all the labor, materials, necessary tools, expendable equipment, and all utility and transportation services required for the following work of improvement: **San Fernando Pacoima Wash Bikeway and Pedestrian Path, Federal Project No. ATPL-5202(020), Project No. 7615, Plan No. P-737** (the "Work of Improvement") all in accordance with the Contract Documents and Contractor's Proposal dated _____.

CONTRACTOR agrees to perform all the work and furnish all the materials at his own cost and expense necessary to construct and complete in a good and workman-like manner and to the satisfaction of the City Engineer of the CITY, the Work of Improvement in accordance with the plans, specifications, and Contract Documents (the "Specifications") therefore prepared by City's Engineering Department and adopted by the City Council.

3. CITY agrees to pay and CONTRACTOR agrees to accept in full payment for this Work of Improvement the stipulated sum of _____ (\$_____).

CITY agrees to make monthly payments and final payment in accordance with the method set forth in the Specifications.

4. CONTRACTOR agrees to commence construction of the Work of Improvement within ten (10) days after issuance of a Notice to Proceed, and to continue in a diligent and workman-like manner without interruption, and to complete the construction thereof within **Three Hundred Forty (340)** working days from the date the Notice to Proceed is issued.

CONSTRUCTION CONTRACT/AGREEMENT

San Fernando Pacoima Wash Bikeway and Pedestrian Path, Federal Project No. ATPL-5205(020), Job No. 7615, Plan No. P-737

5. Time is of essence of this Contract, and it is agreed that it would be impracticable or extremely difficult to ascertain the extent of actual loss or damage which the CITY will sustain by reason of any delay in the performance of this Agreement. It is, therefore, agreed that CONTRACTOR will pay as liquidated damages to the CITY the following sum: **Three thousand nine hundred Dollars (\$3,900.00)** for each day's delay beyond the time herein prescribed for finishing work. If liquidated damages are not paid, as designated by the CITY, the CITY may deduct the amount thereof from any money due or that may become due the CONTRACTOR under this Agreement in addition to any other remedy available to CITY. The CONTRACTOR shall not be assessed liquidated damages for any delay caused by the failure of a public utility to relocate or remove an existing utility required for the performance of this Contract.

6. The CONTRACTOR will pay, and will require all subcontractors to pay, all employees on the work of improvement a salary or wage at least equal to the prevailing salary or wage established for such work as set forth in the wage determinations for this work. Travel and subsistence pay shall be paid in accordance with Labor Code Section 1773.8. The CONTRACTOR shall forfeit to the CITY, as penalty, Fifty Dollars (\$50.00) for each calendar day or portion thereof for each worker paid (either by him or any subcontractors under him) less than the prevailing rate described above on the work provided for in this Agreement, all in accordance with Section 1775 of the Labor Code of the State of California. CONTRACTOR, by executing this Agreement, hereby certifies that it shall adopt the current general prevailing Federal and/or State rates of wages applicable to the Work of Improvement.

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

8. Attention is directed to Section 7108.5 of the California Business and Professions Code, which requires a prime CONTRACTOR or SUBCONTRACTOR to pay any SUBCONTRACTOR not later than 10 days of receipt of each progress payment, unless otherwise agreed to in writing. In addition, Federal Regulation (49 CFR 26.29) requires a prime CONTRACTOR or SUBCONTRACTOR to pay a SUBCONTRACTOR no later than 30 days of receipt of each payment, unless any delay or postponement of payment among the parties takes place only for a good cause and with the prior written approval of the CITY. Section 7108.5 of the California Business and Professions Code also contains enforcement actions and penalties. These requirements apply to both DBE and non-DBE subcontractors.

9. Federal Regulation (49 CFR 26.29) requires the following method be used in federal-aid contracts to ensure prompt and full payment of any retainage kept by the prime CONTRACTOR or SUBCONTRACTOR to a SUBCONTRACTOR:

The CITY may hold retainage from the prime CONTRACTOR and provide for prompt and regular incremental acceptances of portions of the contract, pay retainage to prime CONTRACTORS based on the acceptances, and include a contract clause obligating the prime contract and subcontractors to pay all retainage owed to all SUBCONTRACTORS for satisfactory completion of the accepted work within 30 days

CONSTRUCTION CONTRACT/AGREEMENT

San Fernando Pacoima Wash Bikeway and Pedestrian Path, Federal Project No. ATPL-5205(020), Job No. 7615, Plan No. P-737

after receipt of the retainage. This clause must require the prompt release of retainage payments from the prime CONTRACTOR to the SUBCONTRACTOR within a specified number of days after the SUBCONTRACTOR'S work is satisfactorily completed.

In the above method, a SUBCONTRACTOR'S work is satisfactorily completed when all tasks called for in the contract have been accomplished and documented as required by the CITY. The work of a SUBCONTRACTOR covered by that acceptance is deemed to be satisfactorily completed, when the CITY has made an incremental acceptance of a portion of the contract work. Federal Regulation (49 CFR 26.29) also requires that any delay or postponement of payment among the parties may take place only for good cause, must have the prior written approval of the agency, and that appropriate means of enforcement such as those contained in Section 7108.5 of the California Business and Professions Code must be included in the contract.

10. In the performance of this Contract, not more than eight (8) hours shall constitute a day's work, and the CONTRACTOR shall not require more than eight (8) hours in a day from any person employed by him hereunder, except as provided in the Labor Code of the State of California. The CONTRACTOR shall adhere to Article 3, Chapter 1, Part 7 (Sections 1810, et seq.) of the Labor Code of the State of California, and it is agreed that the CONTRACTOR shall forfeit to the CITY as a penalty the sum of Fifty Dollars (\$50.00) for each worker employed in the execution of this Contract by the CONTRACTOR or any subcontractor for each calendar day during which any worker is required or permitted to labor more than eight (8) hours in violation of that article.

11. CONTRACTOR, by executing this Agreement hereby certifies:

"I am aware of the provisions of Section 3700 of the Labor Code which requires every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions of that Code, and I will comply with such provisions before commencing the performance of the work of this Contract."

12. CONTRACTOR shall, prior to the execution of this Contract, furnish two bonds approved by the CITY, one in the amount of One Hundred Percent (100%) of the Contract price, to guarantee the faithful performance of the work, and one in the amount of One Hundred Percent (100%) of the Contract price to guarantee payment of all claims for labor and materials furnished. This Contract shall not become effective until such bonds are supplied to and approved by the CITY. CONTRACTOR shall, prior to the release of the performance and payment bonds or the retention payment, furnish a warranty performance and payment bond equal to at least ten percent of the final contract price or \$1,000, whichever is greater.

IN WITNESS WHEREOF, the said CONTRACTOR and the CITY ADMINISTRATOR and CITY CLERK of the CITY have caused the names of said parties to be affixed hereto, each in triplicate, the day and year first above written.

CONSTRUCTION CONTRACT/AGREEMENT

San Fernando Pacoima Wash Bikeway and Pedestrian Path, Federal Project No. ATPL-5205(020), Job No. 7615, Plan No. P-737

CONTRACTOR

BY _____

Title

BY _____

Title

CITY OF SAN FERNANDO
A Municipal Corporation

NICK KIMBALL
CITY MANAGER

ATTEST:

JULIA FRITZ
CITY CLERK

APPROVED AS TO FORM:

RICK R. OLIVAREZ
CITY ATTORNEY
OLIVAREZ MADRUGA, P.C.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that we, _____
as Principal, and _____ as Surety,
are held and firmly bound unto the CITY OF SAN FERNANDO, hereinafter called the Owner, in the sum of
_____ (\$ _____)
for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors,
administrators and successors, jointly and severally, firmly by these presents.

The conditions of this obligation are such that whereas the Principal entered into a contract, attached
hereto, with the Owner dated _____ for _____
_____.

NOW, THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants,
terms, conditions and agreements of said contract during the original term thereof, and any extensions
thereof that may be granted by the Owner with or without notice of the Surety, and during the life of any
guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings,
covenants, terms, conditions and agreements of any and all duly authorized modifications of said contract
that may hereafter be made, then this obligation shall be void; otherwise this obligation shall remain in
full force and virtue.

Further, the said Surety, for value received, hereby stipulates and agrees that no change, extension of
time, alteration or modification of the contract documents or of the work to be performed thereunder
shall in any way affect its obligations on this bond; and it hereby waives notice of any and all such
changes, extensions of time; and alterations or modifications of the contract documents and/or of the
work to be performed thereunder.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals the _____ day of _____, 2022, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by each party's undersigned representative, pursuant to authority of its governing body.

(Principal)

ATTEST:

(Address)

(By)

(Title)

ATTEST:

(Address)

(By)

(Title)

(To be filled in by Surety)

Rate of premium on this bond is \$_____ per thousand.

Total amount of premium charge is \$_____.

Surety signatures on this bond must be acknowledged before Notary Publics, and a sufficiently power of attorney must be attached to the bond to verify the authority of any party signing on behalf of a surety.

All notices and demands to the surety shall be delivered via first class mail to the following:

PAYMENT (LABOR AND MATERIAL) BOND

KNOW ALL MEN BY THESE PRESENTS: that we, _____ as Principal, and _____ as Surety, are held and firmly bound unto the CITY OF SAN FERNANDO, hereinafter called the Owner, in the sum of _____ (\$ _____) for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

The conditions of this obligation are such that whereas the Principal entered into a contract, attached hereto, with the Owner dated _____ for _____.

NOW, THEREFORE, if the Principal shall promptly make payment to all persons supplying labor and material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of each contract that may hereafter be made, then this obligation shall be void, otherwise this obligation shall remain in full force and virtue.

The condition of this obligation is such that, if said Principal or his or its subcontractors, or the heirs, executors, administrators, successors or assigns thereof, shall fail to pay any of the persons named in Section 3181 of the Civil Code of the State of California for any materials, provisions, provender or other supplies used in, upon, for or about the performance of the work or labor performed by any such claimant or any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board from the wages of employees of the contractor and his subcontractors pursuant to Section 18806 of the Revenue and Taxation Code, with respect to such work and labor, then said Surety will pay for the same, in the amount not exceeding the sum set forth hereinabove and also, in case suit is brought upon the bond, will pay a reasonable attorney's fee to be fixed by the court. This bond shall insure to the benefit of any and all persons named in the aforesaid Civil Code Section 3131 so as to give a right of action to them or their assigns in any suit brought upon the bond.

Further, the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or modification of the contract documents or of the work to be performed thereunder shall in any way affect its obligations on this bond; and it hereby waives notice of any and all such changes, extensions of time; and alterations or modifications of the contract documents and/or of the work to be performed thereunder.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals the _____ day of _____, 2022, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by each party's undersigned representative, pursuant to authority of its governing body.

(Principal)

ATTEST:

(Address)

(By)

ATTEST:

(Address)

(By)

(Title)

(To be filled in by Surety)

Rate of premium on this bond is \$_____ per thousand.

Total amount of premium charge is \$_____.

Surety signatures on this bond must be acknowledged before Notary Publics, and a sufficiently power of attorney must be attached to the bond to verify the authority of any party signing on behalf of a surety.

All notices and demands to the surety shall be delivered via first class mail to the following:

WARRANTY PERFORMANCE AND PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that _____ as Principal, hereinafter called Contractor, and _____, licensed and domiciled in the state of California as Surety, hereinafter called Surety, are held and firmly bound unto CITY OF SAN FERNANDO as Oblige, hereinafter called Owner, in the amount of _____ (\$_____)

for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, _____ as Contractor, has by written agreement dated _____, 2022, entered into a contract with Owner for San Fernando Pacoima Wash Bikeway and Pedestrian Path, Federal Project No. ATPL-5202(020) Job No. 7615 in accordance with Drawings and Specifications contained in a written and executed contract, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

WHEREAS, said contract provides that the Principal shall furnish a bond which shall remain in force for a period of one year after the date of the notice of completion and which shall be conditioned to guarantee against all defects in workmanship and materials which shall become apparent during said period.

NOW THEREFORE, the condition of this obligation is such that, if Contractor shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notices of any alteration or extension of time made by the Owner.

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

(1) Complete the Contract in accordance with its terms and conditions, or;

(2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, arrange for a contract between such bidder and Owner, and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts 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 total amount payable by Owner to Contractor under the Contract and any amendments thereto, less the amount properly paid by Owner to Contractor.

The transaction of insurance as evidenced by this bond is agreed by all parties to have taken place in the State of California in conformance with the laws therein, the Surety hereby accepts jurisdiction for adjudication of all claims in the state wherein the claims have occurred.

This bond is for the protection of the owner and gives no protection to any claimant other than those provided for by statute in the state wherein the claim occurs. The owner hereby agrees that no payments shall be made in excess or advance of any work specifically performed under the contract without the express written consent of the Surety.

For claims regarding non-payment for services provided or materials supplied under the contract, a claimant is defined herein as one having a direct contract with the Principal and/or subcontractor of the Principal. No suit or action shall be commenced hereunder by any claimant unless claimant shall:

1. Notify the Surety of the direct contract with the Principal or Subcontractor of the Principal within 30 days of entering into such contract and;

2. Notify the Surety of any demands for payment under such direct contracts concurrently with the Principal and/or Subcontractor of the Principal and;
3. Notify the Surety by certified mail within 15 days of any payment not made when due, or within 30 days of demand.

As the purpose of this bond is to warrant work previously performed by the Principal in the contract specified herein, the Owner shall notify Surety immediately by certified mail upon demand for work to be performed under this bond.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals the _____ day of _____, 2022, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by each party's undersigned representative, pursuant to authority of its governing body.

(Principal)

ATTEST:

(Address)

(By)

ATTEST:

(Address)

(By)

(Title)

(To be filled in by Surety)

Rate of premium on this bond is \$_____ per thousand.

Total amount of premium charge is \$_____.

Surety signatures on this bond must be acknowledged before Notary Publics, and a sufficiently power of attorney must be attached to the bond to verify the authority of any party signing on behalf of a surety.

All notices and demands to the surety shall be delivered via first class mail to the following:

GENERAL PROVISIONS

GENERAL PROVISIONS

PART I

The documents that control construction, work performed, and materials furnished hereunder are the Contract Documents. The Contract Documents include the Notice Inviting Bids, Contractor's Proposal, Contract/Agreement, Bonds, Specifications, and the documents in the Appendix, if any, all of which are hereby incorporated and made a part of these Contract Documents. The Specifications include the Standard Specifications, these Special Provisions which supplement or modify the Standard Specifications, Plans, Standard Plans, and the Technical Specifications.

The Standard Specifications is the latest edition of the Standard Specifications for Public Works Construction, including supplements, written and promulgated by the Southern California Chapter of the American Public Works Association and the Southern California Districts of the Associated General Contractors of California, and the American Water Works Association (AWWA) Standards.

In case of conflict between documents, the precedence of documents shall follow Subsection 2-5.2 of the Standard Specifications, except that the Technical Provisions precede the Special Provisions. However, for any other precedence of documents, the Technical Provisions shall be considered part of the Special Provisions.

For the convenience of the Contractor, the section and subsection numbering system used in these Special Provisions corresponds to that used in the Standard Specifications.

SECTION 1 - TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURE, AND SYMBOLS

Subsection 1-2 Terms and Definitions

Add the following to the provisions of Subsection 1-2, "Terms and Definitions":

The Standard Specifications, Standard Plans, and Manual of Traffic Controls, latest edition of each, of the State of California, Department of Transportation, and the Los Angeles County Department of Public Works Standard Plans, the City of San Fernando Standard Plans, and the American Water Works Association (AWWA) are incorporated herein by reference and are hereby accepted as Reference Specifications. These Reference Specifications are intended to govern certain construction materials, methods, and details except as modified herein or are inconsistent with the provisions herein. In case of conflict between the Reference Specifications and the Technical Provisions, the Technical Provisions shall govern. In case of a conflict between drawings and Technical Provisions, Technical Provisions shall prevail.

SECTION 2 - SCOPE AND CONTROL OF THE WORK

Subsection 2-1 Award and Execution of the Contract

Add the following to the provisions of Subsection 2-1, "Award and Execution of the Contract":

By mutual consent in writing of the parties signatory to the contract, alterations or deviations, increase or decreases, additions or omissions, in the plans and specifications may be made and the same shall in no way affect or make void the contract.

Subsection 2-4 Contract Bonds

Add the following to the provisions of Subsection 2-4, "Contract Bonds":

The performance bond shall remain in effect at least until the date of substantial completion/notice of completion, except as otherwise provided. The contractor warrants and guarantees to the City that all work will not be defective. The contractor shall furnish a warranty performance and payment bond equal to at least one hundred percent of the final contract price or \$1,000, whichever is greater, before the contract performance and payment bonds can be released or the retention payment paid. The warranty performance and payment bond shall be in effect until at least one year after the date of the notice of completion, except that utility work shall require it to be in effect for three years.

Subsection 2-5 Plans and Specifications

Add the following to the provisions of Subsection 2-5, "Plans and Specifications":

All authorized alterations affecting the requirements and information given on the approved plans shall be in writing. No changes shall be made of any plan or drawing after the same has been approved by the Engineer, except by written direction of the Engineer. Should it appear that the work to be done, or any matter relative thereto is not sufficiently detailed or explained in these Specifications, Special Provisions, Technical Provisions, or Plans, the contractor shall apply to the Engineer for such further explanations as may be necessary and shall conform to such explanation or interpretation as part of the original specifications. In the event of doubt or questions relative to the true meaning of the specifications, reference shall be made to the City Council, whose decision thereon shall be final.

Record Drawings:

All corrections on record drawings shall be done in red ink. Record drawings shall be a control set of the construction plans kept on the site for daily recording of "as built" conditions. Show dimensioned location of all buried facilities, such as drains, sumps, pipe, valves, electrical conduit, and irrigation wire.

Dimensions must be taken from above ground permanent, architectural objects, not plants or irrigation heads. All dimensions, notes, etc., shall be legible.

Record drawing shall be reviewed prior to all progress payment requests and submitted prior to final inspection.

Subsection 2-9 Surveying

Add the following:

The Contractor shall preserve all benchmarks, monuments, survey marks, centerline ties and stakes and, in case of their impending removal or destruction by his/her operations he/she shall be responsible for notifying the City Engineer **prior** to their removal. Failure to provide such

notification will result in the Contractor being liable for all costs associated with their replacement.

2-9.1 Permanent Survey Markers. Subsection 2-9.1 is hereby deleted and replaced with the following:

The Contractor shall retain a Licensed Land Surveyor, or a Registered Civil Engineer authorized to practice land surveying within the State to Reset Survey Monuments. The Contractor is responsible for the filing and recording of the Survey Monuments.

2-9.2 Survey Service. Subsection 2-9.2 is hereby deleted and replaced with the following:

The Contractor shall retain a Licensed Land Surveyor, or a Registered Civil Engineer authorized to practice land surveying within the State to provide construction staking. The Contractor is responsible for the accuracy of surveying adequate for construction.

2-9.5 Measurement and Payment. The following section is hereby added:

Full compensation for Construction Survey, including furnishing all labor, materials, tools, equipment, surveyor, supervision, and incidentals for doing all the work involved shall be considered as included in the other items of work.

Payment for monumentation restoration shall be paid at the contract unit price bid per intersection, including furnishing all labor, materials, tools, equipment, surveyor supervision, filing and recordation and other incidental for doing all the work involved and no separate payment shall be made thereof.

Subsection 2-10 Authority of the Board and the Engineer

Add the following to the provisions of Subsection 2-10, "Authority of the Board and the Engineer":

The Engineer shall retain all written protests filed, and, upon completion of the work, shall submit all such protests to the City Council, together with a copy of the Engineer's prior written decisions for consideration by the City Council at the time of final acceptance of the work. The Contractor or its representative may appear and be heard by the City Council concerning any such protests. In connection with acceptance of the work and final payment under the Contract, the City Council shall make its determination with respect to each protest filed with the Engineer. The decision of the City Council shall be final.

Subsection 2-11 Inspection

Add the following to the provisions of Subsection 2-11, "Inspection":

Inspection work requested by the contractor outside of the prescribed working hours shall be paid by the contractor at the City's overtime rate.

SECTION 3 - CHANGES IN WORK

Subsection 3-3 Extra Work

Add the following to the provisions of Subsection 3-3.1, "General":

The contractor shall proceed with extra work only upon written order from the Engineer. For such extra work the contractor shall receive payment as agreed upon in writing, or he shall be paid on force account. The contractor shall not exceed any of the quantities in the proposal unless prior authorization from the engineer is obtained in writing.

3-3.2.3 Markup.

3-3.2.3.1 Work by Contractor.

Replace the entire paragraph 3-3.2.3.1 Work by Contractor, with the following:

The following percentages shall be added to the Contractor's costs and shall constitute the markup for all overhead, insurance of any type and profits on extra work performed by the Contractor:

- (1) Labor15%
- (2) Materials.....10%
- (3) Equipment Rental10%
- (4) Other Items and Expenditures10%

To the sum of the costs and markups provided for this subsection, one percent shall be added as compensation for bonding. For all negotiated Change Orders the allowance for overhead and profit shall include full compensation for superintendence, insurance premiums, taxes, field office expense, extended overhead, home office overhead, and all other items of expense or cost not included in the cost of labor, materials, or equipment provided for in this Article.

3-3.2.3.2 Work by Subcontractor.

Delete the entire subsection 3-3.3.2 Work by Subcontractor and replace with the following:

When a subcontractor performs all or any part of the extra work, the markup established in subsection 3-3.2.3.1 shall be applied to the subcontractor's actual cost of such work, and shall constitute its only payment for all overhead, insurance of any type and profits. The Contractor shall receive an additional markup, not to exceed five (5) percent, for all its overhead, insurance of any type and profit on the "extra work" performed by the Subcontractor.

Subsection 3-5 Disputed Work

Add the following to the provisions of Subsection 3-5, "Disputed Work":

- A. In accordance with Public Contract Code Section 20104, and for the purposes of Paragraphs B only, the term "Defined Claim" shall mean a separate demand by the Contractor to the Owner of a value of \$375,000 or less, for any of the following: (a) a time extension, (b) payment of money or damages arising from work done by the Contractor pursuant to the Contract Documents and payment of which is not otherwise expressly provided for or the Contractor is not otherwise entitled to, or (c) an amount of payment which is disputed by the Owner.
- B. RESOLUTION OF DEFINED CLAIMS Pursuant to Sections 20104 et seq., of the Public Contracts Code, the provisions of this Paragraph B shall apply to all "Defined Claims," as such term is defined in Paragraph A (i.e., claims that are in the amount of \$375,000 or less).

Filing and Response to Defined Claim

The Defined Claim shall be in writing, include the documents necessary to substantiate the Defined Claim, and be filed with the Owner on or before the date of the final payment for the work.

If the Defined Claim is less than \$50,000, the new Owner shall respond in writing to the Defined Claim within 45 days of its receipt; or the Owner may request in writing within 30 days of receipt of the Defined Claim any additional documentation supporting the Defined Claim or relating to defenses or claims the Owner may have against the Contractor, and in such event the Owner's response shall be submitted to the Contractor within the later of 15 days after the receipt of the further documentation, or the time taken by the Contractor in producing the additional information.

If the Defined Claim is over \$50,000, the Owner shall respond in writing to the Defined Claim within 60 days of its receipt, or the Owner may request in writing within 30 days of receipt of the Defined Claim any additional documentation supporting the Defined Claim or relating to defenses or claims the Owner may have against the Contractor, and in such event the Owner's response shall be submitted to the Contractor within the later of 30 days after the receipt of the further documentation, or the time taken by the Contractor in producing the additional information or requested documentation.

Meet and Confer Regarding Defined Claim

If the Contractor disputes the Owner's written response, or if the Owner fails to respond within the prescribed time, to the Defined Claim, the Contractor may notify the Owner in writing within 15 days, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of the demand, the Owner shall schedule a meet and confer conference within 30 days. If the claim or any portion thereof remains in dispute following the meet and confer conference, the Contractor may file a claim pursuant to Government Code Section 900, et seq. For purposes of this Paragraph B, the running of the period of time within which a claim must be filed shall be tolled from the time the Contractor submits the Defined Claim until the time such Defined Claim is denied, including any period of time utilized by the meet and confer conference.

Procedures for Civil Actions Filed to Resolve Defined Claims

The following procedures shall apply to any civil action filed pursuant to this Paragraph B:

Non-Binding Mediation Within 60 days, but no earlier than 30 days, following the filing of responsive pleadings, the court shall submit the matter to non-binding mediation unless waived by mutual stipulation of both parties. The mediation process shall provide for the selection within 15 days by both parties of a disinterested third person as mediator and shall be commenced within 30 days of the submittal and shall be concluded within 15 days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court.

Judicial Arbitration If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Section 1141.10, et seq., of the Code of Civil Procedure, notwithstanding Code of Civil Procedure Section 1141.11. The civil discovery procedures of Code of Civil Procedure Section 2016, et seq., shall apply, consistent with the rules pertaining to judicial arbitration. In addition to the provisions of Code of Civil Procedure

Section 1141.10, et seq., (a) arbitrators shall, upon stipulation of the parties, be experienced in construction law, and (b) any party appealing an arbitration award who does not obtain a more favorable judgment shall, in addition to payment of costs and fees, also pay the attorney's fees on appeal of the other party.

Interest on Award of Judgment In any suit filed pursuant to Paragraph (G)3.2, the Owner shall pay interest at the legal rate on any arbitration award or judgment, which interest shall begin to accrue on the date the suit is filed in a court of law.

- C. RESOLUTION OF CLAIMS OTHER THAN DEFINED CLAIMS The provisions of this Paragraph C shall apply to all claims that are not "Defined Claims," as such term is defined in Paragraph A (i.e., claims that are in excess of \$375,000.00).

Written Claim

If the Contractor is not satisfied with any action by the City Council to resolve the protest of any claim other than a Defined Claim, it shall file with the City Council, within fifteen (15) days after such determination, a written claim which shall comply with the requirements for a claim under Division 3.6 of Title 1 (commencing with Section 810) of the California Government Code. The City Council shall take action with respect to any such claim as provided in Division 3.6 of Title 1 of the Government Code. Denial of such claim by the City Council shall be a prerequisite to the institution of any legal proceeding challenging the action of the City Council. If the Contractor fails to file a claim within the time specified herein, it shall be deemed satisfied with the action of the City Council with respect to its protests, and such failure to file a claim shall be deemed to be a waiver of all claims and demands arising out of or relating to this Contract.

Limitation Period

Demand for Arbitration of any claim other than a Defined Claim shall be served upon the Owner within the time limits set forth in Division 3.6 of the California Government Code for commencement of legal proceedings against a local public agency.

Arbitration

Except as provided to the contrary herein, arbitration of any claim other than a Defined Claim may be initiated by the Contractor and shall be conducted in accordance with the provisions of California Code of Civil Procedure Sections 1280, et seq. The parties hereto agree that there shall be a single neutral Arbitrator who shall be selected in the following manner: (1) The Demand for Arbitration shall include a list of five names of persons acceptable to the Contractor to be appointed as Arbitrator. The Owner shall determine if any of the names submitted by Contractor are acceptable and, if so, such person will be designated as Arbitrator; (2) In the event that none of the names submitted by Contractor are acceptable to Owner or if for any reasons the Arbitrator selected in Step (1) is unable to serve, the Owner shall submit to Contractor a list of the five names of persons acceptable to Owner for appointment as Arbitrator to Contractor who shall in turn have 10 days in which to determine if one such person is acceptable; (3) If after Steps (1) and (2) the parties are unable to mutually agree upon a neutral Arbitrator, the matter of selection of an Arbitrator shall be submitted to the Los Angeles County Superior Court pursuant to Code of Civil Procedure Section 1281.6.

SECTION 4 - CONTROL OF MATERIALS

Subsection 4-1.3 Inspection Requirements

Add the following to the provisions of Subsection 4-1.3, "Inspection Requirements":

At the option of the Engineer, the source of supply 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 material to be used in the work, for testing or examination as desired by the Engineer. All tests of industry materials furnished by the contractor shall be made in accordance with commonly recognized industry standards or special methods and tests as prescribed in these specifications.

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 whenever necessary to determine the quality of material.

SECTION 5 - UTILITIES

Subsection 5-1 Location

Add the following to the provisions of Subsection 5-1, "Location":

Utilities for the purpose of these Special Provisions shall be considered as including but not limited to; pipelines; conduits; transmission lines; appurtenance of both public utilities and private industries, business, or individual; storm drains; sanitary sewers; and street lighting conduits.

The City has endeavored to locate and indicate on the drawings all underground utilities, facilities, and obstructions within the limit of the work under this contract or so nearly adjacent thereto as to interfere with the execution of the work. However, the accuracy and completeness of the utilities location indicated on the plans is not guaranteed. Sewer service lines, gas service connections, and street lights and traffic signal conduits may not be shown on the plans.

The contractor is responsible to determine the exact location of utilities and its service connections during construction. The contractor shall notify the City of the exact location of any utility or service connection which is not shown or incorrectly shown on the plans.

The contractor shall be expected to maintain liaison with the affected utility company representatives, and shall notify them prior to beginning of the job and each time the particular utility is or could possibly be affected at least 24 hours in advance:

1.	Verizon Company	818-365-3128
2.	Edison Company	800-611-1911
3.	Southern California Gas Company	818-701-3342
4.	San Fernando Water Department	818-898-1293
5.	L.A. City Municipal Services	800-342-5397
6.	L.A. Metropolitan Water Dist.	626-844-5610
7.	Time Warner Cable	818-700-6100

8. Pacific Pipeline Co.
9. Verizon / GTE

800-987-4737
818-365-3128

SECTION 6 - PROSECUTION, PROGRESS, AND ACCEPTANCE OF THE WORK

Subsection 6-1 Construction Schedule and Commencement of the Work

Add the following to the provisions of Subsection 6-1, "Construction Schedule and Commencement of the Work":

Construction work is limited to normal working hours unless prior written approval is obtained from the Engineer. Normal working hours for construction are between 7 a.m. and 4 p.m.

The Contractor shall begin work within three (3) days of the commencement date stated in the Notice to Proceed and shall diligently prosecute the same to completion before the time required to complete the work stated in the Contractor's Proposal expires.

Subsection 6-6 Delays and Extensions of Time

Add the following to the provisions of Subsection 6-6, "Delays and Extensions of Time":

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 Acts of God or of war, acts of the City, fire, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and weather or delays of subcontractors due to such causes, provided that the Contractor shall within ten (10) days from the beginning of any such delay notify the Engineer in writing of the cause of delay, who shall ascertain the facts and the extent of the delay, and his findings of the facts thereon shall be final and conclusive.

Subsection 6-7 Time of Completion

Add the following to the provisions of Subsection 6-7, "Time of Completion":

Where a single shift is worked, eight (8) consecutive hours between 7 a.m. and 5 p.m. shall constitute a day's work at straight time for all workers. Forty (40) hours between Monday, 7 a.m., and Friday, 5 p.m. shall constitute a week's work at straight time. Holidays as herein referred to shall be deemed to be:

- | | |
|---------------------------|--------------------------|
| ▶ New Year's Day | ▶ Labor Day |
| ▶ Martin Luther King Day | ▶ Veterans Day |
| ▶ Washington's Birthday | ▶ Thanksgiving Day |
| ▶ Cesar Chavez's Birthday | ▶ Day after Thanksgiving |
| ▶ Memorial Day | ▶ Christmas |
| ▶ Independence Day | |

Subsection 6-8 Completion, Acceptance and Warranty

Add the following to the provisions of Subsection 6-8, "Completion, Acceptance and Warranty":

Final inspection and recommendation of completion by the Engineer does not constitute acceptance of the project. The contractor remains responsible for the project until acceptance of the work by the City Council.

Subsection 6-9 Liquidated Damages

Add the following to the provisions of Subsection 6-9, "Liquidated Damages":

It is agreed by the parties to the contract that liquidated damages for work under this contract is the sum of Three thousand nine hundred Dollars (\$3,900.00) per day for each and every day's delay beyond the time prescribed to complete the work. Contractor agrees to pay such liquidated damages as herein provided, and in case the same are not paid, Contractor agrees that the City of San Fernando may deduct the amount thereof from any money due or that may become due the Contractor under the contract.

It is further agreed that in case the work called for under the contract is not finished and completed in all parts and requirements within the time specified, the City Council shall have the right to extend the time for completion or not, as may seem best to serve the interest of the City; and if it decides to extend the time limit for the completion of the contract, it shall further have the right to charge to the Contractor, his heirs, assigns or sureties; and to deduct from the final payment for the work, all or any part, as it may deem proper, of the actual cost of engineering, inspection, superintendence, and other overhead expenses which are directly chargeable to the contract, and which accrue during the period of such extension, except that the cost of final surveys and preparation of final estimates shall not be included in such charges.

SECTION 7 - RESPONSIBILITIES OF THE CONTRACTOR

Subsection 7-2 Labor

Add the following to the provisions of Subsection 7-2, "Labor":

Attention is directed to the provisions in Sections 1777.5 (Chapter 1411, Statutes of 1968) and 1777.6 of the Labor Code concerning the employment of apprentices by the contractor or any subcontractor under him.

Section 1777.5, as amended, requires the contractor or subcontractor employing tradesmen in any apprenticeable occupation to apply to the joint apprenticeship committee nearest the site of the public works project and which administers the apprenticeship program in that trade for a certificate of approval. The certificate will also fix the ratio of apprentices to journeymen that will be used in the performance of the contract. The ratio of apprentices to journeymen in such cases shall not be less than one to five except:

1. When unemployment in the area of coverage by the joint apprenticeship committee has exceeded an average of 15 percent in the 90 days prior to the request for certificate, or
2. When the number of apprentices in training in the area exceeds a ratio of one to five, or
3. When the trade can show that it is replacing at least 1/30 of its membership through apprenticeship training on an annual basis statewide or locally, or
4. When the contractor provides evidence that he employs registered apprentices on all of his contracts on an annual average of not less than one apprentice to eight journeymen.

The contractor is required to make contributions to funds established for the administration of apprenticeship programs if he employs registered apprentices or journeymen in any apprenticeable trade on such contracts and if other contractors on the public works site are making such contributions.

The contractor and any subcontractor under him shall apply with the requirements of Sections 1777.5 and 1777.6 in the employment of apprentices.

Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of Industrial Relations, ex officio the Administrator of Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

Subsection 7-2.2 Prevailing Wages

Add the following to the provisions of Subsection 7-2.2, "Prevailing Wages":

Eight hours constitutes a legal days' work. The contractor shall forfeit, as a penalty to the City of San Fernando, \$50.00 for each workman employed in the execution of the contract by the contractor is required or permitted to work more than eight hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of the Labor Code, and in particular, Sections 1810 to 1815, thereof, inclusive, except that work performed by employees of contractors in excess of eight hours per day, and 40 hours during any one week, shall be permitted upon compensation for all hours worked in excess of eight hours per day at not less than one-and-one-half times the basic rate of pay as provided in said Section 1815.

The contractor shall comply with Labor Code Section 1775 in accordance with said Section 1775, the contractor shall forfeit as a penalty to the City of San Fernando, \$50.00 for each calendar day or portion thereof, for each workman paid less than the stipulated prevailing rates for such work or craft in which such workman is employed for any work under the contract by him or by any subcontractor under him in violation of the provisions of the Labor Code and in particular, Labor Code Sections 1770 to 1780, inclusive. In addition to said penalty and pursuant to said Section 1775, the difference between such stipulated prevailing wage rates and the amount paid to each workman for each calendar day or portion thereof for which each workman was paid less than the stipulated prevailing wage rate shall be paid to each workman by the contractor.

In accordance with the provisions of Section 1770 to 1777 inclusive, of the Labor Code of the State of California, the City Council of San Fernando has adopted the general prevailing rates of per diem wages applicable to the work to be done as have been determined by the Director of the Department of Industrial Relations for the State of California.

Subsection 7-3 Insurance

Add the following to the provisions of Subsection 7-3, "Insurance":

The public liability insurance shall include protection from claims caused by automobiles, trucks, or other vehicles of the contractor or any subcontractor while in use both within and outside the contract premises. The property damage insurance shall cover damage or destruction of any and all property other than that which is owned, leased, or in the care, custody or control of the Contractor or any subcontractor, with the liability limit applying to any one (1) accident, disaster

or claim. All coverage provided by Contractor shall be considered primary and shall be completely exhausted before City coverage, if any and to be considered secondary, is exercised.

By appropriate endorsement, such policies of insurance required shall name the City of San Fernando as additionally insured with the Contractor with respect to the construction project described in these specifications and shall provide that such insurance coverage shall not be canceled or reduced without thirty (30) days prior written notice to the City of San Fernando. Said endorsement shall be a separate document. Certificates of the insurance carried evidencing such insurance coverage shall be delivered to the City of San Fernando concurrently with the execution of the contract by the Contractor.

Subsection 7-5 Permits

Add the following to the provisions of Subsection 7-5, "Permits":

The Contractor shall procure all permits and licenses, pay all charges and fees, and give all notices necessary and incidental to the due and lawful prosecution of the work

Pursuant to State Bill 854, the following new requirements apply to all public works projects:

A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded. The website for contractor registration with the Department of Industrial Relations (DIR) is <https://efiling.dir.ca.gov/PWCR>; the annual non-refundable fee, valid July 1 through June 30 (state fiscal year), is \$300.

Contractors who are awarded a public works project must submit electronic payroll records to the DIR's Compliance Monitoring Unit (CMU) in addition to providing wet-ink original copies to the City or its designated labor compliance enforcement officer.

Subsection 7-8.1 General

Add the following to the provisions of Subsection 7-8.1, "Cleanup and Dust Control":

All excess dirt and construction debris shall be hauled away from job site each day.

Subsection 7-9 Protection and Restoration of Existing Improvements

Add the following to the provisions of Subsection 7-9, "Protection and Restoration of Existing Improvements":

Existing improvements damaged or removed without written authorization shall be replaced by the contractor at no cost to the City. The contractor shall leave the work area in the same or better condition as compared to before beginning contract work.

Subsection 7-10 Safety

7-10.1 Traffic and Access. Subsection 7-10.1 is hereby added to Subsection 7-10. The Contractor shall notify the occupants of all affected properties at least 48 hours prior to any temporary obstruction of access. Vehicular access to property line shall be maintained, except as required for construction for a reasonable period of time. No overnight closure of any driveway will be allowed, except as permitted by the Engineer.

At least one 12-foot wide traffic lane shall be provided for each direction of travel on all streets at all times, except as permitted by the Engineer. The traffic lanes shall be maintained on pavement and shall remain unobstructed.

Clearances from traffic lanes shall be 5 feet to the edge of any excavation and 2 feet to the face of any curb, pole, barricade, delineator, or other vertical obstruction.

One 4-foot wide paved pedestrian walkway shall be maintained in the parkway area on one side of each street.

All drop-offs on the pavement over 1 inch in height that are perpendicular to the direction of traffic, including driveway approach, and will remain overnight shall be ramped with temporary AC pavement. The cost to construct temporary AC pavement shall be included in price paid for other items of work, and no additional payment thereof.

All open trenches shall be covered with non-skid steel plates or temporary asphalt pavement before and after work hours, unless otherwise directed by the Engineer.

7-10.2 Street Closures, Detours, Barricades. Subsection 7-10.2 is hereby added to Subsection 7-10. Street closures will not be allowed, except as specifically permitted by the Engineer.

In the event that any street must be closed, request must be received by the Engineer for approval and the following parties shall be notified at least 48 hours in advance.

- | | | |
|----|-------------------------|--------------|
| a. | Public Works Department | 818-898-1293 |
| b. | Police Department | 818-898-1267 |
| c. | Fire Department | 818-989-8561 |
| d. | Mauran Ambulance | 818-365-3182 |

The Contractor shall prepare any traffic control or detour plans that may be required as directed by the Engineer.

Lane transitions shall conform to the California MUTCD latest edition, "Transition Area."

Temporary traffic channelization shall be accomplished with delineators. Temporary striping will not be allowed unless specifically permitted by the Engineer. The Contractor shall prepare any plans that may be required for temporary striping to the satisfaction of the Engineer. In no event will temporary striping be allowed on finished pavement surfaces which are to remain.

The Contractor shall schedule an employee to police the temporary delineators and barricades within the travel way during weekday, nonworking hours and over Saturdays, Sundays, and holidays. Any corrective work required to be done by AGENCY forces shall be back charged to the Contractor based on the actual costs, plus AGENCY overhead and withheld from the final payment.

At least 7-working days prior to commencing work, the Contractor shall submit his final construction schedule to the Engineer for approval. This schedule shall allow affected people ample "on-street" parking within a reasonable distance from their homes and businesses. Requests for changes in the schedule shall be submitted by the Contractor to the Engineer for approval at least 48 hours prior to the scheduled operations on the streets affected.

A STREET SHALL NOT BE SCHEDULED FOR SURFACING ON TRASH PICKUP DAY.

All work shall be scheduled so that all areas are open to traffic between 4p.m. and 7a.m. the following day.

Traffic shall be directed through the project with warning signs, cones and flag persons in a manner that provides maximum safety for traffic and the workers, and the least interruption of the work.

7-10.6 Protection of the Public. Subsection 7-10.6 is hereby added to Subsection 7-10 of the Standard Specifications as follows:

It is part of the service required of the Contractor to make whatever provisions are necessary to protect the public. The Contractor shall use foresight and shall take such steps and precautions as his operations warrant to protect the public from danger, loss of life, or loss of property which would result from interruption or contamination of public water supply, from interruption of other public service, or from the failure of partly completed work or partially removed facilities. Unusual conditions may arise on the work which will require that immediate and unusual provisions be made to protect the public from danger or loss or damage to life and property due directly or indirectly to prosecution of work under this contract.

Whenever, in the opinion of the Engineer, an emergency exists against which the Contractor has not taken sufficient precaution for the public safety, protection of utilities and protection of adjacent structures or property which may be damaged by the Contractor's operations and when, in the opinion of the Engineer, immediate action shall be considered necessary in order to protect the public or property due to the Contractor's operations under this contract, the Engineer will order the Contractor to provide a remedy for the unsafe condition. If the Contractor fails to act on the situation within a reasonable time period, the Engineer may provide suitable protection to said interests by causing such work to be done and material to be furnished as, in the opinion of the Engineer, may seem reasonable and necessary.

The cost and expense of said labor and material, together with the cost and expense of such repairs as are deemed necessary, shall be borne by the Contractor. All expenses incurred by the AGENCY for emergency repairs will be deducted from the progress payments and the final payment due to the Contractor. However, if the AGENCY does not take such remedial measures, the Contractor is not relieved of the full responsibility for public safety.

Temporary "No Parking" signs shall be posted at least 24 hours, but no more than 48 hours, in advance of the work. The signs shall be placed no more than 76 meters (250 feet) apart on each side of the street and at shorter intervals if conditions warrant. Signs shall be posted only for the areas necessary to accomplish the work. The Contractor shall provide the signs and will be responsible for adding the dates and hours of closure to the signs, removal of the signs, and furnishing and placing of barricades, if necessary, for posting of signs. All signs shall be removed within 48 hours after the effective date.

Payment for all the provisions above shall be included in the lump sum price bid for traffic control and no separate payment will be allowed thereof.

SECTION 8 - FACILITIES FOR AGENCY PERSONNEL

No field offices for AGENCY personnel shall be required; however, the AGENCY's personnel shall have the right to enter upon the project at all times and shall be admitted to the offices of the Contractor if so provided by the Contractor for his own personnel.

SECTION 9 - MEASUREMENT AND PAYMENT

Subsection 9-3 Payment

Add the following to the provisions of Subsection 9-3, "Payment":

It is mutually agreed between the parties to the contract that no certificate given or payments made under the contract, except the final project acceptance, shall be conclusive evidence of the performance of the contract, either wholly or in part, against any claim of the party of the first part, and no payment shall be construed to be an acceptance of any defective work or improper materials.

The Contractor further agrees that the payment of the final amount due under the contract, and the adjustment and payment for any work done in accordance with any alterations of the same, shall release the City of San Fernando, City Council, and the Engineer from any and all claims of liability on account of work performed under the contract or any alteration thereof.

Subsection 9-3.2 Partial and Final Payment

Add the following to the provisions of Subsection 9-3.2, "Partial and Final Payment":

The City shall, once in each month, cause an estimate in writing to be made by the Engineer of the total amount of work done and the acceptable materials furnished and delivered by the Contractor on the ground and not used, at the time of such estimate; and the value thereof. The City of San Fernando shall retain five percent (5%) of such estimated value of the work done and fifty percent (50%) of the value of the materials so estimated to have been furnished and delivered and unused as aforesaid as part security for the fulfillment of the contract by the Contractor, and shall monthly pay the Contractor, while carrying on the work, the balance not retained, as aforesaid, after deducting therefrom all previous payments and all sums to be kept or retained under the provisions of the 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 the contract, or when in his judgment, the total value of the work done since the last estimate amounts to less than Three Hundred Dollars (\$300.00).

The Contractor may be required to submit updated work schedules and current record drawings (as-built) with requests for progress payments.

TECHNICAL PROVISIONS

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**SECTION 02 41 00
DEMOLITION**

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

- A. This Section covers all wrecking and demolition, together with the removal and disposal of items.
- B. Related Work Specified Elsewhere:
 - 1. Clearing and grubbing is specified in Section 311100, CLEARING & GRUBBING.
 - 2. Excavating and filling for the site is specified in Section 310000, EARTHWORK, except as herein specified.

1.02 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies:
 - 1. Traffic:
 - a. Obstruction. Do not close, obstruct, or store material or equipment in streets, sidewalks, alleys or passageways without a permit in accordance with all local ordinances, regulations and codes.

1.03 JOB CONDITIONS

- A. Salvage. Remove equipment, material, or items called for on the plans, and store as directed, the items to remain the property of the OWNER. These items are assumed to be in good operating condition at the time the Contract is signed. Properly protect them and remove them complete, including all appurtenances, and deliver in good order to the OWNER as directed.
 - 1. Existing light poles.
- B. Protection:
 - 1. General Requirements. Protect persons and property in accordance with the GENERAL CONDITIONS. Remove all temporary construction upon completion of the Project.
 - a. Temporary Barricade Fence. On all sides of the property except where existing buildings are on the property line or where a sidewalk shed is specified, erect an 8 foot (2.44 m) high fence built solid for its entire length and height, except for such openings as doors, necessary for the proper prosecution of the Work.
 - b. Temporary protective fence. Before beginning any excavation or construction Work at the site, erect a temporary protective fence around the excavation and immediately adjacent to the building. Erect a 4 foot (1.22 m) high fluorescent orange temporary protective fence secured to posts not more than 8 feet (2.44 m) o.c.
 - 2. Existing structures and property. Take precautions to guard against movement or settlement of adjacent buildings or structures. Provide and place bracing or shoring as necessary or proper in connection therewith. Be responsible for safety and support of such buildings and structures. Be liable for any movement or settlement, any damage or injury caused thereby or resulting therefrom. If at any time safety of

any adjacent buildings or structures appears to be endangered, cease operation, take precautions to support such buildings or structures and notify the ENGINEER. Resume operations only after permission has been granted. If the ENGINEER considers additional bracing or shoring necessary to safeguard, or prevent movement or settlement, install such bracing or shoring upon ENGINEER'S order. If the CONTRACTOR fails to comply promptly with such order, such bracing and shoring may be placed by the OWNER at the CONTRACTOR'S expense.

PART 3 EXECUTION

3.01 INSPECTION

A. Condition of Premises:

1. Accept the premises as found and clear the site as specified. The OWNER assumes no responsibility for condition of buildings on site at time of proposal or continuation of conditions thereafter. Assume risk regarding damage or loss, whether by reason of fire, theft, or other casualty or happening to specified buildings.

3.02 PREPARATION

A. Utilities:

1. Prior to disconnecting, removing, plugging or abandoning existing utilities serving the buildings being removed, notify all utility corporations, companies, individuals or local authorities concerned with the Work.

3.03 INSTALLATION/APPLICATION/PERFORMANCE/ERECTION

A. Performance:

1. Wrecking and Demolition.
 - a. Other Items. Wreck, demolish, dismantle and completely remove all items, and obstructions as shown on the drawings or called out in these specifications. Remove any existing rubbish, trash and junk and leave the site clear of such materials.
 - (1) Pneumatic Tools. Work with pneumatic or vibratory tools will generally be permitted, however on certain areas the Engineer may direct that only hand tools be used.
 - b. Walks and Drives. Where indicated on the drawings, remove pavement, curbs and sidewalks to full depth, take care to avoid damage to adjacent remaining pavement or sidewalks. Make cuts in such a manner that a clean vertical joint remains.
 - c. Utilities. Disconnect electrical service and/or cut off and cap gas, water and sewer services at the mains on the property or in the street as required by the responsible utility company, or local authority or relocate as shown on the drawings. Remove and cut off and plug or cap all utilities within the existing building areas, except those designated to remain. The Contractor shall coordinate the removal Work with the relocation and/or new Work being performed by all contractors.
 - d. Removal. Unless otherwise noted or specified to be relocated or stored, all materials removed become the property of the Contractor and are to be removed completely away from the site by him. Do not store or permit debris to accumulate on the Site. If the Contractor fails to remove excess

debris promptly, the Owner reserves the right to cause same to be removed at Contractor's expense.

3.04 FIELD QUALITY CONTROL

- A. Workmanship:
 - 1. Demolition Work. Execute in an orderly and careful manner with due consideration for neighbors and the public. Execute the Work to insure adjacent properties and the public against damages incurred by falling debris or other causes.
 - 2. Masonry. Demolish in small sections and brace and shore where necessary to avoid collapse of the structure.
 - 3. Burning of Materials. Burn no materials or debris on the premises.
 - 4. Dust control. Constantly sprinkle all rubbish and debris to lay down the dust.
- B. Traffic:
 - 1. Interference. Conduct operations with minimum interference with roads, streets, driveways, alleys, sidewalks and other facilities.

3.05 ADJUSTMENT AND CLEANING

- A. Temporary Structures. Remove all temporary structures when they are no longer required.
- B. Repair:
 - 1. Clean up, repair, or replace at no cost to the Owner, all property damaged by reason of required Work, including restoring all disturbed areas, surfaced and unsurfaced, to their original condition on completion of the Work. All patchwork shall match existing and be performed in a neat and workmanlike manner by craftsmen skilled in the trade involved. Painted surfaces shall be painted to match the adjacent areas. In newly graded areas take every precaution and temporary measures necessary, such as temporary seeding, to prevent damage from erosion of freshly graded areas. Where any settlement or washing may occur prior to acceptance of the work, repair and re-establish grades to the required elevations and slopes at no additional cost to the Owner. This applies to damage to the newly graded areas within the construction limits and damage to adjacent properties by eroded material.

(END OF SECTION)

**SECTION 03 11 00
CONCRETE FORMWORK**

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall furnish all materials for concrete formwork, bracing, shoring, and supports and shall design and construct all falsework and scaffolding, all in accordance with the provisions of the Contract Documents.

B. DEFINITIONS

1. Exposed Concrete: All concrete that is visible in the finished work, including concrete to be painted.
2. Unexposed Concrete: All other concrete that is concealed in the finished work, including plastered surfaces and attic and utility spaces.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 310000 Earthwork.
- B. Section 032000 Concrete Reinforcing
- C. Section 031516 Concrete Construction Joints.
- D. Section 033000 Cast-in-Place Concrete.
- E. Section 036000 Grout.
- F. Section 033900 Concrete Curing.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Comply with the reference standards and Standard Specifications as specified in the GENERAL REQUIREMENTS.
- B. Comply with the current provisions of the following Codes and Standards, as applicable:

1. Government Standards:

PS 1	U.S. Product Standard for Concrete Forms, Class I
PS 20	American Lumber Softwood Standard
CSS	Caltrans Standard Specifications

2. Commercial Standards:

ACI 347	Recommended Practice for Concrete Formwork
ACI 117	Standard Tolerances for Concrete Construction and Materials

1.4 CONTRACTOR SUBMITTALS

- A. Submittals shall be made in accordance with the GENERAL REQUIREMENTS.
- B. The following submittals and specific information shall be provided.

1. Falsework Calculations and Drawings: The CONTRACTOR shall comply with all the latest applicable Sections of the Division of Industrial Safety, Construction Safety Orders. For all falsework or vertical shoring installations where the height of the falsework or vertical shoring, as measured from the top of the sills to the soffit of the superstructure, exceeds 14 feet, or where individual horizontal span lengths exceed 16 feet, or where provision for vehicular, pedestrian, or railroad traffic through falsework or vertical shoring is made, Plans and Calculations shall be prepared and signed by a Civil Engineer, registered in the State of California. A copy of the falsework plan or shoring layout shall be available on the job site at all times. The Engineer who designed the falsework or vertical shoring shall personally inspect such work and provide a written certification that the work conforms to the design.
2. The CONTRACTOR shall, in accordance with the requirements in GENERAL REQUIREMENTS file with the City detailed plans of the falsework and scaffolding proposed to be used. Such plans and calculations shall be in sufficient detail to indicate the general layout, pattern layout, dimensioned to precisely locate grooves, form panel jointing, and similar features. The submittal shall also include sizes of members, anticipated stresses, grade of materials to be used, and typical soil conditions.
 - a. Form Release Compound
 - b. Form Ties and Spreaders
 - c. Installation Instructions

1.5 QUALITY ASSURANCE

- A. Tolerances: The variation from established grade or lines shall not exceed 1/4-inch in 10 feet and there shall be no offsets or visible waviness in the finished surface. All other tolerances shall be within the tolerances specified in ACI 117, unless noted otherwise.
- B. Laborers: Use adequate number of skilled laborers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials for forms in timely manner to ensure uninterrupted progress.
- B. Store materials by methods that prevent damage and permit ready access for inspection and identification.

PART 2 -- PRODUCTS

2.1 GENERAL

- A. Except as otherwise expressly accepted by the ENGINEER, all lumber brought on the job site for use as forms, shoring, or bracing shall be new material. All forms shall be smooth surface forms and shall be of the following materials:

All work - Steel panels, plywood or tongue and groove lumber

2.2 FORM AND FALSEWORK MATERIALS

A. Materials for concrete forms, formwork, and falsework shall conform to the following requirements:

1. Lumber shall be Douglas Fir or Southern Pine, construction grade or better, in conformance with U.S. Product Standard PS20.
2. Plywood for concrete formwork shall be new, waterproof, synthetic resin bonded, exterior type Douglas Fir or Southern Pine plywood manufactured especially for concrete formwork and shall conform to the requirements of PS 1 for Concrete Forms, Class I, and shall be edge sealed.
3. Form materials shall be metal, wood, plywood, or other material approved by the ENGINEER that will not adversely affect the concrete and will facilitate placement of concrete to the shape, form, line, and grade shown. Metal forms shall be an approved type that will accomplish such results.

Forms for exposed exterior concrete surfaces shall be American Plywood Association (APA) High Density Overlay (HDO) Plyform Class I Ext. 48" X 96" X 3/4" minimum thickness.

Forms for other concrete surfaces shall be American Plywood Association (APA) Douglas Fir B-B Plyform Class I Exterior PS 1, 3/4-inch minimum thickness.

4. Coated Form Plywood: For exposed painted concrete, plastic overlaid plywood of grade specified above, factory coated with a form coating and release agent equal to "Noxcrete".
5. Tube forms: Sonoco "Seamless Sonotubes", Alton Building Products "Sleek Seamless Standard Wall", or equal, type leaving no marks in concrete, 1-piece lengths for full required height.

B. Unless otherwise shown, exterior corners in exposed concrete members shall be provided with 3/4-inch chamfers. Re-entrant corners in concrete members shall not have fillets unless otherwise shown.

C. Forms proposed for use at bridges shall comply with Caltrans Standard Specification Section 51.

2.3 FORM TIES

- A. Form ties with integral waterstops shall be provided with a plastic cone or other suitable means for forming a conical hole to insure that the form tie may be broken off back of the face of the concrete. The maximum diameter of removable cones for rod ties, or of other removable form-tie fasteners having a circular cross-section, shall not exceed 1-1/2-inches; and all such fasteners shall be such as to leave holes of regular shape for reaming.
- B. Form ties for water-retaining structures shall have integral waterstops. Removable taper ties may be used except for water bearing structures, when approved by the ENGINEER. A preformed neoprene or polyurethane tapered plug sized to seat at the center of the wall shall be inserted in the hole left by the removal of the taper tie.

2.4. FORM RELEASE COMPOUND

- A. Form release compound shall be non-staining clear coating free from oil, silicone, wax, and not grain-raising. Use "Nox-crete Form coating" by Nox Crete, "Formshield" by Euclid Chemical Company, "Burke Bio Release" by Edoco, or "Cast-Off" by Sonneborn, or an approved equal. Where form liners are used, provide form compound recommended by form liner manufacturer. However, regardless of product use, provide form compound that is VOC compliant for the area used.

2.5 EARTH FORMS

Unless otherwise indicated or required, concrete for footings and pile caps may be placed directly against vertical excavated surfaces, provided the material will stand without caving, that minimum reinforcing steel clearances are maintained, and suitable provisions are taken to prevent raveling of top edges or sloughing of loose material from walls of excavation. Sides of excavation shall be made with a neat cut and the width made as indicated. Concrete which is exposed to view on exterior shall be formed to maintained depth of 6 inches below finished grade.

PART 3 -- EXECUTION

3.1 GENERAL

- A. Forms to confine the concrete and shape it to the required lines shall be used wherever necessary. The CONTRACTOR shall assume full responsibility for the adequate design of all forms, and any forms which are unsafe or inadequate in any respect shall promptly be removed from the WORK and replaced at the CONTRACTOR's expense. A sufficient number of forms of each kind shall be provided to permit the required rate of progress to be maintained. The design and inspection of concrete forms, falsework, and shoring shall comply with applicable local, state and Federal regulations. Plumb and string lines shall be properly installed before concrete placement and shall be maintained during placement. Such lines shall be used by CONTRACTOR's personnel and by the INSPECTOR and shall be in sufficient number and properly installed. During concrete placement, the CONTRACTOR shall continually monitor plumb and string line form positions and immediately correct deficiencies.
- B. Concrete forms shall conform to the shape, lines, and dimensions of members as called for on the Drawings, and shall be substantial, free from surface defects, and sufficiently tight to prevent leakage. Forms shall be properly braced or tied together to maintain their position and shape under a load of freshly-placed concrete. If adequate foundation for shores cannot be secured, trussed supports shall be provided.

3.2 FORM DESIGN

- A. All forms shall be true in every respect to the required shape and size, shall conform to the established alignment and grade, and shall be of sufficient strength and rigidity to maintain their position and shape under the loads and operations incident to placing and vibrating the concrete. Suitable and effective means shall be provided on all forms for holding adjacent edges and ends of panels and sections tightly together and in accurate alignment so as to prevent the formation of ridges, fins, offsets, or similar surface defects in the finished concrete. Plywood, 3/4-inch and greater in thickness, may be fastened directly to studding if the studs are spaced close enough to prevent visible deflection marks in the concrete. The forms shall be tight so as to prevent the loss of water, cement and fines during placing and vibrating of the concrete. Specifically, the bottom of wall forms that rest on concrete footings or slabs shall be provided with a gasket to prevent loss of fines and paste during placement and vibration of concrete. Such gasket may be a 1- to 1-1/2-inch diameter polyethylene rod held in position to the underside of the wall form. Adequate clean-out holes shall be provided at the bottom of each lift of forms. The size, number, and location of such clean-outs shall be as acceptable to the INSPECTOR.
- B. Actual form design shall conform to ACI 347.
- C. For concrete mixes characterized as self-consolidating concrete, high performance concrete, or known to contain components that can potentially extend the plastic state of the concrete, the forms shall be designed to sustain the resulting hydrostatic pressure for the total pour height or pressure

head for that day of pour, whichever is more. For such mixes, appropriate set-time tests shall be conducted in preparation of the mix design and this information made available to the form designer.

- D. Forms proposed for use at bridges shall comply with Caltrans Standard Specification Section 51-1.

3.3 CONSTRUCTION

- A. Vertical Surfaces: All vertical surfaces of concrete members shall be formed, except where placement of the concrete against the ground is shown. Not less than 1-inch of concrete shall be added to the thickness of the concrete member as shown where concrete is permitted to be placed against trimmed ground in lieu of forms. Such permission will be granted only for members of comparatively limited height and where the character of the ground is such that it can be trimmed to the required lines and will stand securely without caving or sloughing until the concrete has been placed.
- B. Construction Joints: Concrete construction joints will not be permitted at locations other than those shown or specified, except as may be acceptable to the ENGINEER. When a second lift is placed on hardened concrete, special precautions shall be taken in the way of the number, location, and tightening of ties at the top of the old lift and bottom of the new to prevent any unsatisfactory effect whatsoever on the concrete. Pipe stubs and anchor bolts shall be set in the forms where required.
- C. Provide for openings, offsets, keyways, recesses, moldings, reglets, chamfers, blocking, screeds, bulkheads, anchorages, inserts and other features as required. Fill form joints to produce smooth surfaces, intersections, and arrises. Use polymer foam or equivalent fillers at joints and where forms abut or overlap existing concrete to prevent leakage of mortar.
- D. Set embedded piping and rough hardware in forms to be embedded in concrete in a manner so that the required strength of the structure will not be reduced.
- E. Apply form release compound on formwork in accordance with manufacturer's instructions prior to placing of reinforcing steel, anchorages, and embedded items.
- F. Construct forms suitable for removal without hammering or prying against and damaging the concrete.
- G. Openings in Forms: Provide as required to facilitate cleaning and inspection. Close such openings immediately after cleaning and before placement of concrete. Provide air relief holes in formed top surfaces of concrete elements as required.
- H. Form Ties:
1. Embedded Ties: Holes left by the removal of form tie cones shall be clean and rough before being filled with mortar as specified for "Finish of Concrete Surfaces" in Section 033000, "Cast-in-Place Concrete". Wire ties for holding forms will not be permitted. No form-tying device or part thereof, other than metal, shall be left embedded in the concrete. Ties shall not be removed in such manner as to leave a hole extending through the interior of the concrete members. The use of snap-ties which cause spalling of the concrete upon form stripping or tie removal will not be permitted. If steel panel forms are used, rubber grommets shall be provided where the ties pass through the form in order to prevent loss of cement paste. Where metal rods extending through the concrete are used to support or to strengthen forms, the rods shall remain embedded and shall terminate not less than 1-inch back from the formed face or faces of the concrete.
 2. Removable Ties: Where taper ties are approved for use in non water bearing structures, the larger end of the taper tie shall be on the wet side of walls in water retaining structures. After the taper tie is removed, the hole shall be thoroughly cleaned and roughened for bond. A precast neoprene or polyurethane tapered plug shall be located at the wall centerline. The hole shall be completely filled with non-shrink grout for water bearing and below-grade walls. The

hole shall be completely filled with non-shrink or regular cement grout for above-grade walls which are dry on both sides. Exposed faces of walls shall have the outer 2-inches of the exposed face filled with a cement grout which shall match the color and texture of the surrounding wall surface.

I. Coordination:

1. Provide slots, openings, chases, recesses, grounds, nailers and screeds required by other trades and subsequent work.
2. Ensure that conduit, pipes, sleeves, anchors, hangers and ties are secured in forms before concrete is placed.

3.4 REUSE OF FORMS

Forms may be reused only if in good condition and only if acceptable to the INSPECTOR. Light sanding between uses will be required wherever necessary to obtain uniform surface texture on all exposed concrete surfaces. Exposed concrete surfaces are defined as surfaces which are permanently exposed to view. In the case of forms for the inside wall surfaces of water retaining structures, unused tie rod holes in forms shall be covered with metal caps or shall be filled by other methods acceptable to the INSPECTOR.

3.5 REMOVAL OF FORMS

Careful procedures for the removal of forms shall be strictly followed, and this work shall be done with care so as to avoid damage the concrete. No heavy loading on green concrete will be permitted. The period of time for formwork removal shall be in accordance with ACI 318, Chapter 6 and Section 303-1.4 of Standard Specifications and as follows:

1. Do not remove formwork until concrete has attained sufficient strength to support its own weight and all superimposed loads including construction loads and to permit form and falsework removal with complete safety.
2. In the case of concrete members subject to bending stresses, where the member relies upon forms for vertical support, forms shall remain in place until test cylinders attain a minimum compressive strength of 75 percent of the 28-day strength specified in Section 033000, "Cast in-Place Concrete", provided, that no forms shall be disturbed or removed under individual panel or unit before the concrete in the adjacent panel or unit has attained 75 percent of the specified 28-day strength and has been in place for a minimum of 7 days.
3. Forms for roofs and elevated slabs shall remain in place a minimum of 10 days after concrete has been placed.
4. Forms for all vertical walls and columns shall remain in place at least 3 days after the concrete has been placed.
5. Formwork removal shall also be subject to the curing requirements of Section 033900 of these specifications and as authorized by the ENGINEER.
6. Reshore structural members as specified below because of design requirements or construction conditions to permit successive construction.

The time required to establish said strength shall be determined by the ENGINEER based on test cylinders made for this purpose from the concrete placed and in accordance with ACI 318 and the curing requirements of Section 033900. If the time so determined is more than the minimum time specified above, then that time shall be used as the minimum length of time. Forms for all parts of the WORK not specifically mentioned herein shall remain in place for periods of time as determined by

the ENGINEER.

3.6 FORMWORK TOLERANCES

- A. Deflection: Limit deflection of forming surfaces from concrete pressure to $L/240$.
- B. Finish Lines: Position formwork to maintain hardened concrete finish lines within following permissible deviations.

1. Variation from Plumb:

In 10'-0"	1/4" max.
In any story or 20'-0"	3/8" max.
In 40'-0" or more	3/4" max.

2. Variation from Level or Grades Indicated

In 10'-0"	1/4" max.
In any bay or 20'-0" maximum	3/8"
In 40'-0" or more	3/4" max.

- C. Building Lines: Variation of linear building lines from established position in plan and related position of columns, walls and partitions:

1. In any bay or 10'-0" maximum	1/2"
2. In 40'-0" or more	1"

- D. Slab Openings: Variations in size and location of sleeves and slab openings shall not exceed 1/4".

3.7 MAINTENANCE OF FORMS

Forms shall be maintained at all times in good condition, particularly as to size, shape, strength, rigidity, tightness, and smoothness of surface. Forms, when in place, shall conform to the established alignment and grades. Before concrete is placed, the forms shall be thoroughly cleaned. The form surfaces shall be treated with a nonstaining mineral oil or other lubricant acceptable to the ENGINEER. Any excess lubricant shall be satisfactorily removed before placing the concrete. Where field oiling of forms is required, the CONTRACTOR shall perform the oiling at least two weeks in advance of their use. Care shall be exercised to keep oil off the surfaces of steel reinforcement and other metal items to be embedded in concrete.

3.8 FALSEWORK

- A. The CONTRACTOR shall be responsible for the design, engineering, construction, maintenance, and safety of all falsework, including staging, walkways, forms, ladders, and similar appurtenances, which shall equal or exceed the applicable requirements of the provisions of the OSHA Safety and Health Standards for Construction, the requirements of the Construction Safety Orders of the California Division of Industrial Safety, and the requirements specified herein.
- B. All falsework shall be designed and constructed to provide the necessary rigidity and to support the loads. Falsework for the support of a superstructure shall be designed to support the loads that would be imposed if the entire superstructure were placed at one time.

- C. Falsework shall be placed upon a solid footing, safe against undermining, and protected from softening. When the falsework is supported on timber piles, the maximum calculated pile loading shall not exceed 20 tons. When falsework is supported on any portion of the structure which is already constructed, the load imposed by the falsework shall be spread, distributed, and braced in such a way as to avoid any possibility of damage to the structure.
- D. Reshoring:
 - 1. Minimum reshoring with falsework shall consist of not less than half the full required falsework added under the last placed floor over which full falsework is to be placed for the next floor above. Leave reshoring in place for at least 10 days after the floor above is placed, but in no case remove falsework until the next concrete placing has attained a compressive strength equal to 75% of that required for the 28 days age as determined by controlled test cylinders.
 - 2. Maintain a form and falsework removal record.
- E. Falsework proposed for use at bridges shall comply with Caltrans Standard Specification Section 51.

(END OF SECTION)

**SECTION 03 15 00
CONCRETE ACCESSORIES**

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall furnish all tools, equipment, materials, and supplies to install all concrete accessories to complete the Work including cast-in-place anchor bolts (also known as anchor rods), epoxy grouted anchor bolts or dowels and, expansion or adhesive anchors, in accordance with the requirements of the Contract Documents.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 033000 Cast-in-Place Concrete.
B. Section 036000 Grout.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Comply with the reference standards and Standard Specifications of the GENERAL REQUIREMENTS.
B. Comply with the current provisions of the following Codes and Standards, as applicable.

1. Commercial Standards:

AISC Code of Standard Practice for Steel Buildings and Bridges

AISC	Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings
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ASTM A 36	Specifications for Carbon Structural Steel
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ASTM A 153	Specifications for Zinc Coating (Hot Dip) on Iron and Steel Hardware
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ASTM A 193	Specifications for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
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ASTM A 194	Specifications for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service
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ASTM A 307	Specifications for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
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ASTM A 449	Specifications for Quenched and Tempered Steel Bolts and Studs
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ASTM A 615	Specifications for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
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ASTM B 633	Specifications for Electrodeposited Coatings of Zinc on Iron and Steel
ASTM B 695	Specifications for Coatings of Zinc Mechanically Deposited on Iron and Steel
ASTM F 436	Specifications for Hardened Steel Washers
ASTM F 1554	Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

1.4 CONTRACTOR SUBMITTALS

- A. Submittals shall be made in accordance with the GENERAL REQUIREMENTS.
- B. The following submittals and specific information shall be provided.
 - 1. High Strength Anchor Bolts: The CONTRACTOR shall provide mill certificates and certified compliance with ASTM F 1554; A 449 with F 436.
 - 2. The CONTRACTOR shall submit shop drawings for all welded or fabricated items for use as anchors.
 - 3. The CONTRACTOR shall submit catalog cuts and manufacturer's recommendations for all expansion and adhesive anchors, and anti-seize thread lubricants.

PART 2 -- PRODUCTS

2.1 GENERAL

- A. Anchor Size: Anchor size shall be as specified or shown on plans.
- B. Anchor Material:
 - 1. Water-containment or sanitary structures, immersion service, or exposed exterior locations: Stainless steel.
 - 2. Other locations: Galvanized steel as permitted by the corresponding ASTM except as listed in the contract drawings.
- C. Anchor Length: Sufficient to extend through the nut(s) and not more than 1/4 inch beyond the nut when exposed while meeting the required embedment as indicated on the contract drawings.

2.2 ANCHOR GRADES

- A. Anchor Bolts and Nuts:
 - 1. High Strength: ASTM F 1554 Grade 105; A 449, galvanized. Provide with corresponding galvanized hardened washers.
 - 2. Stainless steel: ASTM A 193 and A 194, Type 316N, Grade 8MN.
 - 3. Unspecified: ASTM F 1554 Grade 36; A 36 or A 307, galvanized.

4. Galvanizing: Hot dipped as required per ASTM F 1554; 1.25 ounces per square foot per ASTM A 153 or B 633; When protected from the atmosphere, moisture and sewage gases, ASTM B 695 is also acceptable.
 5. Other Coatings: None; As specified in the contract drawings.
- B. Flat Washers: Same material and finish as nut and bolt. For high strength bolts, use ASTM F 1554; F 436.
- C. Anti-Seize Thread Lubricant for use with stainless steel anchors:
1. Jet-Lube "Nikal"
 2. Never-Seez "Pure Nickel Special"
 3. Permatex "Nickel Anti-Seize"
 4. Or an approved equal.
- D. Reinforcing Steel Dowels: ASTM A 615, Grade 60. Same diameter as spliced rebar, or #4 minimum.
- E. Expansion and Adhesive Anchors: Use only anchor types and styles listed below:
1. Simpson Strong-tie "Wedge All"
 2. Hilti "Kwik-Bolt II"
 3. Phillips "Red Head"
 4. Or an approved equal.

PART 3 -- EXECUTION

3.1 PROJECT CONDITIONS

- A. Examine the areas and conditions under which the work will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until detrimental conditions are corrected.

3.2 CAST-IN-PLACE ANCHOR BOLTS

- A. Provide templates or other means to ensure accurate placement. Provide sufficient threads to allow for a nut to be placed on the concrete side of the template.
- B. Anchor bolts shall be clean and free of all coatings which may impair bonding with concrete.
- C. Provide two nuts and a washer with each anchor bolt. Provide an additional locknut when indicated on the Drawings.
- D. High Strength Bolts: Install such that ASTM Grade markings are visible after casting into concrete.

3.3 EPOXY-GROUTED ANCHOR BOLTS OR DOWELS

- A. Provide templates or other means to ensure accurate placement.
- B. Anchor bolts or dowels shall be clean and free of all coatings which may impair bonding with epoxy.

- C. Provide two nuts and a washer with each anchor bolt. Provide an additional locknut when indicated on the Drawings.
 - D. High Strength Bolts: Install such that ASTM Grade markings are visible after casting into concrete.
 - E. Do not disturb bolt or dowel until epoxy grout has cured and reached full strength.
- 3.4 EXPANSION AND ADHESIVE ANCHORS: Install per manufacturer's recommendations. Provide nuts and washers of same material and finish as anchor body.
- 3.5 STAINLESS STEEL ANCHORS. After installation of stainless steel anchor bolts or expansion anchors, lubricate threads before fastening.

(END OF SECTION)

**SECTION 03 15 16
CONCRETE CONSTRUCTION JOINTS**

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall construct all joints and bearing pads in concrete at the locations shown on the Landscape Architecture plans. Joints required in concrete structures are of various types and will be permitted only where shown, unless specifically accepted by the ENGINEER.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 03 10 00 Concrete Formwork.
B. Section 03 20 00 Concrete Reinforcing.
C. Section 03 30 00 Cast-in-Place Concrete.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Comply with the reference standards of the GENERAL REQUIREMENTS.
B. Comply with the current provisions of the following Codes and Standards, as applicable:

1. Federal Specifications:

TT-S-0227E(3) Sealing Compound, elastomeric type, Multi-component for Caulking, Sealing, and Glazing Buildings and Other Structures).

2. U.S. Army Corps of Engineers Specifications:

CRD-C572 Specification for Polyvinylchloride Waterstop.

3. Other Government Standards:

CSS Caltrans Standard Specifications.

4. Commercial Standards:

ASTM C 920 Specification for Elastomeric Joint Sealants.

ASTM D 624 Test Method for Rubber Property -- Tear Resistance.

ASTM D 638 Test Method for Tensile Properties of Plastics.

ASTM D 746 Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.

ASTM D 747 Test Method for Apparent Bending Modulus of Plastics by Means of a Cantilever Beam.

ASTM D 1751	Premolded Joint Filler
ASTM D 1752	Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
ASTM D 2240	Test Method for Rubber Property -- Durometer Hardness.

1.4 TYPES OF JOINTS

- A. Construction Joints: When fresh concrete is placed against a hardened concrete surface, the joint between the two pours is called a construction joint. Unless otherwise specified, all joints in water bearing members shall be provided with a waterstop and sealant groove of the shape specified and as shown on the plans.
- B. Contraction Joints: Contraction joints are similar to construction joints except that the fresh concrete shall not bond to the hardened surface of the first pour, which shall be coated with a bond breaker. The slab reinforcement shall be stopped 4-1/2 inches from the joint, unless noted otherwise; which is provided with a sleeve-type dowel, to allow shrinkage of the concrete of the second pour. Waterstop and sealant groove shall also be provided.
- C. Expansion Joints: To allow the concrete to expand freely, a space is provided between the two pours, the joint shall be formed as shown on the plans. This space is obtained by placing a filler joint material against the first pour, which acts as a form for the second pour. Unless otherwise specified, all expansion joints in water bearing members shall be provided with an approved type waterstop.

Premolded expansion joint material shall be installed with the edge at the indicated distance below or back from finished concrete surface, and shall have a slightly tapered, dressed, and oiled wood strip secured to or placed at the edge thereof during concrete placement, which shall later be removed to form space for sealing material. The space so formed shall be filled with a joint sealant material as specified in the Paragraph in Part 2 entitled "Joint Sealant." In order to keep the two elements in line the joint shall be provided with a sleeve-type dowel as shown.

- D. Control Joints (Weakened Plane): The function of the control joint is to provide a weaker plane in the concrete, where shrinkage cracks will probably occur. A groove, of the shape and dimensions as shown on the plans, is formed or saw-cut in the concrete and shall be filled with a joint sealant material as specified in the Paragraph in Part 2 entitled "Joint Sealant."
- E. All other Joints, bearing devices, and elastomeric bearing pads for bridge structures shall comply with CSS Section 51.

1.5 CONTRACTOR SUBMITTALS

- A. Submittals shall be made in accordance with GENERAL REQUIREMENTS.
- B. The following submittals and specific information shall be provided.
 - 1. Waterstops: Prior to use of the material required under this contract, qualification samples shall be submitted. Such samples shall consist of extruded or molded sections of each size or shape to be used. The material sample shall be representative of the material to be furnished under this contract. The balance of the material to be used under this contract shall not be produced until after the ENGINEER has reviewed and approved the qualification samples.
 - 2. Joint Sealant: Prior to ordering the sealant material, the CONTRACTOR shall submit to the ENGINEER for review and approval, data to show compliance with the requirements of the Contract Documents. Certified test reports from the sealant manufacturer on the actual batch of material being supplied indicating compliance with the above requirements shall be furnished the ENGINEER before the sealant is used on the job.

3. Shipping Certification: The CONTRACTOR shall provide written certification from the manufacturer as an integral part of the shipping form, to show that all of the material shipped to this project meets or exceeds the physical property requirements of the Contract Documents. Supplier certificates are not acceptable.
4. The CONTRACTOR shall submit placement shop drawings showing the location and type of all joints for each structure.

1.6 QUALITY ASSURANCE

- A. Waterstop manufacturer shall demonstrate five years (minimum) continuous, successful experience in production of waterstops.
- B. Waterstop Inspection: It is required that all waterstop field joints shall be subject to inspection, and no such work shall be scheduled or started without having made prior arrangements with the INSPECTOR to provide for the required inspections. Not less than 24 hours notice shall be provided to the INSPECTOR for scheduling such inspections.
- C. All field joints in waterstops shall be free of misalignment, bubbles, inadequate bond, porosity, cracks, offsets, and other defects which would reduce the potential resistance of the material to water pressure at any point. All defective joints shall be replaced with material which shall pass said inspection, and all faulty material shall be removed from the site and disposed of by the CONTRACTOR at its own expense.
- D. The following waterstop defects represent a partial list of defects which shall be grounds for rejection:
 1. Offsets at joints greater than 1/16-inch or 15 percent of material thickness, at any point, whichever is less.
 2. Exterior crack at joint, due to incomplete bond, which is deeper than 1/16-inch or 15 percent of material thickness, at any point, whichever is less.
 3. Any combination of offset or exterior crack which will result in a net reduction in the cross section of the waterstop in excess of 1/16-inch or 15 percent of material thickness at any point, whichever is less.
 4. Misalignment of joint which result in misalignment of the waterstop in excess of 1/2-inch in 10 feet.
 5. Porosity in the welded joint as evidenced by visual inspection.
 6. Bubbles or inadequate bonding.
- E. Waterstop Samples: Prior to use of the waterstop material in the field, a sample of a fabricated metered cross and a tee constructed of each size or shape of material to be used shall be submitted to the ENGINEER for approval. These samples shall be fabricated so that the material and workmanship represent in all respects the fittings to be furnished under this contract. Field samples of fabricated fittings (crosses, tees, etc.) will be selected at random by the INSPECTOR for testing. When tested, they shall have a tensile strength across the joints equal to at least 600 psi.
- F. Construction Joint Sealant: The CONTRACTOR shall prepare adhesion and cohesion test specimens as specified herein, at intervals of 5 working days while sealants are being installed.
- G. The sealant material shall show no signs of adhesive or cohesive failure when tested in accordance with the following procedure in laboratory and field tests:
 1. Sealant specimen shall be prepared between 2 concrete blocks (1-inch by 2-inch by 3-inch). Spacing between the blocks shall be 1/2-inch. Coated spacers (2-inch by 1-1/2-inch by 1/2-

inch) shall be used to insure sealant cross-sections of 1/2-inch by 2 inches with a width of 1/2-inch.

2. Sealant shall be cast and cured according to manufacturer's recommendations except that curing period shall not exceed 24 hours.
3. Following curing period, the gap between blocks shall be widened to one inch. Spacers shall be used to maintain this gap for 24 hours prior to inspection for failure.

H. Store waterstops under tarps to protect from oil, dirt, and sunlight.

1.7 GUARANTEE

- A. The CONTRACTOR shall provide a 5-year written guarantee of the entire sealant installation against faulty and/or incompatible materials and workmanship, together with a statement that it agrees to repair or replace, to the satisfaction of the CITY, at no additional cost to the CITY, any such defective areas which become evident within said 5-year guarantee period.

PART 2 -- PRODUCTS

2.1 PVC WATERSTOPS

- A. General: Waterstops shall be extruded from an elastomeric polyvinyl chloride compound containing the plasticizers, resins, stabilizers, and other materials necessary to meet the requirements of these Specifications. No reclaimed or scrap material shall be used. The CONTRACTOR shall obtain from the waterstop manufacturer and shall furnish to the ENGINEER for review, current test reports and a written certification of the manufacturer that the material to be shipped to the job meets the physical requirements as outlined in the U.S. Army Corps of Engineers Specification CRD-C572 and those listed herein.
- B. Flatstrip and Center-Bulb Waterstops: Flatstrip and center-bulb waterstops shall be as detailed and as manufactured by: Kirkhill Rubber Co., Brea, California; Greenstreak, St. Louis, MO, Water Seals, Inc., Chicago, Illinois; Progress Unlimited, Inc., New York, New York; or an approved equal; provided, that at no place shall the thickness of flat strip waterstops, including the center bulb type, be less than 3/8-inch.
- C. Multi-Rib Waterstops: Multi-rib waterstops, where required, shall be as detailed and as manufactured by Water Seals, Inc., Chicago, Illinois; Progress Unlimited, Inc., New York, New York; Greenstreak, St. Louis, MO, or an approved equal. Prefabricated joint fittings shall be used at all intersections of the ribbed-type waterstops.
- D. Other Types of Waterstops: When other types of waterstops, not listed above are required and shown, they shall be subjected to the same requirements as those listed herein.
- E. Waterstop Testing Requirements: When tested in accordance with the specified test standards, the waterstop material shall meet or exceed the following requirements:

Physical Property, Sheet Material	Value	ASTM Std.
Tensile Strength-min (psi)	1750	D 638, Type IV
Ultimate Elongation-min (percent)	350	D 638, Type IV
Low Temp Brittleness-max (degrees F)	-35	D 746
Stiffness in Flexure-min (psi)	400	D 747
Accelerated Extraction (CRD-C572)		

Tensile Strength-min (psi)	1500	D 638, Type IV
Ultimate Elongation-min (percent)	300	D 638, Type IV

Effect of Alkalies (CRD-C572)

Change in Weight (percent)	+0.25/-0.10	-----
Change in Durometer, Shore A	+5	D.2240

Finish Waterstop

Tensile Strength-min (psi)	1400	D 638, Type IV
Ultimate Elongation-min (percent)	280	D 638, Type IV

F. Accessories

1. Provide factory made waterstop fabrications for all changes of direction, intersections, and transitions leaving only straight butt joint splices for the field.
2. Provide hog rings or grommets spaced at 12 inches on center along length of waterstop.
3. Provide Teflon coated thermostatically controlled waterstop splicing irons for field butt splices.

2.2 JOINT SEALANT

- A. Joint sealant shall be polyurethane polymer designed for bonding to concrete which is continuously submerged in water.
- B. Joint sealant material shall meet the following requirements:

Work Life	45 - 90 minutes
Time to Reach 20 Shore "A" Hardness (at 77 degrees F, 200 gr quantity)	24 hours, maximum
Ultimate Hardness	30 - 40 Shore "A"
Tensile Strength	250 psi, minimum
Ultimate Elongation	400 percent, minimum
Tear Resistance (Die C ASTM D 624)	75 pounds per inch of thickness, minimum
Color	Light Gray

- C. All polyurethane sealants for waterstop joints in concrete shall conform to the following requirements:
 1. Sealant shall be 2-part polyurethane with the physical properties of the cured sealant conforming to or exceeding the requirements of ASTM C 920 or Federal Specification TT-S-00227 E(3) for 2-part material, as applicable.
 2. For vertical joints and overhead horizontal joints, only "non-sag" compounds shall be used; all such compounds shall conform to the requirements of ASTM C 920 Class B, or Federal Specification TT-S-0027 E(3), Type II.
 3. For plane horizontal joints, the self-leveling compounds which meet the requirements of ASTM C 920 Class A, or Federal Specification TT-S-0027 E(3), Type I shall be used. For joints

subject to either pedestrian or vehicular traffic, a compound providing non-tracking characteristics, and having a Shore "A" hardness range of 25 to 35, shall be used.

4. Primer materials, if recommended by the sealant manufacturer, shall conform to the printed recommendations of the sealant manufacturer.
- D. All sealants, wherever shown, or required hereunder shall be Rubbercalc 2101-I or 270 as manufactured by Products Research Company; GS 102 or GS 1102 as manufactured by General Sealants Corp; or an approved equal. For sanitary structures mastic/sealant material shall be Ram Nek Sealant by Henry Co.; Sika Flex 1A, Sikadur 51 NS by Sika Corp.
- E. Mastic joint sealer for non-waterstop joints shall be a material that does not contain evaporating solvents; that will tenaciously adhere to concrete surfaces; that will remain permanently resilient and pliable; that will not be affected by continuous presence of water and will not in any way contaminate potable water; and that will effectively seal the joints against moisture infiltration even when the joints are subject to movement due to expansion and contraction. The sealer shall be composed of special asphalts or similar materials blended with lubricating and plasticizing agents to form a tough, durable mastic substance containing no volatile oils or lubricants and shall be capable of meeting the test requirements set forth hereinafter, if testing is required by the ENGINEER.

2.3 PREFORMED JOINT FILLER

- A. Preformed joint filler material shall be of the preformed non-extruding type joint filler constructed of cellular neoprene sponge rubber or polyurethane of firm texture. Bituminous fiber type will not be permitted. All non-extruding and resilient-type preformed expansion joint fillers shall conform to the requirements and tests set forth in ASTM D 1752 for Type I, except as otherwise specified herein.
- B. Unless otherwise noted, preformed joint filler shall be a non-extruding, resilient, bituminous type conforming to the requirements of ASTM D 1751.

2.4 BACKING ROD

- A. Backing rod shall be an extruded closed-cell, polyethylene foam rod. The material shall be compatible with the joint sealant material used and shall have a tensile strength of not less than 40 psi and a compression deflection of approximately 25 percent at 8 psi. The rod shall be 1/8-inch larger in diameter than the joint width except that a one-inch diameter rod shall be used for a 3/4-inch wide joint.

2.5 BOND BREAKER

- A. Bond breaker shall be Super Bond Breaker as manufactured by Burke Company, San Mateo, California; Hunt Process 225-TU as manufactured by Hunt Process Co., Santa Fe Springs, California; Select Cure CRB as manufactured by Select Products Co., Upland, California; or an approved equal. It shall contain a fugitive dye so that areas of application will be readily distinguishable.

2.6 BEARING DEVICES AND ELASTOMERIC BEARING PADS

Bearing devices and elastomeric bearing pads shall comply with CSS Section 51.

PART 3 -- EXECUTION

3.1 GENERAL

- A. Unless otherwise shown, waterstops of the type specified herein shall be embedded in the concrete across joints as shown. All waterstops shall be fully continuous for the extent of the joint. Splices necessary to provide such continuity shall be accomplished in conformance to printed instructions of manufacturer of the waterstops. The CONTRACTOR shall take suitable precautions and means to support and protect the waterstops during the progress of the work and shall repair or replace at its own expense any waterstops damaged during the progress of the work. All waterstops shall be stored so as to permit free circulation of air around the waterstop material.
- B. When any waterstop is installed in the concrete on one side of a joint, while the other half or portion of the waterstop remains exposed to the atmosphere for more than 2 days, suitable precautions shall be taken to shade and protect the exposed waterstop from direct rays of the sun during the entire exposure and until the exposed portion of the waterstop is embedded in concrete.

3.2 SPLICES IN WATERSTOPS

- A. Splices in waterstops shall be performed by heat sealing the adjacent waterstop sections in accordance with the manufacturer's printed recommendations and the following requirements:
 - 1. The material not be damaged by heat sealing.
 - 2. The splices have a tensile strength of not less than 60 percent of the unspliced materials tensile strength.
 - 3. The continuity of the waterstop ribs and of its tubular center axis be maintained.
- B. Butt joints of the ends of two identical waterstop sections may be made while the material is in the forms.
- C. All joints with waterstops involving more than 2 ends to be jointed together, and all joints which involve an angle cut, alignment change, or the joining of 2 dissimilar waterstop sections shall be prefabricated by the CONTRACTOR prior to placement in the forms, allowing not less than 24-inch long strips of waterstop material beyond the joint. Upon being inspected and approved, such prefabricated waterstop joint assemblies shall be installed in the forms and the ends of the 24-inch strips shall be butt welded to the straight run portions of waterstop in place in the forms.

3.3 JOINT CONSTRUCTION

- A. Setting Waterstops:
 - 1. In order to eliminate faulty installation that may result in joint leakage, particular care shall be taken of the correct positioning of the waterstops during installation. Adequate provisions must be made to support the waterstops during the progress of the WORK and to insure the proper embedment in the concrete. The symmetrical halves of the waterstops shall be equally divided between the concrete pours at the joints. The center axis of the waterstops shall be coincident with the joint openings. Maximum density and imperviousness of the concrete shall be insured by thoroughly working it in the vicinity of all joints
 - 2. In placing flat-strip waterstops in the forms, means shall be provided to prevent them from being folded over by the concrete as it is placed. Unless otherwise shown, all waterstops shall be held in place with light wire ties on 12-inch centers which shall be passed through the edge of the waterstop and tied to the curtain of reinforcing steel. Horizontal waterstops, with their flat face in a vertical plane, shall be held in place with continuous supports to which the top edge of the waterstop shall be tacked. In placing concrete around horizontal waterstops, with their flat face in a horizontal plane, concrete shall be worked under the waterstops by hand so as to avoid the formation of air and rock pockets.

3. Adequate means shall be provided for anchoring the waterstop in concrete. Waterstops shall be positioned so that they are equally embedded in the concrete on each side of the joint.

B. Joint Location:

Construction joints, and other types of joints, shall be provided where shown. When not shown, construction joints shall be provided at 25-foot maximum spacing for all concrete construction, subject to the approval of the ENGINEER, unless noted otherwise. Where joints are shown spaced greater than 25 feet apart, additional joints shall be provided to maintain the 25-foot maximum spacing. The location of all joints, of any type, shall be submitted for acceptance by the ENGINEER.

C. Joint Preparation:

Special care shall be used in preparing concrete surfaces at joints where bonding between two sections of concrete is required. Unless otherwise shown, such bonding will be required at all horizontal joints in walls. Surfaces shall be prepared in accordance with the requirements of Section 033000, "Cast-in-Place Concrete." Except on horizontal wall construction joints, wall to slab joints or where otherwise shown or specified, at all joints where waterstops are required, the joint face of the first pour shall be coated with a bond breaker as specified herein.

D. Construction Joint Sealant:

1. Construction joints in water-bearing floor slabs, and elsewhere as shown, shall be provided with tapered grooves which will be filled with construction joint sealant. The material used for forming the tapered grooves shall be left in the grooves until just before the grooves are cleaned and filled with joint sealant. After removing the forms from the grooves, all laitance and fins shall be removed, and the grooves shall be sand-blasted. The grooves shall be allowed to become thoroughly dry, after which they shall be blown out; immediately thereafter, they shall be primed and filled with the construction joint sealant. The primer used shall be supplied by the same manufacturer supplying the sealant. No sealant will be permitted to be used without a primer. Care shall be used to completely fill the sealant grooves. Areas designated to receive a sealant filler shall be thoroughly cleaned, as outlined for the tapered grooves, prior to application of the sealant.
2. Sealant application shall be in accordance with the manufacturer's printed instructions. The surfaces of the groove for the sealant shall not be coated. Concrete next to waterstops shall be placed in accordance with the requirements of Section 033000, Cast-in-Place Concrete.
3. The primer and sealant shall be placed strictly in accordance with the printed recommendations of the manufacturer, taking special care to properly mix the sealant prior to application. All sealant shall cure at least 7 days before the structure is filled with water.
4. All sealant shall be installed by a competent waterproofing specialty contractor who has a successful record of performance in similar installations. Before work is commenced, the crew doing the WORK shall be instructed as to the proper method of application by a representative of the sealant manufacturer.
5. Thorough, uniform mixing of 2-part, catalyst-cured materials is essential; special care shall be taken to properly mix the sealer before its application. Before any sealer is placed, the CONTRACTOR shall arrange to have the crew doing the WORK carefully instructed as to the proper method of mixing and application by a representative of the sealant manufacturer.
6. Thorough, uniform mixing of 2-part, catalyst-cured materials is essential; special care shall be taken to properly mix the sealer before its application. Before any sealer is placed, the CONTRACTOR shall arrange to have the crew doing the WORK carefully instructed as to the proper method of mixing and application by a representative of the sealant manufacturer.

7. Any joint sealant which after the manufacturer's recommended curing time for the job conditions of the WORK hereunder, fails to fully and properly cure shall be completely removed; the groove shall be thoroughly sandblasted to remove all traces of the uncured or partially cured sealant and primer, and shall be re-sealed with the specified joint sealant. All costs of such removal, joint treatment, re-sealing, and appurtenant work shall be at the expense of the CONTRACTOR.

(END OF SECTION)

**SECTION 03 20 00
CONCRETE REINFORCING**

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall furnish, fabricate, and place all concrete reinforcement steel, welded wire fabric, couplers, and concrete inserts for use in reinforced concrete and masonry construction and shall perform all appurtenant work, including all the wires, clips, supports, chairs, spacers, and other accessories, all in accordance with the Contract Documents.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 031100 Concrete Formwork.
B. Section 031516 Concrete Construction Joints.
C. Section 033000 Cast-in-Place Concrete.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Comply with the reference standards of the GENERAL REQUIREMENTS.
B. Comply with the current provisions of the following Codes and Standards, as applicable:

1. Commercial Standards:

ACI 315	Details and Detailing of Concrete Reinforcement.
ACI 318	Building Code Requirements for Reinforced Concrete.
ACI 350	Code Requirements for Environmental Engineering Concrete Structures.
ACI 530	Building Code Requirements & Specifications for Masonry Structures
WRI	Manual of Standard Practice for Welded Wire Fabric.
AWS D1.4	Structural Welding Code - Reinforcing Steel.
ASTM A 82	Specification for Steel Wire, Plain, for Concrete Reinforcement.
ASTM A 185	Specification for Welded Steel Wire Fabric For Concrete Reinforcement.
ASTM A 497	Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
ASTM A 615	Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
ASTM A 706	Low-alloy Deformed Steel Bars for Concrete Reinforcement
ASTM A 775	Specifications for Epoxy Coated Bar Reinforcement
ASTM A 884	Specifications for Epoxy Coated Wire Reinforcement
CRSI	Manual of Standard Practice

CRSI Recommended Practice for Placing Bar Supports, Specifications and Nomenclature

CRSI Recommended Practice for Placing Reinforcing Bars

2. Government Standards:

CSS Caltrans Standard Specifications.

1.4 CONTRACTOR SUBMITTALS

A. Submittals shall be made in accordance with the GENERAL REQUIREMENTS.

B. The following submittals and specific information shall be provided.

1. The CONTRACTOR shall furnish shop bending diagrams, placing lists, splice lengths and location, and drawings of all reinforcement steel prior to fabrication in accordance with GENERAL REQUIREMENTS.
2. Details of the concrete reinforcement steel and concrete inserts shall be submitted by the CONTRACTOR at the earliest possible date after receipt by the CONTRACTOR of the Notice to Proceed. Said details of reinforcement steel for fabrication and erection shall conform to ACI 315 and the requirements specified and shown. The shop bending diagrams shall show the actual lengths of bars, to the nearest inch measured to the intersection of the extensions (tangents for bars of circular cross section) of the outside surface. The shop drawings shall include bar placement diagrams which clearly indicate the dimensions of each bar splice.
3. Where mechanical couplers are required or permitted to splice reinforcement steel, the CONTRACTOR shall submit Los Angeles City Department of Building and Safety's Research Report approval and manufacturer's literature which contains instructions and recommendations for installation for each type of coupler used; certified test reports which verify the load capacity of each type and size of coupler used; and shop drawings which show the location of each coupler with details of how it is to be installed in the formwork.
4. If reinforcement steel is required or permitted to be spliced by welding at any location, the CONTRACTOR shall submit mill test reports which shall contain the information necessary for the determination of the carbon equivalent as specified in AWS D1.4. The CONTRACTOR shall submit a written welding procedure for each type of weld for each size of bar which is to be spliced by welding; merely a statement that AWS procedures will be followed is not acceptable.

1.5 QUALITY ASSURANCE

- A. The CONTRACTOR shall make provisions for sampling reinforcing steel delivered to the job site in accordance with SSPWC Section 201-2.4.2. Costs of initial tests will be paid by the CITY. Additional tests due to material failing initial tests shall be paid by the CONTRACTOR.
- B. If reinforcement steel is welded at any location, the CONTRACTOR shall submit certifications of procedure qualifications for each welding procedure used and certification of welder qualifications, for each welding procedure, and for each welder performing the work. Such certification and qualifications shall be as required by the City of San Fernando's Department of Building and Safety.

- C. The CONTRACTOR shall provide samples of each type of weld used in the work in a quantity and of dimensions adequate for testing. At the discretion of the INSPECTOR, radiographic testing of direct butt welds will be performed. The CONTRACTOR shall provide assistance necessary to facilitate testing. The CONTRACTOR shall repair any weld which fails to meet the requirements of AWS D1.4. The costs of testing will be paid by the CITY; except, the costs of all tests which fail to meet specified requirements shall be paid by the CONTRACTOR.
- D. The CONTRACTOR shall provide to the INSPECTOR written identification of reinforcement steel by manufacturer's heat number and mil certification, and the fabricator's release number and type from the point of fabrication to the place of final incorporation of the rebar into the work.

1.6 MARKING AND SHIPPING

- A. Tag bundled bars with identification, and transport and store so as not to damage any material. Use metal tags indicating size, length and other marking shown on placement drawings. Maintain tags after bundles are broken.

PART 2 -- PRODUCTS

2.1 REINFORCEMENT STEEL

- A. All reinforcement steel for all cast-in-place reinforced concrete construction shall conform to the following requirements:
 - 1. Bar reinforcement shall conform to the requirements of ASTM A615, Grade 60 Billet Steel Reinforcement with supplementary requirement S-1, and ASTM A706 for rebars subject to welding, or as otherwise shown.
 - 2. Bar reinforcement for wall boundary elements, special moment frames, or when subject to welding, shall conform to ASTM A706, unless noted otherwise.
 - 3. Welded wire fabric reinforcement shall conform to the requirements of ASTM A185, or ASTM A497 and the details shown; provided, that welded wire fabric with longitudinal wire of W9.5 size wire shall be either furnished in flat sheets or in rolls with a core diameter of not less than 10 inches; and provided further, that welded wire fabric with longitudinal wires larger than W9.5 size shall be furnished in flat sheets only.
 - 4. Spiral reinforcement may be cold-drawn steel wire conforming to the requirements of ASTM A82, when approved by the ENGINEER.
 - 5. All reinforcements shall be shop fabricated. Bending of reinforcing in the field will not be allowed.
 - 6. Epoxy coated reinforcing steel shall conform to the requirements of ASTM A775 and A884, and shall be used where indicated on the drawing.
 - 7. Reinforcement with any of the following defects will not be acceptable and be immediately removed from the site:
 - a. Bar lengths, depths, and/or bends exceeding the specified fabrication tolerances.
 - b. Bends or kinks not shown on the Drawings
 - c. Bars with reduced cross-section due to excessive rusting or other cause.

B. Accessories:

1. Accessories shall include all necessary chairs, slab bolsters, concrete blocks, tie wires, dips, supports, spacers, and other devices to position reinforcement during concrete placement. Slab bolsters shall have gray plastic-coated legs.
2. Concrete blocks (dobies), used to support and position reinforcement steel, shall have the same or higher compressive strength as specified for the concrete in which it is located. Where the concrete blocks are used on concrete surfaces exposed to view, the color and texture of the concrete blocks shall match that required for the finished surface. Wire ties shall be embedded in concrete block bar supports.
3. Use bar supports complying with CRSI recommendations, unless otherwise shown on the Contract Drawings.
4. Do not use wood, brick, or other non-complying material.
5. For exposed-to-view completed concrete surfaces, where legs of supports are in contact with forms, provide supports with either hot-dip galvanized or plastic-protected legs. CONTRACTOR's selection subject to the ENGINEER's approval.

2.2 MECHANICAL COUPLERS

- A. Mechanical couplers shall comply with the applicable Department of Building and Safety's Research Report. Location of the Mechanical Couplers shall be approved by the ENGINEER. The couplers shall develop a tensile strength which exceeds 125 percent of the yield strength of the reinforcement bars being spliced at each splice. CONTRACTOR to provide the required number of couplers and bars for testing in accordance with the Report
- B. Where the type of coupler used is composed of more than one component, all components required for a complete splice shall be supplied. This shall apply to all mechanical splices, including those splices intended for future connections.
- C. The reinforcement steel and coupler used shall be compatible for obtaining the required strength of the connection. Clearance and coverage requirements shall be maintained at all times.
- D. Couplers which are located at a joint face shall be a type which can be set either flush or recessed from the face as shown. The couplers shall be sealed during concrete placement to completely eliminate concrete or cement paste from entering. After the concrete is placed, couplers intended for future connections shall be plugged and sealed to prevent any contact with water or other corrosive materials. Threaded couplers shall be plugged with plastic plugs which have an O-ring seal.
- E. Hot-forged sleeve-type couplers shall not be used.

2.3 WELDED SPLICES

- A. Welded splices shall be provided where shown and where approved by the ENGINEER. All welded splices of reinforcement steel shall develop a tensile strength which exceeds 125 percent of the yield strength of the reinforcement bars which are connected. Provide two samples of each bar size for testing. When welding is to be done in the field, provide field prepared samples. Preparation shall be made by welder actually preparing the production run.
- B. All materials required to conform the welded splices to the requirements of AWS D1.4 shall be provided.

- C. All welding shall be performed by City of Los Angeles certified welders. All shop welding shall be performed at shops of a City of Los Angeles approved fabricator.

PART 3 -- EXECUTION

3.1 GENERAL

- A. All reinforcement steel, welded wire fabric, couplers, and accessories shall be fabricated, and placed in accordance with the requirements of the California Building Code, CRSI Recommended Practices and Manual, and WRI, and the supplementary requirements specified herein.

3.2 FABRICATION

- A. General: Reinforcement steel shall be accurately formed to the dimensions and shapes shown, and the fabricating details shall be prepared in accordance with ACI 315 and ACI 318 or ACI 350 (as applicable), except as modified by the Drawings. Bars shall be bent cold.
- B. The CONTRACTOR shall fabricate reinforcement bars for structures in accordance with bending diagrams, placing lists, and placing drawings. Said drawings, diagrams, and lists shall be prepared by the CONTRACTOR as specified under GENERAL REQUIREMENTS.
- C. Fabricating Tolerances: Bars used for concrete reinforcement shall meet the following requirements for fabricating tolerances:
1. Sheared length: ± 1 inch
 2. Depth of truss bars: $+ 0, - 1/2$ inch
 3. Stirrups, ties, and spirals: $\pm 1/2$ inch
 4. All other bends: ± 1 inch

3.3 PLACING

- A. Placing: Reinforcement steel shall be accurately positioned as shown, and shall be supported and wired together to prevent displacement, using annealed iron wire ties or suitable clips at intersections. All reinforcement steel shall be supported using approved accessories and chairs which are strong and rigid enough to prevent any displacement of the reinforcement steel and shall comply with the applicable Department of Building and Safety's Research Report. Where concrete is to be placed on the ground, supporting concrete blocks (or dobies) shall be used, in sufficient numbers to support the bars without settlement, but in no case shall such support be continuous. All concrete blocks used to support reinforcement steel shall be tied to the steel with wire ties which are embedded in the blocks. Use care not to damage vapor barriers where they occur.
- B. The portions of all accessories in contact with the formwork shall be made of concrete, plastic, or steel coated with a 1/8-inch minimum thickness of plastic which extends at least 1/2-inch from the concrete surface. Plastic shall be gray in color.
- C. Tie wires shall be bent away from the forms in order to provide the specified concrete coverage.
- D. Bars additional to those shown which may be found necessary or desirable by the CONTRACTOR for the purpose of securing reinforcement in position shall be provided by the CONTRACTOR at its own expense.

- E. Placing Tolerances: Unless otherwise specified, reinforcement placing tolerances shall be within the limits specified in Section 7.5 of ACI 318 except where in conflict with the requirements of the California Building Code.
- F. Bars may be moved as necessary to avoid interference with other reinforcement steel, conduits, or embedded items. If bars are moved more than one bar diameter, or enough to exceed the above tolerances, the resulting arrangement of bars shall be reviewed and accepted by the ENGINEER.
- G. Welded wire fabric reinforcement placed over horizontal forms shall be supported on slab bolsters having gray, plastic-coated standard type legs as specified in Paragraph B herein. Slab bolsters shall be spaced not less than 30 inches on centers, shall extend continuously across the entire width of the reinforcement mat, and shall support the reinforcement mat in the plane shown.
- H. Welded wire fabric placed over the ground shall be supported on wired concrete blocks (dobies) spaced not more than 3 feet on centers in any direction. The construction practice of placing welded wire fabric on the ground and hooking into place in the freshly placed concrete shall not be used.

3.4 SPACING OF BARS

- A. Spacing of reinforcement shall comply with ACI 318 requirements.
- B. Spacing of bars on bridge structures shall conform to the requirements in CSS Section 52-1.

3.5 SPLICING

- A. General: Reinforcement bar splices shall only be used at locations shown. When it is necessary to splice reinforcement at points other than where shown, the character of the splice and location shall be as acceptable to the ENGINEER.
- B. Splices of Reinforcement: The length of lap for reinforcement bars, unless otherwise shown shall be in accordance with ACI 318, Section 12.15.1 for a class B splice. Stagger splices in horizontal wall bars at least 48" longitudinal in alternate bars and opposite faces.
- C. Laps of welded wire fabric shall be in accordance with the ACI 318. Adjoining sheets shall be securely tied together with No. 14 tie wire, one tie for each 2 running feet. Wires shall be staggered and tied in such a manner that they cannot slip.
- D. Splices in column spiral reinforcement, when necessary, shall be made by welding or by a lap of 1-1/2 turns.
- E. Field welding of bars: In accordance with the approved submittal.
- F. Mechanical couplers: Install in accordance with the approved submittal.
- G. Bending or Straightening: Reinforcement shall not be straightened or rebent in a manner which will injure the material. Bars with kinks or bends not shown shall not be used. All bars shall be bent cold, unless otherwise permitted by the ENGINEER. No bars partially embedded in concrete shall be field-bent except as shown or specifically permitted by the ENGINEER.
- H. Splicing of reinforcement on bridge structures shall conform to CSS Section 52-1.

3.6 CLEANING AND PROTECTION

The surfaces of all reinforcement steel and other metalwork to be in contact with concrete shall be thoroughly cleaned of all dirt, grease, loose scale and rust, grout, mortar and other foreign

substances immediately before the concrete is placed. Where there is delay in depositing concrete, reinforcement shall be reinspected and, if necessary recleaned. Bars with reduced cross-section due to excessive rusting or other cause will not be acceptable for use and shall be replaced by the CONTRACTOR at no additional cost to the CITY.

3.7 FIELD QUALITY CONTROL

- A. Inspection: Secure inspection and acceptance from INSPECTOR before concrete is placed. Make arrangements in advance for geotechnical inspection of foundations, continuous inspection as required, and/or structural observation by the designated registered design professional prior to concrete placement.

(END OF SECTION)

**SECTION 033000
CAST-IN-PLACE CONCRETE**

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall furnish all materials for concrete in accordance with the provisions of this Section and shall form, mix, place, cure, repair, finish, and do all other work as required to produce finished concrete, in accordance with the requirements of the Contract Documents.
- B. The following types of concrete shall be covered in this Section:
 - 1. Structural Concrete: Concrete to be used in all cases except where noted otherwise in the Contract Documents.
 - 2. Sitework Concrete: Concrete to be used for curbs, gutters, sidewalks, pavements, fence and guard post embedment, and underground duct bank encasement unless otherwise shown.
 - 3. Lean Concrete: Concrete to be used for thrust blocks, pipe trench cut-off blocks and cradles, where the preceding items are detailed on the Drawings as unreinforced. Concrete to be used as protective cover for dowels intended for future connection.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 031100 Concrete Formwork.
- B. Section 032000 Concrete Reinforcing.
- C. Section 031500 Concrete Accessories.
- D. Section 031516 Concrete Construction Joints.
- E. Section 036000 Grout.
- F. Section 033900 Concrete Curing

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Comply with the reference standards and the Standard Specifications of the GENERAL REQUIREMENTS.
- B. Comply with the current provisions of the following Codes and Standards, as applicable.

1. Commercial Standards:

ACI 117	Standard Tolerances for Concrete Construction and Materials
ACI 301	Specifications for Structural Concrete for Buildings
ACI 305R	Standard Specifications for Hot Weather Concreting
ACI 306.1	Standard Specifications for Cold Weather Concreting
ACI 318	Building Code Requirements for Reinforced Concrete
ACI 347	Recommended Practice for Concrete Formwork

ACI 350	Recommended Practice for Sanitary Structure
ASTM C 31	Practices for Making and Curing Concrete Test Specimens in the Field
ASTM C 33	Specification for Concrete Aggregates
ASTM C 39	Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C 40	Test Method for Organic Impurities in Fine Aggregates for Concrete
ASTM C 42	Methods of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C 88	Test Method for Soundness of Aggregates by use of Sodium Sulfate or Magnesium Sulfate
ASTM C 94	Specification for Ready-Mixed Concrete
ASTM C 117	Standard Test Method for Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing
ASTM C 131	Test Method for Resistance to Degradation of Small-Sized Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
ASTM C 136	Method for Sieve Analysis of Fine and Coarse Aggregate
ASTM C 143	Test Method for Slump of Portland Cement Concrete
ASTM C 157	Test Method for Length Change of Hardened Hydraulic Cement Mortar and Concrete.
ASTM C 192	Method of Making and Curing Concrete Test Specimens in the Laboratory.
ASTM C 260	Specification for Air-Entraining Admixtures for Concrete.
ASTM C 289	Test Method for Potential Reactivity of Aggregates (Chemical Method)
ASTM C 311	Method for Sampling and Testing Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Portland Cement Concrete
ASTM C 494	Specification for Chemical Admixtures for Concrete
ASTM C 618	Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete
ASTM D 2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate

2. Government Standards:

CSS	Caltrans Standard Specifications
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1.4 CONTRACTOR SUBMITTALS

- A. Submittals shall be made in accordance with GENERAL REQUIREMENTS.
- B. The following submittals and specific information shall be provided.
 - 1. Mix Designs: Prior to beginning the WORK, the CONTRACTOR shall submit to the ENGINEER, for review, and acceptance, preliminary concrete mix designs for each class and type of concrete specified herein. The mix designs shall be designed by an independent testing laboratory acceptable to the ENGINEER. All costs related to such mix design shall be borne by the CONTRACTOR.

Each concrete mix submittal shall contain the following information, as applicable:

- 1) Location and purpose of the mix.
 - 2) Slump on which the design is based.
 - 3) Total gallons of water per cubic yard, and the water/cement ratio.
 - 4) Brand, type, composition and quantity of cement.
 - 5) Brand type, composition and quantity of fly ash.
 - 6) Specific Gravity, source and gradation of each aggregate.
 - 7) Ratio of fine to total aggregate per cubic yard.
 - 8) Weight (surface dry) of each aggregate per cubic yard.
 - 9) Brand, type, and ASTM designation, active chemical ingredients and quantity of each admixture.
 - 10) Copy of the Building and Safety Research Report Approval for each concrete admixture.
 - 11) Air content.
 - 12) Compressive strength based on 7 day and 28 day compression tests, including standard deviation calculations, corroborative data (if applicable), and required average comprehensive strength per ACI 318, Section 5.
 - 13) Time of initial and final set.
 - 14) Certification stamp and signature by a Civil or Structural engineer registered in the State of California, experienced in concrete mix design.
 - 15) Certificate of Compliance for Cement.
 - 16) Concrete pour sequence.
- 2. Certified Delivery Tickets: Where ready-mix concrete is used, the CONTRACTOR shall provide certified weighmaster delivery tickets at the time of delivery of each load of concrete. Each certificate shall show the public weighmaster's signature, and the total quantities, by weight of cement, sand, each class of aggregate, admixtures, and the amounts of water in the aggregate and added at the batching plant as well as the amount of water allowed to be added at the site for the specific design mix. Each certificate shall, in addition, state the mix number, total yield in cubic yards, and the time of day, to the nearest minute, corresponding to when the batch was dispatched, when it left the plant, when it arrived at the job, the time that unloading began, and the time that unloading was finished.
- 3. When a water reducing admixture is to be used, the CONTRACTOR shall furnish mix designs for concrete both with and without the admixture.
- 4. The CONTRACTOR shall furnish a Certificate of Compliance signed by the supplier identifying the type of fly ash and stating that the fly ash complies with ASTM C 618 and these Specifications, together with all supporting test data prior to the use of the fly ash the sample represents. The supporting data shall also contain test results confirming that the fly ash in combination with the cement and water to be used meets all strength requirements and is compatible with air-entraining agents and other admixtures.
- 5. The CONTRACTOR shall submit to the ENGINEER for review the design mix for fly ash concrete together with the design mix for Portland cement (non-fly ash) concrete as specified in this Section.

1.5 QUALITY ASSURANCE

- A. Laborers: Use adequate number of skilled laborers who are thoroughly trained and experienced in the necessary crafts and completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.
- B. Compliance with Regulations: All materials shall comply with the current rules and regulations of the local air quality management district, with the rules regarding volatile organic compounds, and with FDA rules and regulations for dangerous substances in construction products.
- C. Concrete Manufacturer: Furnish concrete from licensed commercial ready-mix concrete plants conforming to ASTM C94. Requirements herein govern when exceeding ASTM C94.
- D. Continuous Inspection: Construct structural concrete exceeding 2,500 psi compressive strength under continuous inspection of DEPUTY INSPECTOR. Obtain inspection and approval of forms and reinforcing by CONTRACTOR's Independent Testing/Inspection Laboratory three (3) working days before placing structural concrete in order to be verified by DEPUTY INSPECTOR.
- E. Tests on component materials and for compressive strength and shrinkage of concrete will be performed as specified herein. Test for determining slump will be in accordance with the requirements of ASTM C 143.
- F. The cost of all laboratory tests on cement, aggregates, and concrete compressive strength, will be borne by the CITY. However, the CONTRACTOR shall be responsible for all other required tests, and shall be charged for the cost of any additional tests and investigation on work performed which does not meet the specifications.
- G. Concrete for testing shall be supplied by the CONTRACTOR at no cost to the CITY, and the CONTRACTOR shall provide assistance and facilities to the INSPECTOR in obtaining samples, and disposal and cleanup of excess material.
- H. Field Compression Tests:
 - 1. Compression test specimens will be taken during construction from the first placement of each concrete mix used and at intervals thereafter as selected by the INSPECTOR to insure continued compliance with these specifications. Each set of test specimens will be a minimum of 4 cylinders.
 - 2. Compression test specimens for concrete shall be made in accordance with ASTM C 31. Specimens shall be 6-inch diameter by 12-inch high cylinders.
 - 3. Compression tests shall be performed in accordance with ASTM C 39. Two test cylinders will be tested at 7 days as necessary and two at 28 days. Any remaining cylinders will be held to verify test results, if needed.
- I. Evaluation and acceptance of Compressive Strength Concrete shall be based on the following criteria:
 - 1. Concrete shall be sampled and tested in accordance with the ASTM's stated in Subsection 1.3.B.1.
 - 2. Acceptance of concrete placed shall be based on 28-day compressive strength test results. A 28-day compressive strength test shall consist of the average compressive strength of two concrete test cylinders fabricated from a single load of fresh concrete except that, if a cylinder should show evidence of improper handling, molding, or testing, said cylinder shall be discarded and the compressive strength test shall then consist of the remaining cylinder.
 - 3. Concrete compressive strength tests representing concrete poured-in-place, shall attain the 28-day compressive strength specified in the specifications or as shown on the plans.

4. In-place concrete represented by a compressive cylinder strength test failing to meet the specified 28-day compressive strength shall be removed from the work at no cost to the CITY. Also, the CONTRACTOR shall at its own expense make any corrective changes in the mix deemed necessary by the ENGINEER. The changes in the mix proportions or placement procedures shall be approved by the ENGINEER prior to the placement of any additional concrete subsequent to a failing compressive strength test.
5. As an alternative to the removal of concrete represented by a failed cylinder compressive strength test and subject to the approval of the ENGINEER, the concrete represented by the failed compressive strength cylinder test or tests may be cored in place. The corings shall be completed no later than 10 days from notification of failure by the ENGINEER. The cores shall be taken by the CONTRACTOR in the presence of the INSPECTOR and tested at the CONTRACTOR's expense in accordance with ASTM C 42 by a certified laboratory acceptable to the INSPECTOR. The cores shall be 4 inch diameter (min.) unless otherwise directed by the ENGINEER. At least three cores shall be taken in each area represented by a failed 28-day concrete compressive strength cylinder test. Unless otherwise directed by the ENGINEER, the cores shall be tested wet following a 40-hour submergence. If each core tests at least 85 percent of the specified 28-day compressive strength or greater, the concrete represented may be accepted provided the CONTRACTOR accepts the payment provisions stated below. Concrete represented by failing core tests shall not be paid for and shall be removed by the CONTRACTOR from the work at no cost to the CITY.
6. Payment to the CONTRACTOR for concrete accepted by the ENGINEER based on core test results but represented by failing compressive cylinder test results shall be reduced as follows:
 - a. When the result of a single compressive cylinder strength test is less than the specified 28-day compressive strength but 95 percent or more of the 28-day compressive strength, the CONTRACTOR shall pay the CITY \$15 per cubic yard for each in-place cubic yard of concrete represented by the deficient compressive strength cylinder test as determined by the actual sampling interval; and.
 - b. When the result of a single compressive strength cylinder test is less than 95 percent of the specified 28-day compressive strength but is acceptable based on core test results taken in accordance with Subsection 1.5.1.5, the CONTRACTOR shall pay the CITY \$20 per cubic yard for each in-place cubic yard of concrete represented by the deficient compressive strength cylinder test as determined by the actual sampling interval.

J. Shrinkage Tests:

1. Drying shrinkage tests shall be provided by the CONTRACTOR for the trial batch specified in the Paragraph in Part 2 entitled "Trial Batch and Laboratory Tests," and during construction to insure continued compliance with these Specifications.
2. Drying shrinkage specimens shall be 4-inch by 4-inch by 11-inch prisms with an effective gage length of 10 inches, fabricated, cured, dried and measured in accordance with ASTM C 157 modified as follows: specimens shall be removed from molds at an age of 23 ± 1 hours after trial batching, shall be placed immediately in water at $70 \text{ degrees F} \pm 3 \text{ degrees F}$ for at least 30 minutes, and shall be measured within 30 minutes thereafter to determine original length and then submerged in saturated lime water at $73 \text{ degrees F} \pm 3 \text{ degrees F}$. Measurement to determine expansion expressed as a percentage of original length shall be made at age 7 days. This length at age 7 days shall be the base length for drying shrinkage calculations ("0" days drying age). Specimens then shall be stored immediately in a humidity control room maintained at $73 \text{ degrees F} \pm 3 \text{ degrees F}$ and 50 percent ± 4 percent relative humidity for the remainder of the test. Measurements to determine shrinkage expressed as percentage of base length shall be made and reported separately for 7, 14, 21, and 28 days of drying after 7 days of moist curing.
3. The drying shrinkage deformation of each specimen shall be computed as the difference between the base length (at "0" days drying age) and the length after drying at each test age.

The average drying shrinkage deformation of the specimens shall be computed to the nearest 0.0001 at each test age. If the drying shrinkage of any specimen departs from the average of that test age by more than 0.0004-inch, the results obtained from that specimen shall be disregarded. Results of the shrinkage test shall be reported to the nearest 0.001 percent of shrinkage. Compression test specimens shall be taken in each case from the same concrete used for preparing drying shrinkage specimens. These tests shall be considered a part of the normal compression tests for the project. Allowable shrinkage limitations shall be as specified in Part 2, herein.

- K. Construction Tolerances: The CONTRACTOR shall set and maintain concrete forms and perform finishing operations so as to ensure that the completed work is within the tolerances specified in Section 031100 "Concrete Formwork". Surface defects and irregularities are defined as finishes and are to be distinguished from tolerances.
- L. For each class of fly ash, all testing and sampling procedures shall conform with these Specifications and ASTM C 311, including the restriction that one sample weighing 4 pounds shall be taken from at least each 200 tons of fly ash supplied.
- M. Separate storage facilities shall be provided for fly ash. Fly ash shall be stored in such a manner as to permit ready access for the purpose of inspection and sampling and suitably protected against contamination or moisture. Should any fly ash show evidence of contamination or moisture or be otherwise unsuitable, the INSPECTOR may reject it and require that it be removed from the site. Each class of fly ash used in concrete for this project shall be from the same source.

PART 2 -- PRODUCTS

2.1 CONCRETE MATERIALS

- A. Materials shall be delivered, stored, and handled so as to prevent damage by water or breakage. Only one brand of cement shall be used. Cement reclaimed from cleaning bags or leaking containers shall not be used. All cement shall be used in the sequence of receipt of shipments.
- B. All materials furnished for the work shall comply with the requirements of ACI 301, as applicable. For bridge structures, materials for concrete shall conform to Section 90-2 to 90-4 of CSS.
- C. Storage of materials shall conform to the requirements of ACI 301.
- D. Materials for concrete shall conform to the Standard Specifications and the following requirements.
 - 1. Concurrent with strength design criteria, concrete shall also be proportioned to provide the requisite durability to satisfy the exposure conditions imposed by either environment and/or service. Durability, in this context, refers to the ability of the concrete to resist deterioration from the environment or service in which it is placed. Concrete proportioned in accordance with ACI 318, or ACI 350 for sanitary structures, Chapter 4, Durability Requirements, will meet this criteria.
 - 2. Aggregates shall be obtained from pits acceptable to the INSPECTOR, shall be non-reactive, and shall conform to ASTM C 33. Lightweight sand for fine aggregate will not be permitted. Any suitable individual grading of coarse aggregate may be furnished, provided Grading of Combined Aggregate indicated in the following table is obtained.

Sieve Number or Size in Inches	Grading of Combined Aggregate		
	1-1/2" Maximum	1" Maximum	3/4" Maximum
2"	-	-	-
1-1/2"	95-100	-	-
1"	70-90	90-100	-
3/4"	50-80	70-95	90-100
3/8"	40-60	45-70	55-75
No. 4	35-55	35-55	40-60
No. 8	25-40	27-45	30-46
No. 16	16-34	20-38	23-40
No. 30	12-25	12-27	13-28
No. 50	2-12	5-15	5-15
No. 100	0-3	0-5	0-5

- a. When tested in accordance with ASTM C 289, the ratio of silica released to reduction in alkalinity shall not exceed 1.0.
 - b. When tested in accordance with ASTM C 40, the fine aggregate shall produce a color in the supernatant liquid no darker than the reference standard color solution.
 - c. When tested in accordance with ASTM C 131, the coarse aggregate shall show a loss not exceeding 42 percent after 500 revolutions, or 10.5 percent after 100 revolutions.
 - d. When tested in accordance with ASTM C 88, the loss resulting after five cycles shall not exceed 10 percent for fine or coarse aggregate when using sodium sulfate.
 - e. When tested in accordance with ASTM C 117, materials finer than No. 200 sieve shall not exceed 1% for gravel, and 1.5% for crushed aggregate.
 - f. When tested in accordance with ASTM D 2419, the California sand equivalent values operating range shall not be below 71%.
3. Ready-mix concrete shall conform to the requirements of ASTM C 94.
 4. Admixtures: The ENGINEER may require the use of admixtures or the CONTRACTOR may propose to use admixtures to control the set, effect water reduction, and increase workability. In either case, the addition of an admixture shall be at the CONTRACTOR's expense. The use and continued use of an admixture shall be approved by the ENGINEER. Admixtures specified herein, other than calcium chloride, shall conform to the requirements of ASTM C 494. The required quantity of cement shall be used in the mix regardless of whether or not an admixture is used. Admixtures shall contain no free chloride ions, be non-toxic after 30 days, and shall be compatible with and made by the same manufacturer as the air entraining admixture.

These admixtures shall not be used in greater doses than those recommended by the manufacturer or permitted by the ENGINEER. The permitted dosage of the admixture shall not exceed that which will result in an increase in the drying shrinkage of the concrete in excess of 20 percent when used in precast or prestressed concrete, or 10 percent when used in any other structural concrete. The strength of concrete containing the admixture in the amount proposed shall, at the age of 48 hours and longer be not less than that of similar concrete without the admixture. The admixture shall not adversely affect the specified air content, unless permitted by the ENGINEER.

- a. Set controlling admixture shall be either with or without water-reducing properties. Where the air temperature at the time of placement is expected to be consistently over 80 degrees F, a set retarding admixture such as Sika Chemical Corporation's

Plastiment, Master Builder's Pozzolith 300R, or an approved equal shall be used. Where the air temperature at the time of placement is expected to be consistently under 40 degrees F, a set accelerating admixture such as Sika Chemical Corporation's Plastocrete 161FL, Master Builder's Pozzolith 50C, or an approved equal shall be used.

- b. Low range water reducer shall conform to ASTM C 494, Type A where ambient temperature is 80 degrees F or lower, or Type D where ambient temperature is above 80 degrees F. It shall be either a hydroxylated carboxylic acid type or a hydroxylated polymer type. The quantity of admixture used and the method of mixing shall be in accordance with the manufacturer's instructions and recommendations.
- c. High range water reducer shall be sulfonated polymer conforming to ASTM C 494, Type F or G.

If the high range water reducing agent is added to the concrete at the batch plant, it shall be second generation type, Daracem 100, as manufactured by W.R. Grace & Co.; Pozzolith 430R, as manufactured by Masterbuilders; or an approved equal. High range water reducer shall be added to the concrete after all other ingredients have been mixed and initial slump has been verified.

If the high range water reducer is added to the concrete at the job site, it shall be used in conjunction with a low range water reducer and shall be Pozzolith 400N and Pozzolith MBL82, as manufactured by Masterbuilders; WRDA 19 and WRDA 79, as manufactured by W.R. Grace & Co.; or an approved equal. Concrete shall have a slump of 3-inches \pm 1/2-inch prior to adding the high range water reducing admixture at the job site. The high range water reducing admixture shall be accurately measured and pressure injected into the mixer as a single dose by an experienced technician. A standby system shall be provided and tested prior to each day's operation of the job site system.

Concrete shall be mixed at mixing speed for a minimum of 30 mixer revolutions after the addition of the high range water reducer.

- d. Air-entraining agent meeting the requirements of ASTM C 260, shall be used. Sufficient air-entraining agent shall be used to provide a total air content of 3 to 4 percent; provided that, when the mean daily temperature in the vicinity of the worksite falls below 40 degrees F for more than one day, the total air content provided shall be 5 to 6 percent. The CITY reserves the right, at any time, to sample and test the air-entraining agent received on the job by the CONTRACTOR. The air-entraining agent shall be added to the batch in a portion of the mixing water. The solution shall be batched by means of a mechanical batcher capable of accurate measurement.
5. Calcium Chloride: Except as otherwise provided herein, calcium chloride will not be permitted to be used in concrete.

2.2 CURING MATERIALS

- A. Materials for curing concrete shall conform to Section 033900 "Curing Concrete, Part 2.

2.3 EXPANSION JOINT FILLERS

- A. Preformed strips, non-extruding and resilient bituminous type, of thickness indicated, conforming to ASTM D 1751.

2.4 MISCELLANEOUS MATERIALS

- A. Epoxy adhesives shall be per the following products for the applications specified:

1. For bonding freshly-mixed, plastic concrete to hardened concrete, Sikadur Hi-Mod Epoxy Adhesive, as manufactured by Sika Chemical Corporation; Concreave 1001-LPL, as manufactured by Adhesive Engineering Company; or an approved equal.
 2. For bonding hardened concrete or masonry to steel, Colma-Dur Gel, Sikadur Hi-Mod Gel, or an approved equal.
- B. Vapor Barrier: ASTM D2103, polyethylene sheeting, clear, 10 mils minimum thickness, impact strength greater than 70 grams per mil, 10 feet minimum width. Provide minimum 2-inch wide waterproof plastic self-adhering tape for sealing edges and ends of sheeting.

2.5 CONCRETE DESIGN REQUIREMENTS

- A. General: Concrete shall be composed of cement, admixtures, aggregates and water. These materials shall be of the qualities specified. The exact proportions in which these materials are to be used for different parts of the work will be determined during the trial batch. In general, the mix shall be designed to produce a concrete capable of being deposited so as to obtain maximum density and minimum shrinkage and, where deposited in forms, to have good consolidation properties and maximum smoothness of surface. Mix designs with more than 41 percent of sand of the total weight of fine and coarse aggregate shall not be used. The aggregate gradations shall be formulated to provide fresh concrete that will not promote rock pockets around reinforcing steel or embedded items. The proportions shall be changed whenever necessary or desirable to meet the required results at no additional cost to the CITY. All changes shall be subject to review by the ENGINEER.
- B. Water-Cement Ratio and Compressive Strength: The minimum compressive strength and cement content of concrete shall be not less than that specified in the following tabulation, unless otherwise indicated on the contract drawings.

Type of Work	Min. 28-Day Compressive Strength (psi)	Aggregate Gradation	Cement per cu yd (sacks)	Max W/C Ratio (by weight)
Structural Concrete *				
a. Retaining Walls, Foundations: & Soldier Pile Walls	4,000	C	6.0	0.45
b. Other Structures **:	3,250	C	6.0	0.54 **
Sitework concrete:	2,500	C	5.5	0.50
Lean concrete:	2,000	C	4.8	0.71

Note: One sack of cement equals 94 lb.

* Use "B" Aggregate gradation when placing conditions permit.

** For Slabs on grade, maximum W/C ratio shall be 0.45. This includes maintenance holes, junction structures, catch basins, light pole foundations, building foundations and footings.

- C. Adjustments to Mix Design: The mixes used shall be changed whenever such change is necessary or desirable to secure the required strength, density, workability, and surface finish and the CONTRACTOR shall be entitled to no additional compensation because of such changes.
- D. Fly ash/pozzolan may be used per requirements of the Standard Specifications, when approved by the ENGINEER as a partial cement replacement in concrete as follows:

1. Fly ash shall replace not more than 10 percent by weight of the Portland cement in the design mix. The design mix shall contain a minimum of 7 sacks of cement per cubic yard before the replacement is made.
2. Fly ash for hydraulic/liquid containing structures shall be Class F fly ash only. Fly ash for all other structures shall be Class C or F fly ash.

2.6 CONSISTENCY

The quantity of water entering into a batch of concrete shall be just sufficient, with a normal mixing period, to produce a concrete which can be worked properly into place without segregation, and which can be compacted by the vibratory methods herein specified to give the desired density, impermeability and smoothness of surface. Subject to the w/c ratio requirements of section 2.5, the quantity of water shall be changed as necessary, with variations in the nature or moisture content of the aggregates, to maintain uniform production of a desired consistency. The consistency of the concrete in successive batches shall be determined by slump tests in accordance with ASTM C 143. The slumps shall be as follows:

<u>Part of Work</u>	<u>Slump (in)</u>
With high range water reducer added	8-inches max
Other work	per Standard Specifications

2.7 TRIAL BATCH AND LABORATORY TESTS

- A. Before placing any concrete, a Department of Building and Safety certified testing laboratory approved by the ENGINEER shall prepare, within 30 calendar days after the date of the Notice to Proceed, a trial batch of each concrete mix, based on the preliminary concrete mixes submitted by the CONTRACTOR. During the trial batch the aggregate proportions may be adjusted by the testing laboratory using the two coarse aggregate size ranges to obtain the required properties. If one size range produces an acceptable mix, a second size range need not be used. Such adjustments shall be considered refinements to the mix design and shall not be the basis for extra compensation to the CONTRACTOR. All concrete shall conform to the requirements of this Section, whether the aggregate proportions are from the CONTRACTOR's preliminary mix design, or whether the proportions have been adjusted during the trial batch process. The trial batch shall be prepared using the aggregates, cement and admixture proposed for the project. The trial batch materials shall be of a quantity such that the testing laboratory can obtain 3 drying shrinkage, and 10 compression test specimens from each batch. The cost of not more than 3 laboratory trial batch tests for each specified concrete strength shall be borne by the CONTRACTOR. Any additional trial batch testing required shall be performed at the expense of the CONTRACTOR.

The trial batch procedure may be waived when test data of prior performance of the proposed mix design, performed by a Department of Building and Safety certified testing laboratory, is presented by the CONTRACTOR and approved by the ENGINEER.

The requirements of this section may be waived for concrete mixes specified by the Class per the Standard Specifications.

- B. The determination of compressive strength will be made by testing 6-inch diameter by 12-inch high cylinders; made, cured and tested in accordance with ASTM C 192 and ASTM C 39. 5 compression test cylinders shall be tested at 7 days and 5 at 28 days. The average compressive strength for the 5 cylinders tested at 28 days for any given trial batch shall not be less than the appropriate sections of ACI 318 of the specified compressive strength.
- C. A sieve analysis of the combined aggregate for each trial batch shall be performed according to the requirements of ASTM C 136. Values shall be given for percent passing each sieve.

2.8 SHRINKAGE LIMITATION

- A. The maximum concrete shrinkage for specimens cast in the laboratory from the trial batch, as measured at 21-day drying age or at 28-day drying age shall be 0.036 percent or 0.042 percent, respectively. The CONTRACTOR shall only use a mix design for construction that has first met the trial batch shrinkage requirements.
- B. The maximum concrete shrinkage for specimens cast in the field shall not exceed the trial batch maximum shrinkage requirement by more than 25 percent.
- C. If the required shrinkage limitation is not met during construction, the CONTRACTOR shall take any or all of the following actions, at no additional cost to the CITY, for securing the specified shrinkage requirements. These actions may include changing the source or aggregates, cement and/or admixtures; reducing water content; washing of aggregate to reduce fines; increasing the number of construction joints; modifying the curing requirements; or other actions designed to minimize shrinkage or the effects of shrinkage.

2.9 MEASUREMENT OF CEMENT AND AGGREGATE

The amount of cement and of each separate size of aggregate entering into each batch of concrete shall be determined by direct weighing equipment furnished by the CONTRACTOR and acceptable to the ENGINEER; provided that, where batches are so proportioned as to contain an integral number of conventional sacks of cement, and the cement is delivered at the mixer in the original unbroken sacks, the weight of the cement contained in each sack may be taken without weighing as 94 pounds.

2.10 MEASUREMENT OF WATER

The quantity of water entering the mixer shall be measured by a suitable water meter or other measuring device of a type acceptable to the ENGINEER and capable of measuring the water in variable amounts within a tolerance of one percent. The water feed control mechanism shall be capable of being locked in position so as to deliver constantly any specified amount of water to each batch of concrete, and the meter shall include a set-back register with a readily visible vertical face and double hands indicating in cubic feet and decimals thereof. A positive quick-acting valve shall be used for a cut-off in the water line to the mixer. The operating mechanism must be such that leakage will not occur when the valves are closed.

2.11 READY-MIXED CONCRETE

- A. At the CONTRACTOR's option, ready-mixed concrete may be used meeting the requirements as to materials, batching, mixing, transporting, and placing as specified herein and in accordance with ASTM C 94, including the following supplementary requirements.
- B. Ready-mixed concrete shall be delivered to the site of the work, and discharge shall be completed within 90 minutes after the addition of the cement to the aggregates or before the drum has been revolved 250 revolutions, whichever is first. In hot weather, or under conditions contributing to quick stiffening of the concrete, the ready-mixed concrete shall be discharged before the temperature of the concrete exceeds 90 degrees F.
- C. Truck mixers shall be equipped with electrically-actuated counters by which the number of revolutions of the drum or blades may be readily verified. The counter shall be of the re-settable, recording type, and shall be mounted in the driver's cab. The counters shall be actuated at the time of starting mixers at mixing speeds.
- D. Each batch of concrete shall be mixed in a truck mixer for not less than 70 revolutions of the drum or blades at the rate of rotation designated by the manufacturer of equipment. Additional mixing, if any, shall be at the speed designated by the manufacturer of the equipment as agitating speed. All

materials including mixing water shall be in the mixer drum before actuating the revolution counter for determining the number of revolution of mixing.

- E. Truck mixers and their operation shall be such that the concrete throughout the mixed batch as discharged is within acceptable limits of uniformity with respect to consistency, mix, and grading. If slump tests taken at approximately the 1/4 and 3/4 points of the load during discharge give slumps differing by more than 2-inches when the specified slump is more than 3-inches, the mixer shall not be used on the work unless the causing condition is corrected and satisfactory performance is verified by additional slump tests. All mechanical details of the mixer, such as water measuring and discharge apparatus, condition of the blades, speed of rotation, general mechanical condition of the unit, and clearance of the drum, shall be checked before a further attempt to use the unit will be permitted.
- F. Each batch of ready-mixed concrete delivered at the job site shall be accompanied by a certified weighmaster delivery ticket furnished to the INSPECTOR in accordance with the Paragraph in Part 1 entitled "Certified Delivery Tickets".
- G. The use of non-agitating equipment for transporting ready-mixed concrete will not be permitted. Combination truck and trailer equipment for transporting ready-mixed concrete will not be permitted. The quality and quantity of materials used in ready-mixed concrete and in batch aggregates shall be subject to continuous inspection at the batching plant by the INSPECTOR.
- H. Mixing and Transporting of concrete for bridge structures shall comply with Section 90-6 of CSS.

2.12 CONCRETE BARRIER

Concrete barrier materials shall comply with Section 83-2.02 of CSS.

2.13 COLOR

The color of concrete sidewalks shall be as specified in Landscape Architecture plans.

PART 3 -- EXECUTION

3.1 GENERAL

- A. Pouring Record: A record shall be kept on the Project site of time and date of placing concrete in each portion of structure. Such record shall be maintained on the Project site until Substantial Completion and shall be available for examination by the ENGINEER.

3.2 PROPORTIONING AND MIXING

- A. Proportioning: Proportioning of the concrete mix shall conform to the requirements of Chapter 3 "Proportioning" of ACI 301; provided that the maximum slump for any concrete shall not exceed 4-inches except when the use of high range water reducer is permitted which increases the maximum slump to 8-inches. Proportioning for bridge structures shall comply with Section 90-5 of the CSS.
- B. Mixing: Mixing of concrete shall conform to the requirements of Chapter 7 of said ACI 301 Specifications.
- C. Slump: Maximum slumps shall be as specified herein in Section 2.6.
- D. Retempering: Retempering of concrete or mortar which has partially hardened will not be permitted.

3.3 PREPARATION OF SURFACES FOR CONCRETING

- A. General: Wet wood forms sufficiently to tighten up cracks. Wet other materials sufficiently to reduce adsorption and to help maintain concrete workability. Earth surfaces shall be thoroughly wetted by sprinkling, 24 hours prior to the placing of any concrete, and these surfaces shall be kept moist by frequent sprinkling up to the time of placing concrete thereon. The surface shall be free from standing water, mud, and debris at the time of placing concrete.
- B. Moisture Barrier: Before installation of screeds and slab reinforcement, install a moisture barrier under slabs on grade. Place membrane in as large sheets as possible, lapped 12 inches at sides and ends, with top lap placed in the direction of the spreading of concrete. Extend membrane and lap at least 4 inches onto adjoining wall surfaces and seal with pressure-sensitive tape.
1. Install moisture barrier on minimum 2-inch bed of sand, unless otherwise indicated, over gravel base as indicated on the Drawings.
 2. Patch punctures and tears in moisture barrier.
- C. Joints in Concrete: Concrete surfaces upon or against which concrete is to be placed, where the placement of the old concrete has been stopped or interrupted so that, as determined by the ENGINEER, the new concrete cannot be incorporated integrally with that previously placed, are defined as construction joints. The surfaces of horizontal joints shall be given a compacted, roughened surface for good bond. Except where the Drawings call for joint surfaces to be coated, the joint surfaces shall be cleaned of all laitance, loose or defective concrete, and foreign material. Such cleaning shall be accomplished by sandblasting followed by thorough washing. All pools of water shall be removed from the surface of construction joints before the new concrete is placed.
- D. Embedded Items: No concrete shall be placed until all formwork, installation of parts to be embedded, reinforcement steel, and preparation of surfaces involved in the placing have been completed and ACCEPTED by the INSPECTOR at least 24 hours before placement of concrete. All surfaces of forms and embedded items that have become encrusted with dried grout from concrete previously placed shall be cleaned of all such grout before the surrounding or adjacent concrete is placed.
- E. Conduits and Sleeves:
1. Locate so as not to reduce the strength of construction. Do not place pipes, except conduits in a slab of less than 3-1/2" thickness.
 2. In supported concrete slabs, do not bury conduit having any outside diameter greater than 33% of the thickness of the slab. Increase slab thickness locally to meet this requirement.
 3. Do not place conduit between the bottom of reinforcing steel and the bottom of supported slab.
 4. In placing conduits at slabs on earth, place below the reinforcement, and encase in concrete by increasing thickness of the slab locally to at least 3" of concrete around the conduit on all sides.
- F. All inserts or other embedded items shall conform to the requirements herein.
- G. All reinforcement, anchor bolts, sleeves, inserts, and similar items shall be set and secured in the forms where shown or by shop drawings and shall be acceptable to the INSPECTOR before any concrete is placed. Accuracy of placement is the responsibility of the CONTRACTOR.
- H. Where concrete is to be cast against old concrete, (greater than 60 days of age), the surface of the old concrete shall be thoroughly cleaned and roughened by sand-blasting, exposing the aggregate. In concrete shear-walls, suspended slabs and roof slabs, the interface surface at construction joints shall be roughened to a full amplitude of one quarter inch. The hardened surface shall be cleaned of all latent foreign material and washed clean, prior to the application of an epoxy bonding agent.
- I. Concrete shall not be placed in any structure until all water entering the space to be filled with concrete has been properly cut off or has been diverted by pipes, or other means, and carried out of

the forms, clear of the work. Concrete shall not be deposited underwater nor shall the CONTRACTOR allow still water to rise on any concrete until the concrete has attained its initial set. Water shall not be permitted to flow over the surface of any concrete in such manner and at such velocity as will injure the surface finish of the concrete. Pumping or other necessary dewatering operations for removing ground water, if required, will be subject to the review of the ENGINEER.

- J. Corrosion Protection: Pipe, conduit, dowels, and other ferrous items required to be embedded in concrete construction shall be so positioned and supported prior to placement of concrete that there will be a minimum of 2-inches clearance between said items and any part of the concrete reinforcement. Securing such items in position by wiring or welding them to the reinforcement will not be permitted.
- K. Openings for pipes, inserts for pipe hangers and brackets, and the setting of anchors shall, where practicable, be provided for during the placing of concrete.
- L. Anchor bolts shall be accurately set, and shall be maintained in position by templates while being embedded in concrete.
- M. Dove-tail anchor slots at concrete walls to receive masonry veneer shall be set vertically in forms, 24 inches maximum on centers measured horizontally. Anchor slots shall be No. 24 gage galvanized sheet steel with removable fiber filler to prevent seepage of cement in slot.
- N. Screeds: Install screeds accurately and maintain at required grade or slab elevations after steel reinforcement has been installed, but before starting to place concrete. Install screeds in parallel rows not to exceed 8 feet on centers.
- O. Cleaning: The surfaces of all metalwork to be in contact with concrete shall be thoroughly cleaned of all dirt, grease, loose scale and rust, grout, mortar, and other foreign substances immediately before the concrete is placed.

3.12 HANDLING, TRANSPORTING, AND PLACING

- A. General: Do not place concrete during rain or adverse weather conditions without means to prevent all damage. Conform to requirements specified hereinafter whenever concrete placement is required during cold or hot weather. Placing of concrete shall conform to the applicable requirements of ACI 301 and the requirements of this Section.
- B. Non-Conforming Work or Materials: Concrete which upon or before placing is found not to conform to the requirements specified herein shall be rejected and immediately removed from the work. Concrete which is not placed in accordance with these Specifications, or which is of inferior quality, shall be removed and replaced by and at the expense of the CONTRACTOR.
- C. Concrete shall not be placed except in the presence of duly authorized representative of the INSPECTOR. The CONTRACTOR shall notify the INSPECTOR in writing at least 48 hours in advance of placement of any concrete.
- D. Placement in Wall Forms: Concrete shall not be dropped through reinforcement steel or into any deep form, whether reinforcement is present or not, causing separation of the coarse aggregate from the mortar on account of repeatedly hitting rods or the sides of the form as it falls, nor shall concrete be placed in any form in such a manner as to leave accumulation of mortar on the form surfaces above the placed concrete. In such cases, some means such as the use of hoppers and, if necessary, vertical ducts of canvas, rubber, or metal shall be used for placing concrete in the forms in a manner that it may reach the place of final deposit without separation. In no case shall the free fall of concrete exceed 4 feet below the ends of ducts, chutes, or buggies. Concrete shall be uniformly distributed during the process of depositing and in no case after depositing shall any portion be displaced in the forms more than 6 feet in horizontal direction. Concrete in forms shall be deposited in uniform horizontal layers not deeper than 2 feet; and care shall be taken to avoid inclined layers or inclined construction joints except where such are required for sloping members. Each layer shall be

placed while the previous layer is still soft. The rate of placing concrete in forms shall not exceed 5 feet of vertical rise per hour.

- E. Casting New Concrete Against Old: An approved epoxy adhesive bonding agent shall be applied to the old surfaces according to the manufacturer's written recommendations. This provision shall not apply to joints where waterstop is installed, see Section 031516, "Concrete Construction Joints".
- F. Conveyor Belts and Chutes: All ends of chutes, hopper gates, and all other points of concrete discharge throughout the CONTRACTOR'S conveying, hoisting and placing system shall be so designed and arranged that concrete passing from them will not fall separated into whatever receptacle immediately receives it. Conveyor belts, if used, shall be of a type acceptable to the ENGINEER. Chutes longer than 50 feet will not be permitted. Minimum slopes of chutes shall be such that concrete of the specified consistency will readily flow in them. If a conveyor belt is used, it shall be wiped clean by a device operated in such a manner that none of the mortar adhering to the belt will be wasted. All conveyor belts and chutes shall be covered. Sufficient illumination shall be provided in the interior of all forms so that the concrete at the places of deposit is visible from the deck or runway.
- G. Placement in Slabs: Concrete placed in sloping slabs shall proceed uniformly from the bottom of the slab to the top, for the full width of the pour. As the work progresses, the concrete shall be vibrated and carefully worked around the slab reinforcement, and the surface of the slab shall be screeded in an up-slope direction.
- H. Temperature of Concrete: The temperature of concrete when it is being placed shall be not more than 90 degrees F nor less than 40 degrees F in moderate weather, and not less than 50 degrees F in weather during which the mean daily temperature drops below 40 degrees F. Concrete ingredients shall not be heated to a temperature higher than that necessary to keep the temperature of the mixed concrete, as placed, from falling below the specified minimum temperature. If concrete is placed when the weather is such that the temperature of the concrete would exceed 90 degrees F, the CONTRACTOR shall employ effective means, such as precooling of aggregates and mixing water using ice or placing at night, as necessary to maintain the temperature of the concrete, as it is placed, below 90 degrees F. The CONTRACTOR shall be entitled to no additional compensation on account of the foregoing requirements.
- I. Cold Weather Placement:
 - 1. Earth foundations shall be free from frost or ice when concrete is placed upon or against them. Fly ash concrete shall not be placed when the air temperature falls below 50 degrees F.
 - 2. Normal Concrete: When the temperature is below 40 degrees F, the temperature of the concrete placed in the forms shall be at least 60 degrees F. When the temperature is below 30 degrees F, the temperature of the concrete as mixed shall be 65°F. In all cases, when the daily average temperature is below 40 degrees F, the concrete shall be kept at 55 degrees F for the 72 hours, and then allowed to drop uniformly to the air temperature over the next 24 hours. Concrete temperature shall be measured by placing a thermometer 2" below the top of the concrete being placed.
 - 3. Air-entrained concrete shall be kept at the above temperature for 27 hours and above freezing for an additional 72 hours.
 - 4. No calcium chloride shall be used to accelerate hardening of concrete. CONTRACTOR to certify that any additive used does not contain calcium chloride.
 - 5. If low temperature accelerating admixture is proposed, adjust concrete mix as required and obtain approval of the ENGINEER.
 - 6. All concrete materials, reinforcement, forming materials and ground with which concrete is to come in contact shall be free of frost.

7. The covering or other protection used in connection with the curing shall remain in place and intact for at least 24 hours.
8. The work shall be protected from the elements, flowing water, and defacements of any nature during the construction operations.
9. Conform to the provisions of ACI 306.1, except as modified herein.

J. Hot Weather Placement:

Conform to ACI 305R and the following requirements:

1. Take extra care to reduce the temperature of the concrete being placed, and to prevent rapid drying of newly placed concrete. When the outdoor ambient temperature is more than 90 degrees F, shade the fresh concrete as soon as possible after placing, and start curing as soon as the surface of the fresh concrete is sufficiently hard to permit it without damage.
2. Concrete placement temperatures shall be controlled by the CONTRACTOR and shall not be limited to:
 - A. Shading and cooling the aggregate;
 - B. Avoiding use of hot cement;
 - C. Cooling mixing water by additions of ice;
 - D. Insulating water supply lines and tanks; and
 - E. Insulating mixer drums or cooling them with sprays or wet burlap.

- K. Cast-in-place concrete shall be homogeneous throughout the structural element. The methods used to place shall prevent segregation. Placement of concrete for bridge structures shall conform to Section 51-1 of the CSS.

3.13 PUMPING OF CONCRETE

- A. General: If the pumped concrete does not produce satisfactory end results, the CONTRACTOR shall discontinue the pumping operation and proceed with the placing of concrete using conventional methods.
- B. Pumping Equipment: The pumping equipment must have 2 cylinders and be designed to operate with one cylinder only in case the other one is not functioning. In lieu of this requirement, the CONTRACTOR may have a standby pump on the site during pumping.
- C. The minimum diameter of the hose (conduits) shall be 4-inches.
- D. Pumping equipment and hoses (conduits) that are not functioning properly, shall be replaced.
- E. Aluminum conduits for conveying the concrete will not be permitted.
- F. Gradation of coarse aggregates shall conform to ASTM C 33 and shall be as close to the middle range as possible.
- G. Gradation of fine aggregate shall conform to ASTM C 33, with 15 to 30 percent passing the number 50 screen and 5 to 10 percent passing the number 100 screen. The fineness modulus of sand used shall not be over 3.00.

- H. Field Control: Concrete samples for slump per ASTM C 143 and test cylinders per ASTM C 31 and C 39.

3.14 ORDER OF PLACING CONCRETE

- A. The order of placing concrete in all parts of the work shall be acceptable to the ENGINEER. In order to minimize the effects of shrinkage, the concrete shall be placed in units as bounded by construction joints shown. The placing of units shall be done by placing alternate units in a manner such that each unit placed shall have cured at least 7 days before the contiguous unit or units are placed, except that the corner sections of vertical walls shall not be placed until the 2 adjacent wall panels have cured at least 14 days.
- B. The surface of the concrete shall be level whenever a run of concrete is stopped. To insure a level, straight joint on the exposed surface of walls, a wood strip at least 3/4-inch thick shall be tacked to the forms on these surfaces. The concrete shall be carried about 1/2-inch above the underside of the strip. About one hour after the concrete is placed, the strip shall be removed and any irregularities in the edge formed by the strip shall be leveled with a trowel and all laitance shall be removed.

3.15 TAMPING AND VIBRATING

- A. As concrete is placed in the forms or in excavations, it shall be thoroughly settled and compacted, throughout the entire depth of the layer which is being consolidated, into a dense, homogeneous mass, filling all corners and angles, thoroughly embedding the reinforcement, eliminating rock pockets, and bringing only a slight excess of water to the exposed surface of concrete during placement. Vibrators shall be high speed power vibrators (8,000 to 10,000 rpm) of an immersion type in sufficient number and with (at least one) standby units as required.
- B. Operation of Vibrators: Do not horizontally transport concrete in forms with vibrators nor allow vibrators to contact forms or reinforcing. Push vibrators vertically into the preceding layers that are still plastic and slowly withdraw, producing maximum obtainable density in concrete without creating voids or segregation. In no case disturb concrete that has partially set. Vibrate at intervals not exceeding two-thirds the effective visible vibration diameter of the submerged vibrator. Avoid excessive vibration that causes segregation. Use and type of vibrators shall conform to ACI 309 "Recommended Practice for Consolidation of Concrete".
- C. Correction of Segregation: Before placing next layer of concrete, and at the top of last placement for vertical elements, remove concrete containing excess water or fine aggregate or showing deficiency of coarse aggregate and fill the space with compacted concrete of correct proportions.
- D. Care shall be used in placing concrete around waterstops. The concrete shall be carefully worked by rodding and vibrating to make sure that all air and rock pockets have been eliminated. Where flat-strip type waterstops are placed horizontally, the concrete shall be worked under the waterstops by hand, making sure that all air and rock pockets have been eliminated. Concrete surrounding the waterstops shall be given additional vibration, over and above that used for adjacent concrete placement to assure complete embedment of the waterstops in the concrete.
- E. Concrete in walls shall be internally vibrated and at the same time rammed, stirred, or worked with suitable appliances, tamping bars, shovels, or forked tools until it completely fills the forms or excavations and closes snugly against all surfaces. Subsequent layers of concrete shall not be placed until the layers previously placed have been worked thoroughly as specified. Vibrators shall be provided in sufficient numbers, with standby units as required, to accomplish the results herein specified within 15 minutes after concrete of the prescribed consistency is placed in the forms. The vibrating head shall be kept from contact with the surfaces of the forms. Care shall be taken not to vibrate concrete excessively or to work it in any manner that causes segregation of its constituents.

3.16 FINISHING CONCRETE SURFACES

- A. General: Surfaces shall be free from fins, bulges, ridges, offsets, honeycombing, or roughness of any kind, and shall present a finished, smooth, continuous hard surface. Allowable deviations from plumb or level and from the alignment, profiles, and dimensions shown are defined as tolerances and are specified in Part 1, herein. These tolerances are to be distinguished from irregularities in finish as described herein. Aluminum finishing tools shall not be used.
- B. Formed Surfaces: Formed surfaces for all structures other than building structures and bridge decks, shall be finished per Section 303-1.9 of Standard Specifications. Concrete for bridge decks shall be finished per CSS Section 51-1.17. Concrete for building and retaining wall structures shall be finished per architectural finish as specified hereon, or as shown on Drawings.
- C. Soda and Acid Wash:
 - 1. Concrete surfaces to receive plaster, paint or other finish and which have been formed by oil-coated forms, scrub with a solution of 1-1/2 lbs. caustic soda to one gallon of water.
 - 2. On surfaces where smooth wood or waste molds have been used, scrub with a solution of 20% muriatic acid or hydrochloric acid.
 - 3. After the surfaces have been scrubbed, wash with clean water as soon as possible.
- D. Surface finish for bridge structures, other than bridge decks, shall comply with Section 51-1.18 of CSS.

3.8 CURING

Curing shall conform to Section 033900 "Curing Concrete", Part 3.

3.9 PROTECTION

The CONTRACTOR shall protect all concrete against injury until final acceptance by the CITY. Fresh concrete shall be protected from damage due to rain, hail, sleet, or snow. The CONTRACTOR shall provide such protection while the concrete is still plastic and whenever such precipitation is imminent or occurring. Immediately following the first frost in the fall, the CONTRACTOR shall be prepared to protect all concrete against freezing. After the first frost, and until the mean daily temperature in the vicinity of the worksite falls below 40 degrees F for more than one day, the concrete shall be maintained at a temperature not lower than 50 degrees F for at least 72 hours after it is placed.

The CONTRACTOR shall protect all concrete against injury or damage from excessive heat, lack of moisture, overstress, or any other cause until final acceptance by the CITY. Particular care shall be taken to prevent the drying of concrete and to avoid roughening or otherwise damaging the surface. Any concrete found to be damaged, or which may have been originally defective, or which becomes defective at any time prior to the final acceptance of the completed work, or which departs from the established line or grade, or which, for any other reason, does not conform to the requirements of the Contract Documents, shall be satisfactorily repaired or removed and replaced with acceptable concrete at the CONTRACTOR'S expense.

3.10 TREATMENT OF SURFACE DEFECTS

- A. As soon as forms are removed, all exposed surfaces shall be carefully examined and any irregularities shall be immediately rubbed or ground in a satisfactory manner in order to secure a smooth, uniform, and continuous surface. Plastering or coating of surfaces to be smoothed will not be permitted. No repairs shall be made until after inspection by the ENGINEER. In no case will extensive patching of honeycombed concrete be permitted. Concrete containing minor voids, holes, honeycombing, or similar depression defects shall be repaired as specified herein. Concrete containing extensive voids, holes, honeycombing, or similar depression defects, shall be completely removed and replaced. All repairs

and replacements herein specified shall be promptly executed by the CONTRACTOR at its own expense.

- B. Defective surfaces to be repaired shall be cut back from trueline a minimum depth of 1/2-inch over the entire area. Feathered edges will not be permitted. Where chipping or cutting tools are not required in order to deepen the area properly, the surface shall be prepared for bonding by the removal of all laitance or soft material, and not less than 1/32-inch depth of the surface film from all hard portions, by means of an efficient sandblast. After cutting and sandblasting, the surface shall be wetted sufficiently in advance of shooting with shotcrete or with cement mortar so that while the repair material is being applied, the surfaces under repair will remain moist, but not so wet as to overcome the suction upon which a good bond depends. The material used for repair purposes shall consist of a mixture of one sack of cement to 3 cubic feet of sand. For exposed walls, the cement shall contain such a proportion of Atlas white Portland cement as is required to make the color of the patch match the color of the surrounding concrete.
- C. Holes left by tie-rod cones shall be reamed so as to leave the surfaces of the holes clean and rough. These holes then shall be repaired in an approved manner with non-shrink grout. Holes left by forming devices having a rectangular cross-section, and other imperfections having a depth greater than their least surface dimension, shall not be reamed but shall be repaired in an approved manner with non-shrink grout.
- D. All repairs shall be built up and shaped in such a manner that the completed work will conform to the requirements of this Section, as applicable, using approved methods which will not disturb the bond, cause sagging, or cause horizontal fractures. Surfaces of said repairs shall receive the same kind and amount of curing treatment as required for the concrete in the repaired section.
- E. Prior to filling any structure with water, all cracks that may have developed shall be repaired to the satisfaction of the ENGINEER. This repair method shall be done on the water bearing face of members. Prior to backfilling, faces of members in contact with fill, which are not covered with a waterproofing membrane, shall also have cracks repaired as specified herein.

3.11 TESTING

- A. Should strength of any grade of concrete, for any portion of Work indicated by tests of molded cylinders and core tests, fall below minimum of 28 days strength specified or indicated, concrete will be deemed defective Work and shall be replaced or adequately strengthened in a manner acceptable to the Landscape Architect and Engineer.
- B. Concrete Work that is not formed as indicated, is not true within 1/250 of span, not true to intended alignment, not plumb or level where so indicated, not true to intended grades and levels, contains sawdust shavings, wood or embedded debris, or does not fully conform to Contract provisions, shall be deemed to be defective Work and shall be removed and replaced.
- C. Concrete for Equipment Pads, Mechanical and Electrical Work: Unless otherwise indicated, strength shall be 3,000 psi concrete. Exposed concrete shall be provided with a hand trowel finish with radius corners and edges. Form and place concrete where necessary as described in Section 031100 – Concrete Formwork, and reinforced as described in Section 032000 – Concrete Reinforcing. Calcium chloride shall not be furnished in any concrete mix provided for the installation of underground electrical conduits. For concrete encasement of more than one conduit, furnish 3/4 inch to 1 inch aggregate as specified for concrete mix.

(END OF SECTION)

**SECTION 03 39 00
CONCRETE CURING**

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The Contractor shall furnish all tools, equipment, materials, and supplies and shall perform all labor required to complete the work as indicated on the Drawings and specified herein.
- B. This section covers the work necessary for the concrete curing requirements.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 031100 Concrete Formwork.
- B. Section 033000 Cast-In-Place Concrete.

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. Comply with the reference standards and Standard Specifications of the GENERAL REQUIREMENTS.
- B. Comply with the current provisions of the following Codes and Standards, as applicable.

1. Federal Specifications:

UU-B-790A (Int.Amd. 1) Building Paper, Vegetable Fiber (Kraft, Waterproofed, Waterproofed, water Repellant and Fire Resistant)

2. Commercial Standards:

ACI 308 Standard Practice for Curing Concrete

ASTM C 156 Test Method for Water Retention by Concrete Curing Materials

ASTM C 171 Specifications for Sheet Materials for Concrete Curing

ASTM C 309 Specifications for Liquid Membrane-Forming Compounds for Curing Concrete

3. Government Standards:

CSS Caltrans Standard Specifications

1.4 CONTRACTOR SUBMITTALS

- A. Submittals shall be made in accordance with the GENERAL REQUIREMENTS.

1.5 QUALITY ASSURANCE

- A. Quality Control Data:

1. Curing Compound: Manufacturer's Certification of Compliance, to include statement that product meets ASTM C 309, additional permeability requirement, and coverage.
2. Retardant For Exposed Aggregate Finish on Formed Surface: Manufacturer's Certification of Compliance including statement that product is suitable for and will meet job requirements.
3. Curing method, procedures and method of application to be used shall be in compliance with the requirements as specified herein.

PART 2 -- PRODUCTS

2.1 CURING MATERIALS

- A. Materials for curing concrete as specified herein shall conform to the Standard Specifications and the following requirements:

1. Polyethylene sheet for use as concrete curing blanket shall be white and conform to ASTM C 171. The loss of moisture when determined in accordance with the requirements of ASTM C 156 shall not exceed 0.055 grams per square centimeter of surface.
2. Polyethylene-coated waterproof paper sheeting for use as concrete curing blanket shall consist of white polyethylene sheeting free of visible defects, uniform in appearance, having a nominal thickness of 2 mils and permanently bonded to waterproof paper conforming to the requirements of Federal Specification UU-B-790A (Int. Amd. 1). The loss of moisture, when determined in accordance with the requirements of ASTM C 156, shall not exceed 0.055 gram per square centimeter of surface.
3. Polyethylene-coated burlap for use as concrete curing blanket shall conform to ASTM C 171. The loss of moisture, when determined in accordance with the requirements of ASTM C 156, shall not exceed 0.055 grams per square centimeter of surface.
4. Curing mats for use in Curing Method 2 as specified herein, shall be heavy shag rugs or carpets or cotton mats quilted at 4-inches on center. Curing mats shall weigh a minimum of 12 ounces per square yard when dry.
5. Evaporation retardant shall be a material such as Confilm as manufactured by Masterbuilders, Cleveland, OH; or an approved equal.

- B. Curing Compound:

1. Curing compound shall consist of a liquid which, when applied to fresh concrete by means of a spray gun, will form an impervious membrane over the exposed surfaces of the concrete.

2. The membrane may be either asphaltic or paraffin derivatives to which other waterproofing materials may have been added. Concrete curing compounds shall be designated by type as follows:

Type 1 – Clear or translucent without dye

Type 1-D - Clear or translucent with red fugitive dye

Type 2 - White pigmented

Type 3 - Light gray pigmented

Type 4 - Black pigmented

3. Provide curing compound meeting requirements of ASTM C 309, with additional requirement that permeability not exceed 0.039 gm/square cm/72 hours, when tested in accordance with ASTM C 156 standards.
4. Provide evaporation retardant where required to prevent rapid evaporation of water from fresh exposed concrete.
5. When pigmented curing compounds are used, at the time of use, the compound shall be thoroughly mixed, with the pigment uniformly dispensed throughout the mixture.
6. Unless otherwise specified, Type 1-D curing compound shall be used, except that Type 2 shall be used for the top surface of bridge decks.
7. All curing compounds shall be furnished by the CONTRACTOR and shall be delivered ready-mixed in sealed original containers bearing the manufacturer's name and product identification.

2.2 FLOOR HARDENER (SURFACE-APPLIED)

- A. Floor hardener shall be a colorless, aqueous solution of zinc and/or magnesium fluosilicate.
- B. Each gallon of fluosilicate solution shall contain minimum of 2 pounds of crystals.
- C. All hardeners shall be furnished by the CONTRACTOR and shall be delivered ready mixed in sealed original containers bearing the manufacturer's name and product identification.

PART 3 -- EXECUTION

3.1 CURING OF CONCRETE

- A. As soon after the completion of the specified finishing operations as the condition of the concrete will permit without danger of consequent damage thereto, all exposed surface shall either be sprinkled with water, covered with plastic sheet, or covered with earth, sand or burlap, or when not required to be painted, sprayed with Type 1 curing compound conforming with Article 2.1B, Curing Compound of this section.
- B. Concrete that is water cured must be kept continuously wet for at least 10 days after being placed; preferably being covered, if possible, with at least two layers of not lighter than 7-ounce burlap. Handrail, base rail, railing posts, tops of walls, and similar parts of the structures, if water cured,

must be covered with burlap as prescribed above, immediately following the finishing treatment specified therefore, and such covering shall not be removed in less than 4 days. Roadway areas, floors, slabs, curbs, walks, and the like, that are water cured may be covered with sand to a depth of at least 2 inches in lieu of the burlap as prescribed above, as soon as the condition of the concrete will permit, and such covering shall remain wet and in place for at least 10 days, unless otherwise directed by the Engineer or prescribed by the Specifications.

- C. When an impervious membrane (curing compound) is used, it shall be applied under pressure through a spray nozzle in such manner and quantity as to entirely cover and seal all exposed surfaces of the concrete with uniform film. The membrane shall not be applied to any surface until all of the finishing operations have been completed; such surfaces being kept damp, until the membrane is applied. All surfaces on which a bond is required, such as construction joint, shear planes, reinforcing steel, and the like, shall be adequately covered and protected before starting the application of the curing compound in order to prevent any of the compound from being deposited thereon; and any such surface with which the compound may have come in contact shall immediately thereafter be cleaned. Care shall be exercised to prevent any damage to the membrane seal during the curing period. Should the seal be damaged before the expiration of 10 days after the placing of the concrete, additional impervious membrane shall be immediately applied over the damaged area.
- D. Should any forms be removed sooner than 10 days after the placing of the concrete, the surface so exposed shall either be immediately sprayed with a coating of the curing compound, or kept continuously wet by the use of burlap or other suitable means until such concrete has cured for at least 10 days.
- E. When tops of walls are cured by the curing compound method, the side forms, except for metal forms, must be kept continuously wet for the 10 days following the placing of the concrete.
- F. If there is any likelihood of the fresh concrete checking or cracking prior to the commencement of the curing operations (due to weather conditions, materials used, or for any other reason), it shall be kept damp, but not wet, by means of an indirect fine spray of water until it is not likely that checking or cracking will occur, or until the curing operations are started in the area affected.

3.2 CURING METHODS

A. Walls

- 1. General: Where walls are to receive coatings, painting, cementitious material, or other similar finishes, do not use curing compounds. Use only water curing procedures.
- 2. Method 1: Leave concrete forms in place and keep sufficiently damp at all times to prevent opening of joints and drying of concrete.
- 3. Method 2: Apply specified curing compound, where allowed, immediately after removal of forms.
- 4. Method 3: Continuously sprinkle exposed surfaces.

B. Slabs, Curbs, and Roadway Areas

- 1. Method 1: Protect surface by ponding.
- 2. Method 2: Cover with two layers of burlap or cotton mats and keep continuously wet.

3. Method 3: Cover with 2-inch layer of wet sand, earth, or sawdust, and keep continuously wet.
4. Method 4: Continuously sprinkle exposed surface.
5. Other agreed upon method that will provide moisture to be present and uniform at all times on entire surface of slab.

C. The ENGINEER will determine the permissible rate of coverage of a curing compound.

3.3 EVAPORATION RETARDANT APPLICATION PROTECTION

- A. Spray onto surface of fresh concrete immediately after screeding to react with surface moisture.
- B. Reapply after smoothing surface with a bull float to ensure continuous, compacted monomolecular layer until final finishing is completed.
- C. After finishing, apply water curing as specified.

3.4 CURING AND PROTECTION IN COLD WEATHER

- A. Concrete shall not be placed during cold weather where conditions would require procedures as specified in ACI 306.
- B. The Engineer, at his option, may allow cold weather placement of concrete if an extended period of cold weather is anticipated.

3.5 CLEAR HARDENER APPLICATION (SURFACE APPLIED)

- A. Before application, thoroughly cure floors to receive hardener for minimum 28 days, keep clean, unpainted, free from membrane curing compounds, and dry with all work above them completed.
- B. Do not use curing compounds where floor hardeners are specified. Use water curing only.
- C. Apply hardener evenly, using three coats, allowing 24 hours between coats as follows:
 1. First Coat: 1/3 strength, second coat 1/2 strength, and third coat 2/3 strength, mix with water.
 2. Apply each coat so as to remain wet on surface for 15 minutes.
 3. Apply approved hardeners in accordance with manufacturer's instructions.
 4. After final coat is completed and dry, remove surplus hardener from surface by scrubbing and mopping with water.

(END OF SECTION)

**SECTION 03 60 00
GROUT**

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall furnish all materials for grout in accordance with the provisions of this Section and shall form, mix, place, cure, repair, finish, and do all other work as required to produce finished grout, in accordance with the requirements of the Contract Documents.
- B. All grouts shall be City of Los Angeles approved product. The CONTRACTOR shall submit a copy of the Los Angeles Research Report with submittals.
- C. The following types of grout shall be covered in this Section:
 - 1. Non-Shrink Grout: This type of grout is to be used wherever grout is shown in the Contract Documents, unless another type is specifically referenced.
 - 2. Cement Grout
 - 3. Epoxy Grout

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 031500 Concrete Accessories.
- B. Section 033000 Cast-in-Place Concrete.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Comply with the reference standards of the GENERAL REQUIREMENTS.
- B. Comply with the current provisions of the following Codes and Standards, as applicable.
 - 1. Commercial Standards:

CRD-C 621	Corps of Engineers Specification for Non-shrink Grout
ASTM C 109	Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in or 50-mm Cube Specimens)
ASTM C 531	Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical- Resistant Mortars, Grouts, and Monolithic Surfacing
ASTM C 579	Test Methods for Compressive Strength of Chemical-Resistant Mortars and Monolithic Surfacing
ASTM C 827	Test Method for Early Volume Change of Cementitious Mixtures
ASTM C 1107	Standard Specification for Packaged dry hydraulic cement grout (non-shrink)

2. Other Government Standards:

CSS

Caltrans Standard Specifications.

1.4 CONTRACTOR SUBMITTALS

A. Submittals shall be made in accordance with GENERAL REQUIREMENTS.

B. The following submittals and specific information shall be provided.

1. The CONTRACTOR shall submit certified test results verifying the compressive strength, shrinkage, and expansion requirements specified herein; and manufacturer's literature containing instructions and recommendations on the mixing, handling, placement and appropriate uses for each type of non-shrink and epoxy grout used in the work.

1.5 QUALITY ASSURANCE

A. Field Tests:

1. Compression test specimens will be taken during construction from the first placement of each type of grout, and at intervals thereafter as selected by the ENGINEER to insure continued compliance with these specifications. The specimens will be made by the INSPECTOR
2. Compression tests and fabrication of specimens for cement grout and non-shrink grout will be performed as specified in ASTM C 109 at intervals during construction as selected by the ENGINEER. A set of three specimens will be made for testing at 7 days, 28 days, and each additional time period as appropriate.
3. Compression tests and fabrication of specimens for epoxy grout will be performed as specified in ASTM C 579, Method B, at intervals during construction as selected by the ENGINEER. A set of three specimens will be made for testing at 7 days, and each earlier time period as appropriate.
4. All grout, already placed, which fails to meet the requirements of these specifications, is subject to removal and replacement at the cost of the CONTRACTOR.
5. The cost of all laboratory tests on grout will be borne by the CITY, but the CONTRACTOR shall assist the INSPECTOR in obtaining specimens for testing. However, the CONTRACTOR shall be charged for the cost of any additional tests and investigation on work performed which does not meet the specifications. The CONTRACTOR shall supply all materials necessary for fabricating and containing the test specimens.

B. Construction Tolerances: Construction tolerances shall be as specified in the Section 033000, "Cast-in-Place Concrete," except as modified herein and elsewhere in the Contract Documents.

C. The grout used in post-tensioned prestressing systems of bridge structures, shall comply with CSS Section 50-1.09.

PART 2 -- PRODUCTS

2.1 CEMENT GROUT

- A. Cement Grout: Cement grout shall be composed of one part cement, three parts sand, and the minimum amount of water necessary for the mixture to flow under its own weight. Where needed to match the color of adjacent concrete, white Portland cement shall be blended with regular cement as needed. In addition, where needed, an approved admixture may be added to increase workability at a low water/cement ratio. The minimum compressive strength at 28 days shall be 4000 psi.
- B. Cement grout materials shall be as specified in Section 033000, "Cast-in-Place Concrete".

2.2 PREPACKAGED GROUTS

A. Non-Shrink Grout:

- 1. Non-shrink grout shall be a prepackaged, inorganic, non-gas-liberating when tested in accordance with C1107, non-metallic, cement-based grout requiring only the addition of water. Manufacturer's instructions shall be printed on each bag or other container in which the materials are packaged. The specific formulation for each class of non-shrink grout specified herein shall be that recommended by the manufacturer for the particular application.
- 2. Class A non-shrink grouts shall have a minimum 28 day compressive strength of 5,000 psi; shall have no shrinkage (0.0 percent) and a maximum 4.0 percent expansion in the plastic state when tested in accordance with ASTM C 827; and shall have no shrinkage (0.0 percent) and a maximum of 0.2 percent expansion in the hardened state when tested in accordance with CRD C 621.
- 3. Class B non-shrink grouts shall have a minimum 28 day compressive strength of 5,000 psi and shall meet the requirements of CRD C 621.
- 4. Application:
 - a. Class A non-shrink grout shall be used for the repair of all holes and defects in concrete members which are water bearing or in contact with soil or other fill material, grouting under all equipment base plates, and at all locations where grout is specified in the contract documents; except, for those applications for Class B non-shrink grout and epoxy grout specified herein. Class A non-shrink grout may be used in place of Class B non-shrink grout for all applications.
 - b. Class B non-shrink grout shall be used for the repair of all holes and defects in concrete members which are not water-bearing and not in contact with soil or other fill material, grouting under all base plates for structural steel members, and grouting railing posts in place.

B. Epoxy Grout:

- 1. Epoxy grout shall be a pourable, non-shrink, 100 percent solids system. The epoxy grout system shall have three components: resin, hardener, and specially blended aggregate, all premeasured and prepackaged. The resin component shall not contain any non-reactive diluents. Resins containing butyl glycidyl ether (BGE) or other highly volatile and hazardous reactive diluents are not acceptable. Variation of component ratios is not permitted unless specifically recommended by the manufacturer. Manufacturer's instructions shall be printed on each container in which the materials are packaged.
- 2. The chemical formulation of the epoxy grout shall be that recommended by the manufacturer for the particular application.

3. The mixed epoxy grout system shall have a minimum working life of 45 minutes at 75 degrees F.
4. The epoxy grout shall develop a compressive strength of 5,000 psi in 24 hours and 10,000 psi in seven days when tested in accordance with ASTM C 579, Method B. There shall be no shrinkage (0.0 percent) and a maximum 4.0 percent expansion when tested in accordance with ASTM C 827.
5. The epoxy grout shall exhibit a minimum effective bearing area of 95 percent. This shall be determined by a test consisting of filling a 2-inch diameter by 4-inch high metal cylinder mold covered with a glass plate coated with a release agent. A weight shall be placed on the glass plate. At 24 hours after casting, the weight and plate shall be removed and the area in plan of all voids measured. The surface of the grout shall be probed with a sharp instrument to locate all voids.
6. The peak exotherm of a 2-inch diameter by 4-inch high cylinder shall not exceed 95 degrees F when tested with 75 degree F material at laboratory temperature. The epoxy grout shall exhibit a maximum thermal coefficient of 30×10^{-6} inches/inch/degree F when tested according to ASTM C 531 or ASTM D 696.
7. The CONTRACTOR shall demonstrate the ability of the epoxy grout system to completely fill the size and depth of the intended hole, blockout, or area before the system is submitted for consideration by the ENGINEER.
8. Application: Epoxy grout shall be used to embed all anchor bolts and reinforcing steel required to be set in grout, and for all other applications required in the Contract Documents.

2.3 CURING MATERIALS

Curing materials shall be as specified in Section 033000, "Cast-in-Place Concrete" for cement grout and as recommended by the manufacturer of prepackaged grouts.

2.4 CONSISTENCY

The consistency of grouts shall be that necessary to completely fill the space to be grouted for the particular application. Dry pack consistency is such that the grout is plastic and moldable but will not flow. Where "dry pack" is called for in the Contract Documents, it shall mean a grout of that consistency; the type of grout to be used shall be as specified herein for the particular application.

2.5 MEASUREMENT OF INGREDIENTS

- A. Measurements for cement grout shall be made accurately by volume using containers. Shovel measurement shall not be allowed.
- B. Prepackaged grouts shall have ingredients measured by means recommended by the manufacturer.
- C. Measurement of ingredients for grout used in prestressing systems of bridge structures shall conform to Section 50-1.09 of the CSS.

PART 3 -- EXECUTION

3.1 GENERAL

- A. All surface preparation, curing, and protection of cement grout shall be as specified in Section 033000, "Cast-in-Place Concrete". The finish of the grout surface shall match that of the adjacent concrete.
- B. The manufacturer of Class A non-shrink grout and epoxy grout shall provide on-site technical assistance upon request. All costs related to this requirement shall be borne by the CONTRACTOR.
- C. All mixing, surface preparation, handling, placing, consolidation, and other means of execution for prepackaged grouts shall be done according to the instructions and recommendations of the manufacturer.
- D. Application of grout used in prestressing systems of bridge structures shall conform to Section 50-1.09 of the CSS.

3.2 CONSOLIDATION

Grout shall be placed in such a manner, for the consistency necessary for each application, so as to assure that the space to be grouted is completely filled.

(END OF SECTION)

STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural steel.
2. Grout.

1.2 DEFINITIONS

- A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Show fabrication of structural-steel components.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Fabricator
- B. Welding certificates.
- C. reports for structural steel, including chemical and physical properties.
- D. Source quality-control reports.
- E. Field quality-control reports.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD, or is accredited by the IAS Fabricator Inspection Program for Structural Steel (AC 172).
- B. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.
- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- D. Comply with applicable provisions of the following specifications and documents:
1. AISC 303.

2. AISC 360.
3. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

- A. W-Shapes: ASTM A 992 or ASTM A 572, Grade 50.
- B. Channels, Angles, S-Shapes: ASTM A 36
- C. Plate and Bar: ASTM A 36
- D. Cold-Formed Hollow Structural Sections: ASTM A 500/A 500M, Grade B structural tubing.
- E. Steel Pipe: ASTM A 53/A 53M, Type E or Type S, Grade B.
- F. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

- A. Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade DH heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers.
 1. Finish: Hot-dip zinc coating
- B. Unheaded Anchor Rods: ASTM F 1554, Grade 36.
 1. Configuration: Straight.
 2. Finish: Hot-dip zinc coating, ASTM A 153, Class C.
- C. Headed Anchor Rods: ASTM F 1554, Grade 36, straight.
 1. Finish: Hot-dip zinc coating, ASTM A 153, Class C.
- D. Threaded Rods: ASTM A 193/A 193M, Grade B7.
 1. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C

2.3 GROUT

- A. Metallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.
- B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.4 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," and to AISC 360.
- B. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

2.5 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened
- B. Weld Connections: Comply with AWS D1.1 and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

2.6 SHOP PRIMING

- A. Shop prime steel surfaces except the following:
 - 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 - 2. Surfaces to be field welded.
 - 3. Surfaces of high-strength bolted, slip-critical connections.
 - 4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
 - 5. Galvanized surfaces.
 - 6. Surfaces enclosed in interior construction.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
 - 1. SSPC-SP 2, "Hand Tool Cleaning."
 - 2. SSPC-SP 3, "Power Tool Cleaning."
 - 3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

2.7 SOURCE QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform shop tests and inspections.
 - 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- B. Bolted Connections: Inspect shop-bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

- C. Welded Connections: Visually inspect shop-welded connections according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - 1. Liquid Penetrant Inspection: ASTM E 165.
 - 2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
 - 3. Ultrasonic Inspection: ASTM E 164;
 - 4. Radiographic Inspection: ASTM E 94.
- D. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
- B. Baseplates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Weld plate washers to top of baseplate.
 - 3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 - 4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- C. Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

3.3 FIELD CONNECTIONS

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened
- B. Weld Connections: Comply with AWS D1.1 and AWS D1.8 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 - 1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
 - 2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.

3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," for mill material.

3.4 FIELD QUALITY CONTROL

- A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:
 1. Verify structural-steel materials and inspect steel frame joint details.
 2. Verify weld materials and inspect welds.
 3. Verify connection materials and inspect high-strength bolted connections.
- B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- C. Bolted Connections: Inspect bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- D. Welded Connections: Visually inspect field welds according to AWS D1.1/D1.1M.
 1. In addition to visual inspection, test and inspect field welds according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
 - c. Ultrasonic Inspection: ASTM E 164.
 - d. Radiographic Inspection: ASTM E 94.

END OF SECTION 051200

SECTION 055000

METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Miscellaneous steel framing and supports.
2. Miscellaneous steel trim.
3. Loose bearing and leveling plates.
4. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete.
5. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

1. Grout.

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- ###### A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

2.2 METALS

- ###### A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- ###### B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- ###### C. Stainless-Steel Bars and Shapes: ASTM A 276, Type 316L.
- ###### D. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.
- ###### E. Rolled-Stainless-Steel Floor Plate: ASTM A 793.

- F. Steel Tubing: ASTM A 500/A 500M, cold-formed steel tubing.
- G. Steel Pipe: ASTM A 53/A 53M, Standard Weight (Schedule 40) unless otherwise indicated.
- H. Zinc-Coated Steel Wire Rope: ASTM A 741.
- I. Aluminum Extrusions: ASTM B 221 Alloy 6063-T6.
- J. Aluminum-Alloy Rolled Tread Plate: ASTM B 632/B 632M, Alloy 6061-T6.
- K. Aluminum Castings: ASTM B 26/B 26M, Alloy 443.0-F.

2.3 FASTENERS

- A. General: Unless otherwise indicated, provide Type 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
 - 1. Provide stainless-steel fasteners for fastening aluminum.
 - 2. Provide stainless-steel fasteners for fastening stainless steel.
 - 3. Provide stainless-steel fasteners for fastening nickel silver.
 - 4. Provide bronze fasteners for fastening bronze.
- B. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.
- C. Post-Installed Anchors: Torque-controlled expansion anchors or [chemical anchors].
 - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.
 - 2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

2.4 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.
- C. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.5 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Use connections that maintain structural value of joined pieces.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges. Remove sharp or rough areas on exposed surfaces.

- C. Weld corners and seams continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended.
- D. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Locate joints where least conspicuous.
- E. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- F. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors not less than 8 inches from ends and corners of units and 24 inches o.c.

2.6 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
- C. Fabricate steel girders for wood frame construction from continuous steel shapes of sizes indicated.
 - 1. Where wood nailers are attached to girders with bolts or lag screws, drill or punch holes at 24 inches o.c.
- D. Fabricate steel pipe columns for supporting wood frame construction from steel pipe with steel baseplates and top plates as indicated. Drill or punch baseplates and top plates for anchor and connection bolts and weld to pipe with fillet welds all around. Make welds the same size as pipe wall thickness unless otherwise indicated.

2.7 LOOSE BEARING AND LEVELING PLATES

- A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

2.8 STEEL WELD PLATES AND ANGLES

- A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.9 FINISHES, GENERAL

- A. Finish metal fabrications after assembly.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 INSTALLING BEARING AND LEVELING PLATES

- A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.
- B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with nonshrink grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.3 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION 055000

SECTION 10 14 53

TRAFFIC SIGNS

PART 1 GENERAL

1.1 Scope

This section covers the installation of traffic control signs.

1.2 Reference Material

A. Codes and Standards

1. US Department of Transportation, Federal Highway Administration, "Manual on Uniform Traffic Control Devices" (MUTCD).
2. California Department of Transportation, "2014 California Manual on Uniform Traffic Control Devices" (CA MUTCD).

B. American Society for Testing and Materials (ASTM)

1. C31 Making and Curing Concrete Test Specimens in the Field.
2. C94 Standard Specification for Ready-Mixed Concrete.
3. C143 Standard Test Method for Slump of Hydraulic-Cement Concrete.
4. C173 Air Content of Freshly Mixed Concrete by the Volumetric Method.

1.3 Submittals

Provide product information, and materials certification for all products specified herein.

PART 2 PRODUCTS

2.1 Signs

Traffic signs shall conform to the following and MUTCD classification as shown on the plans.

2.2 Posts

Square galvanized steel posts with galvanized sign-mounting hardware for each sign. Post shall have a weight of 2-pounds per linear foot.

2.3 Concrete

- A. Mix concrete and deliver in accordance with ASTM C94.
- B. Design mix to produce normal weight concrete consisting of Portland cement, aggregate, water-reducing admixture, air-entrained and water. Deliver in accordance with ASTM C31, ASTM C143 and ASTM C173 to comply with the following parameters:

1. Compressive Strength: 3,500psi, minimum at 28 days, unless otherwise indicated on plans.
2. Slump Range: 1 to 3-inches at time of placement.
3. Air Entrainment: 5 to 8 percent.

PART 3 EXECUTION

3.1 Preparation

- A. The CONTRACTOR shall field verify underground utilities prior to sign installation. Primary utilities of concern of shallow depths are lawn sprinkler systems, electric, telephone, fiber optic, cable and gas.
- B. Cost related to repair of damaged surface and subsurface facilities shall be paid for by the CONTRACTOR at no additional expense to the OWNER.

3.2 Installation

- A. Installation of posts shall be in 18-inch diameter by 24-inch deep concrete foundations. Posts shall be set vertical and plumb with bottom of sign.
- B. Signs shall be secured to posts with galvanized hardware at a height shown on the plans.

3.3 Field Quality Control

- A. During and after sign installation, the CONTRACTOR shall visually inspect signs to assure satisfactory installation. Installation shall be in accordance with standards and in locations shown in plans.

END OF SECTION

SECTION 31 00 00

EARTHWORK

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO T 180 (2010) Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in) Drop

AASHTO T 224 (2010) Correction for Coarse Particles in the Soil Compaction Test

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)/TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA)

ANSI/TIA/EIA-758 Customer-Owned Outside Plant Telecommunications Cabling Standard

ANSI/TIA/EIA-758-1 Addendum No. 1 to TIA/EIA 758 Customer-Owned Outside Plant Telecommunications Cabling Standard

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C600 (2010) Installation of Ductile-Iron Water Mains and Their Appurtenances

ASTM INTERNATIONAL (ASTM)

ASTM C 136 (2006) Sieve Analysis of Fine and Coarse Aggregates

ASTM C 33 (2011) Concrete Aggregates

ASTM D 1140 (2000; R 2006) Amount of Material in Soils Finer than the No. 200 (75-micrometer) Sieve

ASTM D 1557 (2009) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))

ASTM D 1883 (2007e2) CBR (California Bearing Ratio) of Laboratory-Compacted Soils

ASTM D 2487 (2010) Soils for Engineering Purposes (Unified Soil Classification System)

ASTM D 422 (1963; R 2007) Particle-Size Analysis of Soils

ASTM D 4318 (2010) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

ASTM D 698

(2007e1) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cu. ft. (600 kN-m/cu. m.))

ASTM D 6938

(2010) Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 600/4-79/020

(1983) Methods for Chemical Analysis of Water and Wastes

EPA SW-846.3-3

(1999, Third Edition, Update III-A) Test Methods for Evaluating Solid Waste: Physical/Chemical Methods

TECHNICAL GUIDE FOR INSTALLATION INFORMATION INFRASTRUCTURE ARCHITECTURE (I3A) by FREDERICK M, SKROBAN II, dated March 2006

1.2 DEFINITIONS

1.2.1 Satisfactory Materials

Satisfactory materials comprise any materials classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, SW, SP, SM, SW-SM, SP-SM, ML, MH. Satisfactory materials for grading comprise stones less than 8 inches, except for fill material for pavements which comprise stones less than 3 inches in any dimension. ML and MH shall have a CBR expansion of 2% or less when tested at 95 percent ASTM D 1557 maximum density as determined in accordance with ASTM D 1883.

1.2.2 Unsatisfactory Materials

Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Unsatisfactory materials also include man-made fills; trash; refuse; backfills from previous construction; expansive soils, and material classified as satisfactory which contains root and other organic matter or frozen material. Notify the Contracting Officer when encountering any contaminated materials.

1.2.3 Cohesionless and Cohesive Materials

Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic. Perform testing, required for classifying materials, in accordance with ASTM D 4318, ASTM C 136, ASTM D 422, and ASTM D 1140.

1.2.4 Degree of Compaction

Degree of compaction required, except as noted in the second sentence, is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557 abbreviated as a percent of laboratory maximum density. Since ASTM D 1557 applies only to soils that have 30 percent or less by weight of their particles retained on the 3/4 inch sieve, express the degree of compaction for material having more than 30 percent by weight of their particles retained on the 3/4 inch sieve as a percentage of the maximum density in accordance with AASHTO T 180 and corrected with AASHTO T 224. To maintain the same percentage of coarse material, use the "remove and replace" procedure as described in NOTE 8 of Paragraph 7.2 in AASHTO T 180.

1.2.5 Topsoil

Material suitable for topsoils obtained from offsite areas and excavations is defined as: Natural, friable soil representative of productive, well-drained soils in the area, free of subsoil, stumps, rocks larger than one inch diameter, brush, weeds, toxic substances, and other material detrimental to plant growth. Amend topsoil pH range to obtain a pH of 5.5 to 7.

1.2.6 Hard/Unyielding Materials

Hard/Unyielding materials comprise weathered rock, dense consolidated deposits, or conglomerate materials which are not included in the definition of "rock" with stones greater than 3 inch in any dimension or as defined by the pipe manufacturer, whichever is smaller. These materials usually require the use of heavy excavation equipment, ripper teeth, or jack hammers for removal.

1.2.7 Rock

Solid homogeneous interlocking crystalline material with firmly cemented, laminated, or foliated masses or conglomerate deposits, neither of which can be removed without systematic drilling and fragmentation by non-explosive methods, drilling and the use of expansion jacks or feather wedges, or the use of backhoe-mounted pneumatic hole punchers or rock breakers; also large boulders, buried masonry, or concrete other than pavement exceeding 1/2 cubic yard in volume. Removal of hard material will not be considered rock excavation because of intermittent hoe ramming or other rock excavation methods that are performed merely to increase production.

1.2.8 Unstable Material

Unstable material is too wet to properly support the utility pipe, conduit, or appurtenant structure.

1.2.9 Select Granular Material

1.2.9.1 General Requirements

Select granular material consisting of materials classified as GW, GP, SW, or SP, by ASTM D 2487 where indicated.

1.2.9.2 California Bearing Ratio Values

Bearing Ratio: At 0.1 inch penetration, provide a bearing ratio of 25 percent at 95 percent ASTM D 1557 maximum density as determined in accordance with ASTM D 1883. Provide 0 percent maximum expansion.

1.2.10 Initial Backfill Material

Initial backfill consists of select granular material free from rocks 3 inches or larger in any dimension or free from rocks of such size as recommended by the pipe manufacturer, whichever is smaller. When the pipe is coated or wrapped for corrosion protection, free the initial backfill material of stones larger than 3 inches in any dimension or as recommended by the pipe manufacturer, whichever is smaller.

1.2.11 Expansive Soils

Expansive soils are defined as soils that have a CBR expansion value greater than 2% when tested at 95% of maximum dry density (ASTM D 1557).

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following::

Preconstruction Submittals

Shoring

Submit 15 days prior to starting work.

Product Data

Utilization of Excavated Materials

Opening of any Excavation or Borrow Pit

Shoulder Construction

Procedure and location for disposal of unused satisfactory material. Proposed source of borrow material. Notification of encountering rock in the project. Advance notice on the opening of excavation or borrow areas. Advance notice on shoulder construction for rigid pavements.

Certificates

Testing

Qualifications of the Corps validated commercial testing laboratory or the Contractor's validated testing facilities.

1.4 SUBSURFACE DATA

Subsurface soil boring logs are in Geotechnical Report dated 09 January 2018 by R.T. Frankian and Associates. The subsoil investigation report shall be available with the COE Contracting. This data represents the best subsurface information available; however, variations may exist in the subsurface between boring locations.

PART 2 PRODUCTS

2.1 REQUIREMENTS FOR OFFSITE SOILS

Test offsite soils brought in for use as backfill for Total Petroleum Hydrocarbons (TPH), Benzene, Toluene, Ethyl Benzene, and Xylene (BTEX) and full Toxicity Characteristic Leaching Procedure (TCLP) including ignitability, corrosivity and reactivity. Backfill shall contain a maximum of 100 parts per million (ppm) of total petroleum hydrocarbons (TPH) and a maximum of 10 ppm of the sum of Benzene, Toluene, Ethyl Benzene, and Xylene (BTEX) and shall pass the TCPL test. Determine TPH concentrations by using EPA 600/4-79/020 Method 418.1. Determine BTEX concentrations by using EPA SW-846.3-3 Method 5030/8020. Perform TCLP in accordance with EPA SW-846.3-3 Method 1311. Provide Borrow Site Testing for TPH, BTEX and TCLP from a composite sample of material from the borrow site, with at least one test from each borrow site. Do not bring material onsite until tests have been approved by the Contracting Officer.

2.2 SOIL MATERIALS

- A. Suitable Excavated Material: Suitable materials from excavations for use in fill and embankments shall be free from shale, sod, large clods or hard lumps of earth, roots, trash or other debris; that has a liquid limit of less than 30 and a plasticity index of less than 9; and is readily compatible to specified density. No rock, cobbles or broken concrete exceeding 4 inches in maximum dimension shall be placed in compacted fill without the specified approval of the City Engineer or the Consultant. No rock, cobbles or broken concrete exceeding 1 inch in maximum dimension shall be placed in compacted

fill of the utility trench.

- B. Fill Material: Furnish imported earth material as necessary; if specified in the contract requirements or if the amount of suitable earth materials obtained from the job-site excavations is not sufficient to properly construct the required fill, subject to the approval of the City Engineer or the Soil Engineer prior to use.

1. Obtain imported fill material from a source approved by the City Engineer or the Consultant prior to importing to the job-site.
2. Imported fill material shall be free of foreign materials, vegetable growths, sod, rocks, expansive soils and all debris.
3. Lime for Treatment of Imported Fill Material: As here after specified in accordance with Section 301-5 - LIME-TREATED SOIL of SSPWC.
4. Where fill material exhibits a wide variation in consistency, the City Engineer or the Consultant may require blending to stabilize and upgrade the material as directed by the City Engineer or the Consultant.
5. In landscape (planting area), fill shall not be saline or contain anything that would prevent normal plant growth: See Landscaping Plans for verification of required or approved fill material.
6. Fill material is subject to the approval of the Soil Engineer or City Engineer.

- C. Base Material: "Untreated-Crushed Miscellaneous Base", 3/4-inch maximum size aggregate, as specified in Section 200-2 - UNTREATED BASE MATERIAL of SSPWC.

- D. Pipe Bedding and Trench Backfill Material:

1. Use clean earth materials previously removed from job-site excavations as above specified free from clay, rock or gravel larger than 1-inches for utility trenches, subject to the Soil Engineer's approval prior to use.
2. For storm drain pipe, use approved washed sand with a sand equivalent value of 30 or more and extend 6 inches below and 12 inches above said pipe, the balance of backfill to be approved clean earth materials. For storm drain pipe section located beneath the sidewalk paving and connected to concrete curb outlet, sand bedding and backfill are not applicable.
3. For underground infiltration galleries, use approved 3/4" angular stone and place a minimum 6 inches below infiltration galleries. Material should meet requirements set by the manufacturer. Material should be raked free of voids, lumps, debris, and sharp objects.
4. For water pipe or pipe rise, use approved washed sand with a sand equivalent value of 30 or more and extend 6 inches below and 12 inches above said pipe, the balance of backfill to be approved clean earth materials.
5. For electrical conduits, use approved washed sand with a sand equivalent value of 30 or more and extend 6 inches below and 12 inches above said conduits, the balance of backfill to be approved clean earth materials. For utility service connection, provide bedding and backfill material in accordance with utility company's instructions.

6. For the landscape irrigation piping, use approved washed sand with a sand equivalent value of 30 or more and extend 6 inches below and 12 inches above said pipe, the balance of backfill to be an approved clean earth materials.
 7. Conforming to applicable Sections of the Project Manual for the pipe bedding widths and depths.
- E. Soil Cement: Use the soil-cement to form a dense, uniform mass conforming to the lines, grades and cross sections shown on the Contract Drawings. The soil cement shall be mixed, placed and compacted at least 95% of the relative compaction, in accordance with Section 301-3 of SSPWC and the instructions of the Soil Engineer.
 - F. Structural Backfill: Structural backfill shall be used for backfilling around the hydrodynamic separators. The structural backfill shall have a sand equivalent of not less than 20 in accordance with Section 300-3.5 - STRUCTURAL BACKFILL and Section 300-4.5 - PLACING MATERIALS FOR FILLS of SSPWC, and placed and compacted to 90% of relative compaction.
 - G. Slurry Backfill: Slurry backfill shall be 60 E 0.7 (Class 100-E-100) and placed in accordance with Section 306-1.3.1 - BACKFILL AND DENSIFICATIONS of SSPWC.
 - H. Drainage Fill Material: Clean crushed rock or gravel, during and free from slaking or decomposition under the action of alternate wetting or drying. The material shall be uniformly graded and shall meet the following gradation requirement:

Sieve Size	% Passing Sieve
1 inch	100
3/4 inch	90 - 100
3/8 inch	40 - 100
No. 4	25 - 40
No. 8	18 - 33
No. 30	5 - 15
No. 50	0 - 7
No. 200	0 - 3

2.3 BIORETENTION SOIL MIXTURE

- A. Medium percolation blend: Bioretention Soil Mixture (BSM) for unlined bioretention planters consist of loamy sand, well aged humic compost and calcined diatomaceous earth called AXIS.

1. The upper layer mix proportions consist of the following:

Item	Composition by Volume	Reference	
Loamy Sand		60%	Gail Materials
Humic Compost		30%	Gail Materials
AXIS		10%	Gail Materials

2. The lower layer mix proportions consist of the following:

Item	Composition by Volume	Reference	
Loamy Sand		90%	Gail Materials
AXIS		10%	Gail Materials

- B. Low Percolation Blend: Bioretention Soil Mixture (BSM) for lined bioretention planters consist of Class A topsoil, well aged humic compost and calcined diatomaceous earth called AXIS.

1. The upper layer mix proportions consist of the following:

Item_Composition by Volume	Reference	
Class A Topsoil	60%	Gail Materials
Humic Compost	30%	Gail Materials
AXIS	10%	Gail Materials

2. The lower layer mix proportions consist of the following

Item_Composition by Volume	Reference	
Class A Topsoil	90%	Gail Materials
AXIS	10%	Gail Materials

- C. Components:

1. Manufactured sand shall consist of 5 parts by volume washed sand to 3 parts by volume sandy loam and be classified "Loamy Sand" as per USDA Soil Classification Criteria.
2. Class A topsoil shall be per CA Greenbook Standards and must be classified "Sandy Loam" as per USDA Soil Classification Criteria.

- D. Blending: The BSM shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the bioretention area that may be harmful to plant growth or prove a hindrance to the planting or maintenance operations. Material shall be blended prior to delivery by a twin screw pug mill or equal. Bucket blending is not equal.

2.4 BURIED WARNING AND IDENTIFICATION TAPE

Provide polyethylene plastic or metallic core or metallic-faced, acid- and alkali-resistant, polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines. Provide tape on rolls, 3 inch minimum width, color coded as specified below for the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (intended service) LINE BELOW" or similar wording. Provide permanent color and printing, unaffected by moisture or soil.

Warning Tape Color Codes

Red:	Electric
Yellow:	Gas, Oil; Dangerous Materials
Orange:	Telephone and Other Communications
Blue:	Water Systems and Chilled Water
Green:	Sewer Systems

2.4.1 Warning Tape for Metallic Piping

Provide acid and alkali-resistant polyethylene plastic tape conforming to the width, color, and printing requirements specified above, with a minimum thickness of 0.003 inch and a minimum strength of 1500 psi lengthwise, and 1250 psi crosswise, with a maximum 350 percent elongation.

2.4.2 Detectable Warning Tape for Non-Metallic Piping

Provide polyethylene plastic tape conforming to the width, color, and printing requirements specified above, with a minimum thickness of 0.004 inch, and a minimum strength of 1500 psi lengthwise and 1250 psi crosswise. Manufacture tape with integral wires, foil backing, or other means of enabling detection by a metal detector when tape is buried up to 3 feet deep. Encase metallic element of the tape in a protective jacket or provide with other means of corrosion protection.

2.5 DETECTION WIRE FOR NON-METALLIC PIPING

Insulate a single strand, solid copper detection wire with a minimum of 12 AWG.

2.6 CAPILLARY WATER BARRIER

Provide capillary water barrier of clean, poorly graded crushed rock, crushed gravel, or uncrushed gravel placed beneath a building slab with or without a vapor barrier to cut off the capillary flow of pore water to the area immediately below. Conform to ASTM C 33 for fine aggregate grading with a maximum of 3 percent by weight passing ASTM D 1140, No. 200 sieve, or 1-1/2 inch and no more than 2 percent by weight passing the No. 4 size sieve or coarse aggregate Size 57, 67, or 77.

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until detrimental conditions are corrected.

3.2 WATER QUALITY PROTECTION

- A. Eroded sediments and other pollutants must be retained on site and may not be transported from the site via sheetflow, swales, area drains, natural drainage, or wind.
- B. Stockpiles of earth and other construction-related materials must be protected from being transported from the site by wind or water.
- C. Fuels, oils, solvents, and other toxic materials must be stored in accordance with their listing and are not to contaminate the soil nor the surface waters. All approved toxic storage containers are to be protected from the weather. Spills must be cleaned up immediately and disposed of in a proper manner. Spills may not be washed into the drainage system.
- D. Excess or waste concrete may not be washed into the public way or any drainage system. Provisions shall be made to retain concrete wastes on-site until they can be appropriately disposed of or recycled.
- E. Trash and construction-related solid wastes must be deposited into a covered receptacle to prevent contamination of rainwater and dispersal by wind.
- F. Sediments and other materials may not be tracked from the site by vehicle traffic. The construction entrance roadways must be stabilized so as to inhibit sediments from being deposited into the public ways. Accidental depositions must be swept up immediately and may not be washed down by rain or by any other means.
- G. Comply with requirements shown in the Storm Water Pollution Prevention Plan.

3.3 SITE PREPARATION

- A. Remove the existing soil including fill material, debris, roots and foreign materials to a depth sufficient to remove all organic material. Removal shall be done in accordance with Section 31110 – CLEARING, GRUBBING AND STRIPPING of the Project Manual.
- B. Topsoil from the strippings shall be stockpiled and may be used for the finished site grading, subject to the approval of the ENGINEER. Excess topsoil will be placed in the waste disposal areas designated by the ENGINEER.
- C. Subgrades: Scarify for recompaction to a depth of 8 inches, bring to optimum moisture content and then recompact to at least 90% maximum density (95% below pavement areas) for subgrade as per ASTM D1557 - TESTED METHOD FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING MODIFIED EFFORT (56,000 FT - LBF/FT³). Prepare subgrade in accordance with Section 301-1 - SUBGRADE PREPARATION of SSPWC.
- D. Holes and trenches existing on the job-site or resulting from Contractor's operations shall be filled with clean existing or imported earth materials (free of large clods and stone).

Unless indicated otherwise, construct fill in accordance with Section 300-4.5 - PLACING MATERIALS FOR FILLS of SSPWC in 8-inch layers and each layer compacted to 95% relative compaction and finished to elevations necessary to require cutting by fine grading. Inspection by the Soil Engineer is required prior to filling. Obtain minimum one compaction test for each layer or volume specified by Code.
- E. Grading: To elevations of existing adjoining street surfaces, private property and surfaces immediately adjacent to the job-site limits indicated on the Contract Drawings; make all grades in a straight line from any point to any other perimeter point.
- F. Dewatering:
 - 1. Remove all water, including rain water, encountered during trench and sub-structure work to an approved location by pumps, drains, and other approved methods.
 - 2. Keep excavations and site construction area free from water.
- G. Dust Control: Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the job-site.
- H. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material. Apply water in manner to prevent free water appearing on surface during or subsequent to compaction operations.
 - 1. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.
 - 2. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value.
- I. Rework: Any previously compacted or tested subgrade and fill material, which are

affected or disturbed, in the opinion of the Soil Engineer, by the inclemency of the weather such as rains, floods, earthquake or others shall be reworked, retested and re-inspected at no additional cost to the City.

- J. Approval of Subgrade: By the Soil Engineer prior to placing any fill.

3.4 GRUBBING AND GRADING

- A. Grubbing shall be performed in accordance with SSPWC Section 300-1.
- B. Rough: Leave cut and fill sufficiently high to require cutting by fine grading.
- C. Fine: To elevations required to ensure proper drainage or finished elevations indicated on drawings; finish elevations for planting areas as specified for top soil fill in Landscape Plans.
- D. Subgrade Preparation: Required for all areas, other than filled or backfill areas, over which moisture barrier material, slabs, walks or pavement will be placed; in accordance with provision specified herein and Section 301-1 - SUBGRADE PREPARATION of SSPWC.
- E. Inspection Required: Prior to placing base material, concrete or other materials.
- F. Grading for Demolition Jobs: To specified elevations or elevations of existing sidewalks, adjacent property lines or surfaces immediately adjacent to the sites. Make all grades straight-line from any point to any other perimeter point.
- G. Grading for New Asphalt Concrete Paving:
 - 1. Rough: Cut and fill to be left sufficiently high to require cutting by fine grading and preparation of the surface for placement of the required select base material to thickness noted on the Contract Drawings or matching that of adjacent existing select base materials.
 - 2. Fine: To exact elevations necessary for required new paving and paving repairs.
 - 3. Testing and Inspection Required: Prior to placing of select base and asphalt paving materials.

3.5 EXCAVATING

- A. General:
 - 1. Excavation consists of the removal and disposal of materials necessary to establish required grade elevations and certified compacted fill for new construction pursuant to Section 300-2 UNCLASSIFIED EXCAVATION of SSPWC.
 - 2. Excavated materials suitable for use as fill and/or backfill to be stockpiled where directed by the City Engineer or the Consultant.
 - 3. Non-approved and excess excavated materials to be legally removed and disposed of from the job-site.

4. Shoring, Bracing and Bulkheading of Trenches: All to be provided, installed and maintained where required to support trenches, See Subsection 1.6 of this Section. Conform to the requirements prescribed by CAL/OSHA, Section 02240 – SHEETING, SHORING AND BRACING SYSTEMS and other Sections of the Project Manual.
5. Access to Trenches: Conform to Section 306-1.1.4 - ACCESS TO TRENCHES of SSPWC. Provide a safe and suitable ladders, which project 2 feet above the top of the trench. It shall be provided for all trenches over 4 feet in depth. Minimum one ladder shall be provided for each 50 feet of open trench or fraction thereof, and be so located that the workers in the trench need not move more than 25 feet to a ladder.
6. Encountered Existing Underground Piping or Conduits: Immediately stop the trench operations at the point of encounter, notify the City Engineer of such condition and submit support drawings to the City Engineer for approval. The support drawings shall be in conformance with CAL/OSHA and the utility company's requirements.

B. For Substructure Concrete:

1. When Earth Banks are Stable: To net sizes of concrete, except as otherwise specified or indicated on the Contract Drawings.
2. When Earth Banks are not Stable: Sufficiently wider than concrete to allow for forms and inspection thereof.
3. Where Rock Occurs: Surface to be leveled to a clean, even hard surface.
4. Depth: As indicated on Contract Drawings.
5. Excessive Width and Depth: Where excavation is made wider and deeper than required, fill with concrete specified in Section 03300 of the Project Manual, at Contractor's expense.
6. Inspection Required: After excavation and before placing concrete and before backfilling, the exposed soil or subgrade will be carefully inspected by the Soil Engineer to verify removal of additional unsuitable soil.
7. Protections and Shorings: See 3.5 A. 4 of this Section.
8. Excavation for Grade Beams: Omit forms when sides will stand to a cut face, make such excavation 1-inch wider on each side.
9. When excavating adjacent to existing remaining structures, do so in a sequence as required and approved by the City Engineer or the Consultant to avoid displacement or damage to the existing adjacent structure.

C. For Site Improvements:

1. Masonry Yard Walls: As necessary for required footing and setting of forms for concrete work, to depth indicated.
2. For Planter Curbs: To exact curb limit, without excessive removal of adjacent paving or subgrade for new paving.

3. Planter Areas: Remove existing sub-soils to a depth as necessary to receive topsoil fill as specified in Landscape Plans.
 4. For Bollards, Light Poles, Signs: To dimensions and depths noted on the Contract Drawings for concrete foundations.
 5. For Concrete and Asphaltic Site Improvements such as concrete and/or asphalt pavements, concrete walkways, driveways aprons, concrete curb and gutter: Excavate to exact limits of such work without excessive removal of existing subgrade. Scarify and compact top 8 inches of subgrade and compact at 90% relative density.
- D. For Walls (including wall footings): Width not less than 18 inches from face of wall and sufficient for necessary forms, cribbing, bracing, inspection, and application for watering on walls, where required.
- E. For Bioretention Facilities: The bioretention facility shall be excavated to the dimensions, side slopes, and elevations shown on the Contract Plans. The method of excavation shall minimize the compaction of the bottom of the bioretention facility. Excavations and backhoes, operating on the ground adjacent to the bioretention facility, shall be used to excavate the facility if possible. Low ground-contact pressure equipment may also be used for excavation. No heavy equipment shall be allowed on the bottom of the bioretention facility. Excavated materials shall be used or disposed of in conformance with Section 300 of the SSPWC. Prior to placing the underdrain and the BSM, the bottom of the excavation shall be roto-tilled to a minimum depth of 6 inches to alleviate any compaction of the facility bottom. Any substitute method for roto-tilling must be approved by the Engineer prior to use. Any ponded water shall be removed from the bottom of the facility and the soil shall be friable before roto-tilling.
- F. Corrections: Required of all unauthorized excavations made below indicated depths, as recommended by the Soil Engineer at no added cost to the City.

3.6 FILLING

- A. General: Construct in accordance with Section 300-4- UNCLASSIFIED FILL of SSPWC and place in layers not exceeding 8-inches thickness, compacted to a relative compaction of not less than 90% when tested in accordance with Section 211-2 - COMPACTION TESTS of SSPWC .
- B. In Planting Areas and Tree Wells: If flooding method is specified for fill material, place saturated fill (exclusive of topsoil fill) prior to construction of adjacent improvements to minimize settlement as follows:
1. Planting Areas and Holes: Cultivate and soak the specified backfill mix for a minimum of two days using a common lawn soaker.
 2. Tree Wells: Excavate a sump approximately 3-feet square by 3-feet deep and flood each sump for about 3 days.
- C. Fill all holes on the existing job-site or resulting from site-clearing or demolition operations.
- D. Topsoil Fill: Specified in Landscape Plans.
- E. Inspection Required: Prior to placement of fill materials. See Subsection 1.7A of this

Section.

- F. Concrete and Asphalt Site Improvements Walkways: Compact top 8 inches of existing subgrade and each 8" layer of backfill or fill material at 90% relative density.

3.7 BACKFILLING

- A. Prior to Backfilling: Remove debris, trash and form materials from excavations.
- B. Inspection Required: Prior to backfilling operations.
- C. Placement of Backfill: In layers not exceeding 8-inches thickness, moisten to optimum moisture content and tamp until required 90% relative compaction is secured and finish to suitable elevations to provide for anticipated settlement and shrinkage.
- D. For Underground Infiltration Galleries: Backfill not to be placed until infiltration galleries have been tested and inspected, and the Fire Department and the Inspector have completed their inspections. Backfill shall be placed evenly around the perimeter and on top of the infiltration galleries at a minimum of 12-inch lifts. Backfill shall be per manufacturer's recommendations.
- E. Pipe Bedding And Backfill Over Underground Piping And Conduit: Place bedding and backfill material in conformance with provisions specified Subsection 2.2 D. Do not place backfill materials until the Inspector has inspected and approved the pipe installation. The bedding shall be compacted and shaped to form a firm base for the pipe and conduit. The initial backfill shall be placed in two lifts. The first lift shall be to the spring line of the pipe or conduit. The initial backfill shall be lightly compacted by light tamping or compacted by water densification method. The balance of backfill shall be placed in accordance with Subsection 3.7 C. herein.
- F. For Parking Lot or Demolition Jobs: Use clean material previously removed from excavations or use imported materials as hereinbefore specified subject to approval by the Inspector or City Engineer or the Consultant.
- G. In Planting Areas Holes and Tree Wells: After planting, cultivate and soak the specified backfill mix for a minimum of two days using a common lawn soaker if specified.
- H. For Voids Left by the Removal of Sheet piling, Piles and Similar Shoring Supports: Immediately backfill with structural backfill of clean sand which shall be jetted into place to ensure a dense and complete filling of the voids.
- I. Slurry Backfill: In areas where specified and/or around the utilities, vaults or other structures where the Soil Engineer determines that it is not practical to attain the required compaction by the mechanical methods or water densification, provide a trench slurry backfill 60-E0.7 (Class 100-E-100).

3.8 SELECT BASE

- A. Place in accordance with Section 301-2 - UNTREATED BASE of SSPWC and "Soil Report" recommendations.
- B. Locations: Place select base beneath concrete and asphalt concrete yard paving, beneath concrete driveway aprons and concrete gutters in yard areas, building floor slab on grade and elsewhere to thickness noted on the Contract Drawings.

- C. Thickness: At least 4 inches under yard concrete paving, at least 4-inches under yard asphalt concrete paving, and at least 9 1/2 inches under permeable interlocking concrete paving or as otherwise indicated on the Contract Drawings.

NOTE: Place to thickness matching that of original thickness of select base under existing removed concrete or asphalt concrete paving and make ready to receive paving repair materials. Aggregate base shall be compacted to 95% relative density in accordance with Section 301-2 - UNTREATED BASE of SSPWC.

3.9 BIORETENTION FACILITIES

- A. Bioretention facilities shall not be constructed until all contributing drainage areas are stabilized as shown on the Contract Plans and to the satisfaction of the Engineer. Bioretention facilities shall not be used as sediment control facilities. No heavy equipment shall operate within the perimeter of a bioretention facility during excavation, underdrain placement, backfilling, planting, or mulching of the facility.

- B. Plastic Liner: Liners shall be placed in the trench in accordance with the Plans. The liner shall be placed loosely and seated firmly into the corners. If chemical seams are used then the panels shall overlap by 6" to 8" with a 4" wide seam. If thermal seams are used then the single track weld shall overlap 4" to 6" with a minimum 2" wide seam. All seams shall be made in accordance with the manufacturer's recommendation. If at all possible, seams shall not be located at low points in the subgrade unless the geometry requires seaming to be done at these locations. Damaged liner material shall be repaired at Contractor's expense by placing new material that meets overlap requirements over the damaged area. The liner shall be covered as soon as possible after being placed, but not later than 7 calendar days after placement. Material left uncovered for more than 7 calendar days shall be removed and rejected.

Trench sides and bottom shall be excavated to provide a smooth surface, free of obstructions and debris. After placement of granular fill and bioretention soil, two edges of the liner protruding at the top of the trench shall be anchored to concrete curb or sidewalk per the manufacturer's recommendation. Excess material shall be trimmed neatly such that it is not exposed.

Provide pipe penetration sealing system as shown on the Plans. Penetrations shall be sealed using the same plastic liner or PVC geomembrane material, flat stock and accessories as shown on the Plans. The field-fabricated assembly shall be field-welded to the main liner as shown on the Plans as to prevent leakage. These field welds shall be in accordance with the manufacturer's recommendations. All sealed areas shall be Air Lance tested using ASTM D-4437 and verified to be leak-free.

- C. Underdrain: The underdrain system shall be placed on a 3-foot wide bed of No. 57 aggregate. The minimum thickness of the ASTM No. 57 aggregate shall be 3 inches. Underdrain shall be covered with 6 inches of No. 57 aggregate and topped with an additional layer of No. 7 aggregate (layer thickness shall be 2 inches, minimum). All aggregate shall be placed according to dimensions shown on the Contract Plans.

Observation wells/cleanouts of 6-inch non-perforated pipe shall be placed vertically in the bioretention facility as shown on the Contract Plans. The wells/cleanouts shall be connected to the perforated underdrain with the appropriate manufactured connections as shown on the Contract Plans. The wells/cleanouts shall extend 6 inches above the top elevation of the bioretention facility mulch, and shall be capped with a screw cap. The ends of the underdrain pipes not terminating in an observation well/cleanout shall be

capped.

- D. Placement and Compaction of the Bioretention Soil Mixture: The BSM shall be placed and graded using low ground-contact pressure equipment or by excavators and/or backhoes operating on the ground adjacent to the bioretention facility. No heavy equipment shall be used within the perimeter of the bioretention facility before, during, or after the placement of the BSM. The placement of the upper layer mix shall be in the upper 12-18" of the planter only. The lower layer mix must be placed to the entire remaining depth of the planter. The BSM shall be compacted by saturating the entire area of the bioretention facility after each lift of BSM is placed until water flows from the underdrain. Water for saturation shall be applied by spraying or sprinkling. Saturation of each lift shall be performed in the presence of the Engineer. An appropriate sediment control device shall be used to treat any sediment-laden water discharged from the underdrain. If the BSM becomes contaminated during the construction of the facility, the contaminated material shall be removed and replaced with uncontaminated material at no additional cost to the Administration. Final grading of the BSM shall be performed after a 24-hour settling period. Final elevations shall be within 2 inches of elevations shown on the Contract Plans.
- E. Mulching: Once the plants are in place, the entire bioretention facility shall be mulched to a uniform thickness of 3 inches. Well aged (minimum age of 6 month) shredded hardwood bark mulch is the only acceptable mulch.

3.10 SOIL STERILIZATION

Apply specified soil sterilization material to areas to receive select base materials and all exterior area including concrete and asphalt paving, concrete walkway, concrete curb and gutter, by methods recommended by the manufacturer. Certify in writing that the material has been applied.

3.11 DISPOSAL OF EXCESS AND WASTE MATERIALS

- A. Removal from City's Property: Remove waste materials, including unacceptable excavated material, trash and debris, and dispose of it off City's property in a legal manner and to conform with the requirements shown in Section 300-1.3 Removal and Disposal of Materials of the SSPWC.
- B. Provide written consent of the owner of the property upon which the surplus material is to be deposited, pursuant to Section 300-2.6 - SURPLUS MATERIAL of the SSPWC.
- C. Borrow Excavation: Where borrow material is required for the work, the Contractor shall submit the material samples and testing results to the Soil Engineer prior to any excavation or import work is performed in accordance with Section 300-5 - BORROW EXCAVATION of SSPWC.

3.12 PAYMENT FOR CONTAMINATED SOIL DISPOSAL

The final area of contaminated soil removal shall be determined in the field by the Soil Engineer or City Engineer. All contaminated soil shall be disposed of at stipulated price of \$33/ton and a minimum fee of \$330 per truck load. The total quantity of work shall be based on the amount of contaminated soil removed and disposed from the job site. The stipulated price shall only include disposal fees.

END OF SECTION 31 00 00

**SECTION 31 11 00
CLEARING, GRUBBING AND STRIPPING**

PART ONE - GENERAL

1.1 DESCRIPTION

- A. All site clearing and grubbing on the jobsite indicated on the Contract Drawings and in the Project Manual.
- B. Clear and grub the entire project site and remove all existing and remaining BMPs from the site.
- C. Site clearing shall consist of removing all vegetable growth such as trees, roots, stumps, shrubs, brush, limbs; and stone, boulders, clods, wood and other vegetative growth from the growth surface. Clearing shall also include the removal and disposal of trash piles, rubbish, etc.
- D. Grubbing shall consist of the removal and disposal of wood roots, stumps, shrubs, brush, stone, boulders, clods, vegetable growth, etc. below the ground or subgrade surface.
- E. CONTRACTOR shall furnish all tools, equipment materials and supplies and shall perform all labor to complete the work associated with removal of all natural and artificial objectionable material from the designated areas of work as indicated in the Contract Documents.
- F. This work shall also include the protection from injury and preservation of existing improvements, adjacent property, utility vegetation and existing objects designated to remain.
- G. Prior to commencing the work, obtain acceptance from the ENGINEER regarding methods to be used and disposal of removed materials.
- H. Related Sections:
 - 1. Documents affecting work of this Section included, but are not necessarily limited to the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, DIVISION 1 - GENERAL REQUIREMENTS and other Sections of the Project Manual.
 - 2. Site Demolition in Section 024100.
 - 3. Earthwork in Section 310000.
 - 4. Concrete work in Section 033000.

1.2 QUALITY ASSURANCE

- A. Labor: Use adequate numbers of skilled laborers thoroughly trained in site-clearing operations and experienced in the necessary crafts and completely familiar with the specified requirements and methods needed for the proper performance of the work of this Section.
- B. Codes and Regulations: Perform all work of this Section in strict accordance with applicable Government Codes and Regulations especially meeting all safety standards and requirements of CAL/OSHA and the County. Conform to all storm water pollution control measures as required and provided in Section 310000 - EARTHWORK of the Project Manual. Provide additional measures, added materials and devices as may be needed as

directed by the CITY ENGINEER or the CONSULTANT at no added cost to the CITY.

C. Miscellaneous Requirements:

1. Erection and maintenance of protections
2. Dust Control
3. Repair of Damages
4. Cleaning and Removal of Rubbish

D. Permits and Licenses: Procure all City, County and State Permits and Licenses, including Municipal Business License and pay all charges and fees for the same.

E. Contractor Submittals - Submit schedule of clearing, grubbing, and erosion control measures to be put in place for all work scheduled during the rainy season (October - April).

PART TWO - PRODUCTS

2.1 MATERIALS

- A. Soil Sterilant: As specified in Section 310000 - EARTHWORK.
- B. Soil Treatment for Termite Control: Not Used.
- C. Provide Materials not specifically described but required for completion of the work of this Section as selected by the CONTRACTOR subject to the approval of the CITY ENGINEER or the CONSULTANT.

PART THREE - EXECUTION

3.1 SITE CONDITIONS

Examine the jobsite and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper site-clearing operations, as directed by the CITY ENGINEER or the CONSULTANT. Do not proceed until such detrimental conditions have been corrected.

3.2 PROTECTION

- A. Protect Existing Structures and Site Improvements indicated to remain from damage by approved methods and/or as authorized by the CITY ENGINEER. Removal of all protections shall be when work of this Section is completed or when so authorized by the CITY ENGINEER or the CONSULTANT. Apply protections to adjacent properties as required and directed by the CITY ENGINEER.
- B. Protect Existing Utilities indicated or made known to remain traversing the jobsite and serving existing adjacent facilities.
- C. Protect Existing Trees and Shrubs indicated to remain by providing temporary surrounding fencing so located a sufficient distance away so that trees and shrubs will not be damaged by site-clearing operations.

- D. Protection of Persons and Property (existing structures and site improvements).
 - 1. Provide barricades, warning signs at open depressions and holes on adjacent property and public accesses.
 - 2. Provide operating warning lights during hours from dusk to dawn each day or as otherwise required.
 - 3. Protect existing remaining structures, utilities, sidewalks, pavements other facilities from damage as caused by settlement, undermining, washout or other hazards created by site-clearing operations of this Section.
 - 4. Provide and maintain pedestrian and vehicular access in accordance with Work Area Traffic Control Handbook (WATCH), latest edition.
- E. Use means necessary to prevent air pollution or dust from becoming a nuisance to the public, to neighbors and to others performing work on or near the jobsite. Comply with governing regulations.
- F. Maintain access to the jobsite, other neighboring property, street and alley at all times.
- G. The project site shall be maintained in conformance with Section 7-8 - PROJECT SITE MAINTENANCE of the Standard Specifications for Public Works Construction (SSPWC) and the requirements of this Project Manual.

3.3 SITE CLEARING AND GRUBBING

- A. General:
 - 1. For drawing clarity, not all trees, shrubs, brush, grass, weeds, or exact amount of trash or debris are shown on the drawings. CONTRACTOR shall carefully study the Contract Drawings, the Soil Investigation Report and the Survey, visit the job site and verify the extent of the work to be done prior to the Bid.
 - 2. Prior to starting jobsite clearing operations in the company of the CITY ENGINEER or CONSULTANT, SOIL ENGINEER and INSPECTOR; visit the job site and verify the extent of the work.
 - 3. Site clearing and grubbing shall conform to Section 300-1 - CLEARING AND GRUBBING of SSPWC and applicable requirements of the Project Manual.
 - 4. Site clearing and grubbing shall be done in the presence of the SOIL ENGINEER. CONTRACTOR shall notify the CITY ENGINEER 72 hours prior to clearing operation.
- B. Site Clearing and Grubbing Operations
 - 1. Clearing and grubbing shall be in conformance with the SSPWC Section 300-1, except 300-1.4.
 - 2. Where active utility lines need to be capped or plugged, perform such work in accordance with requirements of the Utility Company or government agency having jurisdiction and conform to provisions of Section 01140 – CONTRACTOR'S USE OF THE PREMISES, and Subsection 3.2B of this Section.

3.4 STRIPPING

- A. Stripping shall include the removal and disposal of all organic sod, topsoil, grass and grass roots, and other objectionable material remaining after clearing and grubbing from the areas designated to be stripped. The depth of stripping shall be as shown on the Drawings and specified herein.
- B. Topsoil from the strippings shall be stockpiled and used for the finished site grading. Excess topsoil will be placed in the waste disposal areas designated by the ENGINEER.
- C. Prior to beginning any excavation or fill, strip the topsoil to a depth sufficient to remove all organic material and stockpile for future use. In general, topsoil shall be removed where structures are to be built, trenches dug, and roads, parking lots, walks, and similar improvements constructed within the areas presently covered with topsoil. Topsoil shall be stored clear of the construction area. Take reasonable care to prevent the topsoil from becoming mixed with subsoil.

3.5 TOPSOIL

- A. Strip and remove existing sod, and stockpile existing sod if specified for reuse in the Contract Works.
- B. After proposed planting area(s) has been cleared of vegetation and grubbed, strip the existing topsoil to a depth specified and to provide at least a 6-inch depth of topsoil in areas shown on the Contract Drawings to be turfed or planted and to fill planters without contamination with subsoils.
- C. If on site topsoil is specified for reuse, stockpile topsoil in an area clear of new construction or where directed by the CITY ENGINEER or the CONSULTANT.
- D. Maintain topsoil stockpiles in a manner which will not obstruct the natural flow of drainage.
 - 1. Maintain the stockpiled topsoil free from debris and trash.
 - 2. Keep the stockpiled topsoil damp to prevent drying out and creating a dust source.
 - 3. Soil samples shall be obtained and analyzed for agricultural suitability and fertility.
 - 4. Place and compact backfill in the planting area. Add soil amendments to topsoil in accordance with the recommendation and cultivate.
 - 5. Provide Soil Sterilization in accordance with Section 310000 – EARTHWORK of the Project Manual.

3.6 REMOVAL AND DISPOSAL OF CLEARING AND GRUBBING DEBRIS

- A. General: All materials removed shall be disposed of outside of the right-of-way. No accumulation of flammable material shall remain on or adjacent to the right-of-way. The roadway and adjacent areas shall be left with a neat and finished appearance.
- B. Bituminous Pavement: Bituminous pavement removal shall be in conformance with SSPWC Section 300-1.3.2.

- C. Concrete Pavement: Concrete pavement removal shall be in conformance with SSPWC Section 300-1.3.2.
- D. Concrete Curb, Walk, Gutters, Cross Gutters, Driveways, and Alley Intersections: Concrete removal shall be in conformance with SSPWC Section 300-1.3.2.

3.7 STORAGE OF MATERIALS AT THE JOB-SITE

Storage not permitted beyond brief accumulation awaiting pick up by removal trucks. Delays in the removal of site-clearing materials from the jobsite shall be subject to the approval of the CITY ENGINEER or the CONSULTANT.

(END OF SECTION)

SECTION 32 11 24

GRADED CRUSHED AGGREGATE BASE COURSE FOR FLEXIBLE PAVEMENT

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM C 29/C 29M	(2009) Bulk Density ("Unit Weight") and Voids in Aggregate
ASTM C 117	(2004) Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing
ASTM C 131	(2006) Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	(2006) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 75	(2009) Sampling Aggregates
ASTM D 1556	(2007) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(2009) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft.)
ASTM D 1883	(2007e2) CBR (California Bearing Ratio) of Laboratory-Compacted Soils
ASTM D 2217	(1985; R 1998) Wet Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants
ASTM D 2922	(2004) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 4318	(2010) Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D 6938	(2010) Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

Product Data

Aggregates;

Test Reports

- Gradation
- Bearing ratio
- Liquid limit
- Plasticity index
- Percentage of wear
- Dry weight of slag
- Density
- Gradation
- Smoothness
- Density
- Thickness

1.3 DELIVERY AND STORAGE

Inspect materials delivered to site for damage and store as to prevent segregation and contamination.

1.4 WEATHER LIMITATIONS

Do not construct base course when atmospheric temperature is below 35 degrees F or when rainfall or other weather conditions detrimentally affect the quality of the finished course.

1.5 CONSTRUCTION EQUIPMENT

Equipment shall be dependable and adequate for the purpose intended. Maintain equipment in satisfactory and safe operating condition. Subject to approval, special equipment dictated by local conditions may be used. Calibrated equipment, such as scales, batching equipment, spreaders and similar items, shall have been recalibrated by an approved calibration laboratory within 12 months of commencing work.

1.6 SUSTAINABLE DESIGN REQUIREMENTS

1.6.1 Local/Regional Materials

Use materials or products extracted, harvested, or recovered, as well as manufactured, locally, if available from a minimum of three sources. Aggregate materials may be locally available.

1.7 SUMMARY

1.7.1 Related Sections – NOT USED

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Aggregates

Consist of durable and sound crushed concrete, crushed masonry, crushed gravel, crushed stone or crushed slag, free of lumps or balls of clay or other objectionable matter. Materials shall originate primarily from other nearby sources as needed. Material may contain post-consumer or post-industrial recycled content. Crushed stone and gravel shall be free from flat, elongated, soft or disintegrated pieces. All base course material retained on a No. 4 sieve shall have at least 90 percent by weight with at least two fractured faces and 100 percent by weight with at least one fractured face.

Base course materials samples shall have a bearing ratio of at least 80 as determined by laboratory tests on a 4-day soaked specimen in accordance with ASTM D 1883; compact specimen in accordance with ASTM D 1557, Method D. Determine grain size in accordance with ASTM C 136 and amount of material finer than 200 mesh sieve in accordance with ASTM C 117. Aggregate, other than slag, shall have a percentage of wear not exceeding 40 when tested in accordance with ASTM C 131, Grading A. Slag shall be an air-cooled, blast furnace product having a dry weight of not less than 70 pounds per cubic foot when tested in accordance with ASTM C 29/C 29M and shall consist of angular fragments uniform in density and quality, reasonably free from thin, elongated pieces, dirt or other objectionable material. Soil binder material, that portion of material passing the No. 40 sieve, shall be of such composition that the composite material conforms to the requirements specified herein. The base course shall be of such nature that it can be compacted readily with watering and rolling to a firm, stable base and shall conform to one of the following sizes:

Percentage by Weight Passing
Square Mesh Laboratory Sieves

<u>Size Numbers</u>		
<u>Sieves</u>	<u>1</u>	<u>2</u>
2 inch	100	-
1 1/2 inch	70-100	100
1 inch	45-80	60-100
1/2 inch	30-60	30-65
No. 4	20-50	20-50
No. 10	15-40	15-40
No. 40	5-25	5-25
No. 200	0-10	0-10

That portion of the material passing the No. 40 sieve shall have a liquid limit of not more than 25 and a plasticity index of not more than 5 as determined by ASTM D 4318. Prepare samples in accordance with ASTM D 2217, Procedure A.

PART 3 EXECUTION

3.1 BASE COURSE

Construct the graded aggregate base course on a prepared subgrade or previously constructed subbase course, as indicated. Verify compacted subgrade, granular base, is acceptable and ready to support paving and imposed loads. Provide line and grade stakes for control. Place grade stakes in lanes parallel to the centerline of areas to be paved and space for string lining or other control methods. The base course shall consist of aggregate processed, deposited, spread and compacted on a prepared surface. The Contractor shall be responsible for protection of completed areas against detrimental effects. Recondition, reshape, and recompact areas damaged by freezing, rainfall, or other weather conditions.

3.2 PLACING

Do not dump materials in piles, but place on prepared subgrade or subbase in layers of uniform thickness with a spreader. When a compacted course 6 inches in thickness is required, place material in a single layer. When a compacted course in excess of 6 inches is required, place material in layers of equal thickness. Do not exceed 6 inches or have less than 3 inches in thickness for any compacted layer. Place layers so that when compacted, they will be true to grades or levels required with the least possible surface disturbance. Where the base course is constructed in more than one layer, clean previously constructed layers of loose and foreign matter. Maintain material water content

during the placing period to obtain the compaction specified. Make adjustments in placing procedures or equipment to obtain true grades, to minimize segregation and degradation, to reduce or increase water content, and to insure a satisfactory base course.

3.3 COMPACTING AND FINISHING

Immediately following placement, spread the finished mixture uniformly in a layer and bring to optimum moisture content. The loose thickness and the surface of the layer shall be such that the specified density and the required thickness shall be obtained after compaction. Compact the layer with steel-faced, vibrating or pneumatic-tired rollers, or other suitable compacting equipment or combinations thereof. Continue compacting until the layer is compacted through the full depth to a field density of at least 95 percent of the maximum density at optimum moisture content tested in accordance with ASTM D 2922. Sand cone testing in accordance ASTM D 1556 shall also be performed to validate nuclear gage testing as specified for field density tests. In areas not accessible to rollers or compactors, compact the mixture with mechanical hand tampers. If the mixture is excessively moistened by rain, aerate by blade graders, or other suitable equipment. Aerate until the moisture content of the material is that needed to obtain the required density. Finish the surface of the layer by a combination of rolling and blading. Final surface shall be smooth and free from waves, irregularities, and ruts or soft yielding spots.

3.4 FINISHING AT EDGES OF BASE COURSE

Place earth or other approved materials along the edges of the base course in such quantity that it will compact to the thickness of the course being constructed. When the course is being constructed in two or more layers, place material to the thickness of each layer. In each operation, allow at least a one foot width of the shoulder to be rolled and compacted simultaneously with the rolling and compacting of each layer.

3.5 FIELD QUALITY CONTROL

Approve materials and material sources in advance of the use of such materials in the work. Replace base where samples are removed.

3.5.1 Sampling

3.5.1.1 Aggregates at the Source

Prior to production and delivery of aggregates, take at least one initial sample in accordance with ASTM D 75. Collect each sample by taking three incremental samples at random from the source material to make a composite sample of not less than 50 pounds. Repeat above sampling when source of material is changed or when unacceptable deficiencies or variations from specified grading of materials are found in testing.

3.5.1.2 During Construction

Take one random sample from each 1000 tons of completed base course material, but not less than one random sample per day's run. Take samples in accordance with ASTM D 75.

3.5.1.3 Sample Identification

Place each sample in a clean container, securely fastened to prevent loss of material. Tag each sample for identification and with the following information:

Contract No. _____
Sample No. _____ Quality _____
Date of Sample _____
Sampler _____
Source _____
Intended Use _____
For Testing _____

3.5.2 Testing

3.5.2.1 Aggregates

Test each sample of base course material without delay. Make gradation tests from each sample in accordance with ASTM C 136. Make sieve analysis on material passing the No. 200 sieve in accordance with ASTM C 117.

3.5.2.2 Smoothness Tests Test with a 10 foot straightedge, applied parallel with and at right angles to the center line of the paved area. Correct deviations in the surface in excess of 3/8 inch by loosening, adding or removing material, reshaping, watering, and compacting. The smoothness requirements specified herein apply only to the top layer when base course is constructed in more than one layer.

3.5.2.3 Field Density Tests

Nuclear gage compaction testing shall be performed in accordance with ASTM D 6938-10. Take one test for each 250 square yards of each layer of base course.

3.5.2.4 Laboratory Density Tests

In accordance with ASTM D 1557, Method D.

3.5.2.5 Thickness Tests

Measure thickness of base course at intervals such that there will be a depth measurement for at least each 500 square yards of complete base course. Make depth measurements by test holes, at least 3 inches in diameter, through the base course. Where base course deficiency is more than 1/2 inch, correct by scarifying, adding mixture of proper gradation, reblading, and recompact. Where the measured thickness is more than 1/2 inch thicker than indicated, consider it as the indicated thickness plus 1/2 inch for determining the average. The average thickness is the average of the depth measurements and shall not underrun the thickness indicated.

3.6 MAINTENANCE

After construction is completed, maintain the base course throughout, except where portion of the succeeding course is under construction thereon. Maintenance includes drainage, rolling, shaping, and watering, as necessary, to maintain the course in proper condition. Correct deficiencies in thickness, composition, construction, smoothness, and density, which develop during the maintenance, to conform to the requirements specified herein. Maintain sufficient moisture by light sprinkling with water at the surface to prevent a dusty condition.

END OF SECTION 32 11 24

SECTION 32 12 16

ASPHALT CONCRETE PAVING

PART 1 - GENERAL

1.1 Work Included

- A. Construct asphalt concrete pavements for roads, parking areas, aprons, sidewalks, and other Work involving asphalt concrete, all as shown. Asphalt concrete shall conform to all requirements of Standard Specifications for Public Works Construction (SSPWC) and requirements herein.

1.2 Related Work

- A. Section 01 33 00: Submittal Procedures
B. Section 01 40 00: Quality Requirements
C. Section 01 61 00: Common Product Requirements
D. Section 01 65 00: Product Delivery Requirements
E. Section 01 66 00: Product Storage and Handling Requirements
F. Section 01 73 00: Execution
G. Section 02 41 00: Demolition
H. Section 31 00 00: Earthwork
I. Section 31 11 00: Clearing and Grubbing
J. Section 32 11 24: Graded Crushed Aggregate Base Course for Flexible Pavements
K. Section 32 16 13: Concrete Sidewalks, Curbs, and Gutters

1.3 System Description

- A. Furnish and install complete asphalt paving system including subgrade preparation, aggregate base, prime coat, asphalt concrete paving, seal coat, striping and all appurtenant Work.
- B. Completed asphalt paving system shall meet all permit requirements and requirements of city or agency having jurisdiction over paving and right-of-way.
- C. Where new pavement is placed over existing pavement, provide tack coat.

1.4 Quality Assurance

- A. Use adequate numbers of skilled workmen trained and experienced in necessary trades and crafts and completely familiar with specified requirements and methods for proper performance of Work of this section.
- B. Factory (batch plant) testing shall include:

ITEM	TEST FOR	TEST STANDARD (ASTM OR OTHER TEST STANDARD)	FREQUENCY	FIRST TEST PAID FOR BY	RETESTS PAID FOR BY
Crushed Aggregate Rock	Gradation	ASTM C136	Once prior to beginning work, Quarterly thereafter	Contractor	Contractor
Liquid Asphalt	Asphalt Properties	SSPWC Table 203- 2.4(A) for slow curing products	Once for each supplier and each type (grade) of liquid asphalt	Contractor	Contractor

ITEM	TEST FOR	TEST STANDARD (ASTM OR OTHER TEST STANDARD)	FREQUENCY	FIRST TEST PAID FOR BY	RETESTS PAID FOR BY
Asphalt Concrete Mix	Uniformity of Distribution Binder	ASTM D2172	As directed	Contractor	Contractor

1.5 References

- A. Asphalt Institute MS4 The Asphalt Handbook
- B. ASTM C136 Sieve Analysis of Fine and Course Aggregates
- C. ASTM D2041 Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
- D. ASTM D2172 Quantitative Extraction of Bitumen for Bituminous Paving Mixtures
- E. ASTM D2950 Density of Bituminous Concrete in Place by Nuclear Methods
- F. SSPWC Standard Specifications for Public Works Construction (Greenbook) Section 200 "Rock Materials"
- G. SSPWC Standard Specifications for Public Works Construction (Greenbook) Section 203 "Bituminous Materials"
- H. SSPWC Standard Specifications for Public Works Construction (Greenbook) Section 301 "Treated Soil, Subgrade Preparation, and Placement of Base Materials"
- I. SSPWC Standard Specifications for Public Works Construction (Greenbook) Section 302 "Roadway Surfacing"

1.6 Submittals

- A. Furnish the following submittals.

SUBMITTAL	DESCRIPTION	
Catalog Data	Required for all soil sterilants per catalog data requirements	
Certificate of Compliance	Submit report from testing laboratory certifying that aggregate material is asbestos-free and conforms to specified gradations or characteristics.	
Mix Design	Provide mix design in format consistent with requirements shown in SSPWC	
Rubber Blend Certification	Submit certification showing source of rubber materials and mix design	
Test Record Transcripts	Submit certified materials test reports for liquid asphalt and uniformity of distribution of binder per test record transcript requirements.	
Delivery Tickets	Required for all asphalt used.	
Warranty	Furnish one-year warranty from date of final acceptance	

- B. Refer to Section 01 33 00 for definition of requirements for catalog data, certificates of compliance and test record transcripts.

1.7 Delivery, Storage and Handling

- A. Refer to Sections 01 65 00 and 01 66 00 for delivery, storage, and handling requirements.
- B. Manufacturer's instruction and warranty requirements for delivery, storage and handling of asphalt concrete and related products shall be strictly followed.

1.8 Unit Prices

- A. Payment for Work in this section shall be included as part of lump-sum or unit-price bid amount for which such Work is appurtenant.

PART 2 - PRODUCTS

2.1 Materials

- A. Refer to Section 01 61 00 for basic requirements for products and materials.
- B. Bituminous products shall be constructed of the following materials.

ITEM	MATERIAL	SPECIFICATION
Aggregate Base Course	Crushed Aggregate Base	Conform to Section 200-2.2, crushed aggregate base of SSPWC Contractor may substitute on-site materials conforming to Section 200-2.5, Processed Miscellaneous Base of SSPWC
Prime Coat	Liquid Asphalt	Grade SC-250 as specified in SSPWC Section 302-5.3 Application rate: 0.25 gallons per square yard
Tack Coat (Required when paving over existing pavement)	Asphalt	PG 64-10 paving asphalt or SS-1h emulsified asphalt in accordance with SSPWC Section 302-5.4. Application rate: 0.10 gallons per square yard
Asphalt Concrete Pavement Base Course	Aggregate	¾-inch mineral aggregate conforming to SSPWC Section 203-6.3.2 using Class B dense medium-coarse grading mixed with bitumen content of 4.5% to 5.8% of dry mineral aggregate weight. In small hand-rolled areas, Class D1 or D2 fine grading may be substituted at discretion of Owner's Representative to improve workability.
	Bitumen	PG 70 -10 paving asphalt per SSPWC Section 203-1
Asphalt Concrete Pavement Surface Course	Aggregate (Public-Right of-Way)	½-inch mineral aggregate conforming to SSPWC Section 203-6.3.2 using Class B medium coarse grading mixed with bitumen content of 4.6 % to 6.0% of dry mineral aggregate.
	Aggregate (Site Access Roads and On-Site Paving)	½-inch mineral aggregate conforming to SSPWC Section 203-6.3.2 using Class B medium coarse grading mixed with bitumen content of 5.0% to 6.2% of dry mineral aggregate.
	Bitumen	PG 70 -10 paving asphalt per SSPWC Section 203-1
Asphalt Concrete Pavement Surface Course (Rubberized)	Rubberized Asphalt Concrete	Not used.
Seal Coat in Arterial Highways, Collector, and Interior Streets	Asphalt Emulsion	SS-1h Application rate: 0.10 gallons per square yard
	Asphalt Emulsion – Rapid Setting where Permitted by Owner's Representative	CQS-1H cationic Quick-set per SSPWC Table 203-5.2 (A) with 2.50% latex by weight Application rate: 0.10 gallons per square yard
	Aggregate and	SSPWC Table 203-5.3 Type I

ITEM	MATERIAL	SPECIFICATION
	Composition	Application Rate 8-10 lbs/square yard or SSPWC Table 203-5.3 Type II Application Rate 12-15 lbs/square yard Moisture content equal to or less than 4.0% by weight.
	Aggregate and Composition	SSPWC Table 203-5.3 Type II Application Rate 12-15 lbs/square yard Moisture content equal to or less than 4.0% by weight.
	Rubberized Emulsion Aggregate Slurry	Not used.

- C. Asphalt concrete sand shall conform to gradation below from Standard Specifications for Public Works (Greenbook) Table 200-1.5.54(A):

PERCENTAGE PASSING SIEVES BY WEIGHT	
SIEVE SIZE	ASPHALT CONCRETE SAND GRADATION
$\frac{3}{8}$ "	100%
No. 8	75-100%
No. 200	0-8%

- D. Asphalt concrete paving within public (City, County or State) rights-of-way, railroad rights-of-way, or on private property shall comply with permit requirements and other stipulations of applicable property owners.
- E. Install redwood header along all edges of asphalt concrete paving not otherwise abutting hardscape surfaces such as gutters, buildings, concrete pads, vaults, asphalt concrete pavement, Portland cement concrete pavement, paved sidewalk, paved driveway approach, etc.

PART 3 - EXECUTION

3.1 Preparation

- A. Scarify 6-inches below subgrade, bring to optimum moisture content, and compact to relative dry density of 95%.
- B. Spread soil sterilant uniformly on prepared subgrade at rate of 4-pounds of chemical per 100-square feet of area, subject to Manufacturer's recommendations, from outside of curb to opposite outside of curb for full width of roadways or parking area to be paved or surfaced.

3.2 Installation

- A. Refer to Section 01 73 00 for basic execution and installation requirements.
- B. Apply soil sterilant per Section 31 00 00 before paving.
- C. Products shall be furnished and installed by Contractor at locations shown on Plans and Submittals.
- D. The following installation standards shall be followed:
1. Permit requirements of agencies having jurisdiction over streets.

2. Applicable OSHA and Cal OSHA regulations
 3. Standard Specifications for Public Works Construction Section 301 "Treated Soil, Subgrade Preparation, and Placement of Base Materials"
 4. Standard Specifications for Public Works Construction Section 302 "Roadway Surfacing"
- E. Refer variances between above documents and Contract Documents to Owner's Representative.
 - F. Aggregate base material shall be furnished, placed and compacted for asphalt concrete pavements as shown. Spread and compact per SSPWC Section 301-2.
 - G. Prime coat of liquid asphalt shall be pressure-spray applied as shown above after completing subgrade. If aggregate base is specified, apply prime coat after completing base course. Prevent liquid asphalt from spraying on adjacent ground, structures, curbing and fencing.
 - H. Over existing pavement, apply tack coat in accordance with SSPWC Sec 302-5.3.
 - I. Asphaltic concrete pavement shall be spread in one course by using Barber-Greene paving machine, or accepted equal. Spread to depth to achieve compacted thickness shown. Thoroughly compact completed surface smooth and true to grade and cross-section, and free from ruts, humps, depressions and irregularities.
 - J. Apply seal coat of mixing type emulsion liquid asphalt to all asphaltic concrete pavements. Apply emulsion as shown above. Contractor shall have option of closing sealed area to traffic for at least 7-days or blotting with sand and sweeping with area being open to traffic as soon as cover material is laid.
 - K. Adjust all valve box rings and covers to grade within 30 days after final paving of each street in which pipelines are installed.

3.3 Field Quality Control

- A. Field testing shall include:

ITEM	TEST FOR	TEST STANDARD (ASTM OR OTHER TEST STANDARD)	FREQUENCY	FIRST TEST PAID FOR BY	RETESTS PAID FOR BY
Subgrade	Compaction	Section 31 23 00 / 31 23 33	As directed	Owner	Contractor
Roadway/ Paving Base	Compaction	Section 31 23 00 / 31 23 33	As directed	Owner	Contractor
Asphalt Concrete	Compaction	95% per ASTM D2950	As directed	Owner	Contractor
Finished Pavement and Slurry Seal	Rolling	When straight edge is laid on finished surface parallel to centerline, surface shall vary <1/8-inch in 10-feet.	As directed	Owner	Contractor
	Drainage	Flood paved areas sufficiently to demonstrate absence of ponding and "bird- baths"	As directed	Owner	Contractor
	11-month	Demonstrate	1 test	Owner	Contractor

ITEM	TEST FOR	TEST STANDARD (ASTM OR OTHER TEST STANDARD)	FREQUENCY	FIRST TEST PAID FOR BY	RETESTS PAID FOR BY
	Warranty Inspection	compliance to Contract Documents and Manufacturer's printed literature			

END OF SECTION

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SECTION 32 16 13

CONCRETE SIDEWALKS AND CURBS AND GUTTERS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 182 (2005; R 2009) Burlap Cloth Made from Jute or Kenaf

ASTM INTERNATIONAL (ASTM)

ASTM A 185 (2007) Steel Welded Wire Reinforcement, Plain, for Concrete

ASTM A 615/A 615M (2009b) Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement

ASTM C 31/C 31M (2010) Making and Curing Concrete Test Specimens in the Field

ASTM C 143/C 143M (2010) Slump of Hydraulic Cement Concrete

ASTM C 171 (2007) Sheet Materials for Curing Concrete

ASTM C 172 (2010) Sampling Freshly Mixed Concrete

ASTM C 173/C 173M (2010b) Air Content of Freshly Mixed Concrete by the Volumetric Method

ASTM C 309 (2007) Liquid Membrane-Forming Compounds for Curing Concrete

ASTM C 920 (2011) Elastomeric Joint Sealants

ASTM D 1751 (2004; R 2008) Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-Extruding and Resilient Bituminous Types)

ASTM D 1752 (2004a; R 2008) Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction

ASTM D 5893 (2010) Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

Test Reports

Equipment Calibration

Submit copy of concrete compression machine calibration, air content calibration, and thermometer calibration. Except for the concrete compression machine, all calibration shall be performed within 30 calendar days of the first field visit.

Field Quality Control

Copies of all test reports within 12 hours of completion of the test.

1.3 WEATHER LIMITATIONS

1.3.1 Placing During Warm Weather

The temperature of the concrete as placed shall not exceed 85 degrees F except where an approved retarder is used. The mixing water and/or aggregates shall be cooled, if necessary, to maintain a satisfactory placing temperature. The placing temperature shall not exceed 95 degrees F at any time.

1.4 PLANT, EQUIPMENT, MACHINES, AND TOOLS

1.4.1 General Requirements

Plant, equipment, machines, and tools used in the work shall be subject to approval and shall be maintained in a satisfactory working condition at all times. The equipment shall have the capability of producing the required product, meeting grade controls, thickness control and smoothness requirements as specified. Use of the equipment shall be discontinued if it produces unsatisfactory results. The Contracting Officer shall have access at all times to the plant and equipment to ensure proper operation and compliance with specifications.

1.4.2 Slip Form Equipment

Slip form paver or curb forming machine, will be approved based on trial use on the job and shall be self-propelled, automatically controlled, crawler mounted, and capable of spreading, consolidating, and shaping the plastic concrete to the desired cross section in 1 pass.

PART 2 PRODUCTS

2.1 CONCRETE

Concrete shall conform to the applicable requirements of Section 03 30 00 CAST IN PLACE CONCRETE except as otherwise specified. Concrete shall have a minimum compressive strength of 4,000 psi at 28 days for vehicular slabs, curbs and gutters. Concrete walks shall have a minimum compressive strength of 3,000 psi at 28 days. Maximum size of aggregate shall be 37.5 mm.

2.1.1 Air Content

Mixtures shall have air content by volume of concrete of 0 to 6 percent, based on measurements made immediately after discharge from the mixer.

2.1.2 Slump

The concrete slump shall be 2 inches plus or minus 1 inch where determined in accordance with ASTM C 143/C 143M.

2.1.3 Reinforcement Steel

Reinforcement bars shall conform to ASTM A 615/A 615M. Wire mesh reinforcement shall conform to ASTM A 185.

2.2 CONCRETE CURING MATERIALS

2.2.1 Impervious Sheet Materials

Impervious sheet materials shall conform to ASTM C 171, type optional, except that polyethylene film, if used, shall be white opaque.

2.2.2 Burlap shall conform to AASHTO M 182.

2.2.3 Clear Pigmented Membrane-Forming Curing Compound

White pigmented membrane-forming curing compound with fugitive dye shall conform to ASTM C 309, Type 2.

2.3 JOINT FILLER STRIPS

2.3.1 Contraction Joint Filler for Curb and Gutter

Contraction joint filler for curb and gutter shall consist of hard-pressed fiberboard.

2.3.2 Expansion Joint Filler, Pre-Molded

Expansion joint filler, pre-molded, shall conform to ASTM D 1751 or ASTM D 1752, 1/2 inch thick, unless otherwise indicated.

2.4 JOINT SEALANTS

Joint sealant, cold-applied shall conform to ASTM C 920 or ASTM D 5893.

2.5 FORM WORK

Form work shall be designed and constructed to ensure that the finished concrete will conform accurately to the indicated dimensions, lines, and elevations, and within the tolerances specified. Forms shall be of wood or steel, straight, of sufficient strength to resist springing during depositing and consolidating concrete. Wood forms shall be surfaced plank, 2 inches nominal thickness, straight and free from warp, twist, loose knots, splits or other defects. Wood forms shall have a nominal length of 10 feet. Radius bends may be formed with 3/4 inch boards, laminated to the required thickness. Steel forms shall be channel-formed sections with a flat top surface and with welded braces at each end and at not less than two intermediate points. Ends of steel forms shall be interlocking and self-aligning. Steel forms shall include flexible forms for radius forming, corner forms, form spreaders, and fillers. Steel forms shall have a nominal length of 10 feet with a minimum of 3 welded stake pockets per form. Stake pins shall be solid steel rods with chamfered heads and pointed tips designed for use with steel forms.

2.5.1 Sidewalk Forms

Sidewalk forms shall be of a height equal to the full depth of the finished sidewalk.

2.5.2 Curb and Gutter Forms

Curb and gutter outside forms shall have a height equal to the full depth of the curb or gutter. The inside form of curb shall have batter as indicated and shall be securely fastened to and supported by the outside form. Rigid forms shall be provided for curb returns, except that benders or thin plank forms may be used for curb or curb returns with a radius of 10 feet or more, where grade changes occur in the return, or where the central angle is such that a rigid form with a central angle of 90 degrees cannot be used. Back forms for curb returns may be made of 1-1/2 inch benders, for the full

height of the curb, cleated together. In lieu of inside forms for curbs, a curb "mule" may be used for forming and finishing this surface, provided the results are approved.

PART 3 EXECUTION

3.1 SUBGRADE PREPARATION

The subgrade shall be constructed to the specified grade and cross section prior to concrete placement. Subgrade shall be placed and compacted in conformance with Section 31 00 00 EARTHWORK.

3.1.1 Sidewalk Subgrade

The subgrade shall be tested for grade and cross section with a template extending the full width of the sidewalk and supported between side forms.

3.1.2 Curb and Gutter Subgrade

The subgrade shall be tested for grade and cross section by means of a template extending the full width of the curb and gutter. The subgrade shall be of materials equal in bearing quality to the subgrade under the adjacent pavement.

3.1.3 Maintenance of Subgrade

The subgrade shall be maintained in a smooth, compacted condition in conformity with the required section and established grade until the concrete is placed. The subgrade shall be in a moist condition when concrete is placed. The subgrade shall be prepared and protected to produce a subgrade free from frost when the concrete is deposited.

3.2 FORM SETTING

Forms shall be set to the indicated alignment, grade and dimensions. Forms shall be held rigidly in place by a minimum of 3 stakes per form placed at intervals not to exceed 4 feet. Corners, deep sections, and radius bends shall have additional stakes and braces, as required. Clamps, spreaders, and braces shall be used where required to ensure rigidity in the forms. Forms shall be removed without injuring the concrete. Bars or heavy tools shall not be used against the concrete in removing the forms. Any concrete found defective after form removal shall be promptly and satisfactorily repaired. Forms shall be cleaned and coated with form oil each time before concrete is placed. Wood forms may, instead, be thoroughly wetted with water before concrete is placed, except that with probable freezing temperatures, oiling is mandatory.

3.2.1 Sidewalks

Forms for sidewalks shall be set with the upper edge true to line and grade with an allowable tolerance of 1/8 inch in any 10 foot long section. After forms are set, grade and alignment shall be checked with a 10 foot straightedge. Forms shall have a transverse slope of 1/4 inch per foot unless otherwise indicated with the low side adjacent to the roadway. Side forms shall not be removed for 12 hours after finishing has been completed.

3.2.2 Curbs and Gutters

The forms of the front of the curb shall be removed not less than 2 hours nor more than 6 hours after the concrete has been placed. Forms back of curb shall remain in place until the face and top of the curb have been finished, as specified for concrete finishing. Gutter forms shall not be removed while the concrete is sufficiently plastic to slump in any direction.

3.3 SIDEWALK CONCRETE PLACEMENT AND FINISHING

3.3.1 Formed Sidewalks

Concrete shall be placed in the forms in one layer. When consolidated and finished, the sidewalks shall be of the thickness indicated. After concrete has been placed in the forms, a strike-off guided by side forms shall be used to bring the surface to proper section to be compacted. The concrete shall be consolidated with an approved vibrator, and the surface shall be finished to grade with a strike off.

3.3.2 Concrete Finishing

After straight-edging, when most of the water sheen has disappeared, and just before the concrete hardens, the surface shall be finished with a wood float or darby to a smooth and uniformly fine granular or sandy texture free of waves, irregularities, or tool marks. A scored surface shall be produced by brooming with a fiber-bristle brush in a direction transverse to that of the traffic, followed by edging.

3.3.3 Edge and Joint Finishing

All slab edges, including those at formed joints, shall be finished with an edger having a radius of 1/8 inch. Transverse joint shall be edged before brooming, and the brooming shall eliminate the flat surface left by the surface face of the edger. Corners and edges which have crumbled and areas which lack sufficient mortar for proper finishing shall be cleaned and filled solidly with a properly proportioned mortar mixture and then finished.

3.3.4 Surface and Thickness Tolerances

Finished surfaces shall not vary more than 5/16 inch from the testing edge of a 10-foot straightedge. Permissible deficiency in section thickness will be up to 1/4 inch.

3.4 CURB AND GUTTER CONCRETE PLACEMENT AND FINISHING

3.4.1 Formed Curb and Gutter

Concrete shall be placed to the section required in a single lift. Consolidation shall be achieved by using approved mechanical vibrators. Curve shaped gutters shall be finished with a standard curb "mule".

3.4.2 Curb and Gutter Finishing

Approved slip-formed curb and gutter machines may be used in lieu of hand placement.

3.4.3 Concrete Finishing

Exposed surfaces shall be floated and finished with a smooth wood float until true to grade and section and uniform in texture. Floated surfaces shall then be brushed with a fine-hair brush with longitudinal strokes. The edges of the gutter and top of the curb shall be rounded with an edging tool to a radius of 1/2 inch. Immediately after removing the front curb form, the face of the curb shall be rubbed with a wood or concrete rubbing block and water until blemishes, form marks, and tool marks have been removed. The front curb surface, while still wet, shall be brushed in the same manner as the gutter and curb top. The top surface of gutter and entrance shall be finished to grade with a wood float.

3.4.4 Joint Finishing

Curb edges at formed joints shall be finished as indicated.

3.4.5 Surface and Thickness Tolerances

Finished surfaces shall not vary more than 1/4 inch from the testing edge of a 10-foot straightedge. Permissible deficiency in section thickness will be up to 1/4 inch.

3.5 SIDEWALK JOINTS

Sidewalk joints shall be constructed to divide the surface into rectangular areas. Transverse contraction joints shall be spaced at a distance equal to the sidewalk width or 5 feet on centers, whichever is less, and shall be continuous across the slab. Longitudinal contraction joints shall be constructed along the centerline of all sidewalks 10 feet or more in width. Transverse expansion joints shall be installed at sidewalk returns and opposite expansion joints in adjoining curbs. Where the sidewalk is not in contact with the curb, transverse expansion joints shall be installed as indicated. Expansion joints shall be formed about structures and features which project through or into the sidewalk pavement, using joint filler of the type, thickness, and width indicated. Expansion joints are not required between sidewalks and curb that abut the sidewalk longitudinally.

3.5.1 Sidewalk Contraction Joints

The contraction joints shall be formed in the fresh concrete by cutting a groove in the top portion of the slab to a depth of at least one-fourth of the sidewalk slab thickness, using a jointer to cut the groove, or by sawing a groove in the hardened concrete with a power-driven saw, unless otherwise approved. Sawed joints shall be constructed by sawing a groove in the concrete with a 1/8 inch blade to the depth indicated. An ample supply of saw blades shall be available on the job before concrete placement is started, and at least one standby sawing unit in good working order shall be available at the jobsite at all times during the sawing operations.

3.5.2 Sidewalk Expansion Joints

Expansion joints shall be formed with 1/2 inch joint filler strips. Joint filler in expansion joints surrounding structures and features within the sidewalk may consist of preformed filler material conforming to ASTM D 1752 or building paper. Joint filler shall be held in place with steel pins or other devices to prevent warping of the filler during floating and finishing. Immediately after finishing operations are completed, joint edges shall be rounded with an edging tool having a radius of 1/8 inch, and concrete over the joint filler shall be removed. At the end of the curing period, expansion joints shall be cleaned and filled with cold-applied joint sealant. Joint sealant shall be gray or stone in color. Joints shall be sealed as specified on drawings and as indicated below. The joint opening shall be thoroughly cleaned before the sealing material is placed. Sealing material shall not be spilled on exposed surfaces of the concrete. Concrete at the joint shall be surface dry and atmospheric and concrete temperatures shall be above 50 degrees F at the time of application of joint sealing material. Excess material on exposed surfaces of the concrete shall be removed immediately and concrete surfaces cleaned.

3.5.3 Reinforcement Steel Placement

Reinforcement steel shall be accurately and securely fastened in place with suitable supports and ties before the concrete is placed.

3.6 CURB AND GUTTER JOINTS

Curb and gutter joints shall be constructed at right angles to the line of curb and gutter.

3.6.1 Contraction Joints

Contraction joints shall be constructed directly opposite contraction joints in abutting portland cement concrete pavements and spaced so that monolithic sections between curb returns will not be less than 5 feet nor greater than 15 feet in length.

- a. Contraction joints shall be constructed by means of 1/8 inch thick separators and of a section conforming to the cross section of the curb and gutter. Separators shall be removed as soon as practicable after concrete has set sufficiently to preserve the width and shape of the joint and prior to finishing.

3.6.2 Expansion Joints

Expansion joints shall be formed by means of preformed expansion joint filler material cut and shaped to the cross section of curb and gutter. Expansion joints shall be provided in curb and gutter directly opposite expansion joints of abutting portland cement concrete pavement, and shall be of the same type and thickness as joints in the pavement. Where curb and gutter do not abut portland cement concrete pavement, expansion joints at least 1/2 inch in width shall be provided at intervals not less than 30 feet or greater than 120 feet. Expansion joints shall be provided in non-reinforced concrete gutter at locations indicated. Expansion joints shall be sealed immediately following curing of the concrete or as soon thereafter as weather conditions permit. Joints shall be sealed as indicated on drawings. Expansion joints and the top 1 inch depth of curb and gutter contraction-joints shall be sealed with joint sealant. The joint opening shall be thoroughly cleaned before the sealing material is placed. Sealing material shall not be spilled on exposed surfaces of the concrete. Concrete at the joint shall be surface dry and atmospheric and concrete temperatures shall be above 50 degrees F at the time of application of joint sealing material. Excess material on exposed surfaces of the concrete shall be removed immediately and concrete surfaces cleaned.

3.7 CURING AND PROTECTION

3.7.1 General Requirements

Concrete shall be protected against loss of moisture and rapid temperature changes for at least 7 days from the beginning of the curing operation. Unhardened concrete shall be protected from rain and flowing water. All equipment needed for adequate curing and protection of the concrete shall be on hand and ready for use before actual concrete placement begins. Protection shall be provided as necessary to prevent cracking of the pavement due to temperature changes during the curing period.

3.7.1.1 Mat Method

The entire exposed surface shall be covered with 2 or more layers of burlap. Mats shall overlap each other at least 6 inches. The mat shall be thoroughly wetted with water prior to placing on concrete surface and shall be kept continuously in a saturated condition and in intimate contact with concrete for not less than 7 days.

3.7.1.2 Impervious Sheeting Method

The entire exposed surface shall be wetted with a fine spray of water and then covered with impervious sheeting material. Sheets shall be laid directly on the concrete surface with the light-colored side up and overlapped 12 inches when a continuous sheet is not used. The curing medium shall not be less than 18-inches wider than the concrete surface to be cured, and shall be securely weighted down by heavy wood planks, or a bank of moist earth placed along edges and laps in the sheets. Sheets shall be satisfactorily repaired or replaced if torn or otherwise damaged during curing. The curing medium shall remain on the concrete surface to be cured for not less than 7 days.

3.7.1.3 Membrane Curing Method

A uniform coating of clear membrane-curing compound shall be applied to the entire exposed surface of the concrete as soon after finishing as the free water has disappeared from the finished surface. Formed surfaces shall be coated immediately after the forms are removed and in no case longer than 1 hour after the removal of forms. Concrete shall not be allowed to dry before the application of the membrane. If any drying has occurred, the surface of the concrete shall be moistened with a fine spray of water and the curing compound applied as soon as the free water disappears. Curing

compound shall be applied in two coats by hand-operated pressure sprayers at a coverage of approximately 200 square feet/gallon for the total of both coats. The second coat shall be applied in a direction approximately at right angles to the direction of application of the first coat. The compound shall form a uniform, continuous, coherent film that will not check, crack, or peel and shall be free from pinholes or other imperfections. If pinholes, abrasion, or other discontinuities exist, an additional coat shall be applied to the affected areas within 30 minutes. Concrete surfaces that are subjected to heavy rainfall within 3 hours after the curing compound has been applied shall be re-sprayed by the method and at the coverage specified above. Areas where the curing compound is damaged by subsequent construction operations within the curing period shall be re-sprayed. Necessary precautions shall be taken to insure that the concrete is properly cured at sawed joints, and that no curing compound enters the joints. The top of the joint opening and the joint groove at exposed edges shall be tightly sealed before the concrete in the region of the joint is re-sprayed with curing compound. The method used for sealing the joint groove shall prevent loss of moisture from the joint during the entire specified curing period. Approved standby facilities for curing concrete pavement shall be provided at a location accessible to the jobsite for use in the event of mechanical failure of the spraying equipment or other conditions that might prevent correct application of the membrane-curing compound at the proper time. Concrete surfaces to which membrane-curing compounds have been applied shall be adequately protected during the entire curing period from pedestrian and vehicular traffic, except as required for joint-sawing operations and surface tests, and from any other possible damage to the continuity of the membrane.

3.7.2 Backfilling

After curing, debris shall be removed and the area adjoining the concrete shall be backfilled, graded, and compacted to conform to the surrounding area in accordance with lines and grades indicated.

3.7.3 Protection

Completed concrete shall be protected from damage until accepted. The Contractor shall repair damaged concrete and clean concrete discolored during construction. Concrete that is damaged shall be removed and reconstructed for the entire length between regularly scheduled joints. Refinishing the damaged portion will not be acceptable. Removed damaged portions shall be disposed of as directed.

3.8 FIELD QUALITY CONTROL

3.8.1 General Requirements

The Contractor shall perform the inspection and tests described and meet the specified requirements for inspection details and frequency of testing. Based upon the results of these inspections and tests, the Contractor shall take the action and submit reports as required below, and any additional tests to insure that the requirements of these specifications are met.

3.8.2 Concrete Testing

3.8.2.1 Strength Testing

The Contractor shall provide molded concrete specimens for strength tests. Samples of concrete placed each day shall be taken not less than once a day or less than once for every 250 cubic yards of concrete. The samples for strength tests shall be taken in accordance with ASTM C 172. Cylinders for acceptance shall be molded in conformance with ASTM C 31/C 31M by an approved testing laboratory. Each strength test result shall be the average of 2 test cylinders from the same concrete sample tested at 28 days, unless otherwise specified or approved. Concrete specified on the basis of compressive strength will be considered satisfactory if the averages of all sets of three consecutive strength test results equal or exceed the specified strength, and no individual strength test result falls below the specified strength by more than 500 psi.

3.8.2.2 Air Content

Air content shall be determined in accordance with ASTM C 173/C 173M. Two tests for air content shall be made on randomly selected batches of each class of concrete placed during each shift. Additional tests shall be made when excessive variation in concrete workability is reported by the placing foreman or the Government inspector. If results are out of tolerance, the placing foreman shall be notified and he shall take appropriate action to have the air content corrected at the plant. Additional tests for air content will be performed on each truckload of material until such time as the air content is within the tolerance specified.

3.8.2.3 Slump Test

Two slump tests shall be made on randomly selected batches of each class of concrete for every 250 cubic yards, or fraction thereof, of concrete placed during each shift. Additional tests shall be performed when excessive variation in the workability of the concrete is noted or when excessive crumbling or slumping is noted along the edges of slip-formed concrete.

3.8.3 Thickness Evaluation

The anticipated thickness of the concrete shall be determined prior to placement by passing a template through the formed section or by measuring the depth of opening of the extrusion template of the curb forming machine. If a slip form paver is used for sidewalk placement, the subgrade shall be true to grade prior to concrete placement and the thickness will be determined by measuring each edge of the completed slab.

3.8.4 Surface Evaluation

The finished surface of each category of the completed work shall be uniform in color and free of blemishes and form or tool marks.

3.9 SURFACE DEFICIENCIES AND CORRECTIONS

3.9.1 Thickness Deficiency

When measurements indicate that the completed concrete section is deficient in thickness by more than 1/4 inch the deficient section will be removed, between regularly scheduled joints, and replaced.

3.9.2 High Areas

In areas not meeting surface smoothness and plan grade requirements, high areas shall be reduced either by rubbing the freshly finished concrete with carborundum brick and water when the concrete is less than 36 hours old or by grinding the hardened concrete with an approved surface grinding machine after the concrete is 36 hours old or more. The area corrected by grinding the surface of the hardened concrete shall not exceed 5 percent of the area of any integral slab, and the depth of grinding shall not exceed 1/4 inch. Pavement areas requiring grade or surface smoothness corrections in excess of the limits specified above shall be removed and replaced.

3.9.3 Appearance

Exposed surfaces of the finished work will be inspected by the Government and any deficiencies in appearance will be identified. Areas which exhibit excessive cracking, discoloration, form marks, or tool marks or which are otherwise inconsistent with the overall appearances of the work shall be removed and replaced.

END OF SECTION 32 16 13

SECTION 32 17 23

PAVEMENT MARKINGS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D 792	(2000) Density and Specific Gravity (Relative Density) of Plastics by Displacement
ASTM E 28	(2004) Softening Point of Resins Derived from Naval Stores by Ring and Ball Apparatus

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

Product Data

Equipment

Lists of proposed equipment, including descriptive data, and notifications of proposed Contractor actions as specified in this section. List of removal equipment shall include descriptive data indicating area of coverage per pass, pressure adjustment range, tank and flow capacities, and safety precautions required for the equipment operation.

Composition Requirements

Manufacturer's current printed product description and Material Safety Data Sheets (MSDS) for each type paint/color proposed for use.

Qualifications

Documentation on personnel qualifications, as specified.

Test Reports

Sampling and Testing

Certified copies of the test reports, prior to the use of the materials at the jobsite. Testing shall be performed by an approved independent laboratory.

Certificates

Volatile Organic Compound (VOC)

Certificate stating that the proposed pavement marking paint meets the VOC regulations of the local Air Pollution Control District having jurisdiction over the geographical area in which the project is located.

1.3 DELIVERY AND STORAGE

All materials shall be delivered and stored in sealed containers that plainly show the designated name, formula or specification number, batch number, color, date of manufacture, manufacturer's name, and directions, all of which shall be plainly legible at time of use.

1.4 EQUIPMENT

All machines, tools and equipment used in the performance of the work shall be approved and maintained in satisfactory operating condition. Equipment operating on roads and runways shall display low speed traffic markings and traffic warning lights.

1.4.1 Thermoplastic Application Equipment

1.4.1.1 Thermoplastic Material

Thermoplastic material shall be applied to the primed pavement surface by spray techniques or by the extrusion method, wherein one side of the shaping die is the pavement and the other three sides are contained by, or are part of, suitable equipment for heating and controlling the flow of material. By either method, the markings shall be applied with equipment that is capable of providing continuous uniformity in the dimensions of the stripe.

1.4.1.2 Application Equipment

- a. Application equipment shall provide continuous mixing and agitation of the material. Conveying parts of the equipment between the main material reservoir and the extrusion shoe or spray gun shall prevent accumulation and clogging. All parts of the equipment which come into contact with the material shall be easily accessible and exposable for cleaning and maintenance. All mixing and conveying parts up to and including the extrusion shoes and spray guns shall maintain the material at the required temperature with heat-transfer oil or electrical-element-controlled heat.
- b. The application equipment shall be constructed to ensure continuous uniformity in the dimensions of the stripe. The applicator shall provide a means for cleanly cutting off stripe ends squarely and shall provide a method of applying "skiplines". The equipment shall be capable of applying varying widths of traffic markings.
- c. The applicator shall be equipped with a drop-on type bead dispenser capable of uniformly dispensing reflective glass spheres at controlled rates of flow. The bead dispenser shall be automatically operated and shall begin flow prior to the flow of composition to assure that the strip is fully reflectorized.

1.4.1.3 Mobile and Maneuverable

Application equipment shall be mobile and maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc. The equipment used for the placement of thermoplastic pavement markings shall be of two general types: mobile applicator and portable applicator.

- a. Mobile Application Equipment: The mobile applicator shall be defined as a truck-mounted, self-contained pavement marking machine that is capable of hot applying thermoplastic by either the extrusion or spray method. The unit shall be equipped to apply the thermoplastic marking material at temperatures exceeding 375 degrees F, at widths varying from 3 to 12 inches and in thicknesses varying from 0.020 to 0.190 inch and shall have an automatic drop-on bead system. The mobile unit shall be capable of operating continuously and of installing a minimum of 20,000 lineal feet of longitudinal markings in an 8-hour day.

- (1) The mobile unit shall be equipped with a melting kettle which holds a minimum of 6,000 pounds of molten thermoplastic material. The kettle shall be capable of heating the thermoplastic composition to temperatures of 375 to 425 degrees F. A thermostatically controlled heat transfer liquid shall be used. Heating of the composition by direct flame will not be allowed. Oil and material temperature gauges shall be visible at both ends of the kettle. The mobile unit shall be equipped with a minimum of two extrusion shoes located one on each side of the truck, and shall be capable of marking simultaneous edgeline and centerline stripes. Each extrusion shoe shall be a closed, oil-jacketed unit; shall hold the molten thermoplastic at a temperature of 375 to 425 degrees F; and shall be capable of extruding a line of 3 to 8 inches in width; and at a thickness of not less than 0.125 inch or more than 0.190 inch, and of generally uniform cross section. The mobile unit shall be equipped with a spray gun system. The spray system shall consist of a minimum of four spray guns, located two on each side of the truck, and shall be capable of marking simultaneous edgeline and centerline stripes. The spray system shall be surrounded (jacketed) with heating oil to maintain the molten thermoplastic at a temperature of 375 to 425 degrees F; and shall be capable of spraying a stripe of 3 to 12 inches in width, and in thicknesses varying from 0.055 inch to 0.095 inch, and of generally uniform cross section.
- (2) The mobile unit shall be equipped with an electronic programmable line pattern control system. The control system shall be capable of applying skip or solid lines in any sequence, through any and all of the extrusion shoes, or the spray guns, and in programmable cycle lengths. In addition, the mobile unit shall be equipped with an automatic counting mechanism capable of recording the number of lineal feet of thermoplastic markings applied to the pavement surface with an accuracy of 0.5 percent.

- b. Portable Application Equipment: The portable applicator shall be defined as hand-operated equipment, specifically designed for placing special markings such as crosswalks, stopbars, legends, arrows, and short lengths of lane, edge and centerlines. The portable applicator shall be capable of applying thermoplastic pavement markings by the extrusion method. The portable applicator shall be loaded with hot thermoplastic composition from the melting kettles on the mobile applicator. The portable applicator shall be equipped with all the necessary components, including a materials storage reservoir, bead dispenser, extrusion shoe, and heating accessories, so as to be capable of holding the molten thermoplastic at a temperature of 375 to 425 degrees F, of extruding a line of 3 to 12 inches in width, and in thicknesses of not less than 0.125 inch nor more than 0.190 inch and of generally uniform cross section.

1.4.2 Surface Preparation Equipment

1.4.2.1 Sandblasting Equipment

Sandblasting equipment shall include an air compressor, hoses, and nozzles of proper size and capacity as required for cleaning surfaces to be painted. The compressor shall be capable of furnishing not less than 150 cfm of air at a pressure of not less than 90 psi at each nozzle used, and shall be equipped with traps that will maintain the compressed air free of oil and water.

1.4.2.2 Waterblast Equipment

The water pressure shall be specified at 2600 psi at 140 degrees F in order to adequately clean the surfaces to be marked.

1.4.3 Marking Removal Equipment

Equipment shall be mounted on rubber tires and shall be capable of removing markings from the pavement without damaging the pavement surface or joint sealant. Waterblasting equipment shall be capable of producing an adjustable, pressurized stream of water. Sandblasting equipment shall include an air compressor, hoses, and nozzles. The compressor shall be equipped with traps to maintain the air free of oil and water.

1.4.3.1 Shotblasting Equipment

Shotblasting equipment shall be capable of producing an adjustable depth of removal of marking and pavement. Each unit shall be self-cleaning and self-contained, shall be able to confine dust and debris from the operation, and shall be capable of recycling the abrasive for reuse.

1.4.3.2 Chemical Equipment

Chemical equipment shall be capable of application and removal of chemicals from the pavement surface, and shall leave only non-toxic biodegradable residue.

1.4.4 Traffic Controls

Suitable warning signs shall be placed near the beginning of the worksite and well ahead of the worksite for alerting approaching traffic from both directions. Small markers shall be placed along newly painted lines or freshly placed raised markers to control traffic and prevent damage to newly painted surfaces or displacement of raised pavement markers. Painting equipment shall be marked with large warning signs indicating slow-moving painting equipment in operation.

1.5 MAINTENANCE OF TRAFFIC

1.5.1 Roads, Streets, and Parking Areas

When traffic must be rerouted or controlled to accomplish the work, the necessary warning signs, flag persons, and related equipment for the safe passage of vehicles shall be provided.

1.6 WEATHER LIMITATIONS FOR REMOVAL

Surface temperature shall be at least 40 degrees F and rising at the beginning of operations, except those involving shot or sand blasting. Operation shall cease during thunderstorms. Operation shall cease during rainfall, except for waterblasting and removal of previously applied chemicals. Waterblasting shall cease where surface water accumulation alters the effectiveness of material removal.

1.7 QUALIFICATIONS

The Contractor shall submit documentation certifying that pertinent personnel are qualified for equipment operation and handling of chemicals.

1.8 SUMMARY

1.8.1 Related Sections

Division 01 Sustainable Design Requirements for LEED point and submittal requirements.

PART 2 - PRODUCTS

2.1 PAINT

Pavement marking materials shall be in accordance with California Department of Transportation Section 84 - Markings or the requirements indicated below:

2.2 THERMOPLASTIC COMPOUNDS

The thermoplastic reflectorized pavement marking compound shall be extruded or sprayed in a molten state onto a primed pavement surface. Following a surface application of glass beads and

upon cooling to normal pavement temperatures, the marking shall be an adherent reflectorized strip of the specified thickness and width that is capable of resisting deformation by traffic.

2.2.1 Composition Requirements

Reflective thermoplastic compound pavement markings shall be alkyd-based and shall comply with the requirements in Section 84 - Markings of the California Department of Transportation Standard Specifications. Hydrocarbon based reflective thermoplastic compound pavement markings shall not be used. The compound shall not deteriorate by contact with sodium chloride, calcium chloride, oil content of pavement materials, or from oil droppings from traffic.

2.2.2 Physical Properties

2.2.2.1 Color

The color shall be as indicated.

2.2.2.2 Drying Time

When installed at 70 degrees F and in thicknesses between 1/8 and 3/16 inch, after curing 15 minutes.

2.2.2.3 Softening Point

The composition shall have a softening point of not less than 194 degrees F when tested in accordance with ASTM E 28.

2.2.2.4 Specific Gravity

The specific gravity of the composition shall be between 1.9 and 2.2 as determined in accordance with ASTM D 792.

2.2.3 Asphalt Concrete Primer

The primer for asphalt concrete pavements shall be a thermosetting adhesive with a solids content of pigment reinforced synthetic rubber and synthetic plastic resin dissolved and/or dispersed in a volatile organic compound (VOC). Solids content shall not be less than 10 percent by weight at 70 degrees F and 60 percent relative humidity. A wet film thickness of 0.005 inch, plus or minus 0.001 inch, shall dry to a tack-free condition in less than 5 minutes.

2.2.4 Portland Cement Concrete Primer

The primer for Portland cement concrete pavements shall be an epoxy resin primer. The primer shall be of the type recommended by the manufacturer of the thermoplastic composition. Epoxy primers recommended by the manufacturer shall be approved by the Contracting Officer prior to use. Requests for approval shall be accompanied with technical data, instructions for use, and a 1 quart sample of the primer material.

2.3 SAMPLING AND TESTING

Materials proposed for use shall be stored on the project site in sealed and labeled containers, or segregated at the source of supply, sufficiently in advance of needs to allow 60 days for testing. Upon notification by the Contractor that the material is at the site or source of supply, a sample shall be taken by random selection from sealed containers by the Contractor in the presence of a representative of the Contracting Officer. Samples shall be clearly identified by designated name, specification number, batch number, manufacturer's formulation number, project contract number, intended use, and quantity involved. No material shall be used at the project prior to receipt by the

Contractor of written notice that the materials meet the laboratory requirements. Testing shall be performed by an approved independent laboratory. If materials are approved based on reports furnished by the Contractor, samples will be retained by the Government for possible future testing should the material appear defective during or after application.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

All new pavement surfaces shall be at least 30 days old before applying paint. Surfaces to be marked shall be thoroughly cleaned before application of the pavement marking material. Dust, dirt, and other granular surface deposits shall be removed by sweeping, blowing with compressed air, rinsing with water or a combination of these methods as required. Rubber deposits, surface laitance, existing paint markings, and other coatings adhering to the pavement shall be completely removed with scrapers, wire brushes, sandblasting, approved chemicals, or mechanical abrasion as directed. Areas of old pavement affected with oil or grease shall be scrubbed with several applications of trisodium phosphate solution or other approved detergent or degreaser, and rinsed thoroughly after each application. After cleaning, oil-soaked areas shall be sealed with cut shellac to prevent bleeding through the new paint. Pavement surfaces shall be allowed to dry, when water is used for cleaning, prior to striping or marking. Surfaces shall be recleaned, when work has been stopped due to rain.

3.1.1 Cleaning Existing Pavement Markings

In general, markings shall not be placed over existing pavement marking patterns. Existing pavement markings, which are in good condition but interfere or conflict with the newly applied marking patterns, shall be removed. New preformed and thermoplastic pavement markings shall not be applied over existing preformed or thermoplastic markings. Whenever grinding, scraping, sandblasting or other operations are performed the work must be conducted in such a manner that the finished pavement surface is not damaged or left in a pattern that is misleading or confusing. When these operations are completed the pavement surface shall be blown off with compressed air to remove residue and debris resulting from the cleaning work.

3.1.2 Cleaning Concrete Curing Compounds

On new Portland cement concrete pavements, cleaning operations shall not begin until a minimum of 30 days after the placement of concrete. All new concrete pavements shall be cleaned by either sandblasting or water blasting. When water blasting is performed, thermoplastic and preformed markings shall be applied no sooner than 24 hours after the blasting has been completed. The extent of the blasting work shall be to clean and prepare the concrete surface as follows:

- a. There is no visible evidence of curing compound on the peaks of the textured concrete surface.
- b. There are no heavy puddled deposits of curing compound in the valleys of the textured concrete surface.
- c. All remaining curing compound is intact; all loose and flaking material is removed.
- d. The peaks of the textured pavement surface are rounded in profile and free of sharp edges and irregularities.
- e. The surface to be marked is dry.

3.2 APPLICATION

All pavement markings and patterns shall be placed as shown on the plans. Pavement marking types shall be as follows:

Marking description

Type of pavement marking

Cross-walks

Paint or White Thermoplastic markings

Parking stall striping & related markings (e.g. H/C, compact, etc.)	Paint, color as indicated
Parking Lot Driveways (roads leading to Parking lots)	Single yellow paint

3.2.1 Thermoplastic Compounds

Thermoplastic pavement markings shall be placed upon dry pavement; surface dry only will not be considered an acceptable condition. At the time of installation, the pavement surface temperature shall be a minimum of 40 degrees F and rising. Thermoplastics, as placed, shall be free from dirt or tint.

3.2.1.1 Longitudinal Markings

All centerline, skipline, edgeline, and other longitudinal type markings shall be applied with a mobile applicator. All special markings, crosswalks, stop bars, legends, arrows, and similar patterns shall be placed with a portable applicator, using the extrusion method.

3.2.1.2 Primer

After surface preparation has been completed the asphalt and/or concrete pavement surface shall be primed. The primer shall be applied with spray equipment. Primer materials shall be allowed to "set-up" prior to applying the thermoplastic composition. The asphalt concrete primer shall be allowed to dry to a tack-free condition, usually occurring in less than 10 minutes. The Portland cement concrete primer shall be allowed to dry in accordance with the thermoplastic manufacturer's recommendations. To shorten the curing time of the epoxy resins an infrared heating device may be used on the concrete primer.

- a. Asphalt Concrete Primer: Primer shall be applied to all asphalt concrete pavements at a wet film thickness of 0.005 inch, plus or minus 0.001 inch (265-400 square feet/gallon).
- b. Portland Cement Concrete Primer: Primer shall be applied to all concrete pavements (including concrete bridge decks) at a wet film thickness of between 0.04 to 0.05 inch (320-400 square feet/gallon).

3.2.1.3 Markings

After the primer has "set-up", the thermoplastic shall be applied at temperatures no lower than 375 degrees F or higher than 425 degrees F at the point of deposition. Immediately after installation of the marking, drop-on glass spheres shall be mechanically applied so that the spheres are held by and imbedded in the surface of the molten material.

- a. Extruded Markings: All extruded thermoplastic markings shall be applied at the specified width and at a thickness of not less than 0.125 inch or more than 0.190 inch.
- b. Sprayed Markings: All sprayed thermoplastic markings shall be applied at the specified width and the thicknesses designated in the contract plans. If the plans do not specify a thickness, centerline markings shall be applied at a wet thickness of 0.090 inch, plus or minus 0.005 inch, and edgeline markings at a wet thickness of 0.060 inch plus or minus 0.005 inch.
- c. Reflective Glass Spheres: Immediately following application, reflective glass spheres shall be dropped onto the molten thermoplastic marking at the rate of 1 pound/20 square feet of compound.

3.3 MARKING REMOVAL

Pavement marking, including plastic tape, shall be removed in the areas shown on the drawings. Removal of marking shall be as complete as possible without damage to the surface. Aggregate shall not be exposed by the removal process. After the markings are removed, the cleaned

pavement surfaces shall exhibit adequate texture for remarking as specified in paragraph SURFACE PREPARATION. Contractor shall demonstrate removal of pavement marking in an area designated by the Contracting Officer. The demonstration area will become the standard for the remainder of the work.

3.3.1 Equipment Operation

Equipment shall be controlled and operated to remove markings from the pavement surface, prevent dilution or removal of binder from underlying pavement, and prevent emission of blue smoke from asphalt or tar surfaces.

3.3.2 Cleanup and Waste Disposal

The worksite shall be kept clean of debris and waste from the removal operations. Debris shall be disposed outside of Government controlled property.

END OF SECTION 32 17 24.00 10

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SECTION 348000 – PRE-FABRICATED BRIDGE

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This section describes the minimum requirements for the design, materials, fabrication, and installation of the pedestrian bridge as indicated on the Plans and as specified herein. The design shall be in accordance with the structural drawings/plans prepared by Tetra Tech and shall conform to all applicable codes and standards listed in Section 1.2 of this specification.
- B. All engineering design and related detailing of the bridge shall be provided by the supplier. The design and detailing shall conform to applicable codes listed in this specification.
- C. Supplier shall be responsible for the delivery of all bridge materials.
- D. These specifications are for fully engineered clear span bridge of aluminum construction and be regarded as minimum standards for design and construction.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. American Institute of Steel Construction (AISC) Manual of Steel Construction, Fourteenth Edition
- B. AASHTO, Guide Specification for Design of Pedestrian Bridges
- C. The Aluminum Association, Specifications and Guidelines for Aluminum Structures, latest edition
- D. Aluminum Structures, A Guide to Their Specification and Design, latest edition
- E. American Welding Society, Structural Welding Code, D1.2, latest edition
- F. National Design Specification for Wood Construction, ANSI NDS, latest edition
- G. American Wood Preservers Association Standards, latest edition.
- H. American Society for Testing and Materials (ASTM)
 - A242 Specification for High-Strength Low-Alloy Structural Steel
 - A325 Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
 - A588 Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi Minimum Yield Point, with Atmospheric Corrosion Resistance
 - A606 Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance
 - A847 Specification for Cold-Formed Welded and Seamless High-Strength, Low-Alloy Structural Tubing with Improved Atmospheric Corrosion Resistance
- I. American Welding Society (AWS)
 - D1.1 Structural Welding Code
 - D1.5 Bridge Welding Code

1.3 QUALITY CONTROL

- A. The bridge manufacturer shall have been in the business of design and fabrication of bridges for a minimum of five years.
- B. Open truss bridge shall be designed by a professional engineer experienced in pony truss bridge design and top chord stability criteria utilizing elastic lateral restraints.
- C. Bridge fabricator shall be certified by the American Institute of Steel Construction to have the personnel, organization, experience, capability and commitment to produce fabricated structural steel for Conventional Steel Structures and Simple Steel Bridge Structures with both Major Bridge and Sophisticated Paint Endorsement as set forth in the AISC Certification Program.
- D. Welding operators shall be properly accredited experienced operators, each of whom shall submit satisfactory evidence of experience and skill in welding structural steel with the kind of welding to be used in the work, and who have demonstrated the ability to make good uniform welds meeting the sizes and types of welds required.

1.4 SUBMITTALS

- A. Submit bridge superstructure design calculations for approval prior to fabrication. Calculations shall be signed and sealed by a State of California registered civil or structural engineer. At minimum the following criteria must be included for approval:
 - 1. Bridge Reactions for all load combinations (I-V) as outlined in this specification
 - 2. Expansion and Contraction Requirements and/or induced loads
 - 3. Critical weld analysis results
 - 4. Bolted Splice Calculations (if applicable)
 - 5. Detailed Description of Applied Loads and Conditions for all load combinations
 - 6. Member maximum allowables for all load and design conditions
 - 7. FEA boundary conditions
 - 8. FEA Data Input
 - 9. FEA results and supplementary calculations for all Stress & Deflection Analyses
 - 10. FEA results for frame stability analysis
 - 11. FEA results for frequency analysis
- B. Submit shop drawings of all bridge components and appurtenances for the Engineer's approval before delivery to the project site. Bridge shop drawings shall be signed and sealed by a State of California registered civil or structural engineer. At minimum the following criteria must be included for approval:
 - 1. All Relevant Bridge Dimensions
 - 2. Bridge Cross sections
 - 3. Sufficient Detailing

4. Member Cross sections
 5. General Notes indicating material specifications
 6. Weld Details
 7. Detail of Bolted Splices
 8. Signature and Seal of SE or PE licensed in accordance with this specification
 9. Camber Details
- C. Provide copies of materials, notarized certificates of compliance signed by material producer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.
- D. Provide a list of five successful bridge projects of similar construction, each of which has been in service for at least three years.
- E. Submit bridge fabricator's certification.
- F. Weld procedure specifications, procedure qualification records including all destructive and nondestructive test results and welding bead profiles, and individual welder qualification certificates.
- 1.5 GENERAL FEATURES OF DESIGN FOR PEDESTRIAN BRIDGE SUPERSTRUCTURE**
- A. Bridge Dimensions and Camber
1. Width: Inside clear width between trusses shall be: 12 feet 8 inches.
 2. Span: End to End of bridge shall be 84 feet 0 inches.
 3. Camber: Bridge shall be cambered to offset Dead Load.
 4. Slope: Bridge shall be designed for abutments constructed at the same elevation as indicated in the structural drawings/plans. At a minimum, the end vertical truss members shall be perpendicular to the ground (horizon) after the bridge is erected and dead loads applied.
- B. System
1. Bridge shall be a Contour style aluminum truss bridge, as defined in the structural drawings and this specification, or similar in look and function. Style must be approved by the Engineer and Owner in accordance of this specification.
 2. Bridge shall be fabricated and delivered as continuous and pre-assemble structures unless mid-span splices are required.
 3. Bridge shall incorporate an Enclosed Floor System to hide horizontal bracing, floor beams and stringer from view.
 4. Bridge shall be designed utilizing an H-section configuration, where the floor support system intersects the truss verticals above the bottom chord to increase stability.
- C. Safety & Hand Rails
1. Bridge shall incorporate a Combination Rail system consisting of vertical pickets, a graspable top rail, and curb bottom rail, which shall minimize climbing hazards and serve the function of guard, hand, and toe rail. The Combination Rail system shall meet all the dimensional

requirements of FDOT Aluminum Pedestrian/Bicycle Picket Railing – Index No. 860 or pre-approved equal.

- a. Top of top rail shall not be less than 36" above the finished deck.
- b. Clear opening between pickets shall reject the passage of a 4" diameter sphere up to the height specified in 1.5 C. a. of this Section.
- c. Clear opening between bottom rail and finished deck shall reject the passage of a 2" diameter sphere.
- d. Graspable portion of top rail shall be round with a 1 1/4" to 2" OD or equivalent gripping surface.
- e. Ends of handrails shall be returned smoothly to floor or posts.
- f. A 1.5" clear distance between wall and top rail must be maintained.
- g. All geometry is to be smooth with no sharp corners

1.6 PEDESTRIAN BRIDGE SUPERSTRUCTURE DESIGN LOADS AND LIMITATIONS

- A. Dead Load: The bridge shall be designed considering its own dead load including structure and originally designed decking. The maximum weight of the bridge shall not exceed the weight as listed on the contract drawings prepared by Tetra Tech.
- B. Pedestrian Live Load
 1. Main supporting members, including trusses, primary beams, and arches shall be designed for a uniformly distributed load of 90 pounds per square foot and H10 traffic loading with AASHTO prescribed impact load.
 2. Secondary members, including deck and supporting floor system shall be designed for a live load of 90 pounds per square foot and H10 traffic loading with AASHTO prescribed impact load, with no reduction allowed.
- C. Wind Loads
 1. Horizontal Wind Load
 - a. The Bridge shall be designed for a horizontal wind load of 100 miles per hour, applied to the full vertical projected area of the bridge as if enclosed, at right angles to the longitudinal axis of the structure. Wind loads shall be proportionally distributed across all exposed primary member surfaces including chords, vertical posts, and truss diagonals on the windward side.
 - b. Fatigue effects shall be considered for all load combinations incorporating wind loads, where $n=100,000$ cycles.
 2. Overturning Wind Load: The effect of forces tending to overturn the structure shall be calculated assuming that the wind direction is at right angles to the longitudinal axis of the structure. In addition, an upward force shall be applied at the windward quarter point of the transverse superstructure width. This force shall be 20 pounds per square foot of deck influence area.
 3. Top Chord/Rail Load: The top chord, top rail, and vertical posts shall be designed for a simultaneous vertical and horizontal load of 50 pounds per linear foot or a 200 pound point load, whichever is greater, positioned to produce the maximum load effect.

4. Vertical Pickets: The picket system shall be designed for a 200 pound point load, applied transversely over an area of 1 square feet.
- D. Temperature: Bridge shall be designed to accommodate a temperature differential of 120 degrees Fahrenheit. Slip pads of UHMW polyethylene shall be placed between the smooth surface of this setting plate & the smooth bearing plate of the bridge. At least 1" clearance shall be provided between the bridge & concrete abutments.
- E. Deflection: The vertical deflection of the bridge due to pedestrian live load shall not exceed 1/360 of the span length. The minimum load used for the deflection check shall be a minimum of 500 pounds per lineal foot of the bridge. The Horizontal deflection due to lateral wind load shall not exceed 1/500 of the span length.
- F. Allowable Stresses: All allowable stresses for aluminum shall be determined in accordance with the Aluminum Association, Specifications and Guidelines for Aluminum Structures, supplemented by Aluminum Structures, A Guide to Their Specification and Design. Allowable stresses are to be reduced to account for effects due to welding and/or fatigue where applicable. Allowable stresses for Load Combinations which include wind loads may be increased by 25%. All allowable stresses for pressure treated pine shall be determined in accordance with NDS, Design values for wood construction.
- G. Frame Stability: The buckling load factor for the bridge structure shall be no less than 4 for any combination of applied loads, to ensure adequate overall stability and stiffness.
- H. Vibration: The fundamental frequency of the unloaded pedestrian bridge shall be no less than 3.0 Hz to avoid the first harmonic.
- I. Analysis: Full structural analyses for the primary bridge structure shall be completed using a 3-D finite element analysis. All member end conditions are to be considered fixed. Other analysis methods may be used for secondary members. All analysis and results necessary to determine the structural adequacy of the bridge shall be reported. The following analyses are required:
1. Stress and Deflection: Analysis shall be completed to determine that all bridge members, critical connections, and bridge configurations are sufficient to adequately resist the following load combinations and in accordance with Section 1.6 E through H of this Specification:
 - a. Load Combination I – Dead Load Only
 - b. Load Combination II – Dead Load + Pedestrian Live Load
 - c. Load Combination III – Dead Load + Wind Loads
 - d. Load Combination V – Top Chord/Rail Load
 2. Frame Stability: Buckling analysis shall be completed to determine that the bridge frame is adequately stable and sufficient to resist forces causing it to buckle for the following load combinations and in accordance with Section 1.6 E through H of this Specification .
 - a. Load Combination II – Dead Load + Pedestrian Live Load
 - b. Load Combination III – Dead Load + Wind Loads
 - c. Load Combination IV – Dead Load + Vehicle loads
 3. Frequency: Frequency analysis shall be completed to determine that the bridge frame is sufficient to avoid resonance due to frequencies likely encountered under normal use for the

following load combinations and in accordance with Section 1.6 E through H of this Specification .

- a. Load Combination I – Dead Load Only

PART 2 – PRODUCTS

2.1 PRE-ENGINEERED BRIDGE MATERIALS

- A. Provide an aluminum pedestrian bridge superstructure pre-engineered and prefabricated. The bridge shall be a clear span bridge of welded steel construction.
- B. The specific type of bridge required will be a Gator Bridge Standard "Cascade style aluminum truss bridge with dark brown powder coating, as defined in the structural drawings and this specification, or similar in look and function. Style must be approved in accordance with applicable codes and standards listed in this specification. GatorBridge by CMI Limited Co. (2880 Mellonville Avenue, Sanford, FL 32773. www.cmilc.com), or Engineer approved equal.
- C. All primary structural members are to be 6061-T6 aluminum. Secondary members are to be 6000 series aluminum for corrosion resistance.
- D. Deck: Shall be aluminum alloy 6061-T6 extruded in accordance with the requirements of applicable sections of Federal Specifications QQ-A-200. Extruded aluminum slats shall have a raised ribbed surface integral to the extrusion. Ribs shall be mechanically knurled transversely to the ribbing to provide a non-skid surface. The legs of each decking slat shall be welded to the side members and to any longitudinal with a minimum of 1-1/4 inches of weld per leg. The decking slats shall be placed transversely.
- E. Bearing Pads: All bearing pads shall be 1" thick UHMW adequately dimensioned to provide support to the structure over the full travel resulting from expansion and contraction.
- F. Fasteners: All fasteners required for assembly shall be stainless steel type 304. Insulating washer shall be provided where stainless steel and aluminum contact is anticipated to minimize the potential for galvanic action.

PART 3 - EXECUTION

3.1 FABRICATION

- A. Fabricate bridge in accordance with American Association of State Highway and Transportation Officials Specifications.
- B. When required to accommodate contractor requirements or those of this specification, mid span splices shall be incorporated and be adequately designed to meet all criteria specified in Section 1.6 of this document. Mid-span splices shall be designed and fabricated in accordance with the Aluminum Association, Specifications and Guidelines for Aluminum Structures, supplemented by Aluminum Structures, A Guide to Their Specification and Design.
- C. All aluminum members shall be welded using 5356 aluminum filler wire in accordance with AWS D1.2
- D. All welds shall be visually inspected by a Certified Welding Inspector. All complete penetration chord member welds shall be Magnetic Particle (MT) inspected and 10 percent of all other welds shall be MT tested.

- E. Expansion Slots shall be cut into bridge bearing area to allow for proper expansion and contraction of the bridge.

3.2 FINISHES

- A. Finished shall be approved by Engineer and Owner.
- B. Painted System: Not required for powder steel.

3.3 DELIVERY AND ERECTION

- A. The bridge shall be delivered by truck to a location nearest to the site accessible by roads.
- B. Allow adequate time for delivery of the bridge structure to the site from the bridge manufacturer in advance of arrival of bridge erection equipment, whether from ground by crane or from air by helicopter.
- C. The manufacturer shall advise the Contractor of the actual lifting weights, attachment points and all necessary information to install the bridge prior to fabrication.
- D. Handle and erect the bridge so as not to get dirt, oil, concrete, or other foreign matter on the weathering steel that might inhibit the natural protective rusting process of the steel.

3.4 WARRANTY

- A. Bridge manufacturer shall carry a 10-year warranty against defects in material and Workmanship in its manufacture and when used within stated capacity.

END OF SECTION

BID ITEMS

B⁽ⁱ⁾

BID ITEM DESCRIPTIONS

GENERAL

The Contract payment for the specified items of work as set forth in the Bid Schedule shall be full compensation for furnishing all labor, materials, methods or processes, implements, tools, equipment and incidentals and for doing all work involved as required by the provisions of the Contract Documents for a complete in place and operational system.

- A. Unless otherwise specified in the Specifications, quantities of work shall be determined per each, or from measurements or dimensions in a horizontal plane. All materials shall be measured on the basis of "in place" quantities and paid for using the units listed in the bid schedule.
- B. Except as noted, the Engineer will make field measurements of unit price items in order to determine the quantities of the various items as a basis for payment. On all unit price items, the contractor will be paid for the actual amount of the work performed in accordance with the contract documents, as computed from field measurements.
- C. Work or quantities not listed in the description of bid items are considered incidental to other construction and will not be separately measured or paid for. Compensation for such work and/or material shall be included in the prices paid for other items of work.

BID ITEMS:

Bid Item 1 - Mobilization, Demo, and Clean-Up: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per LUMP SUM.

Bid Item 2 - Traffic Control: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per LUMP SUM.

Bid Item 3 - Stormwater Protection Plan: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per LUMP SUM.

Bid Item 4 - Remove Sidewalk: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per CUBIC YARD.

Bid Item 5 - Remove Gate: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per Each.

Bid Item 6 - Remove Curb & Gutter: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per LINEAR FOOT.

Bid Item 7 - Unclassified Excavation: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per CUBIC YARD.

Bid Item 8 - Asphalt Concrete: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per TON.

Bid Item 9 - Base Material: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per CUBIC YARD.

Bid Item 10 – Concrete Ramp: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per CUBIC YARD.

Bid Item 11 – Retaining Wall: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per LINEAR FOOT.

Bid Item 12 – Structural Backfill: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per CUBIC YARD.

Bid Item 13 – Structural Excavation: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per CUBIC YARD.

Bid Item 14 – Bridge: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per LUMP SUM.

Bid Item 15 – Concrete Curb: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per LINEAR FOOT.

Bid Item 16 – Striping: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per LINEAR FOOT.

Bid Item 17 – Pavement Markings: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per Each.

Bid Item 18 – Signs: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per Each.

Bid Item 19 – Rectangular Rapid Flashing Beacons: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per Each.

Bid Item 20 – Headwall and Wingwall: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per Each

Bid Item 21 – Guardrail: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per LINEAR FOOT

Bid Item 22 – Welded Wire Fence: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per LINEAR FOOT

Bid Item 23 – Welded Wire Gate: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per Each

Bid Item 24 – Bollards: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per Each.

Bid Item 25 – Lighting Poles: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per Each.

Bid Item 26 – Excavation for Bioretention Areas: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per Cubic Yard.

Bid Item 27 – Bioretention Areas- Soil Media: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per Cubic Yard.

Bid Item 28 – Bioretention Areas – Drainage Stone: Payment for this item shall include full compensation for all labor, materials, tools, equipment and incidentals. This bid item will be paid for Per Cubic Yard

FEDERAL REQUIREMENTS

NOTICE TO BIDDERS FEDERAL REQUIREMENTS

Proposal Phase

For your bid to be considered responsive, you must submit the following form, either with your bid or within five (5) business days after bid opening:

- ☐ Construction Contract DBE Commitment, Exhibit 15-G (p. F-32)

In addition, you are strongly encouraged, and may be required, to submit the following form as a supplement to Exhibit 15-G:

- ☐ DBE Information – Good Faith Efforts, Exhibit 15-H (p. F-34)

Upon execution and submission of your bid, you are agreeing to be bound by the following (but do not need to return the forms):

- Equal Employment Opportunity Certification (p. F-26)
- Public Contract Code Requirements (p. F-27)
- Debarment and Suspension Certification (p. F-28)
- Nonlobbying Certification for Federal-Aid Contracts (p. F-29)

If applicable, the following form must be submitted with the bid:

- ☐ Disclosure of Lobbying Activities (p. F-30)

Construction Phase

Contractors who are awarded a public works project must submit electronic payroll records to the DIR's Compliance Monitoring Unit (CMU) in addition to providing wet-ink original copies to the City or its designated labor compliance enforcement officer.

If applicable, you will be required to submit the following forms each month during construction:

- ☐ Disadvantaged Business Enterprise Running Tally of Payments (p. F-37)
- ☐ Monthly DBE Trucking Verification (p. F-38)

Post-Construction Phase

When construction is completed, you will be required to submit the following forms to the City:

- ☐ Final Report – Utilization of Disadvantaged Businesses (p. F-40)
- ☐ Disadvantaged Business Enterprises (DBE) Certification Status Change (p. F-42)

EXHIBIT 12-G REQUIRED FEDERAL-AID CONTRACT LANGUAGE

(For Local Assistance Construction Projects)

The following language must be incorporated into all Local Assistance Federal-aid construction contracts.
The following language, with minor edits, was taken from the Code of Federal Regulations.

MAINTAIN RECORDS AND SUBMIT REPORTS DOCUMENTING YOUR PERFORMANCE UNDER THIS SECTION

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B.	CONTRACT ASSURANCE.....	F-3
C.	PROMPT PROGRESS PAYMENT	F-3
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1. DISADVANTAGED BUSINESS ENTERPRISES (DBE)

The contractor, subrecipient or subcontractor shall take necessary and reasonable steps to ensure that DBEs have opportunity to participate in the contract (49 CFR 26). To ensure equal participation of DBEs provided in 49 CFR 26.5, the Agency shows a contract goal for DBEs. The prime contractor shall make work available to DBEs and select work parts consistent with available DBE subcontractors and suppliers.

The prime contractor shall meet the DBE goal shown elsewhere in these special provisions or demonstrate that they made adequate good faith efforts to meet this goal.

It is the prime contractor's responsibility to verify that at date of bid opening the DBE firm is certified as a DBE by using the California Unified Certification Program (CUCP) database and possesses the most specific available North American Industry Classification System (NAICS) codes and work codes applicable to the type of work the firm will perform on the contract. Additionally, the prime contractor is responsible for documenting the verification record by printing out the CUCP data for each DBE firm. A list of DBEs certified by the CUCP can be found here: <https://dot.ca.gov/programs/civil-rights/dbe-search>.

All DBE participation will count toward the California Department of Transportation's federally mandated statewide overall DBE goal.

Credit for materials or supplies the prime contractor purchases from DBEs counts towards the goal in the following manner:

- 100 percent counts if the materials or supplies are obtained from a DBE manufacturer.
- 60 percent counts if the materials or supplies are obtained from a DBE regular dealer.
- Only fees, commissions, and charges for assistance in the procurement and delivery of materials or supplies count if obtained from a DBE that is neither a manufacturer nor regular dealer. 49 CFR 26.55 defines "manufacturer" and "regular dealer."

The prime contractor receives credit toward the goal if they employ a DBE trucking company that performs a commercially useful function as defined in 49 CFR 26.55(d)(1) as follows:

- The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there cannot be a contrived arrangement for the purpose of meeting DBE goals.
- The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.
- The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.
- The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.
- The DBE may lease trucks without drivers from a non-DBE truck leasing company. If the DBE leases trucks from a non-DBE truck leasing company and uses its own employees as drivers, it is entitled to credit for the total value of these hauling services.
- A lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.

a. Nondiscrimination Statement

The contractor, subrecipient or subcontractor will never exclude any person from participation in, deny any person the benefits of, or otherwise discriminate against anyone in connection with the award and performance of any contract covered by 49 CFR 26 on the basis of race, color, sex, or national origin. In administering the Local Agency components of the DBE Program Plan, the contractor, subrecipient or subcontractor will not, directly, or through contractual or other arrangements, use criteria or methods of administration that have the effect of defeating or substantially impairing accomplishment of the objectives of the DBE Program Plan with respect to individuals of a particular race, color, sex, or national origin.

b. Contract Assurance

Under 49 CFR 26.13(b):

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

- (1) Withholding monthly progress payments;
- (2) Assessing sanctions;
- (3) Liquidated damages; and/or
- (4) Disqualifying the contractor from future bidding as non-responsible.

c. Prompt Progress Payment

The prime contractor or subcontractor shall pay to any subcontractor, not later than **seven days** after receipt of each progress payment, unless otherwise agreed to in writing, the respective amounts allowed the contractor on account of the work performed by the subcontractors, to the extent of each subcontractor's interest therein. In the event that there is a good faith dispute over all or any portion of the amount due on a progress payment from the prime contractor or subcontractor to a subcontractor, the prime contractor or subcontractor may withhold no more than 150 percent of the disputed amount. Any violation of this requirement shall constitute a cause for disciplinary action and shall subject the licensee to a penalty, payable to the subcontractor, of 2 percent of the amount due per month for every month that payment is not made.

In any action for the collection of funds wrongfully withheld, the prevailing party shall be entitled to his or her attorney's fees and costs. The sanctions authorized under this requirement shall be separate from, and in addition to, all other remedies, either civil, administrative, or criminal. This clause applies to both DBE and non-DBE subcontractors.

d. Prompt Payment of Withheld Funds to Subcontractors

The Agency may hold retainage from the prime contractor and shall make prompt and regular incremental acceptances of portions, as determined by the Agency, of the contract work, and pay retainage to the prime contractor based on these acceptances. The Agency shall designate one of the methods below in the contract to ensure prompt and full payment of any retainage kept by the prime contractor or subcontractor to a subcontractor. The Agency shall include either Method 1, Method 2, or Method 3 below and delete the other two.

Method 1: No retainage will be held by the Agency from progress payments due to the prime contractor. Prime contractors and subcontractors are prohibited from holding retainage from subcontractors. Any delay or postponement of payment may take place only for good cause and with the Agency's prior written approval. Any violation of these provisions shall subject the violating contractor or subcontractor to the penalties, sanctions, and other remedies specified in Section 7108.5 of the California Business and Professions Code and Section 10262 of the California Public Contract Code. This requirement shall not be construed to limit or impair any contractual, administrative or judicial remedies, otherwise available to the contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the contractor, deficient subcontractor performance and/or noncompliance by a subcontractor. This clause applies to both DBE and non-DBE subcontractors.

Method 2: No retainage will be held by the Agency from progress payments due to the prime contractor. Any retainage kept by the prime contractor or by a subcontractor must be paid in full to the earning subcontractor within seven (7) days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment may take place only for good cause and with the Agency's prior written approval. Any violation of these provisions shall subject the violating contractor or subcontractor to the penalties, sanctions, and remedies specified in Section 7108.5 of the California Business and Professions Code and Section 10262 of the California Public Contract Code. This requirement shall not be construed to limit or impair any contractual, administrative or judicial remedies, otherwise available to the contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the contractor, deficient subcontractor performance and/or noncompliance by a subcontractor. This clause applies to both DBE and non-DBE subcontractors.

Method 3: The Agency shall hold retainage from the prime contractor and shall make prompt and regular incremental acceptances of portions, as determined by the Agency of the contract work and pay retainage to the prime contractor based on these acceptances. The prime contractor or subcontractor shall return all monies withheld in retention from all subcontractors within seven (7) days after receiving payment for work satisfactorily completed and accepted including incremental acceptances of portions of the contract work by the Agency. Any delay or postponement of payment may take place only for good cause and with the Agency's prior written approval. Any violation of these provisions shall subject the violating prime contractor or subcontractor to the penalties, sanctions, and other remedies specified in Section 7108.5 of the California Business and Professions Code and Section 10262 of the California Public Contract Code. This requirement shall not be construed to limit or impair any contractual, administrative or judicial remedies otherwise available to the contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the contractor; deficient subcontractor performance and/or noncompliance by a subcontractor. This clause applies to both DBE and non-DBE subcontractors.

Any violation of these provisions of Prompt Progress Payment and Prompt Payment of Withheld Funds to Subcontractors shall subject the violating prime contractor or subcontractor to the penalties, sanctions and other remedies specified therein. These requirements shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the prime contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the prime contractor, deficient subcontract performance, or noncompliance by a subcontractor.

e. Termination and Substitution of DBE Subcontractors

The prime contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the contractor obtains the Agency's written consent. The prime contractor shall not terminate or substitute a listed DBE for convenience and perform the work with their own forces or obtain materials from other sources without prior written authorization from the Agency. Unless the Agency's prior written consent is provided, the contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE on the Exhibit 15-G Construction Contract DBE Commitment form, included in the Bid.

The Agency authorizes a request to use other forces or sources of materials if the bidder shows any of the following justifications:

1. Listed DBE fails or refuses to execute a written contract based on plans and specifications for the project.
2. The Local Agency stipulated that a bond is a condition of executing the subcontract and the listed DBE fails to meet the Local Agency's bond requirements.
3. Work requires a contractor's license and listed DBE does not have a valid license under Contractors License Law.
4. Listed DBE fails or refuses to perform the work or furnish the listed materials (failing or refusing to perform is not an allowable reason to remove a DBE if the failure or refusal is a result of bad faith or discrimination).
5. Listed DBE's work is unsatisfactory and not in compliance with the contract.
6. Listed DBE is ineligible to work on the project because of suspension or debarment.
7. Listed DBE becomes bankrupt or insolvent.
8. Listed DBE voluntarily withdraws with written notice from the Contract.
9. Listed DBE is ineligible to receive credit for the type of work required.
10. Listed DBE owner dies or becomes disabled resulting in the inability to perform the work on the Contract.
11. The Agency determines other documented good cause.

The prime contractor shall notify the original DBE of the intent to use other forces or material sources and provide the reasons, allowing the DBE 5 days to respond to the notice and advise the prime contractor and the Agency of the reasons why the use of other forces or sources of materials should not occur.

The prime contractor's request to use other forces or material sources must include:

1. One or more of the reasons listed in the preceding paragraph.
2. Notices from the prime contractor to the DBE regarding the request.
3. Notices from the DBEs to the prime contractor regarding the request.

If the Agency authorizes the termination or substitution of a listed DBE, the prime contractor must make good faith efforts to find another DBE to substitute for the original DBE. The substitute DBE must (1) perform at least the same amount of work as the original DBE under the contract to the extent needed to meet or exceed the DBE goal; and (2) be certified as a DBE with the most specific available NAICS codes and work codes applicable to the type of work the DBE will perform on the contract at the time of the prime contractor's request for substitution. The prime contractor shall submit their documentation of good faith efforts within 7 days of their request for authorization of the substitution. The Agency may authorize a 7-day extension of this submittal period at the prime contractor's request. More guidance can be found at 49 CFR 26 app A regarding evaluation of good faith efforts to meet the DBE goal.

f. Commitment and Utilization

Note: In the Agency's reports of DBE participation to Caltrans, the Agency must display both commitments and attainments.

The Agency's DBE program must include a monitoring and enforcement mechanism to ensure that DBE commitments reconcile to DBE utilization.

The bidder shall submit the Exhibit 15-G Construction Contract DBE Commitment, included in the Bid book. This exhibit is the bidder's DBE commitment form. If the form is not submitted with the bid, the bidder must remove the form from the Bid book before submitting their bid.

The bidder shall complete and sign Exhibit 15-G Construction Contract DBE Commitment included in the contract documents regardless of whether DBE participation is reported. The bidder shall provide written confirmation from each DBE that the DBE is participating in the Contract. A copy of a DBE's quote serves as written confirmation. If a DBE is participating as a joint venture partner, the bidder shall submit a copy of the joint venture agreement.

If the DBE Commitment form, Exhibit 15-G, is not submitted with the bid, it must be completed and submitted by all bidders to the Agency within five (5) days of bid opening. If the bidder does not submit the DBE Commitment form within the specified time, the Agency will find the bidder's bid nonresponsive.

The prime contractor shall use each DBE subcontractor as listed on Exhibit 12-B Bidder's List of Subcontractors (DBE and Non-DBE), and Exhibit 15-G Construction Contract DBE Commitment form unless they receive authorization for a substitution.

The Agency shall request the prime contractor to:

1. Notify the Resident Engineer or Inspector of any changes to its anticipated DBE participation
2. Provide this notification before starting the affected work
3. Maintain records including:
 - Name and business address of each 1st-tier subcontractor
 - Name and business address of each DBE subcontractor, DBE vendor, and DBE trucking company, regardless of tier
 - Date of payment and total amount paid to each business (see Exhibit 9-F Monthly Disadvantaged Business Enterprise Payment)

If the prime contractor is a DBE contractor, they shall include the date of work performed by their own forces and the corresponding value of the work.

Before the 15th of each month, the prime contractor shall submit a Monthly DBE Trucking Verification (LAPM Exhibit 16-Z1) form.

If a DBE is decertified before completing its work, the DBE must notify the prime contractor in writing of the decertification date. If a business becomes a certified DBE before completing its work, the business must notify the prime contractor in writing of the certification date. The prime contractor shall submit the notifications. Upon

work completion, the prime contractor shall complete a Disadvantaged Business Enterprises (DBE) Certification Status Change, Exhibit 17-O, form and submit the form within 30 days of contract acceptance.

Upon work completion, the prime contractor shall complete Exhibit 17-F Final Report – Utilization of Disadvantaged Business Enterprises (DBE), First-Tier Subcontractors and submit it within 90 days of contract acceptance. The Agency will withhold \$10,000 until the form is submitted. The Agency releases the withhold upon submission of the completed form.

g. DBE Running Tally of Attainments

After submitting an invoice for reimbursement that includes a payment to a DBE, but no later than the 10th of the following month, the prime contractor/consultant shall complete and email the Exhibit 9-F: Disadvantaged Business Enterprise Running Tally of Payments, to business.support.unit@dot.ca.gov with a copy to the Agency.

- 2. BID OPENING** The Agency publicly opens and reads bids at the time and place shown on the Notice to Contractors.
- 3. BID RIGGING** The U.S. Department of Transportation (DOT) provides a toll-free hotline to report bid rigging activities. Use the hotline to report bid rigging, bidder collusion, and other fraudulent activities. The hotline number is (800) 424-9071. The service is available 24 hours 7 days a week and is confidential and anonymous. The hotline is part of the DOT's effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General.
- 4. CONTRACT AWARD** If the Agency awards the contract, the award is made to the lowest responsible and responsive bidder.
- 5. CONTRACTOR LICENSE**
The Contractor must be properly licensed as a contractor from contract award through Contract acceptance (Public Contract Code § 10164).
- 6. CHANGED CONDITIONS**

a. Differing Site Conditions

1. During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract, are encountered at the site, the party discovering such conditions shall promptly notify the other party in writing of the specific differing conditions before the site is disturbed and before the affected work is performed.
2. Upon written notification, the engineer will investigate the conditions, and if it is determined that the conditions materially differ and cause an increase or decrease in the cost or time required for the performance of any work under the contract, an adjustment, excluding anticipated profits, will be made and the contract modified in writing accordingly. The engineer will notify the contractor of the determination whether or not an adjustment of the contract is warranted.
3. No contract adjustment which results in a benefit to the contractor will be allowed unless the contractor has provided the required written notice.
4. No contract adjustment will be allowed under this clause for any effects caused on unchanged work. (This provision may be omitted by the Local Agency, at their option.)

b. Suspensions of Work Ordered by the Engineer

1. If the performance of all or any portion of the work is suspended or delayed by the engineer in writing for an unreasonable period of time (not originally anticipated, customary, or inherent to the construction industry) and the contractor believes that additional compensation and/or contract time is due as a result of such suspension or delay, the contractor shall submit to the engineer in writing a request for adjustment within 7 calendar days of receipt of the notice to resume work. The request shall set forth the reasons and support for such adjustment.
2. Upon receipt, the engineer will evaluate the contractor's request. If the engineer agrees that the cost and/or time required for the performance of the contract has increased as a result of such

suspension and the suspension was caused by conditions beyond the control of and not the fault of the contractor, its suppliers, or subcontractors at any approved tier, and not caused by weather, the engineer will make an adjustment (excluding profit) and modify the contract in writing accordingly. The contractor will be notified of the engineer's determination whether or not an adjustment of the contract is warranted.

3. No contract adjustment will be allowed unless the contractor has submitted the request for adjustment within the time prescribed.
4. No contract adjustment will be allowed under this clause to the extent that performance would have been suspended or delayed by any other cause, or for which an adjustment is provided or excluded under any other term or condition of this contract.

c. Significant Changes in the Character of Work

1. The engineer reserves the right to make, in writing, at any time during the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily complete the project. Such changes in quantities and alterations shall not invalidate the contract nor release the surety, and the contractor agrees to perform the work as altered.
2. If the alterations or changes in quantities significantly change the character of the work under the contract, whether such alterations or changes are in themselves significant changes to the character of the work or by affecting other work cause such other work to become significantly different in character, an adjustment, excluding anticipated profit, will be made to the contract. The basis for the adjustment shall be agreed upon prior to the performance of the work. If a basis cannot be agreed upon, then an adjustment will be made either for or against the contractor in such amount as the engineer may determine to be fair and equitable.
3. If the alterations or changes in quantities do not significantly change the character of the work to be performed under the contract, the altered work will be paid for as provided elsewhere in the contract.
4. The term "significant change" shall be construed to apply only to the following circumstances:
 - When the character of the work as altered differs materially in kind or nature from that involved or included in the original proposed construction; or
 - When a major item of work, as defined elsewhere in the contract, is increased in excess of 125 percent or decreased below 75 percent of the original contract quantity. Any allowance for an increase in quantity shall apply only to that portion in excess of 125 percent of original contract item quantity, or in case of a decrease below 75 percent, to the actual amount of work performed.

7. BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES

The Contractor shall begin work by the Commencement Date stated in the Notice to Proceed.

This work shall be diligently prosecuted to completion before the expiration of 377 WORKING DAYS after the date shown on the Notice to Proceed.

The Contractor shall pay to the City of San Fernando the sum of \$3,900.00 per day, for each and every calendar day's delay in finishing the work in excess of the number of working days prescribed above.

8. BUY AMERICA

Furnish steel and iron materials to be incorporated into the work with certificates of compliance and certified mill test reports. Mill test reports must indicate where the steel and iron were melted and manufactured. Steel and iron materials must be produced in the U.S. except:

1. Foreign pig iron and processed, pelletized, and reduced iron ore may be used in the domestic production of the steel and iron materials [60 Fed Reg 15478 (03/24/1995)];
2. If the total combined cost of the materials does not exceed the greater of 0.1 percent of the total bid or \$2,500, materials produced outside the U.S. may be used.

Production includes:

1. Processing steel and iron materials, including smelting or other processes that alter the physical form or shape (such as rolling, extruding, machining, bending, grinding, and drilling) or chemical composition;
2. Coating application, including epoxy coating, galvanizing, and painting, that protects or enhances the value of steel and iron materials.

9. QUALITY ASSURANCE

The Local Agency uses a Quality Assurance Program (QAP) to ensure a material is produced to comply with the Contract. The Local Agency may examine the records and reports of tests the prime contractor performs if they are available at the job site. Schedule work to allow time for QAP.

10. PROMPT PAYMENT FROM THE AGENCY TO THE CONTRACTORS

The Agency shall make any progress payment within 30 days after receipt of an undisputed and properly submitted payment request from a contractor on a construction contract. If the Agency fails to pay promptly, the Agency shall pay interest to the contractor, which accrues at the rate of 10 percent per annum on the principal amount of a money judgment remaining unsatisfied. Upon receipt of a payment request, the Agency shall act in accordance with both of the following:

1. Each payment request shall be reviewed by the Agency as soon as practicable after receipt for the purpose of determining that it is a proper payment request.
2. Any payment request determined not to be a proper payment request suitable for payment shall be returned to the contractor as soon as practicable, but not later than seven (7) days, after receipt. A request returned pursuant to this paragraph shall be accompanied by a document setting forth in writing the reasons why the payment request is not proper.

11. FORM FHWA-1273 REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONTRACTS

(Excluding ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS)

[The following 10 pages must be physically inserted into the contract without modification.]

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- I. General
- II. Nondiscrimination
- III. No segregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Government wide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.
3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.
4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

- a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

- b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: 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, pre-apprenticeship, and/or on-the-job training."

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2. EEO Officer: The contractor will designate and make known to the contracting officers and EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

- a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
- b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
- c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.
- d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
- e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

- a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and will establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.
- b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

- c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

- a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
- b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
- c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
- d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

- a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.
- b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).
- c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
- d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

- a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.
- b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.
- c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.
- d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

- a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.
- b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

- a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.
- b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

- a. The records kept by the contractor shall document the following:

- (1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;
- (2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and
- (3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

- b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

- a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

- b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
 - (ii) The classification is utilized in the area by the construction industry; and
 - (iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
 - (3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
 - (4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.
 - c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
 - d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside, in a separate account, assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social

security number and current address of each covered worker and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency.

- (2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
 - (i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;
 - (ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;
 - (iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
- (3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.
- (4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.
- c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

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a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

- a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
- (2) the prime contractor remains responsible for the quality of the work of the leased employees;
- (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
- (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

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2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.
3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.
4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.
5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.
2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).
3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

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X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause or default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

- (1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;
- (2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and
- (4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Participants:

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(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.
2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:
 - a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
 - b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.
3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed information of participant is not required to exceed that which is \$100,000 and that all such recipients shall certify and disclose accordingly.

12. FEMALE AND MINORITY GOALS

To comply with Section II, "Nondiscrimination," of "Required Contract Provisions Federal-Aid Construction Contracts," the following are for female and minority utilization goals for Federal-aid construction contracts and subcontracts that exceed \$10,000:

The nationwide goal for female utilization is 6.9 percent.

The goals for minority utilization [45 Fed Reg 65984 (10/3/1980)] are as follows:

MINORITY UTILIZATION GOALS

Economic Area		Goal (Percent)
174	Redding CA: Non-SMSA (Standard Metropolitan Statistical Area) Counties: CA Lassen; CA Modoc; CA Plumas; CA Shasta; CA Siskiyou; CA Tehama	6.8
175	Eureka, CA Non-SMSA Counties: CA Del Norte; CA Humboldt; CA Trinity	6.6
176	San Francisco-Oakland-San Jose, CA: SMSA Counties: 7120 Salinas-Seaside-Monterey, CA	28.9
	CA Monterey	25.6
	7360 San Francisco-Oakland	
	CA Alameda; CA Contra Costa; CA Marin; CA San Francisco; CA San Mateo	
	7400 San Jose, CA	19.6
	CA Santa Clara, CA	
	7485 Santa Cruz, CA	14.9
	CA Santa Cruz	
	7500 Santa Rosa	9.1
	CA Sonoma	
	8720 Vallejo-Fairfield-Napa, CA	17.1
	CA Napa; CA Solano	
	Non-SMSA Counties: CA Lake; CA Mendocino; CA San Benito	23.2
177	Sacramento, CA: SMSA Counties: 6920 Sacramento, CA	16.1
	CA Placer; CA Sacramento; CA Yolo	
	Non-SMSA Counties CA Butte; CA Colusa; CA El Dorado; CA Glenn; CA Nevada; CA Sierra; CA Sutter; CA Yuba	14.3
178	Stockton-Modesto, CA: SMSA Counties: 5170 Modesto, CA	12.3
	CA Stanislaus	
	8120 Stockton, CA	24.3
	CA San Joaquin	
179	Non-SMSA Counties CA Alpine; CA Amador; CA Calaveras; CA Mariposa; CA Merced; CA Tuolumne	19.8
	Fresno-Bakersfield, CA SMSA Counties: 0680 Bakersfield, CA	19.1
	CA Kern	
	2840 Fresno, CA	26.1
	CA Fresno	
	Non-SMSA Counties: CA Kings; CA Madera; CA Tulare	23.6

180	Los Angeles, CA:	
	SMSA Counties:	
	0360 Anaheim-Santa Ana-Garden Grove, CA	11.9
	CA Orange	
	4480 Los Angeles-Long Beach, CA	28.3
	CA Los Angeles	
	6000 Oxnard-Simi Valley-Ventura, CA	21.5
	CA Ventura	
	6780 Riverside-San Bernardino-Ontario, CA	19.0
	CA Riverside; CA San Bernardino	
181	7480 Santa Barbara-Santa Maria-Lompoc, CA	19.7
	CA Santa Barbara	
	Non-SMSA Counties	24.6
	CA Inyo; CA Mono; CA San Luis Obispo	
	San Diego, CA:	
	SMSA Counties	16.9
181	7320 San Diego, CA	
	CA San Diego	
	Non-SMSA Counties	18.2
181	CA Imperial	

For the last full week of July during which work is performed under the contract, the prime contractor and each non-material-supplier subcontractor with a subcontract of \$10,000 or more must complete Form FHWA PR-1391 (Appendix C to 23 CFR 230). Submit the forms by August 15.

13. TITLE VI ASSURANCES

The U.S. Department of Transportation Order No. 1050.2A requires all federal-aid Department of Transportation contracts between an agency and a contractor to contain Appendix A and Appendix E. *(Appendix B is required only if the contract impacts deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein. Appendices C and D are required only if the contract impacts deeds, licenses, leases, permits, or similar instruments entered into by the recipient.)*

APPENDIX A

During the performance of this Agreement, the contractor, for itself, its assignees, and successors in interest (hereinafter collectively referred to as CONTRACTOR) agrees as follows:

- a. Compliance with Regulations: CONTRACTOR shall comply with the regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the REGULATIONS), which are herein incorporated by reference and made a part of this agreement.
- b. Nondiscrimination: CONTRACTOR, with regard to the work performed by it during the AGREEMENT, shall not discriminate on the grounds of race, color, sex, national origin, religion, age, or disability in the selection and retention of sub-applicants, including procurements of materials and leases of equipment. CONTRACTOR shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the agreement covers a program set forth in Appendix B of the Regulations.
- c. Solicitations for Sub-agreements, Including Procurements of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by CONTRACTOR for work to be performed under a Sub-agreement, including procurements of materials or leases of equipment, each potential sub-applicant or supplier shall be notified by CONTRACTOR of the CONTRACTOR'S obligations under this Agreement and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
- d. Information and Reports: CONTRACTOR shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the California Department of Transportation or FHWA to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of CONTRACTOR is in the exclusive possession of another who fails or refuses to furnish this information, CONTRACTOR shall so certify to the California

Department of Transportation or the FHWA as appropriate and shall set forth what efforts CONTRACTOR has made to obtain the information.

- e. Sanctions for Noncompliance: In the event of CONTRACTOR's noncompliance with the nondiscrimination provisions of this agreement, the California Department of Transportation shall impose such agreement sanctions as it or the FHWA may determine to be appropriate, including, but not limited to:
 - i. withholding of payments to CONTRACTOR under the Agreement within a reasonable period of time, not to exceed 90 days; and/or
 - ii. cancellation, termination or suspension of the Agreement, in whole or in part.
- f. Incorporation of Provisions: CONTRACTOR shall include the provisions of paragraphs (1) through (6) in every sub-agreement, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto.

CONTRACTOR shall take such action with respect to any sub-agreement or procurement as the California Department of Transportation or FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance, provided, however, that, in the event CONTRACTOR becomes involved in, or is threatened with, litigation with a sub-applicant or supplier as a result of such direction, CONTRACTOR may request the California Department of Transportation enter into such litigation to protect the interests of the State, and, in addition, CONTRACTOR may request the United States to enter into such litigation to protect the interests of the United States.

APPENDIX B CLAUSES FOR DEEDS TRANSFERRING UNITED STATES PROPERTY

The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of Assurance 4:

NOW THEREFORE, the U.S. Department of Transportation as authorized by law and upon the condition that the recipient will accept title to the lands and maintain the project constructed thereon in accordance with Title 23 U.S.C., the regulations for the administration of the preceding statute, and the policies and procedures prescribed by the FHWA of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the recipient all the right, title and interest of the U.S. Department of Transportation in and to said lands described in Exhibit A attached hereto and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto the recipient and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the recipient, its successors and assigns. The recipient, in consideration of the conveyance of said lands and interest in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]* (2) that the recipient will use the lands and interests in lands and interest in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended[, and (3) that in the event of breach of any of the above-mentioned non-discrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said lands, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the U.S. Department of Transportation and its assigns as such interest existed prior to this instruction].*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.)

APPENDIX C
CLAUSES FOR TRANSFER OF REAL PROPERTY ACQUIRED OR IMPROVED
UNDER THE ACTIVITY, FACILITY, OR PROGRAM

The following clauses will be included in deeds, licenses, leases, permits, or similar instruments entered into by the recipient pursuant to the provisions of Assurance 7(a):

A. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:

1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a U.S. Department of Transportation activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Acts and Regulations (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.

B. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Non-discrimination covenants, the recipient will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued.*

C. With respect to a deed, in the event of breach of any of the above Non-discrimination covenants, the recipient will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the recipient and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX D
CLAUSES FOR CONSTRUCTION/USE/ACCESS TO REAL PROPERTY
ACQUIRED UNDER THE ACTIVITY, FACILITY OR PROGRAM

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by the recipient pursuant to the provisions of Assurance 7(b):

A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishings of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended, set forth in this Assurance.

B. With respect to (licenses, leases, permits, etc.) in the event of breach of any of the above of the above Non-discrimination covenants, the recipient will have the right to terminate the (license, permits, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued.*

C. With respect to deeds, in the event of breach of any of the above Non-discrimination covenants, the recipient will thereupon revert to and vest in and become the absolute property of the recipient and its assigns.

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities, including, but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), prohibits discrimination on the basis of race, color, national origin; and 49 CFR Part 21;
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), prohibits discrimination on the basis of sex;
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 U.S.C. § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 – 12189) as implemented by Department of Transportation regulations 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

14. USE OF UNITED STATES-FLAG VESSELS

The CONTRACTOR agrees-

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.
2. To Furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.
3. To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract.

15. FEDERAL TRAINEE PROGRAM (to be used when applicable)

For the Federal training program, the number of trainees or apprentices is 5.

This section applies if a number of trainees or apprentices is specified in the special provisions.

As part of the prime contractor's equal opportunity affirmative action program, provide on-the-job training to develop full journeymen in the types of trades or job classifications involved.

The prime contractor has primary responsibility for meeting this training requirement.

If the prime contractor subcontracts a contract part, they shall determine how many trainees or apprentices are to be trained by the subcontractor. Include these training requirements in each subcontract.

Where feasible, 25 percent of apprentices or trainees in each occupation must be in their 1st year of apprenticeship or training.

Distribute the number of apprentices or trainees among the work classifications on the basis of the prime contractor's needs and the availability of journeymen in the various classifications within a reasonable recruitment area.

Before starting work, the prime contractor shall submit to the City:

1. Number of apprentices or trainees to be trained for each classification
2. Training program to be used
3. Training starting date for each classification

The prime contractor shall obtain approval from the City for this submitted information before the prime contractor starts work. The City credits the prime contractor for each apprentice or trainee the prime contractor employs on the job who is currently enrolled or becomes enrolled in an approved program.

The primary objective of this section is to train and upgrade minorities and women toward journeymen status. The prime contractor shall make every effort to enroll minority and women apprentices or trainees, such as conducting systematic and direct recruitment through public and private sources likely to yield minority and women apprentices or trainees, to the extent they are available within a reasonable recruitment area and show that they have made the efforts. In making these efforts, the prime contractor shall not discriminate against any applicant for training.

The prime contractor shall not employ as an apprentice or trainee an employee:

1. In any classification in which the employee has successfully completed a training course leading to journeyman status or in which the employee has been employed as a journeyman
2. Who is not registered in a program approved by the US Department of Labor, Bureau of Apprenticeship and Training

The prime contractor shall ask the employee if the employee has successfully completed a training course leading to journeyman status or has been employed as a journeyman. The prime contractor's records must show the employee's answers to the questions.

In the training program, the prime contractor shall establish the minimum length and training type for each classification. The City and FHWA approve a program if one of the following is met:

1. It is calculated to:
 - Meet equal employment opportunity responsibilities
 - Qualify the average apprentice or trainee for journeyman status in the classification involved by the end of the training period
2. It is registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, and it is administered in a way consistent with the equal employment responsibilities of Federal-aid highway construction contracts

The prime contractor shall obtain the State's approval for their training program before they start work involving the classification covered by the program.

The prime contractor shall provide training in the construction crafts, not in clerk-typist or secretarial-type positions. Training is allowed in lower level management positions such as office engineers, estimators, and timekeepers if the training is oriented toward construction applications. Training is allowed in the laborer classification if significant and meaningful training is provided and approved by the division office.

Off-site training is allowed if the training is an integral part of an approved training program and does not make up a significant part of the overall training.

The City reimburses the prime contractor 80 cents per hour of training given an employee on this contract under an approved training program:

1. For on-site training
2. For off-site training if the apprentice or trainee is currently employed on a Federal-aid project and the prime contractor does at least one of the following:
 - Contribute to the cost of the training
 - Provide the instruction to the apprentice or trainee
 - Pay the apprentice's or trainee's wages during the off-site training period
3. If the prime contractor complies with this section:

Each apprentice or trainee must:

1. Begin training on the project as soon as feasible after the start of work involving the apprentice's or trainee's skill
2. Remain on the project as long as training opportunities exist in the apprentice's or trainee's work classification or until the apprentice or trainee has completed the training program

The prime contractor shall furnish the apprentice or trainee with a copy of the program with which the prime contractor will comply in providing the training.

16. PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE EQUIPMENT AND SERVICES

In response to significant national security concerns, the agency shall check the prohibited vendor list before making any telecommunications and video surveillance purchase because recipients and subrecipients of federal funds are prohibited from obligating or expending loan or grant funds to:

- Procure or obtain;
- Extend or renew a contract to procure or obtain; or
- Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.

The prohibited vendors (and their subsidiaries or affiliates) are:

- Huawei Technologies Company;
- ZTE Corporation;
- Hytera Communications Corporation;
- Hangzhou Hikvision Digital Technology Company;
- Dahua Technology Company; and
- Subsidiaries or affiliates of the above-mentioned companies.

In implementing the prohibition, the agency administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.

THE BIDDER'S EXECUTION ON THE SIGNATURE PORTION OF THIS PROPOSAL SHALL ALSO CONSTITUTE AN ENDORSEMENT AND EXECUTION OF THIS CERTIFICATION, WHICH IS A PART OF THIS PROPOSAL.)

EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION

The ☐bidder / ☐proposed subcontractor hereby certifies that he ☐has / ☐has not participated in a previous contract or subcontract subject to the equal opportunity clauses, as required by Executive Orders 10925, 11114, or 11246, and that, where required, has filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

Note: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7(b) (1)), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of \$10,000 or under are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

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

(THE BIDDER'S EXECUTION ON THE SIGNATURE PORTION OF THIS PROPOSAL SHALL ALSO CONSTITUTE AN ENDORSEMENT AND EXECUTION OF THIS CERTIFICATION, WHICH IS A PART OF THIS PROPOSAL.)

PUBLIC CONTRACT CODE

Public Contract Code Section 10285.1 Statement

In conformance with Public Contract Code Section 10285.1 (Chapter 376, Stats. 1985), the bidder hereby declares under penalty of perjury under the laws of the State of California that the Bidder ☐has / ☐has not been convicted within the preceding three (3) years of any offenses referred to in that section, including any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or federal antitrust law in connection with the bidding upon, award of, or performance of, any public works contract, as defined in Public Contract Code Section 1101, with any public entity, as defined in Public Contract Code Section 1100, including the Regents of the University of California or the Trustees of the California State University. The term "bidder" is understood to include any partner, member, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

Note: The Bidder must place a checkmark before "has" or "has not" in one of the check boxes provided.

Public Contract Code Section 10162 Questionnaire

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

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

☐Yes ☐No

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

Public Contract Code Section 10232 Statement

In conformance with Public Contract Code Section 10232, the Contractor hereby states under penalty of perjury that no more than one (1) final unappealable finding of contempt of court by a federal court has been issued against the Contractor within the immediately preceding two-year period because of the Contractor's failure to comply with an order of a federal court which orders the Contractor to comply with an order of the National Labor Relations Board.

(THE BIDDER'S EXECUTION ON THE SIGNATURE PORTION OF THIS PROPOSAL SHALL ALSO CONSTITUTE AN ENDORSEMENT AND EXECUTION OF THIS CERTIFICATION, WHICH IS A PART OF THIS PROPOSAL.)

DEBARMENT AND SUSPENSION CERTIFICATION
TITLE 49, CODE OF FEDERAL REGULATIONS, PART 29

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

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

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

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

Note: Providing false information may result in criminal prosecution or administrative sanctions.

(THE BIDDER'S EXECUTION ON THE SIGNATURE PORTION OF THIS PROPOSAL SHALL ALSO CONSTITUTE AN ENDORSEMENT AND EXECUTION OF THIS CERTIFICATION, WHICH IS A PART OF THIS PROPOSAL.)

**NONLOBBYING CERTIFICATION
FOR FEDERAL-AID CONTRACTS**

The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in conformance with its instructions:

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such subrecipients shall certify and disclose accordingly.

DISCLOSURE OF LOBBYING ACTIVITIES

COMPLETE THIS FORM TO DISCLOSE LOBBYING ACTIVITIES PURSUANT TO 31 U.S.C. 1352

1. Type of Federal Action: <input type="checkbox"/> a. contract <input type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. Status of Federal Action: <input type="checkbox"/> a. bid/offer/application <input type="checkbox"/> c. initial award <input type="checkbox"/> d. post-award	3. Report Type: <input type="checkbox"/> a. initial <input type="checkbox"/> b. material change For Material Change Only: year _____ quarter _____ date of last report _____
4. Name and Address of Reporting Entity <input type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier _____, if known Congressional District, if known: _____		5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Congressional District, if known: _____
6. Federal Department/Agency:	7. Federal Program Name/Description: CFDA Number, if applicable: _____	
8. Federal Action Number, if known:	9. Award Amount, if known: \$ _____	
10. a. Name and Address of Lobbying Registrant (If individual, last name, first name, MI): (attach Continuation Sheet(s) if necessary)		b. Individuals Performing Services (including address if different from No. 10a) (last name, first name, MI):
11. Amount of Payment (check all that apply) \$ _____ <input type="checkbox"/> Actual <input type="checkbox"/> planned	13. Type of Payment (check all that apply) <input type="checkbox"/> a. retainer <input type="checkbox"/> b. one-time fee <input type="checkbox"/> c. commission <input type="checkbox"/> d. contingent fee <input type="checkbox"/> e. deferred <input type="checkbox"/> f. other, specify _____	
12. Form of Payment (check all that apply): <input type="checkbox"/> a. cash <input type="checkbox"/> b. in-kind; specify: nature _____ Value _____		
14. Brief Description of Services Performed or to be performed and Date(s) of Service, including officer(s), employee(s), or member(s) contacted, for Payment Indicated in Item 11: (attach Continuation Sheet(s) if necessary)		
15. Continuation Sheet(s) attached: Yes <input type="checkbox"/> No <input type="checkbox"/>		
16. Information requested through this form is authorized by Title 31 U.S.C. Section 1352. This disclosure of lobbying reliance was placed by the tier above when his transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to Congress semiannually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.		Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: _____
Federal Use Only:		Authorized for Local Reproduction Standard Form – LLL

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of covered Federal action or a material change to previous filing pursuant to title 31 U.S.C. section 1352. The filing of a form is required for such payment or agreement to make payment to lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress an officer or employee of Congress or an employee of a Member of Congress in connection with a covered Federal action. Attach a continuation sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence, the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a follow-up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last, previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, state, and zip code of the reporting entity. Include Congressional District if known. Check the appropriate classification of the reporting entity that designates if it is or expects to be a prime or subaward recipient. Identify the tier of the subawardee, *e.g.*, the first subawardee of the prime is the first tier. Subawards include but are not limited to subcontracts, sub-grants, and contract awards under grants.
5. If the organization filing the report in Item 4 checks "Subawardee," then enter the full name, address, city, state, and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organization level below agency name, if known (*e.g.*, Department of Transportation, United States Coast Guard).
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identification in item 1 (*e.g.*, Request for Proposal (RFP) number, Invitation for Bid (IFB) number, grant announcement number, the contract grant or loan award number, the application/proposal control number assigned by the Federal agency). Include prefixes, *e.g.*, "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitments for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, state, and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.
(b) Enter the full names of the individual(s) performing services and include full address if different from 10 (a). Enter Last Name, First Name, and Middle Initial (MI).
11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.
12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.
13. Check the appropriate box(es). Check all boxes that apply. If other, specify nature.
14. Provide a specific and detailed description of the services that the lobbyist has performed or will be expected to perform and the date(s) of any services rendered. Include all preparatory and related activity not just time spent in actual contact with Federal officials. Identify the Federal officer(s) or employee(s) contacted or the officer(s) employee(s) or Member(s) of Congress that were contacted.
15. Check whether or not a continuation sheet is attached.
16. The certifying official shall sign and date the form, print his/her name title and telephone number.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, D.C. 20503.

EXHIBIT 15-G CONSTRUCTION CONTRACT DBE COMMITMENT

1. Local Agency: City of San Fernando 2. Contract DBE Goal: 27%
3. Project Description: San Fernando Pacoima Wash Bikeway and Pedestrian Path
4. Project Location: 1.34 miles along the Pacoima Wash
5. Bidder's Name: _____ 6. Prime Certified DBE: ☐ 7. Bid Amount: _____
8. Total Dollar Amount for ALL Subcontractors: _____ 9. Total Number of ALL Subcontractors: _____

10. Bid Item Number	11. Description of Work, Service, or Materials Supplied	12. DBE Certification Number	13. DBE Contact Information (Must be certified on the date bids are opened)	14. DBE Dollar Amount
Local Agency to Complete this Section			15. TOTAL CLAIMED DBE PARTICIPATION	\$
21. Local Agency Contract Number: _____ 22. Federal-Aid Project Number: _____ 23. Bid Opening Date: _____ 24. Contract Award Date: _____ Local Agency certifies that all DBE certifications are valid and information on this form is complete and accurate.				%
25. Local Agency Representative's Signature _____ 26. Date _____ 27. Local Agency Representative's Name _____ 28. Phone _____ 29. Local Agency Representative's Title _____			IMPORTANT: Identify all DBE firms being claimed for credit, regardless of tier. Names of the First Tier DBE Subcontractors and their respective item(s) of work listed above must be consistent, where applicable with the names and items of the work in the "Subcontractor List" submitted with your bid. Written confirmation of each listed DBE is required. 16. Preparer's Signature _____ 17. Date _____ 18. Preparer's Name _____ 19. Phone _____ 20. Preparer's Title _____	

DISTRIBUTION: 1. Original – Local Agency
2. Copy – Caltrans District Local Assistance Engineer (DLAE). Failure to submit to DLAE within 30 days of contract execution may result in de-obligation of federal funds on contract. Include additional copy with award package.

ADA Notice: For individuals with sensory disabilities, this document is available in alternate formats. For information call (916) 654-6410 or TDD (916) 654-3880 or write Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

INSTRUCTIONS – CONSTRUCTION CONTRACT DBE COMMITMENT**CONTRACTOR SECTION**

- 1. Local Agency** - Enter the name of the local or regional agency that is funding the contract.
- 2. Contract DBE Goal** - Enter the contract DBE goal percentage as it appears on the project advertisement.
- 3. Project Location** - Enter the project location as it appears on the project advertisement.
- 4. Project Description** - Enter the project description as it appears on the project advertisement (Bridge Rehab, Seismic Rehab, Overlay, Widening, etc).
- 5. Bidder's Name** - Enter the contractor's firm name.
- 6. Prime Certified DBE** - Check box if prime contractor is a certified DBE.
- 7. Bid Amount** - Enter the total contract bid dollar amount for the prime contractor.
- 8. Total Dollar Amount for ALL Subcontractors** - Enter the total dollar amount for all subcontracted contractors. SUM = (DBEs + all Non-DBEs). Do not include the prime contractor information in this count.
- 9. Total number of ALL subcontractors** - Enter the total number of all subcontracted contractors. SUM = (DBEs + all Non-DBEs). Do not include the prime contractor information in this count.
- 10. Bid Item Number** - Enter bid item number for work, services, or materials supplied to be provided.
- 11. Description of Work, Services, or Materials Supplied** - Enter description of work, services, or materials to be provided. Indicate all work to be performed by DBEs including work performed by the prime contractor's own forces, if the prime is a DBE. If 100% of the item is not to be performed or furnished by the DBE, describe the exact portion to be performed or furnished by the DBE. See LAPM Chapter 9 to determine how to count the participation of DBE firms.
- 12. DBE Certification Number** - Enter the DBE's Certification Identification Number. All DBEs must be certified on the date bids are opened.
- 13. DBE Contact Information** - Enter the name, address, and phone number of all DBE subcontracted contractors. Also, enter the prime contractor's name and phone number, if the prime is a DBE.
- 14. DBE Dollar Amount** - Enter the subcontracted dollar amount of the work to be performed or service to be provided. Include the prime contractor if the prime is a DBE. See LAPM Chapter 9 for how to count full/partial participation.
- 15. Total Claimed DBE Participation - \$:** Enter the total dollar amounts entered in the "DBE Dollar Amount" column. **%:** Enter the total DBE participation claimed ("Total Claimed DBE Participation Dollars" divided by item "Bid Amount"). If the total % claimed is less than item "Contract DBE Goal," an adequately documented Good Faith Effort (GFE) is required (see Exhibit 15-H DBE Information - Good Faith Efforts of the LAPM).
- 16. Preparer's Signature** - The person completing the DBE commitment form on behalf of the contractor's firm must sign their name.
- 17. Date** - Enter the date the DBE commitment form is signed by the contractor's preparer.
- 18. Preparer's Name** - Enter the name of the person preparing and signing the contractor's DBE commitment form.
- 19. Phone** - Enter the area code and phone number of the person signing the contractor's DBE commitment form.
- 20. Preparer's Title** - Enter the position/title of the person signing the contractor's DBE commitment form.

LOCAL AGENCY SECTION

- 21. Local Agency Contract Number** - Enter the Local Agency contract number or identifier.
- 22. Federal-Aid Project Number** - Enter the Federal-Aid Project Number.
- 23. Bid Opening Date** - Enter the date contract bids were opened.
- 24. Contract Award Date** - Enter the date the contract was executed.
- 25. Local Agency Representative's Signature** - The person completing this section of the form for the Local Agency must sign their name to certify that the information in this and the Contractor Section of this form is complete and accurate.
- 26. Date** - Enter the date the DBE commitment form is signed by the Local Agency Representative.
- 27. Local Agency Representative's Name** - Enter the name of the Local Agency Representative certifying the contractor's DBE commitment form.
- 28. Phone** - Enter the area code and phone number of the person signing the contractor's DBE commitment form.
- 29. Local Agency Representative Title** - Enter the position/title of the Local Agency Representative certifying the contractor's DBE commitment form.

EXHIBIT 15-H: PROPOSER/CONTRACTOR GOOD FAITH EFFORTS

Federal-aid Project No(s). ATPL-5202(020) Cost Proposal Due Date _____ PE/CE
 Bid Opening Date _____ CON

The City of San Fernando established a Disadvantaged Business Enterprise (DBE) goal of 27%, for this contract. The information provided herein shows the required good faith efforts to meet or exceed the DBE contract goal.

Proposers or bidders submit the following information to document their good faith efforts within five (5) calendar days from cost proposal due date or bid opening. Proposers and bidders are recommended to submit the following information even if the Exhibit 10-O1: Consultant Proposal DBE Commitments or Exhibit 15-G: Construction Contract DBE Commitment indicate that the proposer or bidder has met the DBE goal. This form protects the proposer's or bidder's eligibility for award of the contract if the administering agency determines that the bidder failed to meet the goal for various reasons, *e.g.*, a DBE firm was not certified at bid opening, or the bidder made a mathematical error.

The following items are listed in the Section entitled "Submission of DBE Commitment" of the Special Provisions, **please attach additional sheets as needed:**

- A. The names and dates of each publication in which a request for DBE participation for this project was placed by the bidder (please attach copies of advertisements or proofs of publication):

Publications	Dates of Advertisement

- B. The names and dates of written notices sent to certified DBEs soliciting bids for this project and the dates and methods used for following up initial solicitations to determine with certainty whether the DBEs were interested (please attach copies of solicitations, telephone records, fax confirmations, etc.):

Names of DBEs Solicited	Date of Initial Solicitation	Follow Up Methods and Dates

- C. The items of work made available to DBE firms including those unbundled contract work items into economically feasible units to facilitate DBE participation. It is the bidder's responsibility to demonstrate that sufficient work to facilitate DBE participation in order to meet or exceed the DBE contract goal.

Items of Work	Proposer or Bidder Normally Performs Item (Y/N)	Breakdown of Items	Amount (\$)	Percentage Of Contract
---------------	---	--------------------	-------------	------------------------

- D. The names, addresses and phone numbers of rejected DBE firms, the reasons for the bidder's rejection of the DBEs, the firms selected for that work (please attach copies of quotes from the firms involved), and the price difference for each DBE if the selected firm is not a DBE:

Names, addresses and phone numbers of rejected DBEs and the reasons for the bidder's rejection of the DBEs:

Names, addresses and phone numbers of firms selected for the work above:

- E. Efforts (e.g., in advertisements and solicitations) made to assist interested DBEs in obtaining information related to the plans, specifications and requirements for the work which was provided to DBEs:

- F. Efforts (*e.g.*, in advertisements and solicitations) made to assist interested DBEs in obtaining bonding, lines of credit or insurance, necessary equipment, supplies, materials, or related assistance or services, excluding supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate:

- G. The names of agencies, organizations or groups contacted to provide assistance in contacting, recruiting and using DBE firms (please attach copies of requests to agencies and any responses received, *i.e.*, lists, Internet page download, etc.):

Name of Agency/Organization

Method/Date of Contact

Results

- H. Any additional data to support a demonstration of good faith efforts:

EXHIBIT 9-F: DISADVANTAGED BUSINESS ENTERPRISE (DBE) RUNNING TALLY OF PAYMENTS

Save this form using the following naming convention: [yyyyymm]-[Prime's DUNS Number]-[ss].xlsx, where [ss] is a two-digit sequential number, applicable when consultant or contractor has more than one 9-F form to complete per pay period. For example, a valid saved file could read: 2020001-123456789-01.xlsx. Prime contractors/consultants are required to submit this form no later than the 10th of the following month, after submitting an invoice for reimbursement that includes a payment to a DBE. If no payments have been made, do not submit the form. Email this form to business.support.unit@dot.ca.gov with a copy to the local administering agencies.

Do not submit this form with the invoice; it will not be processed.

(1) Reporting Period (mm-yyyy)	(2) Federal Aid Project Number	(3) Caltrans District	(4) Local Agency
(5) Contract Number	(6) Total Contract Award Amount (\$)	(7) DBE Goal Percentage (%)	(8) DBE Committed Percentage (%)
(9) Prime Contractor/Consultant DUNS Number	(10) Business Name	(11) Amount Prime Invoiced This Period (\$)	(12) Amount Paid To Date (\$) <div style="text-align: right;">(13) Prime Certified DBE?</div>
(14) DBE Subcontractor Name	(15) DBE Cert. Number	(16) Contract Type	(17) Date of Payment
		(18) Amount of This Payment	(19) Amount Paid To Date
		(20) Amount Committed To This DBE	(21) Comments
		Totals	\$0 \$0 \$0

List all DBEs regardless of tier, whether or not the firms were originally listed in Exhibit 10-O2 or 15-G as a DBE commitment. If the actual DBE utilization was different than that approved at the time of award, provide comments in box (21). All payments reported, including payments to contractor/consultant, are for the date listed. Select the most appropriate contract type (Agent, Consultant, Joint Venture, Manufacturer, Prime, Regular Dealer, Subcontractor, Truck/Haul, Service Provider) for the DBE from dropdown list.

By executing this 9-F, Contractor represents and warrants, under penalty of perjury, that:
Contractor contracted with the Disadvantaged Business Enterprise companies (DBEs) as set forth in their awarded bid on Contract number _____
Contractor paid the full amounts listed on their 9-F to the DBEs set forth in Contractor's awarded bid, without reduction or offset.

(22) Prime Contractor/Consultant Manager's Name (Print)	(23) Business Phone Number	(24) Date

COPY DISTRIBUTION: Original - Prime Contractor/Consultant, Copy - E-mail: Business.Support.Unit@dot.ca.gov; Copy: Local Administering Agency

ADA NOTICE: For individuals with sensory disabilities, this document is available in alternate formats.

For information, call (916) 445-1233. Local Assistance Procedures Manual TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

State of California-Department of Transportation

EXHIBIT 16-Z1 MONTHLY DBE TRUCKING VERIFICATION

Contract No.			Month		Year	
Truck Owner	DBE Cert. No.	Company Name and Address	Truck No.	California Highway Patrol CA No.	Commission Or Amount Paid*	Lease Arrangement (if applicable)
					\$	Lease Agreement with NON-DBE with DBE <input type="checkbox"/>
					\$	Lease Agreement with NON-DBE with DBE <input type="checkbox"/>
					\$	Lease Agreement with NON-DBE with DBE <input type="checkbox"/>
					\$	Lease Agreement with NON-DBE with DBE <input type="checkbox"/>
					\$	Lease Agreement with NON-DBE with DBE <input type="checkbox"/>
					\$	Lease Agreement with NON-DBE with DBE <input type="checkbox"/>
					\$	Lease Agreement with NON-DBE with DBE <input type="checkbox"/>
					\$	Lease Agreement with NON-DBE with DBE <input type="checkbox"/>
					\$	Lease Agreement with NON-DBE with DBE <input type="checkbox"/>
					\$	Lease Agreement with NON-DBE with DBE <input type="checkbox"/>
					\$	Lease Agreement with NON-DBE with DBE <input type="checkbox"/>
					\$	Lease Agreement with NON-DBE with DBE <input type="checkbox"/>
					\$	Lease Agreement with NON-DBE with DBE <input type="checkbox"/>
					Total Amount Paid	

Prime Contractor

Business Address

Business Phone No.

*Upon Request, all Lease Agreements shall be made available, in accordance with the Special Provisions.

Contractor Representative Signature

I CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND CORRECT		Date
Title		

MONTHLY DBE TRUCKING VERIFICATION

The top of Form CEM-2404(F) contains boxes to put in the Contract Number, the Month of the reporting period and the Year of the reporting period.

The Form CEM-2404(F) has a column to enter the name of the Truck Owner, the DBE Cert. No. (if DBE certified) and the Name and Address of the trucking company. The Form CEM-2404(F) also requires the Truck No. and the California Highway Patrol CA No.

Form CEM-2404(F) is to be submitted prior to the 15th of each month and must show the dollar amount paid to the DBE trucking company(s) for trucking work performed by DBE certified trucks and for any fees or commissions of non-DBE trucks utilized each month on the project. The amount paid to each trucking company is to be entered in the column called "Commission or Amount Paid," in accordance with the Special Provisions.

Payment information is derived using the following:

- 1.) 100% for the trucking services provided by the DBE using trucks it owns, operates and insures.
- 2.) 100% for the trucking services provided by the trucks leased from other DBE firms.
- 3.) The fee or commission paid to non-DBEs for the lease of trucks. The Prime does not receive 100% credit for these services because they are not provided by a DBE company.

The total dollar figure of this column is to be placed in the box labeled "Total Amount Paid." The column "Date Paid" requires a date that each trucking company is paid for services rendered. The next column contains information that must be completed if a lease arrangement is applicable. Located at the bottom of the form is a space to put the name of the "Prime Contractor," their "Business Address" and their "Business Phone No."

At the bottom of the form there is a space for the Contractor or designee "Contractor Representative's Signature, Title and Date" certifying that the information provided on the form is complete and correct.

[illegible]

I CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND CORRECT

I CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND CORRECT			
17. Contractor/Consultant Representative's Signature	18. Contractor/Consultant Representative's Name	19. Phone	20. Date
I CERTIFY THAT THE CONTRACTING RECORDS AND ON-SITE PERFORMANCE OF THE DBE(S) HAS BEEN MONITORED			
21. Local Agency Representative's Signature	22. Local Agency Representative's Name	23. Phone	24. Date

ADA NOTICE: For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 445-1233, Local Assistance Procedures Manual TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

INSTRUCTIONS – FINAL REPORT-UTILIZATION OF DISADVANTAGED BUSINESS ENTERPRISES (DBE) AND FIRST-TIER SUBCONTRACTORS

- 1. Local Agency Contract Number** - Enter the Local Agency contract number or identifier.
- 2. Federal-Aid Project Number** - Enter the Federal-Aid Project Number.
- 3. Local Agency** - Enter the name of the local or regional agency that is funding the contract.
- 4. Contract Completion Date** - Enter the date the contract was completed.
- 5. Contractor/Consultant** - Enter the contractor/consultant's firm name.
- 6. Business Address** - Enter the contractor/consultant's business address.
- 7. Final Contract Amount** - Enter the total final amount for the contract.
- 8. Contract Item Number** - Enter contract item for work, services, or materials supplied provided. Not applicable for consultant contracts.
- 9. Description of Work, Services, or Materials Supplied** - Enter description of work, services, or materials provided. Indicate all work to be performed by DBEs including work performed by the prime contractor/consultant's own forces, if the prime is a DBE. If 100% of the item is not to be performed or furnished by the DBE, describe the exact portion to be performed or furnished by the DBE. See LAPM Chapter 9 to determine how to count the participation of DBE firms.
- 10. Company Name and Business Address** - Enter the name, address, and phone number of all subcontracted contractors/consultants. Also, enter the prime contractor/consultant's name and phone number, if the prime is a DBE.
- 11. DBE Certification Number** - Enter the DBE's Certification Identification Number. Leave blank if subcontractor is not a DBE.
- 12. Contract Payments** - Enter the subcontracted dollar amount of the work performed or service provided. Include the prime contractor/consultant if the prime is a DBE. The Non-DBE column is used to enter the dollar value of work performed by firms that are not certified DBE or for work after a DBE becomes decertified.
- 13. Date Work Completed** - Enter the date the subcontractor/subconsultant's item work was completed.
- 14. Date of Final Payment** - Enter the date when the prime contractor/consultant made the final payment to the subcontractor/subconsultant for the portion of work listed as being completed.
- 15. Original DBE Commitment Amount** - Enter the "Total Claimed DBE Participation Dollars" from Exhibits 15-G or 10-O2 for the contract.
- 16. Total** - Enter the sum of the "Contract Payments" Non-DBE and DBE columns.
- 17. Contractor/Consultant Representative's Signature** - The person completing the form on behalf of the contractor/consultant's firm must sign their name.
- 18. Contractor/Consultant Representative's Name** - Enter the name of the person preparing and signing the form.
- 19. Phone** - Enter the area code and telephone number of the person signing the form.
- 20. Date** - Enter the date the form is signed by the contractor's preparer.
- 21. Local Agency Representative's Signature** - A Local Agency Representative must sign their name to certify that the contracting records and on-site performance of the DBE(s) has been monitored.
- 22. Local Agency Representative's Name** - Enter the name of the Local Agency Representative signing the form.
- 23. Phone** - Enter the area code and telephone number of the person signing the form.
- 24. Date** - Enter the date the form is signed by the Local Agency Representative.

EXHIBIT 17-0 DISADVANTAGED BUSINESS ENTERPRISES (DBE) CERTIFICATION STATUS CHANGE

[illegible]

If there were no changes in the DBE certification of subcontractors/subconsultants, indicate on the form,

I CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND CORRECT			
14. Contractor/Consultant Representative's Signature	15. Contractor/Consultant Representative's Name	16. Phone	17. Date
I CERTIFY THAT THE CONTRACTING RECORDS AND ON-SITE PERFORMANCE OF THE DBE(S) HAS BEEN MONITORED			
18. Local Agency Representative's Signature	19. Local Agency Representative's Name	20. Phone	21. Date

DISTRIBUTION: Original – Local Agency, Copy – Caltrans District Local Assistance Engineer. Include with Final Report of Expenditures

ADA NOTICE: For individuals with sensory disabilities, this document is available in alternate formats. For information, call (916) 445-1233, Local Assistance Procedures Manual TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

INSTRUCTIONS –DISADVANTAGED BUSINESS ENTERPRISES (DBE) CERTIFICATION STATUS CHANGE

- 1. Local Agency Contract Number** - Enter the Local Agency contract number or identifier.
- 2. Federal-Aid Project Number** - Enter the Federal-Aid Project Number.
- 3. Local Agency** - Enter the name of the local or regional agency that is funding the contract.
- 4. Contract Completion Date** - Enter the date the contract was completed.
- 5. Contractor/Consultant** - Enter the contractor/consultant's firm name.
- 6. Business Address** - Enter the contractor/consultant's business address.
- 7. Final Contract Amount** - Enter the total final amount for the contract.
- 8. Contract Item Number** - Enter contract item for work, services, or materials supplied provided. Not applicable for consultant contracts.
- 9. DBE Contact Information** - Enter the name, address, and phone number of all DBE subcontracted contractors/consultants.
- 10. DBE Certification Number** - Enter the DBE's Certification Identification Number.
- 11. Amount Paid While Certified** - Enter the actual dollar value of the work performed by those subcontractors/subconsultants during the time period they are certified as a DBE.
- 12. Certification/Decertification Date (Letter Attached)** - Enter either the date of the Decertification Letter sent out by the Office of Business and Economic Opportunity (OBE) or the date of the Certification Certificate mailed out by OBE.
- 13. Comments** - If needed, provide any additional information in this section regarding any of the above certification status changes.
- 14. Contractor/Consultant Representative's Signature** - The person completing the form on behalf of the contractor/consultant's firm must sign their name.
- 15. Contractor/Consultant Representative's Name** - Enter the name of the person preparing and signing the form.
- 16. Phone** - Enter the area code and telephone number of the person signing the form.
- 17. Date** - Enter the date the form is signed by the contractor's preparer.
- 18. Local Agency Representative's Signature** - A Local Agency Representative must sign their name to certify that the contracting records and on-site performance of the DBE(s) has been monitored.
- 19. Local Agency Representative's Name** - Enter the name of the Local Agency Representative signing the form.
- 20. Phone** - Enter the area code and telephone number of the person signing the form.
- 21. Date** - Enter the date the form is signed by the Local Agency Representative.