CSA 23 / AMWC / GARDEN FARMS CWD
EMERGENCY INTERTIE PROJECT
SANTA MARGARITA, CA
CONTRACT NO. 300536

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PROJECT PLANS

SAN LUIS OBISPO COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT

NOTICE AND INSTRUCTIONS TO BIDDERS

FOR

CSA 23 / AMWC / GARDEN FARMS CWD
EMERGENCY INTERTIE PROJECT
SANTA MARGARITA, CA
CONTRACT NO. 300536

SAN LUIS OBISPO COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT
NOTICE TO BIDDERS

Sealed proposals will be received at the office of the County Clerk, 1055 Monterey Street, Room D-120, San Luis Obispo, California 93408 until 3:00 P.M. on Monday, _____, 20__, which bids will then be opened and declared at 3:15 o'clock P.M. on the above mentioned date at a public meeting at 1055 Monterey Street, Room D-120, by the County Clerk, for the following Public Works Project:

CSA 23 / AMWC / GARDEN FARMS CWD
EMERGENCY INTERTIE PROJECT
SANTA MARGARITA, CA
CONTRACT NO. 300536

Any bid received at the Office of the Clerk of the Board of Supervisors of the County of San Luis Obispo after 3:00 P.M. on the date specified above shall not be considered, and shall be returned to the bidder unopened.

NON-MANDATORY PRE-BID MEETING: Bidders may attend a non-mandatory pre-bid meeting in order to assess existing site conditions.

The non-mandatory pre-bid meeting will be held on Wednesday, **May 20, 2015** at 9:00 a.m. at the Park & Ride lot adjacent to the Intersection of El Camino Real & Santa Margarita Road, Atascadero, CA. The non-mandatory pre-bid meeting will include a brief discussion of construction items and contract requirements as well as a tour of the project site and is for Bidder's information only. To confirm attendance or additional information regarding the meeting, please contact Jeff Lee at (805) 781-5252.

Bids are required for the entire work described herein.

An official bound copy of a reduced size set of the Project Plans, the Agreement, the Special Provisions, and blank forms suitable for use in bidding on said work may be obtained from the Department of Public Works, Room 207, County Government Center, San Luis Obispo, CA 93408 and may be purchased therefrom for $, (tax included), per bound copy, said purchase cost not to be refunded. Such documents must be purchased from the Department of Public Works in order to be recognized as an official planholder. No bid will be considered which is not on the forms herein provided. A full size set of the Project Plans and cross sections, if available, are charged separately at the department's current rates and will be provided only upon request.

Pursuant to the provisions of Section 1773 of the California Labor Code, the Board of Supervisors of the County of San Luis Obispo has obtained from the Director of the California Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work for the locality in which the work is to be performed for each needed craft, classification, or type of workman. Copies of said prevailing rate of per diem wages are on file in the Office of the Clerk of the Board of Supervisors of the San Luis Obispo County Flood Control and Water Conservation District (District) and available at the California Department of Industrial Relations' web site address at: www.dir.ca.gov/DLSR/PWD.

Bidders are advised that any contractor who is awarded a public works project and intends to use a craft or classification not shown on the general prevailing wage determination may be required to pay

the wage rate of that craft or classification most closely related to it as shown in the general determinations effective at the time of the call for bids.

Travel and Subsistence Payments shall be in accordance with Section 1773.1 of the Labor Code. Wage rates for holiday and overtime work shall be in accordance with Section 1773 of the Labor Code. Attention is directed to the provisions in Sections 1777.5, 1777.6, and 1777.7 of the Labor Code concerning the employment of apprentices by the Contractor or any subcontractor. Attention is directed to the provisions in Section 1776 of the Labor Code concerning payroll records.

Attention is directed to the provisions in Sections 1810 – 1815 of the Labor Code concerning work hours.

Attention is directed to the provisions of Section 2-1.02, "Required Listing of Proposed Subcontractors," of the Special Provisions regarding the requirement that proposed subcontractors be listed in the bidder's proposal. A "DESIGNATION OF SUBCONTRACTORS" form for listing subcontractors, as required, is included in the section titled "Bid Proposal and Forms" of the Contract Documents. This form must be completed and submitted with bidder's bid proposal.

All bonds and endorsements thereto to be submitted pursuant to this contract shall be written by a company authorized to do surety business in the State of California.

Each bid must be accompanied by a form of bidder's security, namely cash, certified check, cashier's check, or bidder's bond, in the amount of ten percent (10%) of the total of the bid.

All addenda issued before the time in which to submit bids expires shall form a part of the Contract Documents which are the subject of the bid. Any such addendum issued before the time in which to submit bids expires shall be e-mailed to each planholder on the District's official planholder list, at the e-mail address provided to the District at the time bid documents were purchased from the Department of Public Works. An informational electronic copy of such addenda will also be posted to the District 's website for the Bidder's convenience at the following web address:

http://www.slocounty.ca.gov/PW/Design_Division/Projects_Out_To_Bid.htm

All bidders are required to acknowledge and confirm receipt of each and every addendum in their bid proposal.

Within five (5) calendar days, not including Saturdays, Sundays, and legal holidays, after receipt of notice that the contract has been awarded, the successful bidder, shall execute a written contract with the District in the form prescribed herein.

At the time of execution of the contract, the successful bidder shall submit the certificates of insurance stipulated in Article 7 of the Agreement, and, in addition thereto, shall furnish a "Performance Bond" in the sum of one hundred percent (100%) of the contract bid to guarantee the performance of the contract, and a "Payment Bond" in the sum of one hundred percent (100%) of the contract bid. The bond forms are included in the section titled "Agreement" of the Contract Documents.

Attention is directed to the provisions of Section 5-1.07, "Measurement and Payment," of the Special Provisions permitting the substitution of equivalent securities for any moneys withheld to ensure

performance of this contract. Said Section 5-1.07 is incorporated by reference in this invitation for bid as if fully set forth at length.

Pursuant to Labor Code Section 1771.1, no contractor or subcontractor may be listed on the bid proposal for this public works project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

Pursuant to Labor Code Section 1771.1, no contractor or subcontractor may be awarded this public works contract unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations, pursuant to Labor Code Section 1771.4.

The State Department of Industrial Relations (DIR) has approved a Labor Compliance Plan (LCP) that is applicable to this project. This contract is subject to the San Luis Obispo County Department of Public Works "Labor Compliance Program for Projects under Public Resources Code Section 75075 (February 2015)" (LCP) a copy of which is attached to this Contract. The Contractor and all subcontractors shall be required to abide by the requirements included in the LCP.

The Board of Supervisors reserves the right to reject any or all bids, and to waive discrepancies, irregularities, informalities or any other errors in the bids or bidding, if to do so seems to best serve the public interest. The right of Board of Supervisors to waive errors applies even if the Contract Documents state that a discrepancy, irregularity, informality or other error makes a bid nonresponsive, so long as the error does not constitute a material error.

The successful bidder must be licensed to perform the work in accordance with the laws of the State of California. Accordingly, the successful bidder shall possess a Class A general engineering contractor's license at the time this contract is awarded. In the alternative, the successful bidder shall possess a specialty contractor's license that permits the successful bidder to perform with his or her own organization contract work amounting to not less than 30% of the original total contract price and to subcontract the remaining work in accordance with Section 5-1.055, "Subcontracting," of the Amendments to the Standard Specifications. Failure of the bidder to be properly and adequately licensed shall constitute a failure to execute the contract and shall result in the forfeiture of the bidder's security.

Bidders must satisfy themselves by personal examination of the location of the proposed work and by such other means as they prefer 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.

By order of the Board of Supervisors of the San Luis Obispo Flood Control and Water Conservation District made this _____day of _____, 20___.

County Clerk and Ex-officio Clerk
of the Board of Supervisors

By _____
Deputy Clerk

BID PROTESTS AND OTHER CHALLENGES TO AWARDS OF CONSTRUCTION CONTRACTS

Bid protests and any other challenges to the award of this construction contract must comply with the requirements described in the "Rules Governing Bid Protests and Other Challenges to Awards of Construction Contracts" ("Rules"), a copy of which is attached to this contract. In addition to the requirements described in the Rules, any bid protest must be submitted in writing to the Department of Public Works, Room 207, County Government Center, 976 Osos Street, San Luis Obispo, CA 93408; Attention: Design Engineer.

SPECIAL INSTRUCTIONS TO BIDDERS

All bidder Requests for Information must be submitted no later than 3 days prior to the bid opening date. Requests submitted after said date may not be considered. Bidders should submit Requests for Information to the District during the bid period at the following website:

http://www.slocounty.ca.gov/PW/Design_Division/Projects_Out_To_Bid.htm

Attention is directed to Section 4-1.03, "Contract Submittals," of the Special Provisions regarding the time period to submit the listed items upon receipt of the fully executed contract.

SUPPLEMENTAL PROJECT INFORMATION

The Contractor's attention is directed to supplemental project information that is provided for informational purposes only is made available for review at the County of San Luis Obispo Public Works Department front counter during normal business hours and is also available at the Department's website at the following address:

http://www.slocounty.ca.gov/PW/Design_Division/Projects_Out_To_Bid.htm

A portion of the following document is available for review:
"Geotechnical Data Report, Nacimiento Water Project - Pipelines, San Luis Obispo County, California, Prepared for: Black & Veatch Corporation, 15615 Alton Parkway, Suite 300, Irvine, California 92618" (dated March, 2007, Geomatrix Project No. 10352)

IMPORTANT SPECIAL NOTICE

Bidders are to base their bids on the project funding being provided in whole or in part by United States Department of Agriculture (USDA Rural Development which will review and approve the contract award, contract agreement, partial and final payments, and contract change orders. Payment and retainage will comply with Section 6-1.03, "Payment to Contractor," of these Special Provisions. USDA regulations do not allow retainage to be invested for the benefit of the Contractor.

Bidders are notified that financing for this project is provided pursuant to the Consolidated Farm and Rural Development Act (7 U.S.C. Section 1921 et seq.) and that as allowed in Public Contract Code Section 22300, this contract does not provide for substitution of securities for any monies withheld by the District to ensure performance under the Agreement.

Bidders are notified of the requirement for affirmative action to ensure equal employment opportunity (Executive Order No. 11246) as set forth in Article 13 of the Agreement and Section 6-1.13, "Equal Opportunity Requirements," of the Special Provisions.

The following forms are included in the section titled "Bid Proposal and Forms" of the Contract Documents and must be completed and submitted with the bidder's bidder proposal:

- COMPLIANCE STATEMENT
- CERTIFICATION OF NON-SEGREGRATED FACILITIES
- CERTIFICATION REGARDING DEBARMENT, SUSPENSION , INELIGIBILITY AND VOLUNTARY EXCLUSION – LOWER TIER COVERED TRANSACTIONS
- CERTIFICATION FOR CONTRACTS, GRANTS AND LOANS

SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

BID PROPOSAL AND FORMS

FOR

CSA 23 / AMWC / GARDEN FARMS CWD EMERGENCY INTERTIE PROJECT SANTA MARGARITA, CA CONTRACT NO. 300536

BID PROPOSAL

TO: THE BOARD OF SUPERVISORS OF THE SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, STATE OF CALIFORNIA:

Pursuant to and in compliance with your Notice to Bidders, the undersigned, as bidder, declares that the only person or parties interested in this proposal as principals are those named herein; that this proposal is made without collusion with any other person, firm or corporation; that he/she is aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self insurance in accordance with the provisions of that code, and he/she will comply with such provisions before commencing the performance of the work of this contract; that he/she has carefully examined the location of the proposed work, the annexed proposed form of contract, and he/she proposes, and agrees if this proposal is accepted, that he/she will contract with the Board of Supervisors of the San Luis Obispo County Flood Control and Water Conservation District in the form of the copy of the contract annexed hereto, to provide all necessary machinery, tools, apparatus and other equipment needed, and to do all of the work and furnish all the materials specified in the contract, in the manner and the time therein prescribed, and according to the requirements of the Department of Public Works and Transportation as therein set forth, and that he/she will take in full payment therefor the following unit prices, to-wit:

SEE NEXT PAGE FOR BID PROPOSAL FORM

CSA 23/AMWC/GARDEN FARMS CWD
EMERGENCY INTERTIE PROJECT
SANTA MARGARITA, CA
CONTRACT NO. 300536
BID PROPOSAL

ITEM NO.	CODE NO.	DESCRIPTION OF ITEM	APPROX. QUANTITY	UNIT OF MEASURE	UNIT PRICE (IN FIGURES) DOLLARS. CENTS	TOTAL AMOUNT DOLLARS. CENTS
1	0	Sheeting, Shoring & Bracing	1	LS	LUMP SUM	
2	0	Traffic Control System	1	LS	LUMP SUM	
3	0	Construction Area Signs	1	LS	LUMP SUM	
4	0	Decomposed Granite	7	CY		
5	0	Class II Aggregate Base	490	CY		
6	0	Hot Mix Asphalt	820	TON		
7	0	8-inch PVC C900 Water Main	12740	12740		
8	0	4-inch PVC C900 Water Main	90	LF		
9	0	8-inch Tee and Resilent Wedge Gate Valve Assembly	1	LS	LUMP SUM	
10	0	AMWC Water Main Extension & Hydrant Lateral	1	LS	LUMP SUM	
11	0	AMWC Waterline Connection	1	LS	LUMP SUM	
12	0	Garden Farms CWD Waterline Connection	1	LS	LUMP SUM	
13	0	CSA 23 Waterline Connection	1	LS	LUMP SUM	
14	0	Pump	1	EA		
15	0	6-inch Diameter Potable Water Hose	300	LF		
16	0	2-inch Combination ARV Assembly	10	EA		
17	0	Water Service Connection	7	EA		
18	0	Pumpout Assembly (includes Blind Flange)	4	EA		
19	0	Blowoff Assembly	4	EA		
20	0	18-inch Steel Casing	90	LF		

21	0	4-inch D.I. Blind Flange	6	EA		
22	0	6-inch D.I. Blind Flange	6	EA		
23	0	8-inch D.I. Blind Flange	2	EA		
					TOTAL BID	

Bidder's Name: _____

Bidder represents that he/she has hereinabove set forth for each unit basis item of work a unit price and a total for the item, and for each lump sum item a total for the item, all in clearly legible figures in the respective spaces provided for that purpose. In the case of unit basis items, the amount set forth under the "Total" column is the extension of the unit price bid on the basis of the approximate quantity for the item.

In case of discrepancy between the unit price and the total set forth for a unit basis item, the unit price shall prevail, provided, however, if the amount set forth as a unit price is ambiguous, unintelligible, or uncertain for any cause, or is omitted, or is the same amount as the entry in the "Total" column, then the amount set forth in the "Total" column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price.

Proposals in which the prices are mathematically or materially unbalanced may be rejected. A bid is mathematically unbalanced if the bid is structured on the basis of nominal prices for some work and inflated prices for other work; that is, each element of the bid must carry its proportionate share of the total cost of the work plus profits. A bid is materially unbalanced if there is reasonable doubt that award to the bidder submitting the mathematically unbalanced bid will result in the lowest ultimate cost to the District.

Bidder shall execute and submit with their proposal, each of the following:

- BIDDERS INFORMATION LIST
- DESIGNATION OF SUBCONTRACTORS
- BIDDER'S NON-COLLUSION DECLARATION (STATE FORM)
- COMPLIANCE STATEMENT (Form 400-6)
- CERTIFICATION OF NON-SEGRATED FACILITIES
- CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION – LOWER TIER COVERED TRANSACTIONS (Form AD-1048)
- CERTIFICATION FOR CONTRACTS, GRANTS, AND LOANS
- DISCLOSURE OF LOBBYING ACTIVITIES
- CERTIFICATION REGARDING WORKERS' COMPENSATION INSURANCE
- BIDDER'S BOND

Bidder declares that he/she has read, and agrees to, the Special Provisions, including, without limitation, the provisions of Sections 1, 2, 3, 4, and 5 thereof.

Bidder shall list the name and address of each subcontractor to whom the bidder proposes to directly subcontract portions of the work as required by the provisions in Section 2-1.02, "Required Listing of Proposed Subcontractors," of these Special Provisions. The list of subcontractors shall also set forth the portion of work that will be done by each subcontractor listed. The "DESIGNATION OF SUBCONTRACTORS" form for listing the subcontractors is included in the section titled "Bid Proposal and Forms" of the Contract Documents.

Accompanying this bid proposal is a bidder's bond, cash, cashier's check, or a certified check, payable to the San Luis Obispo County Flood Control and Water Conservation District, for the sum of _____ _____ Dollars ($_____), said amount being at least ten percent (10%) of the total of the bid. The proceeds thereof shall become the property of the San Luis Obispo County Flood Control and Water Conservation District if the proposal is withdrawn after the time fixed in the Notice to Bidders for the opening of bids, or if, in case this bid is accepted by said Board of Supervisors and such bidder has received notice that the contract has been awarded to him/her, the undersigned shall fail within ten (10) calendar days, not including Saturdays, Sundays, and legal holidays, thereafter to execute a contract with the District and furnish the certificates of insurance and Payment and Performance bonds required by the Contract Documents. Otherwise, said guarantee, except a bidder's bond, will be returned to the undersigned.

This bid proposal may be withdrawn, in writing, prior to the time fixed in the Notice to Bidders for the opening of bids. It is understood and agreed that this bid proposal will not be withdrawn after the time fixed in the Notice to Bidders for the opening of bids. Bidders further agree that the failure of the District to open bids for this project exactly at the time fixed in said Notice shall not extend the time within which bids may be withdrawn.

The undersigned bidder will sign and deliver to the San Luis Obispo County Flood Control and Water Conservation District the written contract, together with the certificates of insurance and bonds described in the Notice to Bidders, within ten (10) calendar days, not including Saturday, Sundays, and legal holidays, after the undersigned has received notice that the contract has been awarded to him/her.

The undersigned, as bidder, declares that he/she is aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self insurance in accordance with the provisions of that code, and will comply with such provisions before commencing the performance of the work of this contract.

The bidder's execution of the signature portion of this bid proposal shall also constitute an endorsement and execution of those certifications, questionnaires, and assurances which are a part of this proposal.

ADDENDA: The undersigned acknowledges and confirms the receipt of the following Addenda**:**

Addenda Number	Date
_____	_____
_____	_____
_____	_____

and agrees that said addenda are covered in the bid proposal and shall form a part of the Contract Documents.

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

_____

_____

Bidder warrants and represents that he/she is licensed in accordance with an Act providing for the registration of Contractors, License No. _____, Class _____, License Expiration Date _____. (Note: The successful bidder must possess the license classification specified in the Notice to Bidders upon award of this contract.)

Name of Bidder_____

Signature of Bidder_____

Printed Name and Title_____

Business Address_____

Telephone Number_____

Date_____

DIR Registration No.*_____

NOTICE. . . . . .If bidder is a corporation, the legal name of the corporation shall be set forth above together with the signature of the officer or officers authorized to sign contract in behalf of the corporation; if bidder is a partnership, the true name of the firm shall be set forth above together with the signature of the partner or partners authorized to sign contracts in behalf of the partnership; and if the bidder is an individual, his or her signature shall be placed above. If signature is by an agent, other than an officer of a corporation or a member of a partnership, a Power of Attorney must be on file with the District prior to opening of bids or submitted with the bid; otherwise, the bid will be disregarded as irregular and unauthorized.

* Pursuant to Labor Code Section 1771.1, no contractor or subcontractor may be awarded this public works contract unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

RETURN THIS FORM WITH YOUR BID PROPOSAL

BIDDERS INFORMATION LIST

All bidders/proposers are required to provide the following information for all DBE and non-DBE contractors, who provided a proposal, bid, quote, or were contacted by the proposed prime contractor. This information is required from the proposed prime contractor and shall be submitted with their bid proposal. The Department of Public Works will use this information to maintain and update a "Bidder's List" to assist in the overall annual Disadvantaged Business Enterprise (DBE) availability goal setting process required for Federal-aid projects. This information is also being made available to other local agencies for the same purpose. *To the extent permitted by law, all information submitted will be held in strict confidence and will not be shared without your consent except as noted above.*

Contractor: ☐ Prime Contractor ☐ Subcontractor ☐ Supplier ☐ Other: _____

Firm Name: _____ Phone: _____

Business Address: _____ Fax: _____

_____

License No.
and Classification _____ Years in Business: _____

Contact Person: _____

Is the firm currently certified as a DBE by Caltrans? ☐ No ☐ Yes Cert. Number: _____

Gross Annual Receipts for last year:
☐ less than $1 million ☐ less than $5 million ☐ less than $10 million
☐ less than $15 million ☐ more than $15 million

Type of work/ services/ materials provided for this job:
☐ Contractor ☐ Supplier ☐ Manufacturer ☐ Trucking ☐ Broker
☐ Other (describe): _____

Contractor Specialty for this job:
☐ Roadway Construction (including signing, paving, and concrete) (237310)
☐ Roadway Painting/Striping (237310)
☐ Highway Lighting & Signal Installation (238210)
☐ Bridge Construction (237310)
☐ Tunnel Construction (237990)
☐ Water, Sewer, & Pipeline Construction (237110)
☐ Power & Communication Transmission Line (including conduit construction) (237130)
☐ Landscaping (561730)
☐ Irrigation (237110)
☐ Other Heavy Construction (including parks, reclamation, reservoir, water & sewer treatment facilities) (237990)
☐ Masonry (including retaining walls and foundations) (238140)
☐ Concrete Retaining Walls (238110)
☐ Building Construction (236210/236220)
☐ Other (describe): _____

- Copy sheet as needed
- None of the information requested on this form is material to the District's determination of which Bidder's Bid is the lowest responsive bid.

RETURN THIS FORM WITH YOUR BID PROPOSAL

DESIGNATION OF SUBCONTRACTORS FORM

In compliance with the provisions of Sections 4100-4113 of the Public Contract Code of the State of California, and any amendments thereto, the undersigned bidder sets forth the following:

a. The name and location of the place of business of each subcontractor who will perform work or labor, or render service to the undersigned Prime Contractor in or about the construction of the work or improvement, or a subcontractor licensed by the State of California who, under subcontract to the Prime Contractor, specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent of the undersigned Prime Contractor's total bid or in the case of bids for the construction of streets and highways, including bridges, in excess of one-half of one percent or ten thousand dollars ($10,000), whichever is greater.*

b. The portion of the work which will be done by each such subcontractor. Only one subcontractor shall be listed for each such portion. If the subcontractor is not performing all of the work under the bid item number(s) listed for that subcontractor, the bidder shall set forth the portion of the work relating to said bid item number(s) that will be done by the subcontractor.

Bid Schedule Item No.	Description of Portion of Work (if applicable)	Subcontractor	License No.	DIR Reg. No.**	Address	Percent of Total Bid Price

By:_____

(Bidder's Signature/Printed Name and Title/Company Name)

NOTES: * When there is a failure to list a subcontractor, as required, the law provides that the Contractor agrees to do the work with his or her own forces. In such case, bidder must be authorized to perform said work. Any bid not complying with the provisions hereof may be rejected.

** Pursuant to Labor Code Section 1771.1, no contractor or subcontractor may be listed on the bid proposal for this public works project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

RETURN THIS FORM WITH YOUR BID PROPOSAL

BIDDER'S NON-COLLUSION DECLARATION (STATE FORM)

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

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

_____
(Name of Company)

By: _____

_____
Printed Name

_____
Title

Date: _____

RETURN THIS FORM WITH YOUR BID PROPOSAL

USDA
Form RD 400-6
(Rev. 2-98)

COMPLIANCE STATEMENT

This statement relates to a proposed contract
with_____

_____
(Name of borrower or grantee)

who expects to finance the contract with assistance from either the Rural Housing Service (RHS), Rural Business-Cooperative Service (RBS), or the Rural Utilities Service (RUS) or their successor agencies, United States Department of Agriculture (whether by a loan, grant, loan insurance, guarantee, or other form of financial assistance). I am the undersigned bidder or prospective contractor. I represent that:

1. I **[ ]** have, **[ ]** have not, participated in a previous contract or subcontract subject to Executive Order 11246 (regarding equal employment opportunity) or a preceding similar Executive Order.

2. If I have participated in such a contract or subcontract, I **[ ]** have, **[ ]** have not, filed all compliance reports that I have been required to file in connection with the contract or subcontract.

If the proposed contract is for $50,000 or more and I have 50 or more employees, I also represent that:

3. I **[ ]** have, **[ ]** have not, previously had contracts subject to the written affirmative action program requirements of the Secretary of Labor.

4. If I have participated in such a contract or subcontract, I **[ ]** have, **[ ]** have not, developed and placed on file at each establishment affirmative action programs as required by the rules and regulations of the Secretary of Labor.

I understand that if I have failed to file any compliance reports that have been required or me, I am not eligible and will not be eligible to have my bid considered or to enter into the proposed contract unless and until I make an arrangement regarding such reports that is satisfactory to either the RHS, RBS, or RUS, or to the office where the reports are required to be filed.

I also certify that I do not maintain or provide for my employees any segregated facilities at any of my establishments, and that I do not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I certify further that I will not maintain or provide for my employees any segregated facilities at any of my establishments, and that I will not permit my employees to perform their services at any location, under my control, where segregated facilities are maintained. I agree that a breach of this certification is a violation of the Equal Opportunity clause in my contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. I further agree that (except where I have obtained identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that I will retain such certifications in my files; and that I will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods): (See Reverse).

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENTS
FOR
CERTIFICATIONS OF NON-SEGREGATED FACILITIES

A certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity Clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually)

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Date**:** _____

Signature of Bidder or Prospective Contractor

_____

Address (including Zip Code)

U.S. DEPARTMENT OF AGRICULTURE

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – Lower Tier Covered Transactions.

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017.510, Participants' responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency with which this transaction originated.

(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS ON REVERSE)

(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 participation in this transaction 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.

Organization Name PR/Award Number or Project Name

Name(s) and Title(s) of Authorized Representative(s)

Signature(s) Date

Form AD -1048 (1/92)

Instructions for Certification

1. By signing and submitting this form, the prospective lower tier participant is providing the certification set out on the reverse side in accordance with these instructions.

2. 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.

3. 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 when submitted or has become erroneous by reason of changed circumstances.

4. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

5. The prospective lower tier participant agrees by submitting this form 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.

6. The prospective lower tier participant further agrees by submitting this form that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principles. Each participant may, but is not required to, check the Nonprocurement List.

8. 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 information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly entered 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.

Form AD -1048 (1/92)

CERTIFICATION FOR CONTRACTS, GRANTS AND LOANS

The undersigned certifies, 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 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 or Federal loan, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant or loan.

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 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 or loan, the undersigned shall complete and submit Standard From – LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including contracts, subcontracts, and subgrants under grants and loans) and that all subrecipients shall certify and disclose accordingly.

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.

_____ _____
(Name) (Date)

_____
(Title)

(08-21-91) PN 171

CONTRACTOR'S CERTIFICATION
REGARDING WORKERS' COMPENSATION INSURANCE

State of California

County of _____

I am aware of the provisions of Section 3700 of the California Labor Code which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code. I will comply with such provisions before commencing with the performance of the work of this contract.

_____
Printed name of Contractor

_____
Signature of Contractor

Date: _____

BIDDER'S BOND

KNOW ALL BY THESE PRESENTS:

That we, _____

_____

as Principal, and _____

_____,

as Surety, are held and firmly bound unto the San Luis Obispo County Flood Control and Water Conservation District, State of California (hereinafter called "District") in the penal sum of Ten Percent (10%) of the total aggregate amount of the bid of the Principal above named, submitted by said Principal to the District for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents. In no case shall the liability of the Surety hereunder exceed the sum of _____

_____ ($_____).

THE CONDITION OF THIS OBLIGATION IS SUCH,

That whereas a bid to District for certain construction specifically described as follows, for which bids are to be opened on _____, 20____, has been submitted by Principal to District for:

CSA 23 / AMWC / GARDEN FARMS CWD
EMERGENCY INTERTIE PROJECT
SANTA MARGARITA, CA
CONTRACT NO. 300536

NOW, THEREFORE, if the aforesaid Principal shall not withdraw said bid after the time fixed in the Notice to Bidders for the opening of the same, and shall within ten (10) calendar days, not including Saturdays, Sundays, and legal holidays, after receipt of written notice that the contract has been awarded to him/her, enter into a written contract with District, in the prescribed form, in accordance with the bid as accepted, and file with the District the certificates of insurance as stipulated in Article 7 of the Agreement and the two bonds, one to guarantee faithful performance and the other to guarantee payment for labor and materials, as required by law, then this obligation shall be null and void; otherwise, it shall remain in full force and effect, and the penal sum guaranteed by this bond shall be forfeited to the District.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of said contract or to the work to be performed thereunder or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension, alteration, or addition.

In the event suit is brought upon said bond by District and judgment is recovered, the Surety shall pay all costs incurred by District in such suit, including a reasonable attorney's fee to be fixed by the court. Death of the Principal shall not relieve Surety of its obligations hereunder.

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

_____ (Seal)

_____ (Seal)

_____ (Seal)
Principal

_____ (Seal)

_____ (Seal)

_____ (Seal)
Surety

_____

_____
Address

NOTE:

Signatures of those executing for Surety must be properly acknowledged.

SAN LUIS OBISPO COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT

CONTRACT AGREEMENT

FOR

CSA 23 / AMWC / GARDEN FARMS CWD
EMERGENCY INTERTIE PROJECT
SANTA MARGARITA, CA
CONTRACT NO. 300536

SAN LUIS OBISPO COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT

AGREEMENT

THIS AGREEMENT, made and entered into this _____ day of _____, 20_____, between the San Luis Obispo County Flood Control and Water Conservation District, a political subdivision and County of the State of California, party of the first part, hereinafter called "District" and _____ the party of the second part, hereinafter called "Contractor".

WITNESSETH, that for and in consideration of the mutual covenants and agreements hereinafter contained, the parties hereto agree as follows:

ARTICLE 1 – WORK

That the Contractor will, at its own proper cost and expense, do all the work and furnish all the equipment and materials necessary to construct and complete in good and workmanlike manner to the satisfaction of the Board of Supervisors of said District, for

CSA 23 / AMWC / GARDEN FARMS CWD
EMERGENCY INTERTIE PROJECT
SANTA MARGARITA, CA
CONTRACT NO. 300536

all in strict accordance with the Contract Documents, including without limitation, the Project Plans, the Standard Specifications of the State of California, Department of Transportation, dated May 2006 (hereinafter called, "Standard Specifications"), the Standard Plans of the State of California, Department of Transportation, dated May 2006 (hereinafter called, "Standard Plans"), and the Special Provisions therefor, on file in the Department of Public Works and Transportation and the Office of the Clerk of the Board of Supervisors of the San Luis Obispo County Flood Control and Water Conservation District, State of California.

ARTICLE 2 – CONTRACT

This Agreement, together with the Notice and Instructions to Bidders, Bid Proposal and Forms, Standard Specifications, Standard Plans, the Special Provisions, including without limitation the Project Plans incorporated therein, and all addenda thereto, form the contract, and said documents by this reference become as fully a part of this Agreement as if set forth in full and are herein sometimes referred to as "Contract" or as "Contract Documents". In case of conflict between Section 6 of the Special Provisions "USDA Rural Development and Department of Water Resources Supplement Provisions," and any other portion of the Contract Documents, the USDA Rural Development and Department of Water Resources Supplemental Provisions shall take precedence over such conflicting language. The terms set forth below, when utilized in said documents, shall mean as follows:

> PUBLIC WORKS DIRECTOR: Means the Director of Public Works and Transportation (hereinafter, also the Department of Public Works) of the County of San Luis Obispo, State of California, acting either directly or through properly authorized agent(s), acting within the

scope of the particular duties delegated to them, including registered engineers employed by the Department of Public Works and Transportation.

COUNTY CLERK: Means the Clerk of the Board of Supervisors of the San Luis Obispo County Flood Control and Water Conservation District, State of California.

ARTICLE 3 – CONTRACT TIMES

The Contractor shall begin work within ten (10) calendar days, not including Saturdays, Sundays, or legal holidays, from the date of receipt of the District's Notice to Contractor to Proceed, and the work to be accomplished under this contract shall be completed within the time limit provided in Section 4, "Prosecution and Progress of the Work", of the Special Provisions. Attention is directed to the provisions of said Section 4, "Prosecution and Progress of the Work", of the Special Provisions for the amount of liquidated damages.

ARTICLE 4 – CONTRACT PRICE

The total Contract price is the amount of the Contractor's bid as set forth in the award of the Contract approved by the District's Board of Supervisors. The Contractor will receive and accept and the District will pay the prices specified in the attached Bid Proposal, which is incorporated herein by reference, as full compensation for furnishing all labor, materials, and equipment for doing all the work contemplated and embraced in this Agreement. To the extent permitted by law, the Contractor assumes during the progress of the work and before its acceptance, any and all loss or damage arising out of the nature of the work aforesaid or from the action of the elements, or from any unforeseen difficulties or obstructions which may arise or be encountered in the prosecution of the work until its acceptance by the District; and assumes any and all expenses incurred by or in consequence of the suspension or discontinuance of work, for well and faithfully completing the work, and the whole thereof, in the manner and to the requirements of the Plans, Special Provisions, Standard Specifications, Standard Plans, and the Public Works Director.

ARTICLE 5 – SUBCONTRACTING

The Contractor's attention is directed to the provisions of Section 2-1.02, "Required Listing of Proposed Subcontractors," of the Special Provisions and the requirements contained therein.

Additionally, the Contractor's attention is directed to the provisions of the "Subletting and Subcontracting Fair Practices Act" set forth in Sections 4100-4114 of the Public Contract Code.

ARTICLE 6

The Contractor agrees that the Public Works Director shall decide as to the meaning of the Standard Specifications, Standard Plans, and Special Provisions for the work, including without limitation the Project Plans incorporated therein, where the same may be found to be obscure or in dispute and the decision shall be final. The Public Works Director shall have the right to correct any errors or omissions therein when such corrections are necessary to the proper fulfillment of the intention of the Special Provisions, Standard Specifications and Standard Plans; the action of such corrections is to take effect from the time said Public Works Director gives notice thereof to the Contractor.

ARTICLE 7 - INSURANCE REQUIREMENTS

Contractor, at its sole cost, shall purchase and maintain the insurance policies set forth below on all of its operations under this Agreement. All of the insurance companies providing insurance for Contractor shall have, and provide evidence of, an A.M. Best & Co. rating of A:VII or above, unless exception is granted by Risk Manager. Further, all policies shall be maintained for the full term of this Agreement and related warranty period if applicable.

7.01 SCOPE AND LIMITS OF REQUIRED INSURANCE POLICIES

A. COMMERCIAL GENERAL LIABILITY

Policy shall include coverage at least as broad as set forth in Insurance Services Office Commercial General Liability Coverage (CG 00 01) with policy limits of not less than $2 million dollars combined single limit per occurrence. Policy shall be endorsed with the following specific language or contain equivalent language in the policy:

i.) The County of San Luis Obispo, its officers, officials, employees, and volunteers are named as an additional insured for all liability arising out of the operations by or on behalf of the named insured in the performance of this Agreement. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance as least as broad as ISO Form CG 20 10 11 85 or if not available, through the addition of both CG 20 10 and CG 20 37 (if a later edition is used).

ii.) The insurance provided herein shall be considered primary coverage to the County of San Luis Obispo with respect to any insurance or self insured retention maintained by the County. Further, the County's insurance shall be considered excess insurance only and shall not be called upon to contribute to this insurance.

iii.) The policy shall not be cancelled or materially changed without first giving thirty days prior written notice to the County of San Luis Obispo, Department of Public Works.

B. BUSINESS AUTOMOBILE POLICY

Policy shall include coverage at least as broad as set forth in the liability section of Insurance Services Office Business Auto Coverage (CA 00 01) with policy limits of no less than $1 million dollars combined single limit for each occurrence. Said insurance shall include coverage for owned, non-owned, and hired vehicles. Policy shall be endorsed with the following specific language or contain equivalent language in the policy:

i.) The County of San Luis Obispo, its officers, officials, employees, and volunteers are named as an additional insured for all liability arising out of the operations by or on behalf of the named insured in the performance of this Agreement.

ii.) The policy shall not be cancelled or materially changed without first giving thirty days prior written notice to the County of San Luis Obispo, Department of Public Works.

C. WORKERS' COMPENSATION / EMPLOYERS' LIABILITY INSURANCE

i. Workers' Compensation: policy shall provide statutory limits as required by State of California. Policy shall be endorsed with the following specific language or contain equivalent language in the policy:

a. Contractor and its insurer shall waive all rights of subrogation against the County, its officers and employees for workers' compensation losses arising out of this Agreement.

b. The policy shall not be cancelled or materially changed without first giving thirty days prior written notice to the County of San Luis Obispo, Department of Public Works.

ii. Employer's Liability: policy shall provide $1 million dollars per accident for bodily injury or disease.

If the Contractor maintains higher limits than the minimum shown above, the County requires and shall be entitled to coverage for the higher limits maintained by the Contractor.

7.02 DEDUCTIBLES AND SELF-INSURANCE RETENTIONS

All deductibles and/or self-insured retentions which apply to the insurance policies required herein will be declared in writing and approved by the County prior to commencement of this Agreement.

7.03 DOCUMENTATION

Prior to commencement of work and annually thereafter for the term of this Agreement, Contractor will provide to the County of San Luis Obispo, Department of Public Works, Room 207, County Government Center, CA 93408, Attention Design Engineer, Contract No. 300536, properly executed certificates of insurance clearly evidencing the coverage, limits, and endorsements specified in this Agreement. Further, at the County's request, the Contractor shall provide certified copies of the insurance policies within thirty days of request.

Failure of the County to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of the County to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

7.04 ABSENCE OF INSURANCE COVERAGE

County may direct Contractor to immediately cease all activities with respect to this Agreement if it determines that Contractor fails to carry, in full force and effect, all insurance

policies with coverage levels at or above the limits specified in this Agreement. Any delays or expense caused due to stopping of work and change of insurance shall be considered Contractor's delay and expense.

7.05 SPECIAL RISKS OR CIRCUMSTANCES

The County reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstances.

ARTICLE 8 – INDEMNIFICATION

8.01 A.1 GENERAL

To the fullest extent permitted by law, the Contractor assumes liability for and agrees, at the Contractor's sole cost and expense, to promptly and fully indemnify, protect, hold harmless and defend (even if the allegations are false, fraudulent, or groundless), the District, its Board and each member thereof, the USDA, the Department of Water Resources of the State of California (DWR) and their respective officials, officers, directors, employees, commission members, representatives, and agents ("Indemnitees"), from and against any and all claims, allegations, actions, suits, arbitrations, administrative proceedings, regulatory proceedings, or other legal proceeds, causes of action, demands, costs, judgments, liens, stop payment notices, penalties, liabilities, damages, losses, anticipated losses of revenues, and expenses (including, but not limited to, any fees of accountants, attorneys, experts, or other professionals, or investigation expenses), or losses of any kind or nature whatsoever, whether actual, threatened, or alleged, arising out of, resulting from, or in any way (either directly or indirectly), related to the Work, the Project or any breach of the Contract by Contractor or any of its officers, agents, employees, Subcontractors, Sub-subcontractors, or any person performing any of the Work, pursuant to a direct or indirect contract with the Contractor ("Indemnity Claims"). Such Indemnity Claims include, but are not limited to, claims for:

1. Any activity on or use of the District's premises or facilities;
2. Any liability incurred due to Contractor acting outside the scope of its authority pursuant to the Contract, whether or not caused in part by an Indemnified Party;
3. The failure of Contractor or the Work to comply with any applicable law, permit, or orders;
4. Any misrepresentation, misstatement or omission with respect to any statement made in the Contract Documents or any document furnished by the Contractor in connection therewith;
5. Any breach of any duty, obligation or requirement under the Contract Documents, including, but not limited to any breach of Contractor's warranties, representations, or agreements set forth in the Contract Documents;
6. Any failure to coordinate the Work with the District's separate contractors;
7. Any failure to provide notice to any party as required under the Contract Documents;

8. Any failure to act in such a manner as to protect the Project from loss, cost, expense, or liability;

9. Bodily or personal injury, emotional injury, sickness or disease, or death at any time to any persons including without limitation employees of Contractor;

10. Damage or injury to real property or personal property, equipment and materials (including, but without limitation, property under the care and custody of the Contractor or the District) sustained by any person or persons (including, but not limited to, companies, corporations, utility company or property owner, Contractor and its employees or agents, and members of the general public);

11. Any liability imposed by applicable law including, but not limited to criminal or civil fines or penalties;

12. Any dangerous, hazardous, unsafe or defective condition of, in or on the site, of any nature whatsoever, which may exist by reason of any act, omission, neglect, or any use or occupation of the site by Contractor, its officers, agents, employees, or Subcontractors;

13. Any operation conducted upon or any use or occupation of the site by Contractor, its officers, agents, employees, or Subcontractors under or pursuant to the provisions of the Contract or otherwise;

14. Any acts, errors, omission or negligence of Contractor, its officers, agents, employees, or Subcontractors;

15. Infringement of any patent rights, licenses, copyrights or intellectual property which may be brought against the Contractor or the District, the USDA, or DWR arising out of Contractor's Work, for which the Contractor is responsible; and

16. Any and all claims against the District, the USDA, or DWR seeking compensation for labor performed or materials used or furnished to be used in the Work or alleged to have been furnished on the Project, including all incidental or consequential damages resulting to the District, the USDA, or DWR from such claims.

A.2 <u>EFFECT OF INDEMNITEES' ACTIVE NEGLIGENCE</u>

Contractor's obligations to indemnify and hold the Indemnitees harmless exclude only such portion of any Indemnity Claim which is attributable to the active negligence or willful misconduct of the Indemnitee, provided such active negligence or willful misconduct is determined by agreement of the parties or by findings of a court of competent jurisdiction. In instances where an Indemnitee's active negligence accounts for only a percentage of the liability for the Indemnity Claim involved, the obligation of Contractor will be for that entire percentage of liability for the Indemnity Claim not attributable to the active negligence or willful misconduct of the Indemnitee(s). Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Article 8 A. Subject to the limits set forth herein, the Contractor, at its own expense, shall satisfy any resulting judgment that may be rendered against any Indemnitee resulting from an Indemnity Claim. The Indemnitees shall be consulted with regard to any proposed settlement.

A.3 INDEPENDENT DEFENSE OBLIGATION

The duty of the Contractor to indemnify and hold harmless the Indemnitees includes the separate and independent duty to defend the Indemnitees, which duty arises immediately upon receipt by Contractor of the tender of any Indemnity Claim from an Indemnitee. The Contractor's obligation to defend the Indemnitee(s) shall be at Contractor's sole expense, and not be excused because of the Contractor's inability to evaluate liability or because the Contractor evaluates liability and determines that the Contractor is not liable. This duty to defend shall apply whether or not an Indemnity Claim has merit or is meritless, or which involves claims or allegations that any or all of the Indemnitees were actively, passively, or concurrently negligent, or which otherwise asserts that the Indemnitees are responsible, in whole or in part, for any Indemnity Claim. The Contractor shall respond within thirty (30) calendar days to the tender of any Indemnity Claim for defense and/or indemnity by an Indemnitee, unless the Indemnitee agrees in writing to an extension of this time. The defense provided to the Indemnitees by Contractor shall be by well qualified, adequately insured and experienced legal counsel acceptable to the District.

A.4 INTENT OF PARTIES REGARDING SCOPE OF INDEMNITY

It is the intent of the parties that the Contractor and its Subcontractors of all tiers shall provide the Indemnitees with the broadest defense and indemnity permitted by Applicable Law. In the event that any of the defense, indemnity or hold harmless provisions in the Contract Documents are found to be ambiguous, or in conflict with one another, it is the parties' intent that the broadest and most expansive interpretation in favor of providing defense and/or indemnity to the Indemnitees be given effect.

A.5 WAIVER OF INDEMNITY RIGHT AGAINST INDEMNITEES

With respect to third party claims against the Contractor, to the fullest extent permitted by law, the Contractor waives any and all rights to any type of express or implied indemnity against the Indemnitees.

A.6 SUBCONTRACTOR REQUIREMENTS

In addition to the requirements set forth hereinabove, Contractor shall ensure, by written subcontract agreement, that each of Contractor's Subcontractors of every tier shall protect, defend, indemnify and hold harmless the Indemnitees with respect to Indemnity Claims arising out of, in connection with, or in any way related to each such Subcontractors' Work on the Project in the same manner in which Contractor is required to protect, defend, indemnify and hold the Indemnitees harmless. In the event Contractor fails to obtain such defense and indemnity obligations from others as required herein, Contractor agrees to be fully responsible to the Indemnitees according to the terms of this Article 8 A.

A.7 NO LIMITATION OR WAIVER OF RIGHTS

Contractor's obligations under this Article 8 A are in addition to any other rights or remedies which the Indemnitees may have under the law or under the Contract Documents. Contractor's indemnification and defense obligations set forth in this Article 8 A are separate and independent from the insurance provisions set forth in the Contract Documents, and do not limit, in any way, the applicability, scope, or obligations set forth in such insurance provisions. The purchase of insurance by the Contractor with respect to the obligations required herein shall in no event be construed as fulfillment or discharge of such obligations. In any and all claims against the Indemnitees by any employee of the Contractor, any Subcontractor, any supplier of the Contractor or Subcontractors, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the obligations under this Article 8 A shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor or any supplier of either of them, under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts. Failure of the District, the USDA, or DWR to monitor compliance with these requirements imposes no additional obligations on the District, the USDA, or DWR and will in no way act as a waiver of any rights hereunder.

A.8 WITHHOLDING TO SECURE OBLIGATION

In the event an Indemnity Claim arises prior to final payment to Contractor, the District may, in its sole discretion, reserve, retain or apply any monies due Contractor for the purpose of resolving such Indemnity Claims; provided, however, the District may release such funds if the Contractor provides the District with reasonable assurances of protection of the Indemnitees' interests. The District shall, in its sole discretion, determine whether such assurances are reasonable.

A.9 SURVIVAL OF INDEMNITY OBLIGATIONS

Contractor's obligations under this Article 8 A are binding on Contractor's and its Subcontractors' successors, heirs and assigns and shall survive the completion of the Work or termination of the Contractor's performance of the Work.

B.01 RESPONSIBILITY TO OTHER ENTITIES

You are responsible for any liability imposed by law and for injuries to or death of any person, including workers and the public, or damage to property. Indemnify and save harmless any county, city or district and its officers and employees connected with the work, within the limits of which county, city, or district the work is being performed, all in the same manner and to the same extent specified for the protection of the State.

ARTICLE 9 – FINAL PAYMENT

It is mutually agreed between the parties hereto, that no certificate given or payments made under this contract, except the final payment, shall be evidence of the performance of this contract, either wholly or in part, against any claim of the Contractor. Final payment for the work performed under this contract shall not be made until the lapse of thirty-five (35) calendar days after the notice of completion of said work has been filed for record and no payment shall be construed to be an acceptance of any defective work or improper materials. The Contractor further agrees that acceptance by the Contractor of the final payment due under this contract, and the adjustment and payment of his/her bill rendered for any work done in accordance with any amendments of this Contract, shall be and shall operate as a release to the San Luis Obispo County Flood Control and Water Conservation District from any and all claims or liabilities on account of work performed under this Contract except claims or liabilities for which written notice of claim or protest has been filed with the Public Works Director. Besides guarantees required elsewhere, the Contractor shall and does hereby guarantee all workmanship and material for a period of one year from and after both the date of acceptance of the work and the recordation of the notice of completion by the District and shall repair or replace any or all work and material, together with any other portions of the work which may be displaced in so doing, that in the opinion of the District is or becomes defective during the period of said guarantee without expense whatsoever to the District.

ARTICLE 10 – CONTRACTOR'S REPRESENTATIONS

The Contractor hereby declares that he/she has read the Contract Documents pertaining to the work to be accomplished hereunder, has carefully examined the plans and detail drawings of the work to be performed and fully understands the intent and meaning of the same.

It is further stipulated and agreed that the Contractor shall keep himself/herself fully informed of all laws, ordinances, and regulations which do or may affect the conduct of the work, the materials used therein or persons engaged or employed thereupon and all such orders of bodies and tribunals having any jurisdiction over the same. If it be found that the Special Provisions or Standard Specifications for the work conflict with any such law, ordinance or regulation the Contractor shall immediately report same to the Public Works Director in writing. The Contractor shall at all times observe and comply with and shall cause all his/her agents, employees, and independent contractors hired by the Contractor to observe and comply with all such existing and future laws, ordinances, regulations, or decrees.

ARTICLE 11 – APPRENTICES

Attention is directed to the provisions in Sections 1777.5, 1777.6, and 1777.7 of the Labor Code concerning the employment of apprentices by the Contractor or any subcontractor.

The Contractor and any subcontractor shall comply with the requirements of Sections 1777.5, 1777.6, and 1777.7 of the Labor Code in the employment of apprentices.

To insure compliance and complete understanding of the law relating to apprentices, and specifically the required ratio thereunder, each contractor or subcontractor should, where some question exists, contact the Division of Apprenticeship Standards, 455 Golden Gate Avenue, San Francisco, California, or one of its branch offices prior to commencement of work on this contract. Responsibility for compliance with said Labor Code Sections lies with the prime contractor.

ARTICLE 12 – PAYROLL RECORDS

Attention is directed to the provisions in Section 1776 of the Labor Code concerning Contractor and subcontractor payroll records.

The Contractor and any subcontractor shall comply with the requirements of Section 1776 of the Labor Code.

ARTICLE 13 – EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this contract, Contractor agrees to comply with all of the Equal Employment Opportunity provisions of Executive Order No. 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41 CFR Chapter 60), including the following:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoffs or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Department of Public Works setting forth the provisions of this nondiscrimination clause.

2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

3. The Contractor will send to each labor union or representative of workers with which he/she has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Department of Public Works, advising the said labor union or worker's representative of the Contractor's commitments under this Article 14 and shall post copies of the Notice in conspicuous places available to employees and applicants for employment.

4. The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations (41 CFR, Part 60) and relevant orders of the Secretary of Labor.

5. The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the District and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

6. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations or orders, this contract may be cancelled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further government contracts or federally assisted construction contracts in accordance with

procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by law.

7. The Contractor will include the provisions of this Article in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Public Works Director or the Secretary of Labor may direct as a means of enforcing such provisions including sanctions for noncompliance: provided, however, that in the event a contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the Secretary of Labor, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

ARTICLE 14 - SAFETY

All work conducted by the Contractor and/or subcontractors in the execution of this contract shall be in accordance with current CAL OSHA requirements. Full compensation for compliance with the provisions of this Article shall be considered as included in the other items of work and no additional compensation will be allowed therefor.

ARTICLE 15 – BONDS

Contractor agrees that the Payment Bond and Performance Bond attached to this Agreement are for reference purposes only, and shall not be considered a part of this Agreement or any other Contract Document. Contractor further agrees that said bonds are separate obligations of the Contractor and its surety, and that any attorney's fee provision contained in any payment bond or performance bond shall not apply to any legal action between Contractor and District to enforce any provision of the Contract Documents.

ARTICLE 16 – ATTORNEYS FEES

No provisions of the Contract Documents provide either the Contractor or the District the right to be awarded any attorney's fees and/or costs under Civil Code section 1717 in any legal action brought by either party to enforce any provision of the Contract Documents against the other party. The parties agree that any references to attorney's fees in language describing indemnification obligations do not constitute a contractual provision that would provide either the Contractor or the District the right to be awarded any attorney's fees and/or costs under Civil Code section 1717 in any legal action brought by either party to enforce any provision of the Contract Documents against the other party. Any other language in the Contract Documents providing for a recovery of attorney's fees shall be strictly construed as not including the recovery of any attorney's fees incurred by either Contractor or District in any legal action brought by either party to enforce any provision of the Contract Documents against the other party.

The parties agree that the Contract Documents contain no provisions that would allow either the Contractor or the District to be awarded attorney's fees and/or costs under Civil Code section 1717.

Nothing in this Article affects any right by Contractor or District to recover attorney's fees or costs by operation of any law other than Civil Code section 1717.

In the event of any conflict between language in this Article and any other language in the Contract Documents, the language in this Article shall prevail.

ARTICLE 17 – USDA APPROVAL

This Agreement is subject to USDA approval, and shall not be effective unless and until approved by a delegated representative of USDA Rural Development.

ARTICLE 18 – LABOR COMPLIANCE PROGRAM

This contract is subject to the San Luis Obispo County Department of Public Works "Labor Compliance Program for Projects under Public Resources Code Section 75075 (February 2015)" (LCP) a copy of which is attached to this Contract. The Contractor and all subcontractors shall be required to abide by the requirements included in the LCP.

IN WITNESS WHEREOF, the parties to these presents have hereunto set their hands the year and date first above written, being authorized thereto.

SAN LUIS OBISPO COUNTY
FLOOD CONTROL AND
WATER CONSERVATIN DISTRICT

By:_____
Chairperson of the Board of Supervisors

Date:_____

ATTEST:
CLERK OF THE BOARD OF
SUPERVISORS

By:_____
Deputy Clerk

Date:_____

APPROVAL RECOMMENDED
WADE HORTON

By:_____
Director of Public Works

Date: 13 APR 2015

APPROVED AS TO FORM AND
LEGAL EFFECT:

RITA L. NEAL
County Counsel

By:_____

Date: 4/7/15

CONTRACTOR

_____

By:_____

Date:_____

_____
Printed Name and Title
(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign)

By:_____

_____
(Printed Name and Title)

Date:_____

Address for giving notices:

_____

_____

_____

ATTACHMENT TO CONTRACT

This attachment is to the CONTRACT made and entered into on _____ and between the _____hereinafter "District" and _____ hereinafter called "Contractor." This Contract is for that work described in the Contract Documents entitled:

CSA 23 / AMWC / GARDEN FARMS CWD
EMERGENCY INTERTIE PROJECT
SANTA MARGARITA, CA
CONTRACT NO. 300536

This Contract shall not be effective unless and until approved by a delegated representative of USDA Rural Development.

CONSTRUCTION FUNDING

USDA Rural Development
430 G Street, Agency 4169
David, Ca 95616-4169

As a lender and/or grantor of funds to defray the costs of this Contract and without liability for any payments thereunder, USDA Rural Development hereby approves this Agreement.

U.S. Department of Agriculture
RURAL DEVELOPMENT:

BY:_____

TITLE:_____

DATE:_____

CERTIFICATE OF OWNER'S ATTORNEY

I, the undersigned,_____ the duly authorized and acting
(Type Name)
legal representative of_____, do hereby certify as follows:

I have examined the attached Contract (s), Performance and Payment Bonds and insurance certificates and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions, and provisions thereof. I also am of the opinion that the Contractor's insurance coverage complies with the requirements of the Contract.

_____
(Attorney's Signature)

DATE:_____

PERFORMANCE BOND

KNOW ALL BY THESE PRESENTS: That

WHEREAS, the Board of Supervisors of the San Luis Obispo County Flood Control and Water Conservation District, State of California, has awarded to _____

_____

(hereinafter designated as "Principal") a contract for _____

_____

_____

_____; and

WHEREAS, said Principal is required under the terms of said contract to furnish a bond for the faithful performance of said contract;

NOW, THEREFORE, we, the Principal and _____

_____, as Surety, are held and firmly bound unto the San Luis Obispo County Flood and Water Conservation District, (hereinafter called "District"), in the penal sum of _____

($_____), lawful money of the United States, 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 condition of this obligation is such that if the above bounded Principal, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the said contract and any alteration thereof made as therein provided, on his/her or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and

meaning, and shall indemnify and save harmless District, its officers, agents, and employees, as therein stipulated, then this obligation shall become null and void; otherwise it shall be and remain in full force virtue and effect.

And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or additions to the terms of the contract or to the work or to the specifications.

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

Death of the Principal shall not relieve Surety of its obligations hereunder.

IN WITNESS WHEREOF, one identical counterpart of this instrument, which shall for all purposes be deemed an original thereof, has been duly executed by Principal and Surety above named, on the _____ day of_____, 20____.

_____ (Seal)

_____ (Seal)

_____ (Seal)
Principal

_____ (Seal)

_____ (Seal)

_____ (Seal)
Surety

_____

_____
Address

NOTE:

Signatures of those executing for Surety must be properly acknowledged.

PAYMENT BOND

KNOW ALL BY THESE PRESENTS:

WHEREAS, the Board of Supervisors of the San Luis Obispo County Flood Control and Water Conservation District, State of California, and _____ _____ (hereinafter designated as "Principal") have entered into an agreement for _____

_____

_____

_____

which said Agreement, and all of the Contract Documents attached to or forming a part of said Agreement, are hereby referred to and made a part hereof; and

WHEREAS, pursuant to law, the Principal is required before entering upon the performance of the Work, to file a good and sufficient bond with the body by whom the contract is awarded, to secure claims to which reference is made in Sections 3247 through 3252, inclusive, of the Civil Code of California, and Sections 3181, 3110, 3111 and 3112 of the Civil Code of California,

NOW, THEREFORE, said Principal and the undersigned _____

_____

as corporate surety, are held and firmly bound unto the San Luis Obispo County Flood Control and Water Conservation District, and unto all laborers, materialmen, and other persons referred to in said statutes in the sum of _____ ($_____), lawful money of the United States for the payment of which sum well and truly made, we bind ourselves, our heirs, executors, administrators, successors, or assigns, jointly and severally by these presents.

The condition of this obligation is such that if the said Principal, his/her or its heirs, executors, administrators, successors or assigns, or subcontractors, shall fail to pay any of the persons named in Civil Code Section 3181, or amounts due under the Unemployment Insurance Code with respect to work or labor performed by any such claimant, or any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the Principal and his/her subcontractors pursuant to Section 13020 of the Unemployment Insurance Code, with respect to such work and labor, that the surety herein will pay for the same in an amount not exceeding the sum specified in this bond, otherwise the above obligation shall be void. In case suit is brought upon this bond, the said surety will pay a reasonable attorney's fee to be fixed by the court.

This bond shall inure to the benefit of any of the persons named in Civil Code Section 3181 as to give a right of action to such persons or their assigns in any suit brought upon this bond.

Should the condition of this bond be fully performed, then this obligation shall become null and void, otherwise it shall be and remain in full force, virtue, and effect.

And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or additions to the terms of the contract or to the work or to the specifications.

Death of the Principal shall not relieve Surety of its obligations hereunder.

IN WITNESS WHEREOF one identical counterpart of this instrument, which shall for all purposes be deemed an original thereof, has been duly executed by the Principal and Surety above named, on the _____ day of_____, 20____.

_____ (Seal)

_____ (Seal)

_____ (Seal)
Principal

_____ (Seal)

_____ (Seal)

_____ (Seal)
Surety

_____

_____
Address

NOTE:
Signatures of those executing for Surety must be properly acknowledged.

SAN LUIS OBISPO COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT

SPECIAL PROVISIONS

FOR

CSA 23 / AMWC / GARDEN FARMS CWD
EMERGENCY INTERTIE PROJECT
SANTA MARGARITA, CA
CONTRACT NO. 300536

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CONTRACT NO. 300536

The Special Provisions contained herein have been prepared by or under the direction of the following registered engineer(s):

PREPARED BY:

REGISTERED PROFESSIONAL ENGINEER
JEFFREY LEE
No. C 51640
CIVIL
STATE OF CALIFORNIA

PROJECT ENGINEER — DATE 4/8/2015

REGISTERED PROFESSIONAL ENGINEER
JEFF B. WERST
C 47971
EXP 12-31-15
CIVIL
STATE OF CALIFORNIA

DESIGN ENGINEER — DATE 4/10/15

RECOMMENDED FOR APPROVAL AND ADVERTISING BY:

Dave Flynn
DEPUTY PUBLIC WORKS DIRECTOR — DATE 4/13/15

APPROVED BY:

PUBLIC WORKS DIRECTOR — DATE 13 APR 2015

CONTRACT NO. 300536

The Special Provisions contained herein have been prepared by or under the direction of the following registered engineer(s):

PREPARED BY:

For Sections 09960, 15052, 15076, 15110, 15112, 15115, 15117, 15118, 15119, 15120, 15121, 15122, 15125, 15142, 15250, 15251, 15265, 15270, 15274, 15400, 15956 and High-Performance Vacuum Assisted, Fully Automatic, Sound Attenuated, Pumpset, Mounted on a DOT Trailer

Civil Engineer

4/06/2015
Date

REGISTERED PROFESSIONAL ENGINEER
KEONE K. KAUO
No. 75284
Exp. 12/31/15
CIVIL
STATE OF CALIFORNIA

SECTION 1. SPECIFICATIONS AND PLANS

1-1.01 SPECIFICATIONS AND PLANS

The work embraced herein shall be done in accordance with the Standard Specifications of the State of California, Department of Transportation, dated May 2006 (hereinafter called, "Standard Specifications"), the Standard Plans of the State of California, Department of Transportation, dated May 2006 (hereinafter called, "Standard Plans"), insofar as they may apply and in accordance with these Contract Documents. Wherever State Agencies, Departments, or Officers are referred to in the above mentioned Standard Specifications and Standard Plans, the comparable County of San Luis Obispo Agency, Department, or Officer having jurisdiction shall be meant thereby for the purpose of these Contract Documents.

The District hereby elects under Public Contract Code § 20396 to have said applicable provisions of the Standard Specifications and Standard Plans referenced above, including those provisions modified by these Special Provisions, governed by the State Contract Act to the extent, and only to the extent, one or both of the following conditions is satisfied: (1) the applicable provisions of the Standard Specifications or Standard Plans expressly refer to the State Contract Act; or (2) the District would lack the authority to implement the applicable provisions of the Standard Specifications or Standard Plans absent the District's election to have the District's implementation of the provisions governed by the State Contract Act.

No amendment by the Department of Transportation to the Standard Specifications shall apply to these Contract Documents unless the amendment is expressly set forth in these Special Provisions.

In case of conflict between the Standard Specifications and the contract Special Provisions herein, the Special Provisions shall take precedence over such conflicting portions.

In case of conflict between Section 6. "USDA Rural Development Supplemental Provisions," and any other portion of the Contract Documents, the USDA Rural Development Supplemental Provisions shall take precedence over such conflicting language.

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SECTION 2. PROPOSAL REQUIREMENTS AND CONDITIONS

2-1.01 PROPOSAL REQUIREMENTS AND CONDITIONS

Attention is directed to the provisions in Section 2, "Proposal Requirements and Conditions," of the Standard Specifications and these Special Provisions for the requirements and conditions which the bidder must observe in preparation and the submission of their bid.

Pursuant to Labor Code Section 1771.1, no contractor or subcontractor may be listed on the bid proposal for this public works project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

Pursuant to Labor Code Section 1771.1, no contractor or subcontractor may be awarded this public works contract unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations, pursuant to Labor Code Section 1771.4.

The State Department of Industrial Relations (DIR) has approved a Labor Compliance Plan (LCP) that is applicable to this project. This contract is subject to the San Luis Obispo County Department of Public Works "Labor Compliance Program for Projects under Public Resources Code Section 75075 (February 2015)" (LCP) a copy of which is attached to this Contract. The Contractor and all subcontractors shall be required to abide by the requirements included in the LCP.

The bidder's bond shall conform to the bond form in the section titled "Bid Proposal and Forms" of the Contract Documents and shall be properly filled out and executed. The bidder's bond form included in the Contract Documents may be used.

The following provisions for Section 2, "Proposal Requirements and Conditions," of the Standard Specifications are hereby modified as set forth hereafter.

Section 2-1.03, "Examination of Plans, Specifications, Contract, and Site of Work," of the Standard Specifications is hereby amended by modifying the first sentence of the 5th paragraph to read: "Inspection of such records may be made at the Department of Public Works and Transportation of the County of San Luis Obispo."

Section 2-1.05, "Proposal Forms" of the Standard Specifications, is hereby amended by substituting the words, "General and Special Provisions" for the words, "Proposal and Contract" in the first sentence of the 2nd paragraph and by substituting the words, "Notice to Bidders" for the words, "Notice to Contractors" in the first sentence of the 3rd paragraph. The 4th paragraph is

hereby amended to read: "Proposal forms shall be obtained from the Department of Public Works and Transportation, County Government Center, San Luis Obispo, CA. 93408." The 5th paragraph is hereby deleted.

Section 2-1.07, "Proposal Guaranty" of the Standard Specifications, is hereby amended by substituting the words, "made payable to the San Luis Obispo County Flood Control and Water Conservation District" for the words, "made payable to the Director of Transportation" in the first paragraph. The 2nd paragraph is hereby amended by adding the following sentence, "The provisions of the Public Contract Code § 10181 are applicable to this contract." The first sentence of the last paragraph is hereby amended by substituting the words, "General and Special Provisions" for the words, "Proposal and Contract". The last sentence of the last paragraph is hereby deleted.

Section 2-1.08, "Withdrawal of Proposals" of the Standard Specifications, is hereby amended by substituting the words, "Office of the Clerk of the Board of Supervisors of the San Luis Obispo County Flood Control and Water Conservation District" for the words, "Office Engineer, Division of Construction" in the first sentence. The last sentence is hereby amended by modifying it to read: "Any bid received at the Office of the Clerk of the Board of Supervisors of the San Luis Obispo County Flood Control and Water Conservation District after the date and time specified in the Notice to Bidders shall <u>not</u> be considered and shall be returned to the bidder unopened nor may any bid be withdrawn after the time fixed in the public notice for the opening of bids."

Section 2-1.105, "Previous Disqualification, Removal or Other Prevention of Bidding", of the Standard Specifications, is hereby amended by deleting the first paragraph.

Section 2-1.108, "Compliance with Orders of the National Labor Relations Board", of the Standard Specifications, is hereby amended by modifying the last paragraph to read: "The statement required by said Section 10232 is included in the section titled "Bid Proposal and Forms" of the Contract Documents."

Section 2-1.11, "Ineligibility to Contract", of the Standard Specifications is hereby amended by modifying the last paragraph to read: "A form for the statement required by Section 10285.1 is included in the section titled "Bid Proposal and Forms" of the Contract Documents."

2-1.02 <u>REQUIRED LISTING OF PROPOSED SUBCONTRACTORS</u>

The designated subcontractors listed in the bidder's proposal shall list therein the name and address of all subcontractors to whom the bidder proposes to subcontract portions of the work in an amount in excess of 1/2 of one percent of the total bid, or in the case of bids for the construction of streets and highways, including bridges, in excess of 1/2 of the one percent or $10,000, whichever is greater, in accordance with the Subletting and Subcontracting Fair Practices Act

commencing with Section 4100 of the Public Contract Code. The bidder's attention is invited to other provisions of said Act related to the imposition of penalties for a failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions.

The "DESIGNATION OF SUBCONTRACTORS" form for the designation of subcontractors, as required herein, is included in the section titled "Bid Proposal and Forms" of the Contract Documents and shall be completely filled out, signed by the bidder, and submitted with the bid proposal.

2-1.03 USDA BID REQUIREMENTS

Bidders are to base their bids on the project funding being provided in whole or in part by USDA Rural Development which will review and approve the contract award, contract agreement, partial and final payments, and Contract Change Orders. Payment and retainage will comply with Section 6-1.03, "Payment to Contractor" of these Special Provisions." USDA regulations do not allow retainage to be invested for the benefit of the Contractor.

Bidders are notified that financing for this project is provided pursuant to the Consolidated Farm and Rural Development Act (7 U.S.C. Section 1921 et seq.), and that as allowed in Public Contract Code Section 22300, this contract does not provide for substitution of securities for any monies withheld by the District to ensure performance under the Agreement.

Bidders are notified of the requirement for affirmative action to ensure equal employment opportunity (Executive Order No. 11246) as set forth in the Equal Opportunity Requirements. If bid amount exceeds $10,000, a completed and executed Compliance Statement/Certifications of Nonsegregated Facilities (RD 400-6) must be submitted with the bid.

If bid amount exceeds $25,000, a signed Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – Lower Tier Covered Transactions (AD-1048) must be submitted with the bid.

If bid amount exceeds $100,000, a signed RD Instruction 1940-Q, Exhibit A-1, Certification for Contracts, Grants, and Loans must be submitted with the bid.

SECTION 3. AWARD AND EXECUTION OF CONTRACT

3-1.01 AWARD OF CONTRACT

Attention is directed to the provisions of Section 3, "Award and Execution of Contract," of the Standard Specifications and these Special Provisions for the requirements and conditions concerning award and execution of the contract.

The award of contract, if it be awarded, will be to the lowest responsible bidder whose proposal complies with all of the requirements prescribed. Such award, if made, will be made within 45 calendar days after the opening of proposals.

If the lowest responsible bidder refuses or fails to execute the contract, the Board of Supervisors of the San Luis Obispo County Flood Control and Water Conservation District may award the contract to the second lowest responsible bidder. Such award, if made, will be made within 75 calendar days after the opening of proposals. If the second lowest responsible bidder refuses or fails to execute the contract, the Board of Supervisors of the San Luis Obispo County Flood Control and Water Conservation District may award the contract to the third lowest responsible bidder. Such award, if made, will be made within 105 calendar days after the opening of proposals. The periods of time specified above within which the award of contract may be made shall be subject to extension for such further period as may be agreed upon in writing between the San Luis Obispo County Flood Control and Water Conservation District and the bidder concerned.

3-1.02 CONTRACT BONDS

The successful bidder shall furnish two (2) bonds:

1. The Payment bond to secure the claim payments of laborers, workers, mechanics, or materialmen providing goods, labor, or services under the contract. This bond shall be equal to one hundred percent (100%) of the total contract bid.
2. The Performance bond to guarantee the faithful performance of the contract. This bond shall be equal to one hundred percent (100%) of the total contract bid.

Forms for the two (2) required bonds are included in the section titled "Bid Proposal and Forms" of the Contract Documents.

Surety on said bonds must agree that death of the Contractor shall not relieve the surety of its obligation hereunder. The said surety, for the value received, must stipulate and agree that all alterations, extension of time, extra and additional work, and other changes authorized by these Specifications or any part of the contract may be made without securing consent of the surety on the contract bonds, and such actions shall not in any way affect the obligations of the surety on the bonds.

Attention is directed to the provisions in Section 6-1.075, "Guarantee," of the Amendments to the Standard Specifications.

3-1.03 EXECUTION OF CONTRACT

The contract shall be signed by the successful bidder and returned, together with the contract bonds, copy of insurance policies, and Certificates of Insurance, with documents to verify any self insurance coverage within five (5) calendar days, not including Saturdays, Sundays, and legal holidays, after the bidder has received the contract for execution.

The contract shall not be deemed executed by the successful bidder unless all of the above documents are received by the District with the signed contract within said time period. The bidder's security may be forfeited for failure to execute the contract within the time specified.

SECTION 4. PROSECUTION AND PROGRESS OF THE WORK

4-1.01 GENERAL

Attention is directed to the provisions in Section 8, "Prosecution and Progress," of the Standard Specifications and these Special Provisions.

The Contractor shall begin work within ten (10) working days from the date of receipt of the District's "Notice to Proceed."

This work shall be diligently prosecuted to completion before the expiration of 80 WORKING DAYS from the date of receipt of the District's "Notice to Proceed." The Contractor shall not begin work in advance of receiving the District's "Notice to Proceed."

4-1.02 LIQUIDATED DAMAGES

Attention is directed to Section 8-1.07, "Liquidated Damages," of the Standard Specifications and these Special Provisions.

It is agreed by the parties to the contract that in the case all the work called for under the contract in all parts and requirements is not finished or completed within the number of working days as set forth in these Special Provisions, damage will be sustained by the San Luis Obispo County Flood Control and Water Conservation District, and that it is and will be impractical and extremely difficult to ascertain and determine the actual damage which the District will sustain in the event of and by reason of such delay; and it is therefore agreed that the Contractor will pay to the San Luis Obispo County Flood Control and Water Conservation District the sum of ONE THOUSAND EIGHT HUNDRED DOLLARS ($1,800.00) per day for each and every calendar days delay in finishing the work in excess of the number of working days prescribed above as liquidated and agreed damages; and the Contractor agrees to pay said liquidated damages herein provided for, and further agrees that the District may deduct the amount thereof from any moneys due or that may become due the Contractor under the contract.

The language in Sections 10253 through 10260 of the Public Contract Code are incorporated herein by reference as though fully set forth herein (with the word "Director" therein construed to mean the Public Works Director); provided, however, that prequalification of bidders shall not be required, and any references in said sections to prequalification of bidders are hereby deleted.

4-1.03 CONTRACT SUBMITTALS

The Contractor shall submit the following to the Engineer within five (5) calendar days, not including Saturdays, Sundays, and legal holidays, of the Contractor's receipt of the fully executed contract:

- Recycling Plan

- Proposed Progress Schedule
- Schedule of Values
- Identity of Project Safety Officer

The Contractor shall allow five (5) days, not including Saturdays, Sundays, and legal holidays, for the Engineer's review. The Contractor shall revise and resubmit the submittal within five (5) days, not including Saturdays, Sundays, and legal holidays, of receipt of the Engineer's comments. No claim will be allowed for damages or extensions of time because of delays in work resulting from rejection of the submittals or from revisions and resubmittal of the submittals. The number of working days within which the Contractor must complete the work under this contract shall be reduced by 1 working day for each day the Contractor fails to submit or resubmit the required submittal to the Engineer within the prescribed time allowances.

The Engineer's review and approval shall not waive any contract requirements and shall not relieve the Contractor from complying with Federal, State, and local laws, regulations, and requirements. No claim will be allowed for damages or extensions of time because of delays in work resulting from any documents submitted by Contractor to any federal, state, or local agency that are determined by such agency to be incomplete or not in compliance with any applicable laws, regulations, or requirements.

4-1.04 MANDATORY PRE-CONSTRUCTION CONFERENCE

A. General Pre-construction Conference

Prior to the issuance of the "Notice to Proceed" a mandatory pre-construction conference will be held at the office of the Construction Engineer for the purpose of discussing with the Contractor the scope of work, contract drawings, specifications, existing conditions, materials to be ordered, equipment to be used, and all essential matters pertaining to the prosecution and the satisfactory completion of the project as required. The Contractor's representatives at this conference shall include major superintendents and shall include major subcontractors' representatives. So long as the District provides the Contractor at least 5 calendar days advance notice of the date and time of said conference. The number of working days within which the Contractor must complete the work under this contract shall be reduced by 1 working day for each day said conference is delayed by the Contractor's failure to attend the conference with the appropriate representatives.

A written record of attendance and items discussed will be made by the Engineer and a copy of the record kept in the Engineer's files. If for any reason a pre-construction conference is not held the Engineer will notify the Contractor in writing.

B. Labor Law Requirements Pre-construction Conference

In addition to the General pre-construction conference described above, a separate, mandatory pre-construction conference will be coordinated by the Engineer with attendance required by the general contractor and his/her subcontractors. The conference will set forth the framework in establishing the labor standards parameters. At a minimum, the conference agenda will include discussion and handouts of the following items:

1. Appropriate State Wage Determination
2. State Labor Standard Provisions (Labor Code Sections 1720, i.e.)
3. Payroll Reporting Forms (A-1-131 Form) and Certification
4. Certification of Applicable Fringe Benefit Payments
5. Contractor's/Subcontractor's Certification Concerning Labor Standards and Prevailing Wages
6. Posting Requirement of Notice to All Employees (General Contractor)
7. Suggested Checklist of Labor Law Requirements (CCR 16430) (Addendum K)

SECTION 5. GENERAL AND MISCELLANEOUS

5-1.01 DEFINITIONS AND TERMS

Attention is directed to the provisions in Section 1, "Definitions and Terms," of the Standard Specifications with the modifications as set forth hereafter.

Section 1-1.13, "Department," of the Standard Specifications is hereby amended to read: "The San Luis Obispo County Flood Control and Water Conservation District acting by and through its Department of Public Works and Transportation of the County of San Luis Obispo as the ex officio Public Works Department of the District."

Section 1-1.15, "Director," of the Standard Specifications is hereby amended to read: "The Director of the Department of Public Works and Transportation of the County of San Luis Obispo as the ex officio Public Works Director of the District."

Section 1-1.18, "Engineer," of the Standard Specifications is hereby amended to read: "Any duly authorized representative either employed by or contracting with the San Luis Obispo County Flood Control and Water Conservation District acting within the scope of the particular duties delegated to them."

Section 1-1.19, "Engineer's Estimate," of the Standard Specifications is hereby amended to read: "The contract bid form indicating the approximate quantities of work to be performed as contained in the Bid Proposal."

Section 1-1.26, "Liquidated Damages," of the Standard Specifications is hereby amended to read: "The amount prescribed in Section 4, "Prosecution and Progress of the Work," of the Special Provisions pursuant to Government Code Section 53069.85 to be paid to the District, or to be deducted from any payments due, or to become due, the Contractor for each day's delay in completing the whole or any specified portion of work beyond the time allowed in the Contract Documents."

Section 1-1.39, "State," of the Standard Specifications is hereby amended to read: "The State of California and its political subdivision, the San Luis Obispo County Flood Control and Water Conservation District."

Section 1-1.40, "State Contract Act," of the Standard Specifications is hereby amended to read: "Only those sections or provisions of Chapter 1 of Part 2 of Division 2 of the Public Contract Code (Section 10100 et seq.) which are specifically incorporated into this contract are applicable to this contract. All other sections and provisions of Chapter 1 of Part 2 of Division 2 of the Public Contract Code are not applicable to this contract and do not constitute a part hereof."

5-1.02 SCOPE OF WORK

Attention is directed to the provisions in Section 4, "Scope of Work," of the Standard Specifications with the modifications as set forth hereafter.

Section 4-1.03B(1), "Increases of More Than 25 Percent," of the Standard Specifications is amended by adding the following sentence to the last paragraph: "Additionally, such written request by the Contractor shall be accompanied by adequate, detailed data to support actual costs incurred."

Section 4-1.03B(2), "Decreases of More Than 25 Percent, " of the Standard Specifications is hereby amended by modifying the first sentence of the first paragraph to read: "Should the total pay quantity of any item of work required under the contract be less than 75 percent of the Engineer's Estimate therefor, the Engineer may reserve the right to make no adjustment in the corresponding unit price for that item if he/she so elects, except that an adjustment in compensation pursuant to this Section will be made if requested in writing by the Contractor. Additionally, such written request by the Contractor shall be accompanied by adequate, detailed data to support actual costs incurred."

Section 4-1.03D, "Extra Work," of the Standard Specifications is hereby amended by adding the following sentences to the 2nd paragraph: "All extra work shall be reported daily by the Contractor upon forms furnished by the Engineer, signed by both parties at the conclusion of each workday. Said daily extra work reports shall thereafter be considered the true record of the extra work performed and shall become the basis of payment therefor."

5-1.03 CONTROL OF WORK

The Engineer will not have control over, be in charge of, nor be responsible for construction means, methods, techniques, sequences, or procedures, or for the safety precautions and programs in connection with the work, since these are solely Contractor's responsibility, unless otherwise required by the Contract Documents.

Attention is directed to Section 5, "Control of Work," of the Standard Specifications with the modifications as set forth hereafter.

Section 5-1.07, "Lines and Grades," of the Standard Specifications is hereby amended to read: "Stakes or marks will be set by the Engineer as the Engineer determines to be necessary to establish the lines and grades required for the completion of the work specified in these specifications, on the plans, and in the Special Provisions.

When the Contractor requests stakes or marks to be set, the Contractor shall notify the Engineer of the request in writing no less than three (3) working days in advance of starting operations that require their use. The Contractor shall also submit to the Engineer for acceptance, a tentative schedule of all anticipated staking requests for the initial thirty (30) working days of the contract. The

Engineer shall determine if the staking request schedule is reasonable before recognizing any requests for stakes or marks to be set. Said schedule shall correlate with any order of work specified in the Contract Special Provisions. If any vegetation needs to be cleared or grubbed, as determined by the Engineer, before stakes or marks can be set, then the Contractor shall clear the obstructing vegetation for the proper placement of stakes or marks. The Engineer and the Contractor shall agree on the extent of vegetation removal necessary to prepare the work site for the setting of stakes or marks. Vegetation removal for the preparation of the work site for the setting of stakes or marks shall be considered as included in the various items of work involved and no additional compensation will be allowed therefor. The Contractor will not be entitled to any compensation for any perceived delay, nor entitled to an extension of time for any perceived delay without due cause for the period between when the work site is deemed cleared by the Engineer and when the stakes or marks are set for use by the Contractor.

Stakes and marks set by the Engineer shall be carefully preserved by the Contractor. In case the stakes and marks are destroyed or damaged, the stakes and marks will be replaced or restored at the Engineer's earliest convenience. The Contractor will be charged $875.00 for each stake or mark replaced or restored which in the judgment of the Engineer had been carelessly or willfully destroyed or damaged by the Contractor's operations. This charge will be deducted from any moneys due or to become due the Contractor."

Section 5-1.116, "Differing Site Conditions," of the Amendments to the Standard Specifications is hereby amended by including the following language from Section 7104 of the Public Contract Code: "7104. Any public works contract of a local public entity which involves digging trenches or other excavations that extend deeper than four feet below the surface shall contain a clause which provides the following: (a) That the contractor shall promptly, and before the following conditions are disturbed, notify the public entity, in writing, of any: (1) Material that the contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law. (2) Subsurface or latent physical conditions at the site differing from those indicated. (3) Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the contract. (b) That the public entity shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the contractor's cost of, or the time required for, performance of any part of the work shall issue a change order under the procedures described in the contract. (c) That, in the event that a dispute arises between the public entity and the contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the contractor's cost of, or time required for, performance of any part of the work, the contractor shall not be excused from any scheduled completion date provided for by the contract, but shall proceed with all work to be performed under the

contract. The contractor shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between the contracting parties."

5-1.04 PREVAILING WAGE

Attention is directed to the provisions in Section 7-1.01A(2), "Prevailing Wage," of the Standard Specifications and these Special Provisions.

Pursuant to the provisions of Section 1773 of the California Labor Code, the Board of Supervisors of the San Luis Obispo County Flood Control and Water Conservation District has obtained from the Director of the California Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work for the locality in which the work is to be performed for each needed craft, classification, or type of workman. Copies of said prevailing rate of per diem wages are on file in the Office of the Clerk of the Board of Supervisors and available at the California Department of Industrial Relations' web site at:

www.dir.ca.gov/DLSR/PWD.

The wage rates determined by the Director of Industrial Relations refer to expiration dates. Prevailing wage determinations with a single asterisk after the expiration date are in effect on the date of advertisement for bids and are good for the life of the contract. Prevailing wage determinations with double asterisks after the expiration date indicate that the wage rate to be paid for work performed after this date has been determined. If work is to extend past this date, the new rate shall be paid and incorporated in the contract. The Contractor shall contact the Department of Industrial Relations as indicated in the wage rate determinations to obtain predetermined wage changes.

Pursuant to Section 1773.2 of the Labor Code, a copy of said general prevailing rates shall be posted by the Contractor in a prominent place at the site of the work.

Additionally, the Director of Industrial Relations has reserved the right to issue corrected wage determinations for certain crafts contained in the prevailing wage determinations applicable to this contract. These corrected prevailing wage rates shall apply to this contract in the same manner as if they had been published in the prevailing wage determinations applicable to this contract. These revisions to the general prevailing wage rates are on file at the Office of the Clerk of the Board of Supervisors and available at the California Department of Industrial Relations' web site at:

www.dir.ca.gov/DLSR/PWD.

Additionally, changes in general prevailing wage determinations which conform to Labor Code Section 1773.6 and Title 8 California Code of Regulations Section 16204 shall apply to the contract when issued by the Director of Industrial

Relations at least ten (10) calendar days prior to the date of the Notice to Bidders for the project. Changes, if any, to the general prevailing wage rate will be on file at the Office of the Clerk of the Board of Supervisors and available at the California Department of Industrial Relations' web site at:

www.dir.ca.gov/DLSR/PWD.

5-1.05 PRESERVATION OF PROPERTY

Attention is directed to the provisions in Section 7-1.11, "Preservation of Property," of the Standard Specifications is hereby amended by adding the following to the end of the second paragraph: "Pursuant to Section 8771(b) of the California Business and Professions Code, existing survey monuments that control the location of subdivisions, tracts, boundaries, roads, streets, or highways, or provide survey control that are within or adjacent to the Contractor's operations, shall be located and referenced by or under the direction of a licensed land surveyor or registered civil engineer prior to the time when any streets, highways, other rights-of-way, or easements are improved, constructed, reconstructed, maintained, resurfaced, or relocated. In the event that any existing survey monument is disturbed in any way by the Contractor's operations as determined by a licensed land surveyor or registered civil engineer, they shall be reset accordingly and a corner record shall be filed with the county surveyor prior to the recording of a certificate of completion for the project. Full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in locating existing survey monuments by or under the direction of a licensed land surveyor or registered civil engineer, resetting any disturbed survey monument and filing a corner record, shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor."

5-1.06 PROGRESS SCHEDULE

Progress schedules will be required for this contract and shall conform to the provisions in Section 8-1.04, "Progress Schedules," of the Standard Specifications.

The Contractor shall submit to the Engineer a practicable progress schedule in conformance with the provisions in Section 4-1.03, "Contract Submittals," of these Special Provisions, and within 5 working days of the Engineer's written request at any other time.

5-1.07 MEASUREMENT AND PAYMENT

Attention is directed to the provisions in Section 9, "Measurement and Payment," of the Standard Specifications with the modifications as set forth hereafter.

The 13th paragraph of Section 9-1.01, "Measurement of Quantities," of the Standard Specifications shall be amended to read as follows: "Whenever pay quantities of materials are determined by weighing, the scales shall be operated

by a weighmaster licensed in accordance with provisions of the California Business and Professions Code, Division 5, Chapter 7. The contractor shall furnish a Public Weighmaster's certificate, or a private Weighmaster's certificate (load slip) with each load and a Daily Record of Platform Scale Weights. The Weighmaster's certificates shall be numbered consecutively to correspond with the Daily Record of Platform Scale Weights. The Daily Record of Platform Scale Weights shall be prepared using a form supplied by the District and shall be delivered to the Engineer at the end of each day. Contractor shall provide the District sufficient advance notice so as to enable a representative of the District to be present to witness the Weighing and check the Daily Record of Platform Scale Weights."

Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications is hereby amended by adding the following: "Additionally, the written notice of potential claim shall be submitted on Caltrans form CEM-6201 and shall be certified with reference to the California False Claims Act, Government Code Sections 12650-12655. The notice shall set forth the reasons for which the Contractor believes additional compensation will or may be due and the nature of the costs involved. Unless the amount of the potential claim has been stated in the written notice, the Contractor shall within 15 working days of submitting said notice, furnish an estimate of the cost of the affected work and impacts, if any, on project completion. Said estimate of costs may be changed or updated by the Contractor when conditions have changed. When the affected work is completed, the Contractor shall submit substantiation of actual costs. Failure to do so shall be sufficient cause for denial of any claim subsequently filed on the basis of said notice of potential claim.

Should the Contractor, in conjunction with or subsequent to the assertion of a potential claim, request inspection and copying of documents or records in the possession of the District that pertain to the potential claim, the Contractor shall make its records of the project, as deemed by the District to be pertinent to the potential claim, available to the District for inspection and copying."

Section 9-1.05, "Stop Notices," of the Standard Specifications is hereby amended by adding the following statement: "Stop notice information may be obtained from the Department of Public Works and Transportation."

Section 9-1.06 "Partial Payments," of the Standard Specifications is hereby amended by deleting the first sentence of the first paragraph and inserting the following at the beginning of the section:

General

Based upon Applications for Payment submitted to the Engineer by the Contractor, the District shall make progress payments to the Contractor as provided below and elsewhere in the Contract Documents. The pay period covered by each Application for Payment shall be one calendar month ending on the 20th day of the month. The Contractor shall submit each Application for Payment to the Engineer by the last day of each month.

Applications for Payment shall indicate the percentage of completion of each portion of the Work for which a lump sum price is specified as of the end of the period covered by the Application for Payment.

Application for Payment

Contractor shall submit to the Engineer an Application for Payment (on a form provided by the Engineer) for Work completed in accordance with the measurement of quantities. Such application shall be supported by such data substantiating the Contractor's right to payment as the Engineer may require.

Each Application for Payment shall be reviewed by the Engineer as soon as practicable after receipt for the purpose of determining that the Application for Payment is a "proper" payment request, accurately reflecting the value of Work completed. An Application for Payment shall be deemed "proper" only if it is properly completed and submitted on the proper forms. The Engineer shall have the right to adjust any estimate of quantity and to subsequently correct any error made in any Application for Payment.

The District shall make payment to the Contractor not later than thirty (30) calendar days after the Engineer's verification and approval that an Application for Payment is undisputed and properly submitted.

The Contractor may elect to allow an alternative procedure for processing monthly applications for payment whereby the Engineer prepares monthly progress payment estimates. To initiate such alternative procedure, the Contractor shall submit to the Engineer a written request (before the 10th day of the month) which authorizes the Engineer to prepare the monthly progress payment estimates for all remaining payments due under the Contract. Under such alternative procedure, the District, once in each month, shall cause an estimate in writing to be made by the Engineer, and the Contractor's signature approving the progress payment estimate shall be considered to be "receipt of an undisputed and properly submitted payment request" from the Contractor under Section 20104.50 of the California Public Contract Code, and the District shall make payment to the Contractor within thirty (30) calendar days after such receipt.

Applications for Payment shall include the following:

> Contractor's Verification: Contractor has carefully prepared this entire document and hereby attests that the quantities and amounts stated herein accurately represent the total work that has been performed in compliance with the Contract Documents. Contractor will pay any released retainage to subcontractor due to accepted complete work of the Subcontractors portion of the work within 30 days of receipt of payment as required under 49 CFR Part 26 sub section 26.29(b)(3).

Under the alternative procedure described above, progress pay estimates prepared by the Engineer shall include the following:

Contractor's Verification: Contractor has carefully reviewed this entire document and hereby attests that the quantities and amounts stated herein accurately represent the total work that has been performed in compliance with the Contract Documents. Contractor will pay any released retainage to subcontractor due to accepted complete work of the Subcontractors portion of the work within 30 days of receipt of payment as required under 49 CFR Part 26 sub section 26.29(b)(3).

Section 9-1.06, "Partial Payments," of the Standard Specifications is hereby amended by modifying the third paragraph to read: "In accordance with PUBLIC CONTRACT CODE SECTION 7201, the retention proceeds withheld from payment shall not exceed 5 percent of the payment."

Section 9-1.065, "Payment of Withheld Funds," of the Standard Specifications is hereby amended to read: "Attention is directed to Section 9-1.06, "Partial Payments," of the Standard Specifications, to these Special Provisions and in particular to the retention provisions therein.

Retainage: USDA regulations do not allow retainage to be invested for the benefit of the Contractor. Public Contract Code Section 22300 provides that substitution of securities shall not be required in contracts in which there will be financing provided by the Farmers Home Administration of the United States Department of Agriculture pursuant to the Consolidated Farm and Rural Development Act (7 U.S.C. Sec. 1921 et seq), and where federal regulations or policies, or both, do not allow the substitution of securities.

Section 9-1.07B, "Final Payments and Claims," of the Standard Specifications is hereby amended by deleting the introductory phrase "After acceptance by the Director," and inserting in its place the phrase: "After the Engineer makes a formal recommendation to the Director that the Public Works Department initiates the internal procedures that would allow the Board to accept the work at a future Board meeting,"

5-1.08 DETERMINATION OF DISPUTES

Public Contract Code Sections 10240 through 10245.4 shall not be applicable to this contract. Section 9-1.10, "Arbitration," of the Standard Specifications is hereby deleted. All disputes and claims arising under or by virtue of this contract shall be directed to and be determined by the Public Works Director. The Public Works Director's determination of disputes and claims pursuant to these Special Provisions shall constitute the decision of the District.

The parties agree that to the extent Article 1.5 of the Public Contract Code (Public Contract Code Section 20104 et seq) is applicable to any claims made under this contract, nothing in Article 1.5 excuses Contractor's compliance with the claim procedures set forth in the Standard Specifications (as amended by these Contract Documents). Nothing in Article 1.5 extends the time limit or supercedes the notice requirements set forth in the Standard Specifications (as amended by these Contract Documents). The parties mutually agree that all

information required of the Contractor under said Standard Specifications (as amended by these Contract Documents) is hereby incorporated into the requirements of Article 1.5.

Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3 of Division 2 of the Public Contract Code provides as follows:

Article 1.5 Resolution of Construction Claims

20104. (a) (1) This article applies to all public works claims of three hundred seventy-five thousand dollars ($375,000) or less which arise between a contractor and a local agency. (2) This article shall not apply to any claims resulting from a contract between a contractor and a public agency when the public agency has elected to resolve any disputes pursuant to Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2.

(b) (1) "Public work" has the same meaning as in Sections 3100 and 3106 of the Civil Code, except that "public work" does not include any work or improvement contracted for by the state or the Regents of the University of California. (2) "Claim" means a separate demand by the Contractor for (A) a time extension, (B) payment of money or damages arising from work done by, or on behalf of, the Contractor pursuant to the contract for a public work and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or (C) an amount the payment of which is disputed by the local agency.

(c) The provisions of this article or a summary thereof shall be set forth in the plans or specifications for any work which may give rise to a claim under this article.

(d) This article applies only to contracts entered into on or after January 1, 1991.

20104.2. For any claim subject to this article, the following requirements apply:

(a) The claim shall be in writing and include the documents necessary to substantiate the claim. Claims must be filed on or before the date of final payment. Nothing in this subdivision is intended to extend the time limit or supersede notice requirements otherwise provided by contract for the filing of claims.

(b) (1) For claims of less than fifty thousand dollars ($50,000), the local agency shall respond in writing to any written claim within 45 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the local agency may have against the claimant. (2) If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the local agency and the claimant. (3) The local agency's written response to the claim, as further documented, shall be submitted to the claimant within 15 days after receipt of the further

documentation or within a period of time no greater than that taken by the claimant in producing the additional information, whichever is greater.

(c) (1) For claims of over fifty thousand dollars ($50,000) and less than or equal to three hundred seventy-five thousand dollars ($375,000), the local agency shall respond in writing to all written claims within 60 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the local agency may have against the claimant. (2) If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the local agency and the claimant. (3) The local agency's written response to the claim, as further documented, shall be submitted to the claimant within 30 days after receipt of the further documentation, or within a period of time no greater than that taken by the claimant in producing the additional information or requested documentation, whichever is greater.

(d) If the claimant disputes the local agency's written response, or the local agency fails to respond within the time prescribed, the claimant may so notify the local agency, in writing, either within 15 days of receipt of the local agency's response or within 15 days of the local agency's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a demand, the local agency shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(e) Following the meet and confer conference, if the claim or any portion remains in dispute, the claimant may file a claim as provided in Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the claimant submits his or her written claim pursuant to subdivision (a) until the time that claim is denied as a result of the meet and confer process, including any period of time utilized by the meet and confer process.

(f) This article does not apply to tort claims and nothing in this article is intended nor shall be construed to change the time periods for filing tort claims or actions specified by Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code.

<u>20104.4</u>. The following procedures are established for all civil actions filed to resolve claims subject to this article:

(a) Within 60 days, but no earlier than 30 days, following the filing or responsive pleadings, the court shall submit the matter to nonbinding 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, 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 or by stipulation of both parties. If the parties fail to select a mediator within the 15-day period, any party may petition the court to appoint the mediator.

(b) (1) If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1141.11 of that code. The Civil Discovery Act of 1986 (Article 3 (commencing with Section 2016) of Chapter 3 of Title 3 of Part 4 of the Code of Civil Procedure) shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration. (2) Notwithstanding any other provision of law, upon stipulation of the parties, arbitrators appointed for purposes of this article shall be experienced in construction law, and, upon stipulation of the parties, mediators, and arbitrators shall be paid necessary and reasonable hourly rates of pay not to exceed their customary rate, and such fees and expenses shall be paid equally by the parties, except in the case of arbitration where the arbitrator, for good cause, determines a different division. In no event shall these fees or expenses be paid by state or county funds. (3) In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, any party who after receiving an arbitration award requests a trial de novo but does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, pay the attorney's fees of the other party arising out of the trial de novo.

(c) The court may, upon request by any party, order any witnesses to participate in the mediation or arbitration process.

20104.6. (a) No local agency shall fail to pay money as to any portion of a claim which is undisputed except as otherwise provided in the contract.

(b) In any suit filed under Section 20104.4, the local agency shall pay interest at the legal rate on any arbitration award or judgment. The interest shall begin to accrue on the date the suit is filed in a court of law.

5-1.09 AUDIT OF RECORDS

The Contractor shall maintain and make available for examination and audit by the State Auditor General and/or duly authorized representatives of the State, District, or Federal Governments, all books, papers, accounting records, and other documents pertaining to the cost and performance of this contract.

The Contractor shall retain said books, papers, accounting records, and other documents for a period of three years after the date of final payment under this contract (Government Code Section 8546.7).

5-1.10 CONTRACTOR'S REPORTS

The Contractor shall complete a daily report indicating location worked, total manpower per construction trade for each task, major equipment on site, each subcontractor's manpower and equipment, weather conditions, and other related information involved in the performance of the work. The daily report shall be completed on forms furnished by the Engineer and shall be submitted to the Engineer at the conclusion of each workday. The report shall comment on the daily progress and status of the work within each major component of the work.

5-1.11 REMOVAL OF ASBESTOS AND HAZARDOUS SUBSTANCES

When the presence of asbestos or hazardous substances are not shown on the plans or indicated in the specifications and the Contractor encounters materials which the Contractor reasonably believes to be asbestos or a hazardous substance as defined in Section 25914.1 of the Health and Safety Code, and the asbestos or hazardous substance has not been rendered harmless, the Contractor may continue work in unaffected areas reasonably believed to be safe. The Contractor shall immediately cease work in the affected area and report the condition to the Engineer in writing.

In conformance with Section 25914.1 of the Health and Safety Code, removal of asbestos or hazardous substances including exploratory work to identify and determine the extent of the asbestos or hazardous substance will be performed by separate contract.

If delay of work in the area delays the current controlling operation, the delay will be considered a right of way delay and the Contractor will be compensated for the delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

5-1.12 SUBCONTRACTING

No subcontract releases the Contractor from the contract or relieves the Contractor of their responsibility for a subcontractor's work.

If the Contractor violates Public Contract Code §4100 et seq., the District may exercise the remedies provided under Public Contract Code §4100. The District may refer the violation to the Contractors State License Board as provided under Public Contract Code §4111.

The Contractor shall perform work equaling at least 30 percent of the value of the original total bid with the Contractor's own employees and equipment, owned or rented, with or without operators.

Each subcontract shall comply with the contract.

Each subcontractor shall have an active and valid State contractor's license with a classification appropriate for the work to be performed (Business and Professions Code, §7000 et seq.).

The Contractor shall submit copies of subcontracts upon request by the Engineer.

The Contractor shall submit a Subcontracting Request form prior to commencement of that portion of the work.

The Contractor shall not use a debarred subcontractor. Pursuant to the provisions in Section 1777.1 of the Labor Code, the Labor Commissioner publishes and distributes a list of contractors ineligible to perform work as a subcontractor on a public works project. This list of debarred contractors is available from the Department of Industrial Relations web site at:

http://www.dir.ca.gov/DLSE/Debar.html.

Upon request by the Engineer, the Contractor shall immediately remove and not again use a subcontractor who fails to prosecute the work satisfactorily.

5-1.13 CONSTRUCTION SUBMITTALS

Construction project submittals, including shop drawings and manufacturer's product specifications, shall be supplied for all material, equipment items, and for other items of work required by its contract documents. The Contractor shall supply 5 copies of manufacturer's scaled, dimensioned shop drawings complete with all information required to describe the item and demonstrate compliance with contract drawings and these specifications. Submittals will only be accepted from the Contractor (not sub-contractor or material supplier). Neither fabrication nor onsite preparation shall be started before receipt of written review from the District.

Each submittal shall be sequentially numbered, dated, and appropriately titled with the specification number and description.

The Contractor's responsibility for errors, omissions, and deviations from the requirements of the contract documents in submittals is not relieved by the District's review. The Contractor shall be responsible for confirming and correlating all quantities and dimensions, the compatibility of different components, selecting fabrication processes and techniques of construction, coordinating its work with that of other trades or other contractors at the site, and performing its work in a safe and satisfactory manner. The District will require 10 working days for submittal review. No claim will be allowed for damages or extensions of time because of delays in work resulting from rejection of material or from revisions and resubmittal of shop drawings, project data, or samples.

Resubmittals will be reviewed and returned in the same review period as the original submittals. It is considered reasonable that the Contractor shall make a complete and acceptable submittal by the second submission. The Engineer

reserves that right to withhold monies due to the Contractor to cover additional costs of any review beyond the second submittal. Full compensation for preparing submittals and shop drawings, as required, shall be considered as included in the contract items of work involved and no additional compensation will be allowed therefor.

5-1.14 LEGAL ADDRESS OF THE CONTRACTOR

Both the address given in the proposal and the Contractor's office in the vicinity of the work are hereby designated as places to either of which drawings, letters, notices, or other articles or communications to the Contractor may be mailed, transmitted electronically, or delivered. The mailing, electronic transmission, or delivery at either of these places shall be deemed sufficient notice thereof upon the Contractor.

Nothing herein contained shall be deemed to preclude the service of any drawing, letter, notice, article, or communication to, or upon, the Contractor or Contractor's representative personally. The address named in the proposal may be changed at any time by written notice from the Contractor to the Engineer.

5-1.15 WEEKLY PROGRESS MEETINGS

Weekly meetings shall be held at the project site to review the progress of the work and to discuss any problems which may have occurred. Meeting shall include the Engineer, inspectors, and the Contractor's foreman. The Contractor shall provide an updated schedule at the weekly meeting.

Full compensation for preparing updated schedules and attending the progress meetings, as required, shall be considered as included in the contract items of work involved and no additional compensation will be allowed therefor.

5-1.16 GOVERNMENT CODE CLAIM REQUIREMENTS

Nothing in these Contract Documents shall excuse a Contractor from fully complying with the requirements of Part 3 of division 3.6 of Title 1 of the Government Code (commencing with section 900). Said requirements must be complied with before filing any claim in any court of law, and are in addition to the other claims procedures set forth in the Contract Documents shall be considered a substitute or alternative procedure for complying with the requirements of Part 3 of Division 3.6 of Title 1 of the Government Code (commencing with section 900.)

5-1.17 SURFACE MINING AND RECLAMATION ACT

Imported borrow or aggregate material must come from a surface mine permitted under the Surface Mining and Reclamation Act of 1975 (SMARA), Pub Res Code § 2710, et seq., or from an exempt site.

The Department of Conservation, Office of Mine Reclamation maintains a list of permitted mine sites. For the list of permitted sites, go to:

http://www.conservation.ca.gov/omr/ab_3098_list

If Contractor obtains import borrow or aggregate material from a surface mine not on this list, Contractor shall submit written proof the mine is exempt from SMARA to the Engineer.

5-1.18 SUPPLEMENTAL WORK PAYMENTS

Certain extra work to be performed on this project has been designated in the bid proposal as a contract item of work. For bidding purposes, the Contractor shall deem the amount set forth in the "Total Amount" column for the designated item as the maximum amount allotted for said item of extra work.

The District reserves the right to increase, decrease or entirely eliminate any supplemental work item in this contract without penalty. Notwithstanding any other provision to the contrary (including but not limited to section 4-1.03B(3) of the Standard Specifications), the Contractor has no right to receive any payment(s) for Supplemental Work that is decreased or entirely eliminated by the District.

5-1.19 SUPPLEMENTAL PROJECT INFORMATION

The Contractor's attention is directed to supplemental project information that is provided for informational purposes only is made available for review at the County of San Luis Obispo Public Works Department front counter during normal business hours and is also available at the Department's website at the following address:

http://www.slocounty.ca.gov/PW/Design_Division/Projects_Out_To_Bid.htm

A portion of the following document is available for review:
"Geotechnical Data Report, Nacimiento Water Project - Pipelines, San Luis Obispo County, California, Prepared for: Black & Veatch Corporation, 15615 Alton Parkway, Suite 300, Irvine, California 92618" (dated March, 2007, Geomatrix Project No. 10352).

5-1.20 SOLID WASTE MANAGEMENT

The Contractor shall recycle at least 50% of the construction and demolition waste generated by the project.

The following is a list of IWMA-Certified Recycling Facilities:

C&D Recycling Facility at Cold Canyon Landfill	805-549-8332
C&D Recycling Facility at Chicago Grade Landfill	805-466-2985
North SLO County Recycling	805-434-0043
API (roll-off/debris box company)	805-928-8689
R&R (a roll-off/debris box company)	805-929-8000
Recycling Facility at the Paso Robles Landfill	805-238-2028
Santa Maria Transfer Station	805-922-9255
Bedford Enterprises/SMART	805-922-4977

The Contractor shall complete and sign the "RECYCLING PLAN" form in conformance with the provisions in Section 4-1.03, "Contract Submittals," of these Special Provisions. This form must be submitted and approved prior to receiving the Notice to Proceed.

This form must show how at least 50% of the project construction and demolition waste will be recycled.

The Contractor shall maintain receipts or other documentation for any facility or site that received waste from the project.

The Contractor shall submit a complete and accurate "DISPOSAL REPORT" form with original receipts and supporting documentation. This form must be submitted and approved prior to receiving the Notice of Completion.

If the Contractor fails to submit the required information showing the 50% recycling goal was met, the District could impose a penalty equal to 2 percent of the total contract amount.

Full compensation for complying with these requirements shall be considered as included in the prices paid for the various items of work generating such construction and demolition waste and no additional compensation will be allowed therefor.

The following are copies of the "RECYCLING PLAN" and "DISPOSAL REPORT" forms:

RECYCLING PLAN FOR DISTRICT PROJECTS

SECTION 1. PROJECT INFORMATION		
Contract Title	Contractor Name	
	Contractor Phone	Contractor Fax
Contract Number	Street Address	
Total Contract Amount	City, State, Zip	
Print Name and Title	Signature	Date

SECTION 2. RECYCLING PLAN					
	Before Construction (estimated tons)				
	Landfill	Recycling Facility		Reuse	
Materials	(Tons)	(Tons)	Location	(Tons)	Location
Cleared Vegetation					
Asphalt Concrete					
Concrete					
Metals (including spent equipment)					
Lumber					
Drywall					
Mixed Recyclables					
Trash					
Totals					
% Diversion					

Official Use Only		
Recycling Plan Approved ☐	Recycling Plan Denied ☐	
Information Required:		
Print Name and Title	Signature	Date

DISPOSAL REPORT FOR DISTRICT PROJECTS

SECTION 1. PROJECT INFORMATION		
Contract Title	Contractor Name	
	Contractor Phone	Contractor Fax
Contract Number	Street Address	
Total Contract Amount	City, State, Zip	

Contractor Certification: I certify under penalty of perjury that the information provided in this form is complete and accurate.

Print Name and Title	Signature	Date

SECTION 2. DISPOSAL REPORT

	After Construction (actual tons)				
	Landfill	Recycling Facility		Reuse	
Materials	(Tons)	(Tons)	Location	(Tons)	Location
Cleared Vegetation					
Asphalt Concrete					
Concrete					
Metals (including spent equipment)					
Lumber					
Drywall					
Mixed Recyclables					
Trash					
Totals					
% Diversion					

I have reviewed and approved the information submitted in this report for completeness

Resident Engineer's Name:	Signature:	Date:

Official Use Only

Disposal Report Approved ☐	Disposal Report Denied ☐

Information Required

Print Name and Title	Signature	Date

SECTION 6. USDA RURAL DEVELOPMENT AND DEPARTMENT OF WATER RESOURCES SUPPLEMENTAL PROVISIONS

6-1 USDA Rural Development Supplemental Provisions

6-1.01 USDA Rural Development Approvals: The District is seeking financial assistance for the project from the USDA Rural Development. If such assistance is granted, USDA approval of the Agreement, contract change orders, and pay estimates will be required, but neither USDA, nor any of its departments, entities, or employees is a party to this Contract. District and Contractor will furnish District's attorney such evidence as required so that District's attorney can complete and execute the "Certificate of Owner's Attorney" before District submits the executed contract to USDA for approval. The Contract shall not be effective unless and until approved by a delegated representative of USDA Rural Development.

6-1.02 Contract Change Orders: All changes which affect the cost or time of the construction of the project must be authorized by means of a change order. The change order will include extra work, work for which quantities have been altered from those shown in the bid proposal, as well as decreases or increases in the quantities of installed units which are different than those shown in the bid proposal because of final measurements. All changes should be recorded on a change order as they occur. Each change order must contain complete and detailed justification for all items addressed by the change order. All change orders must be executed on Form RD 1924-7, "Contract Change Order," and are subject to USDA approval. A copy of this form is available at the USDA website at the following address:

http:www.usda.gov/rus/water/forms/1924-7.pdf

A copy of Form RD 1924-7 is attached to this Section 6.

Contractor's agreement on any Change Order shall be a full compromise and settlement of all adjustments to the Contract Time and Contract Price, and all compensation for any and all delay, extended or additional field and home office overhead, disruption, acceleration, inefficiencies, lost labor or equipment productivity, differing site conditions, construction interferences and other extraordinary or consequential damages (hereinafter called "Impacts"), including any ripple or cumulative effect of said Impacts on the overall Work under the Contract arising directly or indirectly from the performance of Work described in the Change Order. By execution of any Change Order, Contractor agrees that the Change Order constitutes a complete accord and satisfaction with respect to all claims for schedule extension, Impacts, or any costs of whatsoever nature, character or kind arising out of or incidental to the Change Order. No action, conduct, omission, product failure or course of dealing by the District shall act to waive, modify, change, or alter the requirement that Change Orders must be in writing, signed by the District and Contractor and that such written Change Orders are the exclusive method for effectuating any change to the Contract Price and/or Contract Time.

FORM APPROVED
OMB NO. 0575-0042

Form RD 1924-7
(Rev. 2-97)

UNITED STATES DEPARTMENT OF AGRICULTURE
RURAL DEVELOPMENT AND
FARM SERVICE AGENCY

CONTRACT CHANGE ORDER

ORDER NO.	
DATE	
STATE	
COUNTY	

CONTRACT FOR

OWNER

To _____
(Contractor)

You are hereby requested to comply with the following changes from the contract plans and specifications:

Description of Changes (Supplemental Plans and Specifications Attached)	DECREASE in Contract Price	INCREASE in Contract Price
	$	$
TOTALS	$ 0.00	0.00
NET CHANGE IN CONTRACT PRICE	$ 0.00	0.00

JUSTIFICATION:

The amount of the Contract will be (Decreased) (Increased) By The Sum Of: _____

_____ Dollars ($_____).

The Contract Total Including this and previous Change Orders Will Be: _____

_____ Dollars ($ _____).

The Contract Period Provided for Completion Will Be (Increased) (Decreased) (Unchanged) : _____ Days.

This document will become a supplement to the contract and all provisions will apply hereto.

Requested _____ *(Owner)* _____ *(Date)*

Recommended _____ *(Owner's Architect/Engineer)* _____ *(Date)*

Accepted _____ *(Contractor)* _____ *(Date)*

Approved by Agency _____ *(Name and Title)* _____ *(Date)*

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0575-01042. The time required to complete this information collection is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

☐ ORIGINAL-BORROWER'S CASE FOLDER
☐ COPY-CONTRACTOR
☐ COPY-BORROWER

POSITION 6

Form RD 1924-7 (Rev. 2-97)

6-1.03 Payment to Contractor:

6-1.03A At least ten (10) days before each progress payment falls due (but not more often than once a month), Contractor will submit to the Engineer a partial payment estimate filled out and signed by the Contractor covering the work performed during the period covered by the partial payment estimate and supported by such data as the Engineer may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the work but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, such as paid invoices, or other written evidence satisfactory to the District; as will establish the District's title to the material and equipment and protect the District's interest therein, including applicable insurance. The Engineer will, within ten (10) days after receipt of each partial payment estimate, either indicate in writing approval of the payment, and present the partial payment estimate to the District, or return the partial payment estimate to the Contractor indicating in writing the reasons for refusing to approve payment. In the latter case, the Contractor may make the necessary corrections and resubmit the partial payment estimate. The District will, within thirty (30) days of presentation of an approved partial payment estimate, pay the Contractor a progress payment on the basis of the approved partial payment estimate less the retainage. The retainage shall be an amount equal to 5% of said estimate.

6-1.03B Payments will not be made that would deplete the retainage nor place in escrow any funds that are required for retainage nor invest the retainage for the benefit of the Contractor.

6-1.03C All progress payments and the final payment shall be processed on Form RD 1924-18, "Partial Payment Estimate," and all payments are subject to USDA approval. A copy of this form is available at the USDA's website at the following address:

http://www.rurdev.usda.gov/regs/for,s/1924-18.pdf

The following is a copy of form RD 1924-18:

FORM APPROVED
OMB NO. 0575-0042

Form RD 1924-18
(Rev. 6-97)

UNITED STATES DEPARTMENT OF AGRICULTURE
RURAL DEVELOPMENT
FARM SERVICE AGENCY

PARTIAL PAYMENT ESTIMATE

CONTRACT NO.

PARTIAL PAYMENT ESTIMATE NO.

PAGE _____

OWNER:	CONTRACTOR:	PERIOD OF ESTIMATE
_____	_____	FROM _____ TO _____

CONTRACT CHANGE ORDER SUMMARY

No.	Agency Approval Date	Amount	
		Additions	Deductions
TOTALS			
NET CHANGE			

ESTIMATE

1. Original Contract . . . . . _____
2. Change Orders . . . . . _____
3. Revised Contract (1 + 2) . . . . . _____
4. Work Completed* . . . . . _____
5. Stored Materials* . . . . . _____
6. Subtotal (4 + 5) . . . . . _____
7. Retainage* . . . . . _____
8. Previous Payments . . . . . _____
9. Amount Due (6-7-8) . . . . . _____

* *Detailed breakdown attached*

CONTRACT TIME

Original (days) _____
Revised _____
Remaining _____

On Schedule ☐ Yes ☐ No

Starting Date _____
Projected Completion _____

CONTRACTOR'S CERTIFICATION:

The undersigned Contractor certifies that to the best of their knowledge, information and belief the work covered by this payment estimate has been completed in accordance with the contract documents, that all amounts have been paid by the contractor for work for which previous payment estimates was issued and payments received from the owner, and that current payment shown herein is now due.

Contractor _____

By _____

Date _____

APPROVED BY OWNER:

Owner _____

By _____

Date _____

ARCHITECT OR ENGINEER'S CERTIFICATION:

The undersigned certifies that the work has been carefully inspected and to the best of their knowledge and belief, the quantities shown in this estimate are correct and the work has been performed in accordance with the contract documents.

Architect or Engineer _____

By _____

Date _____

ACCEPTED BY AGENCY:

The review and acceptance of this estimate does not attest to the correctness of the quantities shown or that the work has been performed in accordance with the contract documents.

By _____

Title _____

Date _____

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0575-0042. The time required to complete this information collection is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

TYPICAL UNIT PRICE BREAKDOWN *

ITEM	DESCRIPTION	CONTRACT *(revised)*			THIS PERIOD		TOTAL TO DATE		% COM-PLETE
		QUANTITY	UNIT PRICE	AMOUNT	QUANTITY	AMOUNT	QUANTITY	AMOUNT	
			$	$		$		$	
	TOTALS								

TYPICAL LUMP SUM PRICE BREAKDOWN *

ITEM	DESCRIPTION	SCHEDULED VALUE	WORK COMPLETED		% COM-PLETE
			THIS PERIOD	TO DATE	
		$	$	$	
	TOTALS				

TYPICAL STORED MATERIALS AND RETAINAGE BREAKDOWN *

MATERIALS STORED AT END OF THIS PAYMENT PERIOD			
DESCRIPTION	QUANTITY	UNIT VALUE	AMOUNT
		$	$

RETAINAGE			
	THIS ESTIMATE	PERCENT	RETAINED
WORK COMPLETED:	$	%	$
STORED MATERIALS:			
OTHER *(explain)*			
TOTAL			

* As a minimum, detailed breakdowns should contain this information.

RD 1924-18
REVERSE

6-1.04 Inspections:

6-1.04A The Engineer, and a designated representative of the USDA will make a prefinal inspection of the WORK. This inspection shall be made as soon as practical after the Contractor has notified the District in writing that the WORK is ready for this inspection. The prefinal inspection shall be made prior to acceptance of any portion of the work as being substantially complete and prior to filing of the Notice of Completion.

6-1.04B A final inspection of all the work will be made by the Engineer, Contractor, and a USDA representative prior to acceptance of the WORK.

6-1.05 Guarantee: The Contractor shall guarantee all materials and equipment furnished and work performed for a period of one (1) year from the date of substantial completion. The Contractor warrants and guarantees for a period of one (1) year from the date of substantial completion of the system that the completed system is free from all defects due to faulty materials or workmanship and the Contractor shall promptly make such corrections as may be necessary by reason of such defect including the repairs of the damage of other parts of the system resulting from such defects. The District will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments or other work that may be made necessary by such defects, the District may do so and charge the Contractor the cost thereby incurred. The Performance bond shall remain in full force and effect throughout the guarantee period.

6-1.06 Conflict of Interest:

6-1.06A Contractor may not knowingly contract with a supplier or manufacturer if the individual or entity who prepared the plans and specifications has a corporate or financial affiliation with the supplier or manufacturer.

6-1.06B District's officers, employees, or agents shall not engage in the award or administration of this contract if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ any of the above, has a financial interest in Contractor. District's officers, employees or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from Contractor or subcontractors.

6-1.07 Gratuities: If District finds after a notice and hearing that Contractor, or any of Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of District or USDA in an attempt to secure this contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this contract, District may, by written notice to Contractor, terminate this contract. District may also pursue other rights and remedies that the law or this contract provides. However, the existence of the facts on which District bases such findings shall be an issue and

may be reviewed in proceedings under the dispute resolution provisions of this contract. In the event this contract is terminated, District may pursue the same remedies against Contractor as it could pursue in the event of a breach of this contract by Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, District may pursue exemplary damages in an amount (as determined by District) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee.

6-1.08 Audit and Access to Records: For all negotiated contracts and negotiated change orders (except those of$10,000 or less), District, USDA, the Comptroller General, or any of their duly authorized representatives, shall have access to any books, documents, papers, and records of the Contractor, which are pertinent to the contract, for the purpose of making audits, examinations, excerpts and transcriptions. Contractor shall maintain all required records for three years after final payment is made and all other pending matters are closed.

6-1.09 Small, Minority, and Women's Businesses: If the Contractor intends to let any subcontracts for a portion of the work, the Contractor shall take affirmative steps to assure that small, minority and women's businesses are used when possible as sources of supplies, equipment, construction, and services. Affirmative steps shall consist of:

1. including qualified small, minority and women's businesses on solicitation lists;

2. assuring that small, minority and women's businesses are solicited whenever they are potential sources;

3. dividing total requirements when economically feasible, into small tasks or quantities to permit maximum participation of small, minority and women's businesses;

4. establishing delivery schedules, where the requirements of the work permit, which will encourage participation by small, minority and women's businesses;

5. using the services and assistance of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce;

6. requiring each party to a subcontract to take the affirmative steps of this section; and

7. the Contractor is encouraged to procure goods and services from labor surplus area firms.

6-1.10 Anti-Kickback: Contractor shall comply with the Copeland Anti-Kickback Act (18 USC 874) as supplemented in Department of Labor regulations (29 CFR Part 3). This act provides that Contractor shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public facilities, to give up any part of the compensation to which they are otherwise entitled. District shall report all suspected or reported violations to USDA.

6-1.11 Violating Facilities: Where this Contract exceeds $100,000 CONTRACTOR shall comply with all the requirements of the Clean Air Act (42 U.S.C. §7414) and Section 308 of the Water Pollution Control Act (33 U.S.C. §1318) relating to inspection, monitoring, entry, reports, and information, as well as all other requirements specified in Section 114 of the Clean Air Act and Section 308 of the Water Pollution Control Act and all regulations and guidelines issued thereunder after the award of the contract. In so doing the Contractor further agrees:

1. As a condition for the award of contract, to notify the Owner of the receipt of any communication from the Environmental Protection Agency (EPA) indicating that a facility to be utilized in the performance of the contract is under consideration to be listed on the EPA list of Violating Facilities. Prompt notification is required prior to contract award.

2. To certify that any facility to be utilized in the performance of any nonexempt contractor subcontract is not listed on the EPA list of Violating Facilities pursuant to 40 CFR Part 32 as of the date of contract award.

3. To include or cause to be included the above criteria and the requirements in every nonexempt subcontract and that the Contractor will take such action as the Government may direct as a means of enforcing such provisions.

6-1.12 State Energy Policy: Contractor shall comply with the Energy Policy and Conservation Act (P.L. 94-163). Mandatory standards and policies relating to energy efficiency, contained in any applicable State Energy Conservation Plan, shall be utilized.

6-1.13 Equal Opportunity Requirements:

6-1.13A If this contract exceeds $10,000, Contractor shall comply with Executive Order 11246, entitled "Equal Employment Opportunity," as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CFR Part 60).

6-1.13B Contractor's compliance with Executive Order 11246 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative active obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4 and its efforts to meet the goals established for the geographical area where the contract is performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole goal of meeting Contractor's goals shall be a violation of the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against total work hours performed.

6-1.13C Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier of construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number; estimated dollar amount of subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

6-1.14 Environmental Requirements: When constructing a project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental constraints:

1. Wetlands - When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert wetlands.

2. Floodplains - When disposing excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert 100 year floodplain areas delineated on the latest Federal Emergency Management Agency Floodplain Maps.

3. Historic Preservation - Any excavation by Contractor that uncovers an historical or archaeological artifact shall be immediately reported to District and a representative of USDA. Construction shall be temporarily halted pending the notification process and further directions issued by USDA after consultation with the State Historic Preservation Officer (SHPO).

4. Endangered Species - Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to District and a representative of USDA. Construction shall be temporarily halted pending the notification process and further directions issued by USDA after consultation with the U.S. Fish and Wildlife Service.

6-1.15 Project Sign: The contractor shall provide a project sign per USDA Rural Development specifications which can be found in the “Construction Area Signs” subsection of Section 10-1. “General,” of the Special Provisions.

6-2 Department of Water Resources ("State" or "DWR") Supplemental Provisions:

6-2.01 Accounting and Deposit of Funding Disbursement: The Contractor shall be responsible to ensure that the Contractor and its subcontractors maintain books, records, and other documents pertinent to their work in accordance with generally accepted accounting principles and practices. Records are subject to inspection by State at any and all reasonable times.

6-2.02 Acknowledgment of Credit: As directed by the Engineer, the Contractor shall install a sign at a prominent location, which shall include a statement that the project is financed under the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006, administered by State of California, Department of Water Resources. Specifications for the sign are included in the "Contraction Area Signs" subsection of Section 10-1 "General" of the Special Provisions. The District shall notify State that the sign has been erected by providing them with a site map with the sign location noted and a photograph of the sign.

6-2.03 Audits: Pursuant to Government Code Section 8546.7, the District shall be subject to the examination and audit by the State for a period of three years after final payment under the Contract Agreement with respect to all matters connected with the Contract Agreement, including but not limited to, the cost of administering the Contract Agreement. All records of the contractor and its subcontractors shall be preserved for this purpose for at least three (3) years after project completion or final billing, whichever comes later.

6-2.04 Conflict of Interest: All participants are subject to State and Federal conflict of interest laws. Failure to comply with these laws, including business and financial disclosure provisions, will result in the application being rejected and any subsequent contract being declared void. Other legal action may also be taken. Applicable statutes include, but are not limited to, Government Code, Section 1090 and Public Contract Code, Sections 10410 and 10411, for State conflict of interest requirements.

a) Current State Employees: No State officer or employee shall engage in any employment, activity, or enterprise from which the officer or employee receives compensation or has a financial interest and which is sponsored or funded by any State agency, unless the employment, activity, or enterprise is required as a condition of regular State employment. No State officer or employee shall contract on his or her own behalf as an independent contractor with any State agency to provide goods or services.

b) Former State Employees: For the two-year period from the date he or she left State employment, no former State officer or employee may enter into a contract in which he or she engaged in any of the negotiations, transactions, planning, arrangements, or any part of the decision-making process relevant to the contract while employed in any capacity by any State agency. For the twelve-month period from the date he or she left State employment, no former State officer or employee may enter into a contract with any State agency if he or she was

employed by that State agency in a policy-making position in the same general subject area as the proposed contract within the twelve-month period prior to his or her leaving State service.

c) Employees of the District: Employees of the District shall comply with all applicable provisions of law pertaining to conflicts of interest, including but not limited to any applicable conflict of interest provisions of the California Political Reform Act, Cal. Gov't Code § 87100 et seq.

d) Employees and Consultants to the District: Individuals working on behalf of a District may be required by the Department to file a Statement of Economic Interests (Fair Political Practices Commission Form 700) if it is determined that an individual is a consultant for Political Reform Act purposes.

6-2.05 Delivery of Information, Reports, and Data: Contractor agrees to expeditiously provide throughout the term of the Contract Agreement, such reports, data, information, and certifications as may be reasonably required by State.

6-2.06 Drug-Free Workplace Certification: By signing the Contract Agreement, the contractor and its subcontractors hereby certify, under penalty of perjury under the laws of State of California, compliance with the requirements of the Drug-Free Workplace Act of 1990 (Government Code 8350 et seq.) and have or will provide a drug-free workplace by taking the following actions:

a) Publish a statement notifying employees, contractors, and subcontractors that unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited and specifying actions to be taken against employees, contractors, or subcontractors for violations, as required by Government Code Section 8355(a)(1).

b) Establish a Drug-Free Awareness Program, as required by Government Code Section 8355(a)(2) to inform employees, contractors, or subcontractors about all of the following:
   i) The dangers of drug abuse in the workplace,
   ii) District's policy of maintaining a drug-free workplace,
   iii) Any available counseling, rehabilitation, and employee assistance programs, and
   iv) Penalties that may be imposed upon employees, contractors, and subcontractors for drug abuse violations.

c) Provide, as required by Government Code Sections 8355(a)(3), that every employee, contractor, and/or subcontractor who works under the Contract Agreement:
   i) Will receive a copy of District's drug-free policy statement, and
   ii) Will agree to abide by terms of District's condition of employment, contract or subcontract.

6-2.07 Inspection of Books, Records, and Reports: During regular office hours, the District, the State and their duly authorized representatives shall have the right to inspect and to make copies of any books, records, or reports of the Contractor pertaining to the Contract Agreement or matters related hereto. The Contractor shall maintain and shall make available at all times for such inspection accurate records of all its costs, disbursements, and receipts with respect to its activities under the Contract Agreement. Failure or refusal by Contractor to comply with this provision shall be considered a breach of the Contract Agreement, and State may withhold disbursements to Contractor or take any other action it deems necessary to protect its interests.

6-2.08 Inspections of Project by State: State shall have the right to inspect the work being performed at any and all reasonable times during the term of the Contract Agreement. This right shall extend to any subcontracts.

6-2.09 Labor Code Compliance: The Contractor will be required to keep informed of and take all measures necessary to ensure compliance with applicable California Labor Code requirements, including, but not limited to, Section 1720 et seq. of the California Labor Code regarding public works, limitations on use of volunteer labor (California Labor Code Section 1720.4), labor compliance programs (California Labor Code Section 1771.5) and payment of prevailing wages for work done and funded pursuant to these Guidelines, including any payments to the Department of Industrial Relations under Labor Code Section 1771.3.

6-2.10 Nondiscrimination: During the performance of the Contract Agreement, the Contractor and its subcontractors shall not unlawfully discriminate, harass, or allow harassment against any employee or applicant for employment because of sex (gender), sexual orientation, race, color, ancestry, religion, creed, national origin (including language use restriction), pregnancy, physical disability (including HIV and AIDS), mental disability, medical condition (cancer/genetic characteristics), age (over 40), marital status, and denial of medial and family care leave or pregnancy disability leave. The Contractor and its subcontractors shall ensure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment. The Contractor and its subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Gov. Code §12990 (a-f) et seq.) and the applicable regulations promulgated there under (California Code of Regulations, Title 2, Section 7285 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code Section 12990 (a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations, are incorporated into this Agreement by reference and made a part hereof as if set forth in full. The Contractor and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.

The Contractor shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform work under the Contract Agreement.

6-2.11 No Discrimination Against Domestic Partners: The Contractor certifies by signing the Contract Agreement, under penalty of perjury under the laws of State of California the Contractor is in compliance with Public Contract Code section 10295.3.

6-2.12 Rights in Data: The Contractor agrees that all data, plans, drawings, specifications, reports, computer programs, operating manuals, notes and other written or graphic work produced in the performance of the Contract Agreement shall be made available to the State and shall be in the public domain to the extent to which release of such materials is required under the California Public Records Act., Cal. Gov't Code §6250 et seq. The Contractor may disclose, disseminate and use in whole or in part, any final form data and information received, collected and developed under the Contract Agreement, subject approval of the District and to appropriate acknowledgement of credit to State for financial support. The Contractor shall not utilize the materials for any profit-making venture or sell or grant rights to a third party who intends to do so. The State shall have the right to use any data described in this paragraph for any public purpose.

6-2.13 Successors and Assigns: The Contract Agreement and all of its provisions shall apply to and bind the successors and assigns of the parties. No assignment or transfer of this Contract Agreement or any part thereof, rights hereunder, or interest herein by the Contractor shall be valid unless and until it is approved by State and made subject to such reasonable terms and conditions as State may impose.

6-2.14 Workers' Compensation: The Contractor affirms that it is aware of the provisions of Section 3700 of the California Labor Code, which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and the Contractor affirms that it will comply with such provisions before commencing the performance of the work under the Contract Agreement and will make its subcontractors aware of this provision.

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SECTION 9. DESCRIPTION OF WORK

Work for this project involves connecting the water systems of CSA 23 (Santa Margarita), Garden Farms Community Water District and the Atascadero Mutual Water Company with an emergency intertie. Construction of the intertie includes, but is not limited to, installation of new waterlines, water vaults, flow meters, backflow preventers and other associated appurtenances and site improvements and such other items of work not mentioned herein that are required by the Drawings, the Standard Specifications, Standard Plans or these Special Provisions.

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SECTION 10. CONSTRUCTION DETAILS

SECTION 10-1 GENERAL

10-1.01 Order of Work

Order of work shall conform to the provisions in Section 4, "PROSECUTION AND PROGRESS OF THE WORK," of the Standard Specifications and these Special Provisions.

The work shall conform to the inherent stages of construction described in the Contractor's Progress Schedule as accepted by the Engineer. Work may proceed that is not in conflict with work in preceding stages, provided satisfactory progress is maintained in said preceding stages of construction.

Contractor's attention is directed to items and or materials of construction that may have long lead times, including but not limited to: all mechanical equipment, pipe, pumps, flow meters, backflow prevention devices and valves. It shall be the Contractor's responsibility to insure that adequate lead time is provided for review and approval of all submittals and for ordering of all materials required for construction of the improvements under this Contract.

At a minimum, submittals for the following material(s) shall be submitted to the Engineer no later than 10 working days after the Contractor's receipt of the Notice to Proceed:

- Water pipe
- Pumps
- Flow meters
- Backflow prevention devices
- Valves, valve boxes and covers
- Vaults and vault covers

All work under this Contract shall be conducted in a manner which will minimize shutdowns or traffic obstructions caused by the construction and maintain open roadways. Shutdowns causing damage to adjacent public and private property shall not be permitted, and any damage resulting shall be the sole responsibility of the Contractor.

Work can commence only after receiving the written Notice to Proceed. Contractor shall install required construction area signs in accordance with these Special Provisions. No other work will be allowed until the placement of the construction area signs has been completed.

The Contractor's attention is directed to the provisions of "WATER POLLUTION CONTROL (WPCP)" of these Special Provisions, requiring acceptance of the WPCP and installation of the specified BMPs before any work is performed. **Further attention is directed to Contractor requirements regarding the Erosivity Waiver and the construction window language in that section.**

The Contractor's attention is directed to 10-1.12 "Obstructions" in these Special Provisions. The Contractor shall pothole and provide a report to the Engineer prior to earthwork activities.

The Contractor's attention is directed to the requirements of 10-1.17 "Traffic Control System" in these Special Provisions regarding submission of a Traffic Control Plan (TCP). A TCP shall be submitted to and approved by the Engineer a minimum of one week prior to conducting any work requiring traffic handling. Attention is directed to limitations on lane closures along El Camino Real as noted on the Plans: **No lane closures from 7AM to 8:30AM and from 3PM to 6PM.**

The Contractor's attention is directed to the requirements of Section 10-2, Technical Specifications, under paragraph 12.0 "Required Documentation: Response Pump Form Checklist" of the "High Performance Vacuum Assisted, Fully Automatic, Sound Attenuated Pumpset, Mounted on a DOT Trailer" specification in these Special Provisions regarding submission of pump information at time of submittal.

The Contractor's attention is directed to the requirements of Section 12, "Environmental Permit Summary Form," for information regarding Special Environmental Conditions including, but not limited to, "sensitive resource zones" (Item #23), cultural resource monitoring (Item #31) and the responsible party for implementation.

Full compensation for conforming to these requirements shall be considered as included in the prices paid for the various items of work and no additional compensation will be allowed therefor.

10-1.02 Progress Schedule

Attention is directed to Section 5-1.05 of the Special Provisions regarding submittal of progress schedules. The Contractor's attention is directed to the service interruption constraints described in Section 10-1.01 "Order of Work" of these Special Provisions.

10-1.03 Schedule of Values

The Contractor shall submit to the Engineer a Schedule of Values at the same time as the initial progress schedule is submitted. The Schedule of Values shall be in a form accepted by the Engineer and shall subdivide identified Contract bid items into components with quantities and prices, which when added together equal the contract price for said bid item. Subdivided components shall be in sufficient detail to serve as the basis for progress payments during performance of the work. The following bid items shall be included in the schedule of values:

Item 1 -	Sheeting, Shoring and Bracing
Item 9 -	8-inch Tee and Resilient Wedge Gate Valve Assembly (Station 46+80.87)
Item 10 -	AMWC Water Main Extension and Hydrant Lateral
Item 11 -	AMWC Waterline Connection
Item 12 -	Garden Farms CWD Waterline Connection
Item 13 -	CSA 23 Waterline Connection

The form and content of the schedule of values shall be approved by the Engineer prior to commencing work.

10-1.04 Submittals

In addition to the submittal requirements specified in Section 4-1.03 "Contract Submittals" and Section 10-1.01 "Order of Work" of these Special Provisions, the Contractor shall submit submittals as follows:

Contractor shall submit five copies of shop drawings and/or manufacturer product data sheets. The County will keep three copies and return the other two copies to the Contractor. If the Contractor desires more than two copies, he shall transfer the Engineer's comments onto additional copies at his/her own expense.

Make submittals promptly in such sequence as to cause no delay in the work. Time allowed for Engineer to review original and any resubmittal shall be a minimum of 10 (ten) working days after receipt by the Engineer. Unless other arrangements are made with the Engineer, no items of work pertaining to the submittals shall be permitted until the reviewed submittals are approved.

Submittals shall contain the following:

a. The Project title and Contract number
    b. Date of submission
    c. Specification Section and the drawing detail to which each shop drawing and/or manufacturer literature is referenced to
    d. All the dates of any previous submission
    e. Clearly marked catalog cut sheets and manufacturer literature to show which model proposed, all pertinent data, capacities, dimensions, clearances, diagrams, paintings/coatings, material list, and connections
    f. Shop drawings with field dimensions clearly identified showing the relationship of the item to adjacent materials.
    g. Identification of any deviation from the contract documents. If there are any deviations from the contract documents, the Contractor shall submit an approved equivalent material or working drawings in accordance with Section 6-1.05, "Trade Names and Alternatives" of the Standard Specifications for approval by the Engineer.
    h. If the Contractor submits shop drawings of equipment by manufacturers other than those listed in the specifications, provide the following additional information with the submittal:
        a. The name and address of at least three companies or agencies that are currently using the equipment.
        b. The name and telephone number of at least one person at each of the above companies or agencies whom the Engineer may contact.

The Contractor's attention is directed to the fact that shop drawings are reviewed by the Engineer for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. The Contractor shall be responsible for confirming and correlating all quantities and dimensions, the compatibility of different components, selecting fabrication processes and techniques of construction, coordinating its work with that of other trades or other contractors at the site, and performing its work in a safe and satisfactory manner.

Resubmittals will be reviewed and returned in the same review period as the original submittals. It is considered reasonable that the Contractor shall make a complete and acceptable submittal by the second submission. The Engineer reserves that right to withhold monies due to the Contractor to cover additional costs of any review beyond the second submittal.

Submittals will only be accepted from the Contractor (not sub-contractor or material supplier).

Full compensation for conforming to these requirements shall be considered as included in the prices paid for the various items of work and no additional compensation will be allowed therefor.

10-1.05 Substitutions and Equivalent Materials

The Engineer shall approve equivalent materials in accordance with Section 6-1.05, "Trade Names and Alternatives" of the Standard Specifications.

10-1.06 Certificates of Compliance

A certificate of compliance shall be furnished for all materials delivered to the work site. Certificates of compliance shall conform to the provisions in Section 6-1.07 “Certificates of Compliance” of the Standard Specifications.

10-1.07 Contractor’s Staging and Storage Areas

The Contractor shall coordinate with the Engineer to determine the Contractor’s storage area. Areas the Contractor proposes to use shall be reviewed and approved by the Engineer. The Contractor shall be responsible for his/her own security and weatherproofing. Missing or damaged material shall be replaced by the Contractor at no additional charge. Use of the staging area shall be subject to the approval of the Engineer and the Contractor shall be required to restore the site to the satisfaction of the Engineer after construction.

10-1.08 Electrical Power

The Contractor shall furnish all power required for performance of all the work in this contract.

10-1.09 Watering

Watering shall conform to the provisions in Section 17, “Watering,” of the Standard Specifications and these Special Provisions. The County will provide a construction water meter for the Contractor’s use in extracting water from the existing CSA 23 waterline system. The Contractor may obtain water from an existing system outlet provided the Contractor provides and utilizes an approved backflow device. Extravagant, inappropriate or wasteful use of water will result in charges to the Contractor for excess water used as determined by the Engineer.

Full compensation for conforming to these requirements shall be considered as included in the prices paid for the various items of work and no additional compensation will be allowed therefor.

10-1.10 Trench Safety

The Contractor’s attention is directed to Section 5-1.02.A, “Excavation Safety Plans,” Section 7-1.01E, “Trench Safety”, and Article 15, “Safety” of the Standard Specifications and Agreement.

The Contractor, prior to beginning any trench or structure excavation 5 feet deep or over, shall submit to the Engineer a detailed plan showing design of all shoring, bracing, sloping of the sides of excavation, or other provisions for worker protection against the hazard of caving ground during the excavation of such trenches or structure excavation. The Contractor’s attention is directed to the provisions for “Shoring and Bracing Drawings” in Section 6705 of the California Labor Code. If such plan varies from the shoring system standards established in the Construction Safety Orders of the State of

California, such alternative systems plans shall be prepared by a Civil or Structural Engineer licensed in the State of California.

The contract lump sum price paid for **"SHEETING, SHORING AND BRACING"** shall include full compensation for furnishing all engineering documents and approvals, labor, materials, tools, equipment, and incidentals and for doing all the work involved in trench safety including, but not limited to, those necessary for the movement of personnel, equipment, supplies and incidentals to the project site; for the installation and removal of trench safety materials, as specified in the Standard Specifications, these Special Provisions and no additional compensation will be allowed therefor.

10-1.11 Mobilization/Demobilization

Mobilization shall conform to the provisions in Section 11, "Mobilization," of the Standard Specifications and these Special Provisions.

Prior to final demobilization from the worksite, Contractor shall remove from the vicinity of the completed work and adjacent property and streets, all rubbish; unused materials, concrete forms, construction equipment, and temporary structures and facilities used during construction. All parts of the work shall be left in a neat and presentable condition. All disturbed areas and surfaces shall be returned to their original condition unless otherwise shown on the plans and specified in these Special Provisions.

Full compensation for conforming to these requirements shall be considered as included in the prices paid for the various items of work and no additional compensation will be allowed therefor.

10-1.12 Obstructions

The Contractor's attention is directed to Section 8-1.10, "Utility and Non-Highway Facilities" and Section 15, "Existing Highway Facilities" of the Standard Specifications.

The locations of existing utilities where shown on the plans are based on available records and are approximate only. The Contractor shall assume sole and complete responsibility for locating or having located all underground utilities and other facilities and for protecting the same during the course of constructing the project. Contractor shall contact USA, or other appropriate regional notification center for operators of subsurface installation, at least 2 working days, but no more than 14 calendar days, prior to performing any excavation or other work close to underground pipeline, conduit, duct, wire, or other structure. Any deviations from the plan location of any existing facilities shall be immediately brought to the attention of the Engineer.

Before starting installation of the pipeline and appurtenances, the Contractor shall pothole at all locations necessary to determine the location of existing utilities and expose potential utility conflicts with the proposed work within the project limits. The Contactor shall notify the Engineer in writing 3 days prior to potholing activities. Contractor shall make the exposed utilities available to the County surveyors for cataloging and surveying prior to backfilling the pot holes. The Contractor shall provide a written report of material, diameter, station, offset, and elevation of the top of pipe prior to earthwork activities.

If interferences occur at locations other than shown on the Plans, the Contractor shall notify the Engineer immediately, and a method for correcting said interferences shall be supplied by the Engineer. Payment for interferences that are not shown on the Plans, nor which may be inferred from surface indications, shall be in accordance with the Special

Provisions. If the Contractor does not expose all required utilities prior to shop drawing preparation, he shall not be entitled to additional compensation for the work necessary to avoid interferences, nor for repair to damaged utilities.

Any necessary relocations of utilities, whether shown on the Plans or not, shall be coordinated with the affected utility.

List of Utility Contacts:

AT&T	Diane Vicars	(805) 434-9462
AT&T Trunk & Toll	Emilio Diaz	(559) 454-3435
AT&T Legacy	Joseph Forket	(714) 963-7964
Atascadero MWC	John Neil	(805) 466-2428
Charter Communications	Tim Lindsay	(805) 431-3047
Garden Farms CWD	Marcia Joyce	(805) 438-3751
The Gas Company	Claudia Turner	(805) 681-8024
Level3 Communications	Matthew Williams	Matthew.Williams@Level3.com
PG&E	Claire Mastin	(805) 546-3888
Phillips 66	Leo Martinez	(805) 226-2656
Qwest/Centurylink	Terry Carmer	(714) 666-8016
Sprint/Nextel	Rich Wolf	(650) 464-8073
Verizon Business	Chuck Czumak	(941) 906-6703

Full compensation for conforming to these requirements, including potholing and reporting, shall be considered as included in the prices paid for the various items of work and no additional compensation will be allowed therefor.

10-1.13 Field Measurements Underground Facilities – Exposure of Utilities in Advance of Work

It shall be the Contractor's responsibility to determine the true location and depth of all utilities, service connections, and connections to existing water systems within the limits of the work before starting construction of the new waterline and appurtenances. The Contractor shall also determine the type and material and condition of any utility which may be affected by or affect the Work.

The construction plans show the general location of underground pipelines and utilities. The location is based on the best information available. It shall be the Contractor's responsibility to find the exact location.

If the utilities, service connections, or connections to existing water systems differ materially from those shown on the Plans, the Contractor shall notify the Engineer immediately in writing. Within 10 working days, the Engineer may make design changes in the alignment and grade of the work to obviate the necessity to remove, relocate, protect, or temporarily maintain such utility facilities; or to reduce the costs of the work involved in the removing, relocating, protecting, or temporarily maintaining such utility facilities. At that time, the Contractor may begin installation of the water main and appurtenances.

Full compensation for conforming to these requirements shall be considered as included in the prices paid for the various items of work and no additional compensation will be allowed therefor.

10-1.14 Construction Site Management

10-1.14A General

Summary

This work includes controlling potential sources of water pollution before they come in contact with storm water systems or watercourses.

Control material pollution and manage waste and non-stormwater at the job site by implementing effective handling, storage, use, and disposal practices.

For information on documents specified in these Special Provisions, refer to the Department's Preparation Manual, Dewatering Guide, and BMP Manual.

Preparation Manual, Dewatering Guide, and BMP Manual are available from the Department's Construction Storm Water and Water Pollution Control web site at:

http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm

Definitions and Abbreviations

Active and Inactive areas:

(1) Active areas have soil disturbing work activities occurring at least once within 14 days, and

(2) Inactive areas are areas that have not been disturbed for at least 15 days.

BMP Manual: The Department's Construction Site Best Management Practices (BMP) Manual.

CDPH: California Department of Public Health

Dewatering Guide: The Department's Field Guide to Construction Site Dewatering.

ELAP: Environmental Laboratory Accreditation Program

Minor spills: Small quantities of oil, gasoline, paint, or other material that are small enough to be controlled by a first responder upon discovery of the spill.

MSDS: Material Safety Data Sheet

Preparation Manual: The Department's Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual.

Semi-significant spills: Spills that can be controlled by a first responder with help from other personnel.

Significant or hazardous spills: Spills that cannot be controlled by construction personnel.

WPC: Water Pollution Control

WPC Manager: Water Pollution Control Manager as defined under "Water Pollution Control" of these Special Provisions.

Submittals

Submit the following:

1. MSDS at least 5 days before material is used or stored
2. Monthly inventory records for material used or stored
3. Copy of written approval to discharge into a sanitary sewer system at least 5 days before beginning discharge activities

10-1.14B Construction

Spill Prevention and Control

Implement spill and leak prevention procedures for chemicals and hazardous substances stored at the job site. If you spill or leak chemicals or hazardous substances at the job site, you are responsible for all associated cleanup costs and related liability.

As soon as it is safe, contain and clean up spills of petroleum products, sanitary and septic waste substances listed under CFR Title 40, Parts 110, 117, and 302.

Minor Spills

Clean up minor spills using the following procedures:

1. Contain the spread of the spill
2. Recover the spilled material by absorption
3. Clean the contaminated area
4. Dispose of the contaminated material promptly and properly

Semi-significant Spills

Clean up semi-significant spills immediately by the following procedures:

1. Contain the spread of the spill
2. Recover the spilled material using absorption whenever a spill occurs on a paved surface or an impermeable surface
3. Contain the spill with an earthen dike and dig up the contaminated soil for disposal whenever a spill occurs on soil
4. If the spill occurs during precipitation, cover the spill with plastic or other material to prevent contaminated runoff
5. Dispose of the contaminated material promptly and properly

Significant or Hazardous Spills

Immediately notify qualified personnel of significant or hazardous spills. Do not let construction personnel attempt to clean up the spill until qualified staff have arrived. Do the following:

1. Notify the Engineer and follow up with a written report
2. Obtain the services of a spills contractor or hazardous material team immediately
3. Notify the local emergency response team by dialing 911 and county officials at the emergency phone numbers kept at the job site
4. Notify the Governor's Office of Emergency Services Warning Center at (805) 852-7550
5. Notify the National Response Center at (800) 424-8802 regarding spills of Federal reportable quantities under CFR Title 40, Parts 110, 119, and 302
6. Notify other agencies as appropriate, including:
    - 6.1. Fire Department
    - 6.2. Public Works Department
    - 6.3. Coast Guard
    - 6.4. Highway Patrol
    - 6.5. County Sheriff Department
    - 6.6. Department of Toxic Substances
    - 6.7. California Division of Oil and Gas
    - 6.8. Cal OSHA
    - 6.9. Regional Water Resources Control Board

Report minor, semi-significant, and significant spills to the WPC Manager. The WPC Manager must notify the Engineer immediately. The WPC Manager must oversee and enforce proper spill prevention and control measures.

Prevent spills from entering storm water runoff before and during cleanup. Do not bury spills or wash spills with water.

Keep material or waste storage areas clean, well organized, and equipped with enough cleanup supplies for the material being stored.

10-1.14C Material Management

General

Material must be delivered, used, and stored for this job in a way that minimizes or eliminates discharge of material into the air, storm drain systems, and watercourses.

Implement the practices described under "MATERIAL MANAGEMENT" of these Special Provisions while taking delivery of, using, or storing any of the following materials:

1. Hazardous chemicals including acids, lime, glues, adhesives, paints, solvents, and curing compounds
2. Soil stabilizers and binders
3. Fertilizers
4. Detergents
5. Plaster
6. Petroleum materials including fuel, oil, and grease
7. Asphalt components and concrete components
8. Pesticides and herbicides

Employees trained in emergency spill cleanup procedures must be present during the unloading of hazardous materials or chemicals.

If practicable, use less hazardous materials.

Material Storage

Use the following material storage procedures:

1. Store liquids, petroleum materials, and substances listed in CFR Title 40, Parts 110, 117, and 302 as specified by the Department, and place them in secondary containment facilities.
2. Secondary containment facilities must be impervious to the materials stored there for a minimum contact time of 72 hours.
3. Cover secondary containment facilities during non-working days and when precipitation is predicted. Secondary containment facilities must be adequately ventilated.
4. Keep secondary containment facility free of accumulated rainwater or spills. After precipitation, or in the event of spills or leaks, collect accumulated liquid and place into drums within 24 hours. Handle these liquids as hazardous waste under "HAZARDOUS WASTE" of these Special Provisions unless testing determines them to be nonhazardous.
5. Do not store incompatible materials, such as chlorine and ammonia, in the same secondary containment facility.
6. Store materials in the original containers with the original material labels maintained in legible condition. Replace damaged or illegible labels immediately.
7. Secondary containment facilities must have the capacity to contain precipitation from a 24-hour-long, 25-year storm, and 10 percent of the aggregate volume of all containers, or entire volume of the largest container within the facility, whichever is greater.
8. Store bagged or boxed material on pallets. Protect bagged or boxed material from wind and rain during non-working days and while precipitation is predicted.

9. Provide sufficient separation between stored containers to allow for spill cleanup or emergency response access. Storage areas must be kept clean, well organized, and equipped with cleanup supplies appropriate for the materials being stored.
10. Repair or replace perimeter controls, containment structures, covers, and liners as necessary. Inspect storage areas before and after precipitation, and at least weekly during other times.

Stockpile Management

Use the following stockpile management procedures:

1. Reduce or eliminate potential water pollution from stockpiled material including soil, paving material, and pressure treated wood.
2. Locate stockpiles:
   - 2.1. If within the floodplain, at least 100 feet from concentrated flows of storm water, drainage courses, and inlets unless approved
   - 2.2. If outside the floodplain, at least 50 feet from concentrated flows of storm water, drainage courses, and inlets unless approved

Install WPC practices within 15 days or before predicted precipitation, whichever occurs first.

Active and inactive soil stockpiles must be:

1. Covered with soil stabilization measures, plastic sheeting, or geosynthetic fabric
2. Surrounded with a linear sediment barrier

Portland cement concrete rubble, AC, HMA, AC and HMA rubble, aggregate base or aggregate sub-base stockpiles must be:

1. Covered with plastic sheeting, or geosynthetic fabric
2. Surrounded with a linear sediment barrier

Pressure treated wood stockpiles must be:

1. Placed on pallets
2. Covered with impermeable material

Cold mix asphalt concrete stockpiles must be:

1. Placed on impervious surface
2. Covered with impermeable material
3. Protected from run-on and runoff

Control wind erosion year round under Section 10, "Dust Control" of the Standard Specifications.

Repair or replace linear sediment barriers and covers as needed to keep them functioning properly. If sediment accumulates to 1/3 of the linear sediment barrier height, remove the sediment.

10-1.14D Waste Management

Solid Waste

Do not allow litter or debris to accumulate anywhere at the job site, including storm drain grates, trash racks, and ditch lines. Pick up and remove trash and debris from the job site at least once a week. The WPC Manager must monitor solid waste storage and disposal procedures at the job site.

If practicable, recycle nonhazardous job site waste and excess material. If recycling is not practicable, disposal must comply with Section 7-1.13, "Disposal of Material Outside the Highway Right of Way" of the Standard Specifications.

Furnish enough closed-lid dumpsters of sufficient size to contain any solid waste generated by work activities. When the refuse reaches the fill line, empty the dumpsters. Dumpsters must be watertight. Do not wash out dumpsters at the job site. Furnish additional containers and pick up dumpsters more frequent during the demolition phase of construction.

Solid waste includes:

1. Brick
2. Mortar
3. Timber
4. Metal scraps
5. Sawdust
6. Pipe
7. Electrical cuttings
8. Non-hazardous equipment parts
9. Styrofoam and other packaging materials
10. Vegetative material and plant containers from highway planting
11. Litter and smoking material, including litter generated randomly by the public
12. Other trash and debris

Furnish and use trash receptacles at the job site yard, field trailers, and locations where workers gather for lunch and breaks.

Hazardous Waste

Use hazardous waste management practices if waste is generated at the job site from the following substances:

1. Petroleum products
2. Asphalt products
3. Concrete curing compound
4. Pesticides
5. Acids
6. Paints
7. Stains
8. Solvents
9. Wood preservatives and treated posts
10. Roofing tar
11. Road flares
12. Lime
13. Glues and adhesives
14. Materials classified as hazardous by California Code of Regulations, Title 22, Division 4.5; or listed in CFR Title 40, Parts 110, 117, 261, or 302

The WPC Manager must oversee and enforce hazardous waste management practices. Minimize the production of hazardous materials and hazardous waste at the job site. If damaged, repair or replace perimeter controls, containment structures, and covers.

If hazardous material levels are unknown, use a laboratory certified by ELAP under CDPH to sample and test waste to determine safe methods for storage and disposal.

Separate potentially hazardous waste from nonhazardous waste at the job site. Hazardous waste must be handled, stored, and disposed of under California Code of

Regulations, Title 22, Division 4.5, Section 66262.34; and in CFR Title 49, Parts 261, 262, and 263.

Store hazardous waste in sealed containers constructed and labeled with the contents and date accumulated under California Code of Regulations, Title 22, Division 4.5; and in CFR Title 49, Parts 172, 173, 178, and 179. Keep hazardous waste containers in temporary containment facilities under "Material Storage" of these Special Provisions.

Furnish containers with adequate storage volume at convenient locations for hazardous waste collection. Do not overfill hazardous waste containers. Do not mix hazardous wastes. Do not allow potentially hazardous waste to accumulate on the ground. Store containers of dry waste that are not watertight on pallets. Store hazardous waste away from storm drains, watercourses, moving vehicles, and equipment.

Clean water based or oil based paint from brushes or equipment within a contained area and in a way that does not contaminate soil, watercourses, and storm drain systems. Handle and dispose of the following as hazardous waste: paints, thinners, solvents, residues, and sludges that cannot be recycled or reused. When thoroughly dry, dispose of the following as solid waste: dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths.

Dispose of hazardous waste within 90 days of being generated. Use a licensed hazardous waste transporter to take hazardous waste to a Class I Disposal Site. Submit a copy of uniform hazardous waste manifest forms within 24 hours of transporting hazardous waste.

The WPC Manager must inspect the following daily:
1. Storage areas for hazardous materials and wastes
2. Hazardous waste disposal and transporting activities
3. Hazardous material delivery and storage activities

Contaminated Soil
Identify contaminated soil from spills or leaks by noticing discoloration, odors, or differences in soil properties. Soil with evidence of contamination must be sampled and tested by a laboratory certified by ELAP.

If levels of contamination are found to be hazardous, handle and dispose of the soil as hazardous waste.

Prevent the flow of water, including ground water, from mixing with contaminated soil by using one or a combination of the following measures:
1. Berms
2. Cofferdams
3. Grout curtains
4. Freeze walls
5. Concrete seal course

If water mixes with contaminated soil and becomes contaminated, sample and test the water using a laboratory certified by ELAP. If levels of contamination are found to be hazardous, handle and dispose of the water as hazardous waste.

Concrete Waste
Use practices that will prevent the discharge of portland cement concrete, AC, or HMA waste into storm drain systems or watercourses.

Collect and dispose of portland cement concrete, AC, or HMA waste at locations where:

1. Concrete material, including grout, is used
2. Concrete dust and debris result from demolition
3. Sawcutting, coring, grinding, grooving, or hydro-concrete demolition of portland cement concrete, AC, or HMA creates a residue or slurry
4. Concrete truck or other concrete-coated equipment is cleaned at the job site

Sanitary and Septic Waste

Do not bury or discharge wastewater from sanitary or septic systems within County right-of-way. The WPC Manager must inspect sanitary or septic waste storage and monitor disposal procedures at least weekly. Sanitary facilities that discharge to the sanitary sewer system must be properly connected and free from leaks. Place sanitary facilities at least 50 feet away from storm drains, watercourses, and flow lines.

Obtain written approval from the local health agency, city, county, and sewer district before discharging from a sanitary or septic system directly into a sanitary sewer system, and submit a copy to the Engineer. Comply with local health agency provisions while using an on-site disposal system.

Liquid Waste

Use practices that will prevent job site liquid waste from entering storm drain systems or watercourses. Liquid wastes include the following:

1. Drilling slurries or fluids
2. Grease-free or oil-free wastewater or rinse water
3. Dredgings, including liquid waste from drainage system cleaning
4. Liquid waste running off a surface including wash or rinse water
5. Other non-stormwater liquids not covered by separate permits

Hold liquid waste in structurally sound, leak proof containers such as:

1. Roll-off bins
2. Portable tanks

Liquid waste containers must be of sufficient quantity and volume to prevent overflow, spills and leaks.

Store containers:

1. At least 50 feet from moving vehicles and equipment
2. If within the floodplain, at least 100 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved
3. If outside the floodplain, at least 50 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved

Remove and dispose of deposited solids from sediment traps under "Solid Waste" of these Special Provisions unless the Engineer approves another method.

Liquid waste may require testing to determine hazardous material content before disposal.

Drilling fluids and residue must be disposed of outside the highway right-of-way.

If an approved location is available within the job site, fluids and residue exempt under California Code of Regulations, Title 23, Section 2511(g) may be dried by evaporation in

a leak proof container. Dispose of remaining solid waste under "SOLID WASTE" of these Special Provisions.

10-1.14E Non-Storm Water Management

Water Control and Conservation

Manage water used for work activities to prevent erosion or discharge of pollutants into storm drain systems or watercourses. Obtain approval before washing anything at the job site with water that could discharge into a storm drain system or watercourse. Report discharges immediately.

If water is used at the job site, implement water conservation practices. Inspect irrigation areas. Adjust watering schedules to prevent erosion, excess watering, or runoff. Shut off water source to broken lines, sprinklers, or valves, and repair breaks within 24 hours. If possible, reuse water from waterline flushing for landscape irrigation. Sweep and vacuum paved areas; do not wash them with water.

Direct job site water runoff, including water from water line repair, to areas where it can infiltrate into the ground and not enter storm drain systems or watercourses. Do not allow spilled water to escape water truck filling areas. If possible, direct water from off-site sources around the job site. Minimize the contact of off-site water with job site water.

Illegal Connection and Discharge Detection and Reporting

Inspect the job site and the site perimeter before starting work for evidence of illegal connections, discharges, or dumping. After starting work, inspect the job site and perimeter on a daily schedule.

Whenever illegal connections, discharges, or dumping are discovered, notify the Engineer immediately. Take no further action unless ordered by the Engineer. Assume unlabeled or unidentifiable material is hazardous.

Look for the following evidence of illegal connections, discharges, or dumping:

1. Debris or trash piles
2. Staining or discoloration on pavement or soils
3. Pungent odors coming from drainage systems
4. Discoloration or oily sheen on water
5. Stains or residue in ditches, channels or drain boxes
6. Abnormal water flow during dry weather
7. Excessive sediment deposits
8. Nonstandard drainage junction structures
9. Broken concrete or other disturbances near junction structures

Vehicle and Equipment Cleaning

Limit vehicle and equipment cleaning or washing at the job site except what is necessary to control vehicle tracking or hazardous waste. Notify the Engineer before cleaning vehicles and equipment at the job site with soap, solvents, or steam. Contain and recycle or dispose of resulting waste under "Liquid Waste" or "Hazardous Waste" of these Special Provisions, whichever is applicable. Do not use diesel to clean vehicles or equipment, and minimize the use of solvents.

Clean or wash vehicles and equipment in a structure equipped with disposal facilities. If using a structure is not possible, clean or wash vehicles and equipment in an outside area. The outside area must be:

1. Paved with AC, HMA, or concrete paving

2. Surrounded by a containment berm
3. Equipped with a sump to collect and dispose of wash water
4. If within the floodplain, located at least 100 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved
5. If outside the floodplain, located at least 50 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved

When washing vehicles or equipment with water, use as little water as possible. Hoses must be equipped with a positive shutoff valve.

Discharge liquid from wash racks to a recycle system or to another approved system. Remove liquids and sediment as necessary.

The WPC Manager must inspect vehicle and equipment cleaning facilities:
1. Daily if vehicle and equipment cleaning occurs daily
2. Weekly if vehicle and equipment cleaning does not occur daily

Vehicle and Equipment Fueling and Maintenance
If practicable, perform maintenance on vehicles and equipment off the job site.

If fueling or maintenance must be done at the job site, designate a site, or sites, and obtain approval before using. Minimize mobile fueling or maintenance.

If vehicle and equipment fueling and maintenance must be done at the job site, areas for the following activities must be:
1. On level ground
2. Protected from storm water run-on
3. If within the floodplain, located at least 100 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved
4. If outside the floodplain, located at least 50 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved

Use containment berms or dikes around the fueling and maintenance area. Keep adequate quantities of absorbent spill cleanup material and spill kits in the fueling and maintenance area and on fueling trucks. Dispose of spill cleanup material and kits immediately after use. Use drip pans or absorbent pads during fueling or maintenance.

Fueling or maintenance activities must not be left unattended. Fueling nozzles must be equipped with an automatic shutoff control. Vapor recovery fueling nozzles must be used where required by the Air Quality Management District. When not in use, nozzles must be secured upright. Do not top-off fuel tanks.

Recycle or properly dispose of used batteries and tires.

The WPC Manager must inspect vehicle and equipment maintenance and fueling areas:
1. Daily when vehicle and equipment maintenance and fueling occurs daily
2. Weekly when vehicle and equipment maintenance and fueling does not occur daily

The WPC Manager must inspect vehicles and equipment at the job site for leaks and spills on a daily schedule. Operators must inspect vehicles and equipment each day of use.

If leaks cannot be repaired immediately, remove the vehicle or equipment from the job site.

Material and Equipment Used Over Water
Place drip pans and absorbent pads under vehicles or equipment used over water. Keep an adequate supply of spill cleanup material with the vehicle or equipment. If the vehicle or equipment will be idle for more than one hour, place drip pans or plastic sheeting under the vehicle or equipment on docks, barges, or other surfaces over water.

Furnish watertight curbs or toe boards on barges, platforms, docks, or other surfaces over water to contain material, debris, and tools. Secure material to prevent spills or discharge into water due to wind.

Structure Removal Over or Adjacent to Water
Do not allow demolished material to enter storm water systems or watercourses. Use approved covers and platforms to collect debris. Use attachments on equipment to catch debris on small demolition activities. Empty debris catching devices daily and handle debris under "Waste Management" of these Special Provisions.

The WPC Manager must inspect demolition sites within 50 feet of storm water systems or watercourses daily.

Paving, Sealing, Sawcutting, Grooving, and Grinding Activities
Prevent the following materials from entering storm drain systems or water courses:
1. Cementitious material
2. Asphaltic material
3. Aggregate or screenings
4. Grinding grooving, or sawcutting residue
5. Pavement chunks
6. Shoulder backing
7. Methacrylate

Cover drainage inlets and use linear sediment barriers to protect downhill watercourses until paving, sealing, sawcutting, grooving, or grinding activities are completed and excess material has been removed. Cover drainage inlets and manholes during the application of seal coat, tack coat, slurry seal, or fog seal.

If precipitation is predicted, limit paving, sawcutting, and grinding to places where runoff can be captured.

Do not start seal coat, tack coat, slurry seal, or fog seal activities if precipitation is predicted during the application or curing period. Do not excavate material from existing roadways during precipitation.

Use a vacuum to remove slurry immediately after slurry is produced. Do not allow slurry to run onto lanes open to traffic or off the pavement.

Collect residue from portland cement concrete grinding and grooving activities with a vacuum attachment on the grinding machine. Do not leave any residue on the pavement or allow the residue to flow across the pavement.

If approved, material excavated from existing roadways may be stockpiled under "Stockpile Management" of these Special Provisions.

Do not coat asphalt trucks and equipment with substances that contain soap, foaming agents, or toxic chemicals.

When paving equipment is not in use, park over drip pans or plastic sheeting with absorbent material to catch drips.

Thermoplastic Striping and Pavement Markers
Thermoplastic striping and preheating equipment shutoff valves must work properly at all times. Do not preheat, transfer, or load thermoplastic within 50 feet of drainage inlets or watercourses. Do not fill a preheating container above a level that is 6 inches below the top. Truck beds must be cleaned daily of scraps or melted thermoplastic.

Do not unload, transfer, or load bituminous material for pavement markers within 50 feet of drainage inlets or watercourses. Release all pressure from a melting tank before removing the lid to fill or service. Do not fill a melting tank above a level that is 6 inches below the top.

Collect bituminous material from the roadway after marker removal.

Pile Driving
Keep spill kits and cleanup material at pile driving locations. Pile driving equipment must be parked over drip pans, absorbent pads, or plastic sheeting with absorbent material. If precipitation is predicted, protect pile driving equipment by parking on plywood and covering with plastic.

Store pile driving equipment when not in use. Stored pile driving equipment must be:
1. Kept on level ground
2. Protected from storm water run-on
3. If within the floodplain, at least 100 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved
4. If outside the floodplain, at least 50 feet from concentrated flows of storm water, drainage courses, watercourses, and storm drain inlets unless approved

If practicable, use vegetable oil instead of hydraulic fluid.

The WPC Manager must inspect the pile driving area for leaks and spills:
1. Daily when pile driving occurs daily
2. Weekly when pile driving does not occur daily

Concrete Curing
Do not overspray chemical curing compound. Minimize the drift by spraying as close to the concrete as possible. Cover drainage inlets before applying the curing compound.

Minimize the use and discharge of water by using wet blankets or similar methods to maintain moisture while curing concrete.

Concrete Finishing
Collect and dispose of water and solid waste from high-pressure water blasting. Cover drainage inlets within 50 feet before sandblasting. Minimize drift of dust and blast material by keeping the nozzle close to the surface of the concrete. The blast residue may contain hazardous material.

Inspect concrete finishing containment structures for damage before each day of use and before predicted precipitation. Remove liquid and solid waste from containment structures after each work shift.

Sweeping

Sweeping must be done using hand or mechanical methods such as vacuuming.

Monitor paved areas and roadways within the job site for sediment and debris generating activities such as:

1. Clearing and grubbing
2. Earthwork
3. Trenching
4. Roadway structural section work
5. Vehicles entering and leaving the job site
6. Soil disturbing work
7. Work that causes offsite tracking of material

If sediment or debris is observed, perform sweeping:

1. Within:
   - 1.1. 8 hours of predicted rain
   - 1.2. 24 hours unless the Engineer approves a longer period
2. On paved roads at job site entrances and exit locations
3. On paved areas within the job site that flow to storm drains or receiving waters

You may stockpile collected material at the job site. Remove collected material including sediment from paved shoulders, drain inlets, curbs and dikes, and other drainage areas. If stockpiled, dispose of collected material at least once per week.

You may dispose of sediment within the job site that you collected during sweeping activities. Protect disposal areas against erosion.

Remove and dispose of trash collected during sweeping under Section 7-1.13, "DISPOSAL OF MATERIAL OUTSIDE THE HIGHWAY RIGHT OF WAY" of the Standard Specifications.

Dewatering

Dewatering consists of discharging accumulated storm water, ground water, or surface water from excavations or temporary containment facilities.

If dewatering and discharging activities are specified under a work item such as "Temporary Active Treatment System" or "Dewatering and Discharge," perform dewatering work as specified in the section involved.

If dewatering and discharging activities are not specified under a work item and you will be performing dewatering activities, you must:

1. Submit a Dewatering and Discharge Plan under Section 5-1.02, "PLANS AND WORKING DRAWINGS," of the Standard Specifications and "WATER POLLUTION CONTROL" of these Special Provisions at least 10 days before starting dewatering activities. The Dewatering and Discharge Plan must include:
   - 1.1. Title sheet and table of contents
   - 1.2. Description of dewatering and discharge activities detailing locations, quantity of water, equipment, and discharge points
   - 1.3. Estimated schedule for dewatering and discharge (start and end dates, intermittent or continuous)
   - 1.4. Discharge alternatives such as dust control or percolation
   - 1.5. Visual monitoring procedures with inspection log
2. Conduct dewatering activities under the Department's "Field Guide for Construction Dewatering."

3. Ensure that any dewatering discharge does not cause erosion, scour, or sedimentary deposits that could impact natural bedding materials.
4. Discharge the water within the project limits. Dispose of the water in the same way as specified for material in Section 7-1.13, "DISPOSAL OF MATERIAL OUTSIDE THE HIGHWAY RIGHT OF WAY," of the Standard Specification if it cannot be discharged within project limits due to site constraints.
5. Do not discharge storm water or non-stormwater that has an odor, discoloration other than sediment, an oily sheen, or foam on the surface. Notify the Engineer immediately upon discovering any such condition.

The WPC manager must inspect dewatering activities:
1. Daily when dewatering work occurs daily
2. Weekly when dewatering work does not occur daily

10-1.14F Payment:

Full compensation for construction site management, including furnishing all labor, materials, tools, equipment, and incidentals and for fully complying with the provisions in this section and for doing all the work involved in spill prevention and control, material management, waste management, non-storm water management, and dewatering and identifying, sampling, testing, handling, and disposing of hazardous waste resulting from contractor activities, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, shall be considered as included in the contract price paid for the various items of work involved and no separate payment will be made therefor.

10-1.15 Water Pollution Control Program (WPCP)

10-1.15A General:

Summary
Water pollution control work applies to projects where work activities result in between 1 and 5 acres of soil disturbance. Manage work activities to reduce the discharge of pollutants to surface waters, groundwater, or municipal separate storm sewer systems including contract work item for Prepare Water Pollution Control Program. Water Pollution Control Program (WPCP) preparation includes obtaining WPCP acceptance, amending the WPCP, and installation, maintenance, monitoring, and inspecting water pollution control practices at the job site.

This project qualifies for an Erosivity Waiver because the soil disturbance is anticipated to be between 1 and 5 acres and the R-factor is less than 5 based and an expected construction window between June 1 and October 30. The Erosivity Waiver and R-factor are described in the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES No. CAS000002).

Failure to comply with this construction window will mandate that a Notice of Intention for a Storm Water Pollution Prevention Plan be initiated before the deadline passes and that the Contractor obtain a WDID number via the Engineer to continue work. The Contractor shall bear all expenses for compliance of the Construction General Permit outside the aforementioned construction window.

Do not begin work until the WPCP is accepted.

Definitions and Abbreviations

active and inactive areas:

(1) Active areas have soil disturbing work activities occurring at least once within 14 days, and

(2) Inactive areas are areas that have not been disturbed for at least 15 days.

BMPs: Best Management Practices are water pollution control practices.

Construction phase: Construction phases are

(1) Highway Construction including work activities for building roads and structures,

(2) Plant Establishment including maintenance on vegetation installed for final stabilization, and

(3) Suspension where work activities are suspended and areas are inactive.

Preparation Manual: The Department's "STORM WATER POLLUTION PREVENTION PLAN AND WATER POLLUTION CONTROL PROGRAM PREPARATION MANUAL."

NPDES: National Pollutant Discharge Elimination System

RWQCB: Regional Water Quality Control Board

SWPPP: Storm Water Pollution Prevention Plan

SWRCB: State Water Resources Control Board

Water Pollution Control Manager: The Water Pollution Control Manager implements water pollution control work described in the WPCP and oversees revisions and amendments to the WPCP.

WPCP: Water Pollution Control Program

Submittals

Within 10 calendar days, not including Saturdays, Sundays, and legal holidays, of receipt of the executed contract, start the following process for WPCP acceptance:

1. Submit 2 copies of the WPCP and allow 5 days for the Engineer's review. If revisions are required, the Engineer provides comments and specifies the date that the review stopped.
2. Change and resubmit the WPCP within 5 days of receipt of the Engineer's comments. The Engineer's review resumes when the complete WPCP is resubmitted.
3. When the Engineer accepts the WPCP, submit an electronic and 3 printed copies of the accepted WPCP.

Submit:

1. Stormwater training records including training dates and subject for employees and subcontractors. Include dates and subject for ongoing training, including tailgate meetings.
2. Employee training records:
   - 2.1. Within 5 days of WPCP acceptance for existing employees
   - 2.2. Within 5 days of training for new employees
   - 2.3. At least 5 days before subcontractors start work for subcontractor's employees

Submit as required:1. BMP Status Report

2. Inspection Reports

At least 5 days before operating any construction support facility:

1. Submit a plan showing the location and quantity of water pollution control practices associated with the construction support facility
2. If you will be operating a batch plant or a crushing plant under the General Industrial Permit, submit a copy of the NOI approved by the RWQCB and the WPCP approved by the RWQCB.

Quality Control and Assurance:

Training
Provide storm water training for:

1. Project managers
2. Supervisory personnel
3. Employees involved with water pollution control work

Train all employees, including subcontractor's employees, in the following subjects:

1. Water pollution control rules and regulations
2. Implementation and maintenance for:
   - 2.1. Temporary Soil Stabilization
   - 2.2. Temporary Sediment Control
   - 2.3. Tracking Control
   - 2.4. Wind Erosion Control
   - 2.5. Material pollution prevention and control
   - 2.6. Waste management
   - 2.7. Non-storm water management
   - 2.8. Identifying and handling hazardous substances
   - 2.9. Potential dangers to humans and the environment from spills and leaks or exposure to toxic or hazardous substances

Employees must receive initial water pollution control training before working on the job.

Conduct weekly training meetings covering:

1. Water pollution control BMPs deficiencies and corrective actions
2. BMPs that are required for work activities during the week
3. Spill prevention and control
4. Material delivery, storage, use, and disposal
5. Waste management
6. Non-storm water management procedures

You may obtain copies of the Preparation Manual from the Publication Distribution Unit. The mailing address for the Publication Distribution Unit is:

State of California
Department of Transportation
Publication Distribution Unit
1900 Royal Oaks Drive
Sacramento, California 95815
Telephone: (916) 445-3520

For the Preparation Manual and other water pollution control references, go to the Department's "Construction Storm Water and Water Pollution Control" web site at:

http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm

If you operate construction support facilities, protect storm water systems or receiving waters from the discharge of potential pollutants by using water pollution control practices.

Construction support facilities include:

1. Staging areas
2. Storage yards for equipment and materials
3. Mobile operations
4. Batch plants for PCC and HMA
5. Crushing plants for rock and aggregate
6. Other facilities installed for your convenience such as haul roads

If you operate a batch plant to manufacture PCC, HMA, or other material; or a crushing plant to produce rock or aggregate; obtain coverage under the General Industrial Permit. You must be covered under the General Industrial Permit for batch plants and crushing plants located:

1. Outside of the job site
2. Within the job site that serve one or more contracts

Discharges from manufacturing facilities such as batch plants must comply with the general waste discharge requirements for Order No. 97-03-DWQ, NPDES General Permit No. CAS000001, issued by the SWRCB for "Discharge of Stormwater Associated with Industrial Activities Excluding Construction Activities." The General Industrial Permit is available at:

http://www.waterboards.ca.gov/

Water Pollution Control Manager

The Contractor shall designate in writing a Water Pollution Control Manager (WPCM). The Contractor shall submit a statement of qualifications describing the training, work history, and expertise of the proposed WPCM. The WPCM must have at least one of the following qualifications:

1. Certified Erosion, Sediment and Storm Water Inspector (CESSWI)™ registered through Enviro Cert International, Inc.
2. Certified Inspector of Sediment and Erosion Control (CISEC) registered through CISEC, Inc.
3. Qualifications described in the Permit (Order No. 2009-009-DWQ, NPDES No. CAS000002) for a QSD.
4. Department approved storm water management training described in the Department's "Construction Storm Water and Water Pollution Control" web site

At the job site, the Water Pollution Control Manager must:

1. Be responsible for water pollution control work
2. Be the primary contact for water pollution control work
3. Oversee the maintenance of water pollution control practices
4. Oversee and enforce hazardous waste management practices
5. Have the authority to mobilize crews to make immediate repairs to water pollution control practices
6. Ensure that all employees have current water pollution control training
7. Implement the accepted WPCP and amend the WPCP when required

Water Pollution Control Manager must oversee:

1. Inspections of water pollution control practices identified in the WPCP

2. Inspections for visual monitoring

You may designate one manager to prepare the WPCP and a different manager to implement the plan. The WPCP preparer shall meet the training requirements for the WPCM.

10-1.15B Water Pollution Control Program:

The work includes preparing a WPCP, obtaining WPCP acceptance, amending the WPCP, and reporting on water pollution control practices at the job site. The WPCP must comply with the Preparation Manual. The WPCP is required by the provisions in Section 7-1.01G, "WATER POLLUTION," of the Standard Specifications, and these Special Provisions.

You may request, or the Engineer may order, changes to the water pollution control work. Changes may include addition of new water pollution control practices. Additional water pollution control work is change order work.

The WPCP must include water pollution control practices:

1. For storm water and non-stormwater from areas outside of the job site related to project work activities such as:
   1.1. Staging areas
   1.2. Storage yards
   1.3. Access roads
2. For activities or mobile operations related to contractor obtained NPDES permits
3. Construction support facilities

The WPCP must include a copy of permits obtained by the County such as Fish & Wildlife permits, US Army Corps of Engineers permits, RWQCB 401 Certifications, and RWQCB Waste Discharge Requirements for Aerially Deposited Lead Reuse.

WPCP Amendments
You must amend the WPCP when:

1. Changes in work activities could affect the discharge of pollutants
2. Water pollution control practices are added by change order work
3. Water pollution control practices are added by your discretion

If you amend the WPCP, follow the same process specified for WPCP acceptance.

Retain a printed copy of the accepted WPCP at the job site.

WPCP Schedule
The WPCP schedule must:

1. Describe when work activities will be performed that could cause the discharge of pollutants in storm water
2. Describe water pollution control practices associated with each construction phase
3. Identify soil stabilization and sediment control practices for disturbed soil areas

10-1.15C Implementation Requirements:

Monitor the National Weather Service Forecast Office on a daily basis. For forecasts, go to:

http://www.srh.noaa.gov/forecast

Whenever you or the Engineer identifies a deficiency in the implementation of the accepted WPCP:

1. Correct the deficiency immediately, unless the Engineer authorizes an agreed date for correction
2. Correct the deficiency before precipitation occurs

If you fail to correct the deficiency by the agreed date or before the onset of precipitation, the County may correct the deficiency and deduct the cost of correcting the deficiency from payment.

If you fail to comply with "WATER POLLUTION CONTROL" of these Special Provisions, the Engineer will order a suspension of work until the project complies with the requirements of "Water Pollution Control" of these Special Provisions.

The Contractor's responsibility for WPCP implementation shall continue throughout any temporary suspension of work ordered in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications.

Install water pollution control practices within 15 days or before predicted precipitation, whichever occurs first.

If actions for your convenience disturb one or more acres, you must pay all costs and be responsible for all delays associated with complying with Order No. 2009-0009-DWQ, NPDES General Permit No. CAS000002) issued by the SWRCB for "Storm Water Discharges Associated with Construction and Land Disturbance Activities." The General Permit is available at:

http://www.waterboards.ca.gov/

Inspection

The Water Pollution Control Manager must oversee inspections for water pollution control practices identified in the WPCP:

1. Before a forecasted storm
2. After precipitation that causes site runoff
3. At 24-hour intervals during extended precipitation
4. On a predetermined schedule, a minimum of once a week

The Water Pollution Control Manager must oversee daily inspections of:

1. Storage areas for hazardous materials and wastes
2. Hazardous waste disposal and transporting activities
3. Hazardous material delivery and storage activities
4. Water pollution control practices specified under "Construction Site Management" of these Special Provisions

The Water Pollution Control Manager must use the Storm Water Site Inspection Report provided in the Preparation Manual.

The Water Pollution Control Manager must prepare BMP status reports that include the following:

1. Location and quantity of installed water pollution control practices
2. Location and quantity of disturbed soil for the active or inactive areas

Within 24 hours of finishing the weekly inspection, the Water Pollution Control Manager must submit:

1. Copy of the completed site inspection report
2. Copy of the BMP status report

Reporting Requirements
If the following occur, notify the Engineer within 6 hours:

1. You identify discharges into receiving waters or drainage systems causing or potentially causing pollution
2. The job receives a written notice or order from a regulatory agency

No later than 48 hours after the conclusion of a storm event resulting in a discharge, a non-stormwater discharge, or receiving the notice or order, submit:

1. Date, time, location, and nature of the activity, type of discharge and quantity, and the cause of the notice or order
2. Water pollution control practices used before the discharge, or before receiving the notice or order
3. Description of water pollution control practices and corrective actions taken to manage the discharge or cause of the notice

10-1.15D Payment:

If you fail to comply with "Water Pollution Control Program" of these Special Provisions or fail to implement water pollution control practices during each estimate period, the County withholds 25 percent from progress payment.

Withholds for failure to perform water pollution control work are in addition to all other withholds provided for in the contract. The County returns performance-failure withholds in the progress payment following the correction for noncompliance.

Full compensation for “Water Pollution Control Program,” including furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in preparing, obtaining acceptance of, and amending the WPCP and inspecting water pollution control practices as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, shall be included in the contract price paid for the various items of work involved and no separate payment will be made therefor.

10-1.16 Maintaining Traffic

Attention is directed to the provisions of Sections 7-1.08, “Public Convenience,” 7-1.09, “Public Safety,” and 12, “Construction Area Traffic Control Devices,” of the Standard Specifications and these Special Provisions.

Public traffic shall be permitted to pass through construction at all times. At all other times a minimum of two 10-foot wide lanes reasonably smooth and satisfactory for the use of public traffic shall be provided and maintained irrespective of the state of construction. Adequate sight distance for vehicles exiting driveways shall be maintained. In addition, the Contractor shall backfill the excavated shoulder trench to match the edge of pavement on a 4:1 slope. The material shall be compacted in order to provide a temporary shoulder.

The Contractor shall conduct his/her operations in such a manner that access of abutting property owners along the county road is not obstructed. Care will be taken by the Contractor that materials, pared equipment or open trench within the county road right-of-way will not block driveways or other access means used by the adjacent property owners.

To accommodate excavation work, steel plate bridging may be necessary. Excavated areas within the roadway shall be covered with steel plate bridging or shall be backfilled and temporary patched at the end of each work day and prior to opening for traffic.

At the conclusion of each work day, all paved-travelled-way surfaces shall be restored to all-weather, traversable condition. There shall not be a drop-off traveled way greater than 0.15 feet. "Low Shoulder" signs shall be placed along the traveled way where there is any drop-off. Such temporary patching or other field approved surfacing shall be kept in a smooth, firm, dust-free condition for the safe us of the public.

Drop-offs greater than 0.15' will require either:

a) Backfilling the drop-off to a minimum of 4:1 slope;
b) Providing appropriate steel plates over excavation;
c) Providing temporary concrete railing along the work zone in conformance with the State Standard Plans and Specifications.

Trench line within the paved area of El Camino Real and paved roadway area, including paved shoulders, shall be covered with recessed non-skid steel plates at the end of each working day. Where the alignment falls within the shoulder, the patch shall include the whole shoulder; no seams within the shoulder/bike lane. No loose gravel shall be allowed in the traveled way or paved shoulder. The maximum length of open trench is three hundred (300) feet at any one time. The maximum length of incomplete or partially restored trench is six hundred (600) feet at any one time.

<u>Steel Plate Bridging</u>

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

a. Steel plates used for bridging must extend a minimum of 12" beyond the edges of the trench.
b. Steel plate bridging shall be installed to operate with minimum noise.
c. The trench shall be adequately shored to support the bridging and traffic loads.
d. Temporary paving with cold mix asphalt concrete shall be used to feather the edges of the plates at the end of each day prior to permitting traffic to drive over the plated trenches.
e. Bridging shall be secured against displacement by using adjustable cleats, shims, or other devices.

f. Approach plate(s) and ending plate (if longitudinal placement) shall be attached to the roadway by a minimum of 2 dowels pre-drilled into the corners of the plane and drilled 2" into the pavement. Subsequent plates are butted to each other. Fine graded asphalt concrete shall be compacted to form ramps, maximum slope 8.5% with a minimum 12" taper to cover all edges of the steel plates. When steel plates are removed, the dowel holes in the pavement shall be backfilled with either graded fines of asphalt concrete mix, concrete slurry or equivalent slurry that is satisfactory to the Caltrans' representative.

g. The Contractor shall maintain the steel plates, shoring, asphalt concrete ramps, and ensure that they meet minimum specifications.

h. Unless specifically noted in the Special Provisions, or approved by the Engineer, use of steel plate bridging shall not exceed 4 consecutive working days in any given week.

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

Trench Width	Minimum Steel Plate Thickness (inches)
10"	½
1'-11"	¾
2'-7"	7/8
3'-5"	1
5'-3"	1-1/4

Note: For spans greater than 5'-3", a structural design by a registered civil engineer shall be prepared and submitted to the Engineer for review and approval.

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

All steel plates used in the traveled portion of the highway shall have a surface that was manufactured with a nominal coefficient of friction (COF) of 0.35 as determined by California Test Method 342.

A Rough Road sign (W8-8) with black lettering on an orange background and Steel Plate Ahead sign (W8-24) shall be used in advance of steel plate bridging. This sign is used along with any other required construction signing.

Where bike lanes are impacted, traffic control shall also include a W20-5 (BIKE LANE CLOSED) and a W11-1 and W16-1 combination (SHARE THE ROAD) signs in the affected direction. Unless authorized by the Engineer, temporary traffic control devices shall be placed outside the paved surfaces. Bike lanes must be reopened at the end of each work day.

Full compensation for furnishing labor, materials, tools, equipment, and incidentals, and for doing the work involved in Maintaining Traffic as specified herein shall be considered as included in the contract price paid for the various items of work involved and no additional compensation will be allowed therefor.

10-1.17 Traffic Control System

A traffic control system shall consist of closing traffic lanes in accordance with the details shown on the plans and to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these Special Provisions.

The Contractor shall prepare, submit and acquire approval for Traffic Control Plans (TCP) to the Engineer. TCPs shall show all proposed street closures, detours, lists of signing, delineation of striping, description of construction activity, and schedule of various phases. All TCPs shall be prepared in accordance with the Caltrans Traffic Manual and the Manual of Uniform Traffic Control Devices.

The provisions in this section will not relieve the Contractor from the responsibility to provide such additional devices or take such measures as may be necessary to comply with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications.

Two-way or one-way traffic shall be controlled through the project in accordance with the plans, Caltrans Standard Plans, and these Special Provisions. The Contractor shall utilize flaggers for one-way traffic.

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

When lane closures are made for work periods only, all components of the traffic control system, except portable delineators placed along open trenches or excavations adjacent to the traveled way, shall be removed from the traveled way, shoulder and auxiliary lanes at the end of each work period. If the Contractor so elects, the components of the traffic control system may be stored at selected central locations, approved by the Engineer, within the limits of the highway right of way.

Upon completion of the work requiring lane closure, all components of the traffic control system shall be removed from the site of work by the Contractor.

The contract lump sum price paid for, "**TRAFFIC CONTROL SYSTEM**," shall include full compensation for furnishing all labor, (except for flagging costs for the lane closures on two-lane highways), materials (including signs), tools equipment and incidentals, traffic control plans, and for doing all the work involved in placing, removing, storing, maintaining, moving to new locations, replacing, and the disposing of the components of the traffic control system as shown on the plans or as specified in the Standard Specifications and these Special Provisions and no additional compensation will be allowed therefor.

Flagging costs for lane closures on two-lane highways will be paid for as provided in Section 12-2.02, "Flagging Costs," of the Standard Specifications. Supplemental traffic control ordered by the Engineer in accordance with Section 7-1.09, "Public Convenience," of the Standard Specifications will be paid for as provided in Section 4-1.03D "Extra Work," of the Standard Specifications.

Full compensation for furnishing and operating a pilot car (including driver, radio communications and any other equipment and labor required) shall be considered as included in the contract lump sum price paid for, "**TRAFFIC CONTROL SYSTEM**," and no

additional compensation will be allowed therefor.

The adjustment provisions in Section 4-1.03, “Changes,” of the Standard Specifications shall not apply to the item of, “Traffic Control System,” or the supplemental work item for flagging and supplemental traffic control. Adjustments in compensation for, “Traffic Control System” will be made only for increased or decreased traffic control system components required by changes ordered by the Engineer and will be made on the basis of the cost of the increased or decreased component necessary. Such adjustment will be made on a force account basis as provided in Section 9-1.03, “Force Account Payment,” of the Standard Specifications for increased work, and estimated on the same basis in the case of decreased work.

Any traffic control system that is required by work which is classed as extra work, as provided in Section 4-1.03D, “Extra Work,” of the Standard Specifications, will be paid for as part of the supplemental work item for flagging and supplemental traffic control.

10-1.18 Abandon or Remove Waterline

This work consists of the Contractor providing all the labor, materials, tools, equipment and incidentals required for abandoning and removing sections of existing water main in order to connect the proposed pipe to the existing system as shown on the plans and specified in these specifications.

In the specific instance of making piping connections to existing asbestos cement pipe, the Contractor shall disconnect, at the nearest joints, the length of asbestos cement pipe to be connected into. The new pipe making the tie-in will replace this length of existing asbestos cement pipe.

When asbestos materials are encountered during any work, the Contractor shall promptly notify the Engineer in writing. A Contractor registered by Cal/OSHA and certified by the State Contractors Licensing Board for asbestos removal shall perform removal of existing asbestos material. Copies of the certification shall be submitted to the Engineer prior to the commencement of any asbestos removal activities. The Contractor or subcontractor shall comply with all State and Federal laws regarding handling and removal of asbestos materials. The Contractor shall be responsible for the proper removal and disposal of all asbestos material.

Full compensation for conforming to these requirements shall be considered as included in the prices paid for the various items of work and no additional compensation will be allowed therefor.

10-1.19 Construction Area Signs

Attention is directed to the provisions of Section 12, “Construction Area Traffic Control Devices,” of the Standard Specifications, the USDA Rural Development Supplemental Provisions, requirements of the Grant Agreement between the State of California (Department of Water Resources) and the San Luis Obispo County Flood Control & Water Conservation District, Proposition 84 Integrated Regional Water Management (IRWM) 2014 Drought Grant California Public Resources Code §75026 et seq., these Special Provisions, and as directed by the Engineer.

The Contractor shall furnish all sign panels, posts and hardware. The Contractor shall also erect and maintain all construction area signs shown on the Plans and/or as provided in these Special Provisions. The Contractor is responsible for having any underground utilities

marked where sign posts will be placed. Construction area signs shall not be used until they are needed and when no longer need, they shall be removed from the site of the work by the Contractor.

The base material of construction area signs shall not be plywood. Used sign panels, in good repair as determined by the Engineer, may be furnished. If determined by the Engineer, signs damaged by any cause shall be repaired or replaced by the Contractor at the Contractor's own expense.

The Contractor shall provide and install a sign measuring 4'x8' made of ¾" exterior grade plywood in a format approved by the State of California, Department of Water Resources and generally adhering to the attached detail on page 10-1(52).

The Contractor shall provide and install a Project Sign per USDA Rural Development specifications. The sign's specifications can be obtained at http://www.rurdev.usda.gov/SupportDocuments/UWP-eng-USDAConstSignLandscape.pdf.

The Contractor will place a project sign at a location designed at the Engineer. This sign measuring 4'x8', will be made of ¾" exterior grade plywood and adhere to the format and details given on the website. If the project sign is to be combined with any other required project sign, then USDA approval must be obtained through the Engineer. A professional sign maker will prepare the sign.

"**CONSTRUCTION AREA SIGNS**" will be paid for on a lump sum basis in the manner specified in Section 12-4.01 of the Standard Specifications.

10-1.20 Clearing and Grubbing

Clearing and grubbing shall conform to the provisions in Section 16, "Clearing and Grubbing," of the Standard Specifications and these Special Provisions.

All existing vegetation, outside the areas to be cleared and grubbed, shall be protected from injury or damage resulting from the Contractor's activities.

Any trees and/or branches to be removed necessary for construction shall be verified by the Contractor in coordination with the Engineer prior to removal.

Full compensation for removing and disposing all vegetation, including trees and/or stumps, which will be affected by the construction activities, and in accordance with the Standard Specifications, shall be considered as included in the contract price paid for the various items of work involved and no additional compensation will be allowed therefor.

10-1.21 Remove Asphalt Concrete Pavement

In accordance with the Plans, the existing asphalt concrete surfacing to be removed shall be saw cut along the fog line of El Camino Real in accordance with Drawings R-3 and R-3a of the 2014 San Luis Obispo County Public Improvement Standards. The existing surfacing within the trench cut shall be broken up and removed. Trench repair shall include a 12" minimum T-section as shown on Drawings R-3 and R-3a. The saw cut shall be a neat vertical cut no less than 0.2-feet in depth. Care is to be taken to protect the surfacing that is to remain in place.

The asphalt concrete material removed shall be considered as excess material and disposed of in accordance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Full compensation for removing and disposing of asphalt concrete pavement shall be considered as included in the contract prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

10-1.22 Earthwork

Earthwork shall conform to the provisions in Section 19, "Earthwork," of the Standard Specifications and these Special Provisions. This section describes excavations, trenching, bedding and backfilling, and testing for compaction for the construction of the potable water pipelines, and other items as shown in the plans.

Excavation and Trenching

The trench shall be excavated to 6 inches below the bottom of the pipe. The excavations for valves and fittings shall be performed by hand and the bedding material shall be hand-shaped so that the bottom segment of the pipe is firmly supported. It is the intention of these requirements to provide firm, uniform bearing for the pipe.

Limit the length of open trench in advance of the pipeline to the length of pipe that can be installed in one working day. All in-place pipeline segments shall be capped daily until buried to prevent the entry of animals or foreign materials.

If soft, spongy, unstable, or similar other material is encountered upon which the bedding material or pipe is to be placed, this unsuitable material shall be removed to a depth ordered by the Engineer and replaced with sand bedding material suitably densified, in accordance with Section 19-2.02 "Unsuitable Material" of the Standard Specifications. Additional excavation and bedding so ordered, over the above amount required by the Drawings or specifications, will be paid for as provided in Section 4-1.03D, "Extra Work" of the Standard Specifications.

The surplus excavated material shall be disposed of by the Contractor outside the highway right of way in accordance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Full compensation for excavation shall be considered as included in the contract prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

Bracing Excavation

The Contractor's attention is directed to "Trench Safety" of these Technical Specifications. Adequate shoring, as required by the Division of Occupational Safety and Health of the State Department of Industrial Relations (CAL/OSHA), to protect

personnel, adjacent property and roadway area shall be installed through unstable material to limit the trench width to the amount specified herein. If any damage does result from such improvements, the Contractor at his/her own expense shall make the necessary repairs or reconstruction required and as directed by the Engineer.

The sheeting, shoring and bracing shall be so arranged as not to place any stress on portions of the completed work until the general construction thereof has proceeded far enough to provide ample strength. Any damage to structures occurring through settlements, water or earth pressures, slides, caves or other causes due to failure or lack of sheeting or bracing or improper bracing, or through negligence or fault of the Contractor in any other manner shall be repaired by the Contractor at his/her own expense.

Care shall be exercised in the drawing or removing of sheeting, shoring, bracing and timbering to prevent the caving or collapsing of the excavation faces which are being supported.

Steel Plating Trenches

The Contractor's attention is directed to "Maintaining Traffic" of these Technical Specifications regarding steel plating. No trenches will be allowed to be open during non-work hours. All trenches and other excavated areas within the roadway shall be covered with steel plate bridging at the end of each work day and prior to opening for traffic.

Full compensation for steel plating trenches shall be considered as included in the contract prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

Sand Bedding and Material Placement

Bedding and structural backfill shall be compacted in accordance with San Luis Obispo County Standard Dwg. No. U-4 and U-4a. Bedding material shall be sand passing a No. 4 sieve with not more than 15% passing a No. 200 sieve, be non-plastic with a minimum sand equivalent of 20, and be approved by the Engineer. Imported sand bedding shall be used for the full length of the new pipeline. Structural backfill material gradation shall be as shown in Drawing U-4.

After the pipe has been bedded on the sand bedding material, bedding of the same material shall be placed on the sides and to a minimum of twelve (12) inches above the pipe. The bedding material shall be filled to the top of the pipe and then compacted around the pipe prior to placing the next layer of material. Water consolidation by flooding or jetting will not be permitted except by written permission of the Engineer. Hand tamping may be supplemented by the use of vibratory or other compaction equipment, provided that the equipment used is approved by the Engineer and does not strike, move or damage the pipe or other improvements while in the process of compacting.

Subsequent Backfilling

The minimum cover over the pipe shall be thirty-six (36) inches unless approved otherwise by the Engineer. Shallow trench construction, if approved by the Engineer, shall conform to the 2014 San Luis Obispo County Public Improvement Standards, Drawing U-4b. All trenches shall be backfilled for the full width of the trench, including joints, after pipe, fittings, appurtenances and bedding material have been installed, and before the required pressure and leakage tests are performed.

Subject to the provisions specified herein, the material obtained from project excavations may be used as backfill, provided that all organic material, rubbish, debris, and other objectionable material are first removed. However, broken Portland cement concrete and bituminous type pavement obtained from the project excavations will be permitted in the backfill, subject to the same limitations as rocks.

Rocks, broken Portland cement concrete and bituminous type pavement greater than 4" in any dimension obtained from project excavations shall not be included in any backfill, and shall be considered "unsuitable material" and disposed of off the project site. Rocks greater than 2 inches in any dimension will not be permitted in backfill placed within 1 foot above the top of any pipe or 1 foot below pavement subgrade. Where rocks are included in the backfill, they shall be mixed with suitable excavated materials so as to eliminate voids.

Compaction requirements shall conform to the "COMPACTION TESTING" specifications described below. After the placing of backfill has been started, the Contractor shall proceed as soon as practicable with densification.

Full compensation for bedding and backfilling, including sawcutting, excavation, sand bedding and subsequent backfill, and removal and disposal of unsuitable material, shall be considered as included in the contract prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

Compaction Testing

Compaction testing shall be performed in accordance with the County of San Luis Obispo Standard Drawing No. U-4 and U-4a. The County will pay for the initial cost of all compaction tests. If the backfill compaction fails to meet the relative density requirements set forth herein, the Contractor shall pay for subsequent compaction tests at the rate of $25.00 per individual test. The Contractor shall make all necessary excavations for compaction tests, as directed by the Engineer, and shall refill and recompact these excavations to the densities specified herein.

10-1.23 Erosion Control (Hydroseed)

GENERAL

Summary

This work includes removing and disposing of weeds and applying erosion control materials including seed, fiber, commercial fertilizer, organic fertilizer, straw, tackifier to erosion control (hydroseed) areas shown on the plans, and as directed by the Engineer.

Comply with Section 20-3, "Erosion Control," of the Standard Specifications.

If notified by the Engineer that an area is ready to receive erosion control materials, start erosion control (hydroseed) work within 5 business days of the Engineer's notification to perform the work.

The Engineer will designate the ground location of all erosion control (hydroseed) areas in increments of one acre or smaller by directing the placing of stakes or other suitable markers. Furnish all tools, labor, materials, and transportation required to adequately mark the various erosion control (hydroseed) locations.

MATERIALS

The erosion control materials shall be mixed and applied in the following approximate proportions:

Material	**Per Acre (slope measurement)**
Seed	36 pounds
Fiber	1,500 pounds
Commercial Fertilizer	400 pounds
Water	As needed for application
Stabilizing emulsion	As recommended by manufacturer

Seed

Seed not required to be labeled under the California Food and Agricultural Code must be tested for purity and germination by a seed laboratory certified by the Association of Official Seed Analysts or by a seed technologist certified by the Society of Commercial Seed Technologists. Measure and mix individual seed species in the presence of the Engineer.

Seed must contain at most 1.0 percent total weed seed by weight.

Deliver seed to the job site in unopened separate containers with the seed tag attached. Containers without a seed tag attached are not accepted. The Engineer takes a sample of approximately one ounce or 0.25 cup of seed for each seed lot greater than 2 pounds.

Seed must comply with the following:

botanical name (Common Name)	**Percentage (minimum) purity**	**Percentage (minimum) Germination**	**Pounds Per Acre**
Bromos carinatus (Cucamonga Brome)	95	80	20
Trifolium tridentatum (Tomcat Clover)	90	60	4
Vulpia microstachys (Small Fescue)	98	85	8

Fiber must be:

1. Free from lead paint, printing ink, varnish, petroleum products, seed germination inhibitors, or chlorine bleach
2. Free from synthetic or plastic materials
3. At most 7 percent ash

Wood fiber must be:

1. Long strand, whole wood fibers, thermo-mechanically processed from clean, whole wood chips

2. Not made from sawdust, cardboard, paper, or paper byproducts
3. At least 25 percent of fibers 3/8 inch long
4. At least 40 percent held on a No. 25 sieve
   Cellulose fiber must be made from natural or recycled pulp fiber, such as wood chips, sawdust, newsprint, chipboard, corrugated cardboard, or a combination of these materials.

Alternate fiber must be:
1. Long strand, whole natural fibers made from clean straw, cotton, corn, or other natural feed stock
2. At least 25 percent of fibers 3/8 inch long
3. At least 40 percent held on a No. 25 sieve

Commercial Fertilizer
Commercial fertilizer must have a guaranteed chemical analysis within 10 percent of __ percent nitrogen, __ percent phosphoric acid and __ percent water soluble potash.

Tackifier

Tackifier must be one of the following:
1. Guar (plant based)
2. Psyllium (plant based)
3. Starch (plant based)
4. Polymeric emulsion blend

Tackifier must comply with the following:

1. Nonflammable
2. Nontoxic to aquatic organisms
3. Free from growth or germination inhibiting factors
4. Either a plant-based product or a polymeric-emulsion blend

Tackifier classified as a plant-based product must be:

1. Natural high molecular weight polysaccharide
2. High viscosity hydrocolloid that is miscible in water
3. Functional for at least 180 days
4. Labeled as either guar, psyllium, or starch

Guar must be:

1. Gum-based product derived from the ground endosperm of the guar plant, cyanmopsis tetragonolobus
2. Treated with dispersant agents for easy mixing
3. Able to be diluted at the rate of 1 to 5 pounds per 100 gallons of water

Psyllium must be:
1. Made of the finely ground muciloid coating of plantago ovata or plantago ispaghula seeds
2. Able to dry and form a firm but rewettable membrane

Starch must be nonionic, water-soluble granular material derived from corn, potato, or other plant-based source.

Tackifier classified as polymeric emulsion blend must be:

1. Liquid or dry powder formulation
2. Anionic with a residual monomer content that is at most 0.05 percent by weight
3. Functional for at least 180 days
4. Prepackaged product labeled as containing one of the following as the primary active ingredient of the polymeric emulsion blend:
   4.1. Acrylic copolymers and polymers
   4.2. Polymers of methacrylates and acrylates
   4.3. Copolymers of sodium acrylates and acrylamides
   4.4. Polyacrylamide (PAM) and copolymer of acrylamide
   4.5. Hydrocolloid polymers

MEASUREMENT AND PAYMENT

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in Erosion Control (hydroseed) complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, shall be considered as included in the contract prices for various contract items of work involved and no additional compensation will be allowed therefor.

10-1.24 Decomposed Granite

Decomposed Granite shall conform to the 2014 San Luis Obispo County Public Improvement Standards, the Standard Specifications, these Special Provisions, and as shown on the plans.

The contract cubic yard price paid for "**DECOMPOSED GRANITE**," shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing decomposed granite, complete in place, including, installation of decomposed granite, compaction, cleanup, and all appurtenant work and materials as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.25 Class II Aggregate Base

Class II Aggregate Base shall conform to the provisions in Section 26, "Aggregate Base," of the Standard Specifications, these Special Provisions and as shown on the plans.

A minimum of 6" of Class II Aggregate Base or matching existing thickness, whichever is greater, shall be placed under all asphalt concrete pavement.

The contract cubic yard price paid for "**CLASS II AGGREGATE BASE**," shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing Class II Aggregate Base, complete in place, including installation, compaction, cleanup, and all appurtenant work and materials as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.26 Hot Mix Asphalt (HMA)

Hot Mix Asphalt (HMA) concrete pavement shall have a structural road repair section conforming to the 2014 San Luis Obispo County Standards Drawing R-3 and R-3a. Trench repair shall include a 12" T-section as shown on Drawing R-3 and R-3a.

HMA concrete pavement shall be Type A using the Method process and shall conform to the provisions in Section 39, “Hot Mix Asphalt,” of the Standard Specifications and these Special Provisions and as shown on the plans.

The aggregate for HMA Type A shall comply with the ½ inch maximum grading.

The grade of asphalt binder to be mixed with aggregate for HMA Type A shall be Performance Grade PG 64-10 and shall conform to the provisions in Section 92, “Asphalt,” of the Standard Specifications.

Smoothness: The first paragraph 39-1.12A is changed to read: “Determine HMA smoothness with a straightedge. Section 30-1.12C “Profilograph,” of the Standard Specifications shall not apply. The fourth paragraph of Section 39-1.12D, “Smoothness Correction,” is hereby modified to read: “After grinding, measure the ground HMA pavement surface with a 12-foot straightedge until the pavement is within specified tolerances. If straight edged pavement cannot be ground to within specified tolerances, remove and replace the pavement.”

A tack coat of emulsified asphalt shall be applied to all exposed sawcut surfaces. The area shall be filled with fresh hot asphaltic concrete mix in lifts of the same depths as the adjacent area, and then compacted by rolling to the specified surface density and smoothness.

The contract tonnage price paid for “**HOT MIX ASPHALT**,” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing Hot Mix Asphalt, complete in place, including installation, compaction, cleanup, and all appurtenant work and materials as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.27 Roadside Sign (One Post)

Roadside Signs shall conform to the provisions in Section 56-4, “Roadside Signs,” of the Standard Specifications, these Special Provisions and as shown on the plans.

Full compensation for furnishing labor, materials, tools, equipment, and incidentals, and for doing the work involved in “Roadside Sign (One Post),” as specified herein shall be considered as included in the contract price paid for the various items of work involved and no additional compensation will be allowed therefor

10-1.28 Traffic Stripes and Pavement Markings

Removal of existing traffic stripes and pavement markings shall conform to the provisions in Section 15-2, “Miscellaneous Highway Facilities,” of the Standard Specifications, these Special Provisions and as shown on the plans.

Traffic Stripes shall conform to the provisions in Section 84-1, “Traffic Stripes and Pavement Markings – General,” of the Standard Specifications, these Special Provisions and as shown on the plans.

Full compensation for furnishing labor, materials, tools, equipment, and incidentals, for doing the work involved in “Traffic Stripes and Pavement Markings,” as specified herein shall be considered as included in the contract price paid for the various items of work involved and no additional compensation will be allowed therefor

10-1.29 PVC C900 Water Main (4" and 8" Diameter)

PVC C900 Water Main shall conform to the San Luis Obispo County, 2014 Public Improvement Standards, Section 6.2 – Construction Specifications, the San Luis Obispo County, 2014 Standard Construction Drawings, the Standard Specifications, these Special Provisions and as shown on the plans.

The individual contract linear foot price paid for "**8-INCH PVC C900 WATER MAIN**" and "**4-INCH PVC C900 WATER MAIN**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the water main, complete in place, including potholing, sawcutting, trenching, excavation, groundwater dewatering, shoring and bracing, safety, connection to existing facilities, pipe, fittings, tees, wyes, elbows, valves, piping lining and coating, concrete thrust blocks, restraints, tracer wire, marking tape, bedding, backfill, compaction, pavement restoration, striping and signage restoration, flushing, testing and disinfection, cleanup, and all appurtenant work and materials as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.30 8-inch Tee and Resilient Wedge Gate Valve Assembly

8-inch tee and resilient wedge gate valve assembly shall conform to the San Luis Obispo County, 2014 Public Improvement Standards, Section 6.2 – Construction Specifications, the San Luis Obispo County, 2014 Standard Construction Drawings, the Standard Specifications, these Special Provisions and as shown on the plans.

The contract lump sum price paid for "**8-INCH TEE AND RESILIENT WEDGE GATE VALVE ASSEMBLY**," at approximate Station 46+80.87 as shown on the Sheet 17, Detail 1 of the Plans, shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the 8-inch tee and resilient wedge gate valve assemblies, complete in place, including, but not limited to, potholing, sawcutting, trenching, excavation, groundwater dewatering, shoring and bracing, safety, connection to existing facilities, pipe, fittings, tees, wyes, elbows, valves piping lining and coating, concrete thrust blocks, restraints, tracer wire, marking tape, bedding, backfill, compaction, pavement restoration, striping and signage restoration, flushing, testing and disinfection, cleanup, and all appurtenant work and materials as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.31 AMWC Water Main Extension and Hydrant Lateral

AMWC Water Main Extension and Hydrant Lateral shall conform to the San Luis Obispo County, 2014 Public Improvement Standards, Section 6.2 – Construction Specifications, the San Luis Obispo County, 2014 Standard Construction Drawings, the Standard Specifications, these Special Provisions and as shown on the plans.

The contract lump sum price paid for "**AMWC WATER MAIN EXTENSION AND HYDRANT LATERAL**," as shown on Sheet 15 of the Plans shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the AMWC Water Main Extension and Hydrant Lateral, complete in place, including, but not limited to, potholing, sawcutting, trenching, excavation, groundwater dewatering, shoring and bracing, safety, connection to existing facilities, pipe, fittings, reducers, tees, wyes, elbows, valves, blind flanges, transition

couplings, fire hydrant assembly, meter and monitoring device, backflow preventer, piping lining and coating, concrete thrust blocks, restraints, tracer wire, marking tape, plastic wrap, bedding, backfill, compaction, pavement restoration, striping and signage restoration, flushing, testing and disinfection, cleanup, and all appurtenant work and materials as shown per Detail 1 – AMWC Waterline Extension Detail and Section A – AMWC Hydrant Lateral Section on Sheet 15 of the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.32 AMWC Waterline Connection

AMWC Waterline Connection (Station 9+50.86 – 9+63.90) shall conform to the San Luis Obispo County, 2014 Public Improvement Standards, Section 6.2 – Construction Specifications, the San Luis Obispo County, 2014 Standard Construction Drawings, the Standard Specifications, these Special Provisions and as shown on the plans.

The contract lump sum price paid for "**AMWC WATERLINE CONNECTION**," as shown on Sheet 16 of the Plans shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the AMWC Waterline Connection, complete in place, including, but not limited to, potholing, sawcutting, trenching, excavation, groundwater dewatering, shoring and bracing, safety, connection to existing facilities, pipe, fittings, reducers, tees, wyes, elbows, valves, blind flanges, transition couplings, fire hydrant assembly, backflow preventer, piping lining and coating, concrete thrust blocks, restraints, tracer wire, marking tape, plastic wrap, bedding, backfill, compaction, striping and signage restoration, flushing, testing and disinfection, cleanup, and all appurtenant work and materials as shown per Section B – AMWC Connection Section on Sheet 16 of the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.33 Garden Farms CWD Waterline Connection

The Garden Farms CWD Waterline Connection shall conform to the San Luis Obispo County, 2014 Public Improvement Standards, Section 6.2 – Construction Specifications, the San Luis Obispo County, 2014 Standard Construction Drawings, the Standard Specifications, these Special Provisions and as shown on the plans.

The contract lump sum price paid for "**GARDEN FARMS CWD WATERLINE CONNECTION**," as shown on Sheet 17 of the Plans shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the Garden Farms Connection, complete in place, including, but not limited to, potholing, sawcutting, trenching, excavation, groundwater dewatering, shoring and bracing, safety, connection to existing facilities, pipe, fittings, reducers, tees, wyes, elbows, valves, blind flanges, transition couplings, meter and monitoring device, backflow preventer, pressure reducing valve, piping lining and coating, concrete thrust blocks, restraints, tracer wire, marking tape, plastic wrap, bedding, backfill, compaction, concrete enclosure and lid, striping and signage restoration, flushing, testing and disinfection, cleanup, and all appurtenant work and materials as shown per Detail 2 – Garden Farms Connection Detail and Detail 3 – Garden Farms Point of Connection Detail on Sheet 17 of the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.34 CSA 23 Waterline Connection

CSA 23 Waterline Connection shall conform to the San Luis Obispo County, 2014 Public Improvement Standards, Section 6.2 – Construction Specifications, the San Luis Obispo County, 2014 Standard Construction Drawings, the Standard Specifications, these Special Provisions and as shown on the plans.

The contract lump sum price paid for "**CSA 23 WATERLINE CONNECTION**," as shown on Sheet 18 of the Plans shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the CSA Connection, complete in place, including, but not limited to, potholing, sawcutting, trenching, excavation, groundwater dewatering, shoring and bracing, safety, connection to existing facilities, pipe, fittings, reducers, tees, wyes, elbows, valves, blind flanges, transition couplings, meter and monitoring device, backflow preventer, pressure reducing valve, piping lining and coating, concrete thrust blocks, restraints, tracer wire, marking tape, plastic wrap, bedding, backfill, compaction, concrete enclosure and lid, pavement restoration, striping and signage restoration, flushing, testing and disinfection, cleanup, and all appurtenant work and materials as shown per Detail 4 – CSA 23 Connection Detail on Sheet 18 of the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.35 Pump

Pump shall conform to specifications in Section 10-2, Technical Specifications, under the section titled "SPECIFICATION FOR A HIGH PERFORMANCE VACUUM ASSISTED, FULLY AUTOMATIC, SOUND ATTENUATED PUMPSET, MOUNTED ON A DOT TRAILER to the Standard Specifications, these Special Provisions, and as shown on the plans.

The contract each price paid for "**PUMP**," shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the pump, complete in place, including potholing, sawcutting, trenching, excavation, groundwater dewatering, shoring and bracing, safety, connection to existing facilities, nuts and bolts, pipe, fittings, reducers, tees, wyes, elbows, valves, blind flanges, transition couplings, piping lining and coating, concrete thrust blocks, restraints, tracer wire, marking tape, plastic wrap, bedding, backfill, compaction, concrete enclosure, pavement restoration, striping and signage restoration, flushing, testing and disinfection, cleanup, and all appurtenant work and materials as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.36 Potable Water Hose and Accessories

The potable water hose and accessories shall be as described in Section 10-2, Technical Specifications, Section 15250, "Potable Water Hose and Accessories" and shall conform to these Special Provisions, and as shown on the plans. Final hose length to be approved by the Engineer as part of the product submittal.

The contract linear foot price paid for "**6-INCH DIAMETER POTABLE WATER HOSE**," shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in providing and installing the potable water hose and fittings, complete in place, including safety, pipe, fittings, flushing, testing and disinfection, cleanup, and all appurtenant work and materials as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.37 2-inch Combination ARV Assembly

2-inch Combination ARV Assembly shall conform to the San Luis Obispo County, 2014 Public Improvement Standards, Section 6.2 – Construction Specifications, the San Luis Obispo County, 2014 Standard Construction Drawings, the Standard Specifications, these Special Provisions and as shown on the plans.

The contract unit price paid for "**2-INCH COMBINATION ARV ASSEMBLY**," shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the combination air release valve assembly, complete in place, including potholing, sawcutting, trenching, excavation, groundwater dewatering, shoring and bracing, safety, connection to existing facilities, pipe, fittings, reducers, tees, wyes, elbows, valves, saddles, corporation stops, traffic rated meter box, fabricated lid and welding, barrel, anchor bolts, weld clips, steel brace, tracer wire, marking tape, plastic wrap, bedding, backfill, compaction, concrete collar, pavement restoration, striping and signage restoration, flushing, testing and disinfection, cleanup, and all appurtenant work and materials as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.38 Water Service Connection

Water Service Connection shall conform to the San Luis Obispo County, 2014 Public Improvement Standards, Section 6.2 – Construction Specifications, the San Luis Obispo County, 2014 Standard Construction Drawings, the Standard Specifications, these Special Provisions and as shown on the plans.

The contract unit price paid for "**WATER SERVICE CONNECTION**," shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the water service connection, complete in place, including potholing, sawcutting, trenching, excavation, groundwater dewatering, shoring and bracing, safety, connection to existing facilities, pipe, fittings, reducers, tees, wyes, elbows, valves, saddles, corporation stops, angle meter stop, traffic rated meter box, tracer wire, marking tape, plastic wrap, bedding, backfill, compaction, pavement restoration, striping and signage restoration, flushing, testing and disinfection, cleanup, and all appurtenant work and materials as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.39 Pumpout Assembly

Pumpout Assembly shall conform to the San Luis Obispo County, 2014 Public Improvement Standards, Section 6.2 – Construction Specifications, the San Luis Obispo County, 2014 Standard Construction Drawings, the Standard Specifications, these Special Provisions and as shown on the plans.

The contract unit price paid for "**PUMPOUT ASSEMBLY (INCLUDES BLIND FLANGE)**," shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the pumpout, complete in place, including potholing, sawcutting, trenching, excavation, groundwater dewatering, shoring and bracing, safety, connection to existing facilities, pipe, fittings, reducers, tees, wyes, elbows, valves, corporation stop, brass nipple, blind flange, traffic rated meter box, utility box, tracer wire, marking tape, plastic wrap, bedding, backfill, compaction, concrete collar, pavement restoration, striping and signage restoration, flushing, testing and disinfection, cleanup, and all appurtenant work and materials as shown on the plans, as

specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.40 Blowoff Assembly

Blowoff Assembly shall conform to the San Luis Obispo County, 2014 Public Improvement Standards, Section 6.2 – Construction Specifications, the San Luis Obispo County, 2014 Standard Construction Drawings, the Standard Specifications, these Special Provisions and as shown on the plans.

The contract unit price paid for "**BLOWOFF ASSEMBLY**," shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the blowoff assembly, complete in place, including potholing, sawcutting, trenching, excavation, groundwater dewatering, shoring and bracing, safety, connection to existing facilities, pipe, fittings, reducers, tees, wyes, elbows, valves, saddles, corporation stops, adapter, valve box with lid, nipple, cap, tracer wire, marking tape, plastic wrap, bedding, backfill, compaction, concrete collar, pavement restoration, striping and signage restoration, flushing, testing and disinfection, cleanup, and all appurtenant work and materials as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.41 Steel Casing (18')

Steel Casing shall conform to the San Luis Obispo County, 2014 Public Improvement Standards, Section 6.2 – Construction Specifications, the San Luis Obispo County, 2014 Standard Construction Drawings, the Standard Specifications, these Special Provisions and as shown on the plans.

The contract linear foot price paid for "**18-INCH STEEL CASING**," shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing the 18-inch Steel Casing, complete in place, including potholing, sawcutting, trenching, excavation, groundwater dewatering, shoring and bracing, safety, pipe, insulating spacers, end seals, bedding, backfill, compaction, pavement restoration, striping and signage restoration, flushing, testing and disinfection, cleanup, and all appurtenant work and materials as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.42 Ductile Iron Blind Flange (4", 6" & 8")

Ductile Iron Blind Flange shall conform to the San Luis Obispo County, 2014 Public Improvement Standards, Section 6.2 – Construction Specifications, the San Luis Obispo County, 2014 Standard Construction Drawings, the Standard Specifications, these Special Provisions and as shown on the plans.

The contract unit price paid for "**4-INCH D.I. BLIND FLANGE**," "**6-INCH D.I. BLIND FLANGE**," or "**8-INCH D.I. BLIND FLANGE**," shall include full compensation for furnishing all materials to the Engineer, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

10-1.43 Testing Pipelines

Pressure and leak tests shall be performed at the same time. Pressure testing against valves shall not be allowed. Separation may be achieved by the installation of a blind flange or "pancake" inserted between the new and existing piping per County Standard Drawing W-8. The Contractor shall give the Engineer a minimum of two (2) working days' notice prior to testing.

Pressure and Leak Testing: After the pipeline and valves has been laid, it shall be filled with water for a minimum of 24 hours and then subjected to a hydrostatic pressure test. Unless otherwise specified, the test pressure shall be 200 psi, or 50 psi greater than the rated pressure of the pipe (measured at the lowest elevation of the system), whichever is greater. The pressure test will be conducted after backfilling has been completed, but before placement of permanent paving. A test shall be conducted only after all backfilling has been completed, and at least 36 hours after the last concrete thrust block or reaction backing has been cast with high-early-strength concrete, or at least seven days after the last concrete thrust block or reaction backing has been cast with standard concrete. The duration of the test shall be two (2) hours unless otherwise directed by the Engineer. All pressure gauges shall be approved by the Engineer.

The pressure tests and leakage tests will be performed at the same time.

Pressure Testing Plan: Contractor shall submit a pressure testing plan, satisfactory to the Engineer, a minimum of 48 hours prior to the beginning of any pressure testing. Unless otherwise specified, the test pressure is measured at the lowest elevation of the system. The plan shall show location to be tested, sequence of testing, location of temporary components for testing, segments isolated, and other relevant testing information.

Procedure: Each section or pipeline shall be slowly filled with water, and the specified test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer. The pump, pipe connection(s) and all necessary apparatus except the water meter shall be furnished by the Contractor.

During the filling of the pipe and before the application of the specified test pressure, all air shall be expelled from the pipeline if necessary, by means of taps at points of highest elevation, and, after completion of the test, the taps shall be tightly plugged, unless otherwise specified. During the test, all exposed pipe, fittings, valves, hydrants, and PVC couplings shall be carefully examined. All cracked or defective elements shall be removed and replaced by the Contractor at his/her expense. The test shall then be repeated until the results are satisfactory to the Engineer.

Pressure testing against valves shall not be allowed.

Payment for pressure testing including furnishing all labor, materials, tools, equipment, incidentals and all work involved in pressure testing of the installed system, complete in place, including but not limited to, preparation of testing plan, testing appurtenances, services, and testing laterals as shown on the Plans, and as specified in these Technical Specifications, and as directed by the Engineer, shall be considered as included in the contract price paid for the various items of work require pressure testing, and no separate payment will be made therefor.

10-1.44 Disinfection, Flushing, Bacteriological Testing, Connection to Distribution and Documentation

The Contractor shall disinfect, dechlorinate (if necessary), drain, and properly dispose of heavily chlorinated water. The Contractor shall submit a disinfection plan to the Engineer for review and approval prior to beginning the disinfection procedure.

Bacteriological and physical samples will not be collected until pressure and leakage testing has been completed and approved by the Engineer.

The Contractor shall provide a minimum of 48 hours advance notice to the Engineer prior to the scheduled time sampling is requested.

County staff will collect samples and provide bacteriological and physical analysis. The cost of the initial sampling and analysis shall be paid by the County. In the event that follow-up analyses are required due to unacceptable test results, the Contractor will be liable for all costs associated with the follow-up sampling and analysis.

Direct connection to the existing water system shall not be permitted until the newly installed portion has passed bacteriological and physical testing. Maintain air gap per San Luis Obispo County 2014 Standard Drawing W-9 and per AWWA C651.

DISINFECTION

Disinfection shall be in accordance with the San Luis Obispo County Department of Public Works Procedural Memorandum O-3 (Revised 15 July 2002), included in these Technical Specifications. Chlorination will be accomplished using the continuous feed method. The section of pipeline to be chlorinated shall be filled entirely with water. Liquid Sodium hypochlorite solution conforming to ANS1/AWWA B300 standards shall be fed at or before the entry point in an amount sufficient enough to produce not less than 25 mg/L of free chlorine residual throughout the new pipeline and its appurtenances. The chlorinated water shall be retained in the main for a minimum of 24 hours. At the end of the 24 hour period, the chlorinated water in all portions of the main shall have a free chlorine residual of not less than 10 mg/L.

FLUSHING

Heavily chlorinated water shall be flushed from the main following the required minimum 24 hour contact time period. All main fittings, valves, and branches must be flushed. The chlorinated water shall be flushed until chlorine measurements show that the concentration of free chlorine in the exiting water is not higher than the water in the distribution system (typically 2.0 mg/L).

If the disposal of heavily chlorinated water will cause damage to the environment or a waterway, then enough of a neutralizing chemical shall be applied to the water to be discharged so that no free chlorine residual is detected. Approved neutralization techniques must be used in accordance with AWWA C6501-05, Appendix C.

Any discharge created from dechlorination, flushing, pumping, or dewatering shall be in accordance with the California Regional Water Quality Control Board NPDES Permit for Discharges with Low Threat to Water Quality, Receiving Water Limitations. Any discharge shall not cause the following limits to be exceeded in the receiving water.

TABLE 2: DISCHARGES WITH LOW THREAT TO WATER QUALITY, RECEIVING WATER LIMITATIONS

CONSTITUENT	MAXIMUM OR RANGE
Total Chlorine Residual	Must not be detected
pH	Between 7.0 and 8.3 at all times, and not changed more than 0.5 units
Temperature	Maximum increase of 5°F
Colour	Maximum increase of 15 colour units
Dissolved Oxygen	Not to be depressed below 5.0 mg/L
Where upstream water turbidity is…	The receiving water shall not be increased more than…
Less than 25 NTUs	5 NTUs
25 – 50 NTU	20%
50 – 100 NTU	10 NTUs
Greater than 100 NTU	10%

BACTERIOLOGICAL ANALYSIS

Bacteriological samples will be collected and analyzed by County staff following the SLO County Procedural Memorandum O-3. Bacteriological analysis on water in the new pipeline shall be done after flushing but before it is connected to the distribution system. Two consecutive sets of acceptable samples, taken at least 24 hours apart, shall be collected from the new pipeline. At least one set of samples shall be collected from every 1200 feet of the new pipeline, plus one set from the end of the line and at least one set from each branch. The results for total coliform and E. coli must be negative (no coliform present) and hetrotrophic plate counts must be less than 500 CFU/mL before connecting the new pipeline and releasing water for use by customers.

TABLE 3: BACTERIOLOGICAL ACCEPTANCE LIMITS

CONSTITUENT	ACCEPTANCE LIMIT
Total coliform/E. coli	<1 MPN / 100 mL
Heterotrophic Plate Count (HPC)	< 500 CFU / mL

If sample results indicate the presence of coliforms or an HPC > 500 CFU / mL, flushing shall be resumed and additional sets of coliform and HPC samples shall be collected until 2 sets (collected at least 24 hours apart), show the absence of coliforms and HPCs < 500 CFU / mL.

PHYSICAL ANALYSIS

Physical samples will be collected and analyzed by County staff. Sample location and frequency will be determined by County staff.

TABLE 4: PHYSICAL ACCEPTANCE LIMITS

CONSTITUENT	ACCEPTANCE LIMIT	MAXIMUM CONTAMINANT LIMIT
Odor	< 3 TON	3 TON
Turbidity	< 1 NTU	5 NTU
Colour	< 15 CU	15 NTU

SAMPLES

Samples shall be collected by the Contractor on working days (Monday through Friday) and shall arrive at the Lab no later than 3:00 PM (Monday – Thursday) and no later than 12:00 noon on Fridays. Results for coliform testing will be available within 24 hours. Other test results will be available with 48 hours.

NOTIFICATION PROCEDURE

Notification of analytical results shall be in accordance with the San Luis Obispo County Department of Public Works Procedural Memorandum O-3, Notification Procedure.

CONNECTION TO DISTRIBUTION SYSTEM

When all bacteriological and physical test results are satisfactory and approved by the Distribution Operator and the Engineer, the new pipeline may be connected to the distribution system and placed in service.

DROP IN PRESSURE

If at any time, the system pressure drops to less than five (5) psi, bacteriological samples shall be collected from water representative of the water quality in the affected portions of the system.

DOCUMENTATION

Accurate records shall be made by the Contractor to document the pipeline installation conditions and chlorine residual data. The records should include documentation of the date/time of any disinfection, flushing, sample collection, and/or connection to the distribution system. The records should identify who performed the work and who release the pipeline for service.

A record must be maintained of any discharged created. The record must document the volume of the discharge and location and description of the receiving area. Discharge records must include documentation of dechlorination and on-going confirmation that no total chlorine residual has been detected throughout the discharge event. In the event that the discharge enters surface water, analytical results of the NPDES Discharge Permit requirements must be documented.

PAYMENT

Full compensation for “Disinfection, Flushing, Bacteriological Testing, Connection to Distribution and Documentation”, including furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in disinfecting the installed system, complete in place, including but not limited to, preparation of disinfection plan, sample collection, dechlorination, flushing, disposal of dechlorinated water, and chlorine swabbing of connection fittings shall be considered as included in the contract items of work involved and no separate payment will be made therefor.

10-1.45 Operation and Maintenance Manuals

Operation and maintenance information shall be supplied for all equipment and as specified in Section 10-2 of these Special Provisions. In additions to any specific operations and maintenance manual requirements specified in Section 10-2, operation and maintenance manuals shall include the following:

a. List of equipment furnished for the project and serial numbers of equipment furnished.
b. Equipment function, normal operating characteristics, and limiting conditions.
c. Assembly, installation, alignment, adjustment, and checking instructions.
d. Operating instructions for startup, routine and normal operation, regulation and control, shutdown, and emergency conditions.
e. Lubrications and maintenance instructions.
f. Guide to troubleshooting.
g. Parts list and predicted life of parts subject to wear.
h. Outline, cross section, and assembly drawings; engineering data; wiring diagrams; and/or final shop drawings.
i. Test data and performance curves, where applicable.
j. Name and address of nearest vendor(s) for service and replacement parts purchase.
k. Copy of manufacturer's equipment guarantees and warrantees.

The operation and maintenance manuals shall be in addition to any instructions or parts lists packed with or attached to the equipment when delivered, or which may be required by Contractor.

Contractor shall provide a minimum of two hardcopies and one electronic copy of all operation and maintenance manuals to the Engineer within forty-five (45) days from the date of shipment of each type of equipment. All operation and maintenance manuals shall be reviewed and accepted by the Engineer prior to project acceptance.

Hardcopy operation and maintenance manuals shall be organized in exteriorly labeled three-ring binders with divider tabs and labels. Diagrams and drawings shall be reduced to 8-1/2"x11" or 11"x17" paper size. Each binder shall include a table of contents.

Electronic operation and maintenance manuals shall be delivered on a CDROM in Adobe Acrobat's Portable Document Format (PDF). The PDF file(s) shall be fully indexed using a table of contents with a bookmark created in the navigation frame for each major entry ("Section" or "Chapter"). Scanned images must be at a readable resolution.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract items of work involved and no separate payment will be made therefor.

10-1.46 Record Drawings and Specifications

The Contractor shall keep at the project site a copy of the drawings and specifications, including addenda and change orders, to which the Engineer shall have access at all times.

The Contractor shall maintain one (1) set of specifications and full size plans and mark thereon any deviation from plan dimensions, elevations, or orientations, and all changes from addenda, change orders, and clarifications. The Contractor shall submit the record drawings in good condition to the Engineer upon completion of Contract work as a

condition of acceptance of the work. Marked prints shall be updated at least weekly during construction operations and shall be available to the Engineer for review.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract items of work involved and no separate payment will be made therefor.

10-1.47 Startup and Testing

The Contractor is responsible for planning and organizing, scheduling, coordinating, performing and documenting Functional Testing and Startup Testing. Contractor shall furnish the services of the various manufacturers' field representatives to assist Contractor during installation, Functional Testing, and Startup Testing.

Contractor shall provide all lubricating oil, hydraulic oil, grease, packing, insulating, lubricating fluids and filters required to initially clean, blow out, flush, and initially charge equipment and systems.

Startup and Testing Plan:
The Contractor shall provide a Startup and Testing Plan to the Engineer at least 30 calendar days prior to scheduled commencement of Functional Testing to assure no delays. Contractor shall be responsible to coordinate with the equipment manufacturer representatives as necessary to provide this plan. The plan shall address all aspects of Functional Testing and Startup Testing of all equipment and systems; provide a schedule showing sequence and duration of testing activities; and acceptance criteria required to release equipment and systems for startup. Testing procedures shall be designed to duplicate, as nearly as possible, all conditions of operation and shall, at a minimum, include all testing and startup activities required in these Special Provisions.

The plan shall include signoff forms, to the satisfaction of the Engineer, for each item of mechanical, electrical, and instrumentation and controls equipment and/or systems provided or installed and shall contain provisions for recording equipment or system name, inspection dates, relevant testing parameters and performance data for original testing, space for problems remaining with equipment and not less than three retests. The forms shall provide for signoff by the Contractor, equipment manufacturer representative, inspector, and Engineer.

Functional Testing:
Functional Testing shall be defined as performing all checks and tests necessary to determine that the equipment, systems and subsystems have been properly manufactured and installed, function properly as specified and are in a condition to permit safe startup of the project.

Functional testing shall include all pre-startup tests and adjustments required in all Sections of Section 10-2 of these Special Provisions, these Special Provisions and the following:

a. Equipment Cleaning and Checking
   - Inspect and clean equipment, devices, and connected piping so they are free from foreign material.
   - Lubricate equipment in accordance to manufacturer's instructions.
   - Turn rotating equipment by hand and check motor-driven equipment for correct rotation.

- Open and close valves by hand and operate other devices to check for binding, interference, or improper functioning.
- Check power supply to electric-powered equipment for correct voltage.
- Check for proper equipment alignment.
- Obtain manufacturers' representatives' written reports certifying that the equipment is installed properly and in accordance with the manufacturers' installation instructions.

b. Civil/Mechanical Equipment and Systems
- Test valves and place valves in their normal position.
- Operate pump and motor auxiliary systems (e.g., seal water, lubrication, etc.) to verify proper operation.
- Perform leak tests on of pipe, fittings, gaskets and seals.
- Perform tests required by manufacturer's catalogs or specifications.
- Perform tests required in Civil and Mechanical Sections 09960 through 15400 in Section 10-2 of these Special Provisions.

Prior to Startup Testing, Contractor shall provide a written notification to the Engineer stating that equipment and systems, Contractor and manufacturers' representatives are ready to initiate Startup Testing. All manufacturers' certifications of proper installation of all equipment, field calibration reports and completed Functional Testing signoff forms prior to performing Startup Testing shall be attached to the notification. After receipt of said notification, the Engineer will make the final determination of Functional Testing acceptance.

Startup Testing:
Startup Testing shall be defined as performing all checks and tests necessary to determine that all individual facility features and equipment systems and subsystems have been properly designed, manufactured, installed and adjusted, function properly as specified and are capable of operating safely and simultaneously in such condition that the entire project and system is capable of continuous operation at all capacities and modes throughout its operating range.

Startup Testing shall include all the startup testing, checks and activities specified in Section 10-2 of these Special Provisions, these Special Provisions and determined as necessary to meet the goals listed in the definition of Startup Testing above. All Startup Testing checks, tests and other activities shall be identified in the Startup and Testing Plan.

Startup Testing shall be performed by the Contractor and/or equipment manufacturer representatives in the presence of the District. Startup Testing shall not begin until Engineer has determined that Functional Testing is complete

Following Startup Testing, the Contractor shall prepare a signed statement that all requirements have been met and certifying that

(1) The equipment has been properly installed, connected, and lubricated under his supervision,
(2) The equipment is in accurate alignment,
(3) The Contractor was present when the equipment was placed in operation,
(4) The Contractor has checked, inspected, and adjusted the equipment as necessary,
(5) The equipment is free from any undue stress imposed by connecting piping or anchor bolts,
(6) Has been satisfactorily operated under full load conditions,

(7) The Contractor has inspected his equipment during the operational demonstration tests, and
(8) Is fully covered under the terms of the equipment warrantee.

The Engineer shall determine Startup Testing as complete and equipment and systems ready for continuous operation after receipt of the Contractor's signed certification statement, all activities identified in the Startup and Testing Plan and specified in these Special Provisions are complete and documented, all signoff forms are submitted and all manufacturers' services completed.

Retesting:
When testing or operation of the equipment demonstrates that the equipment does not meet the specified requirements, Contractor shall repeat or perform all additional tests as necessary and required by Engineer. Additional tests required by manufacturer's modifications to meet specified requirements, or tests required due to failures of Contractor-furnished equipment shall be at the Contractor's expense with no additional cost to the District.

The County may, during startup and testing of electrical equipment, perform any additional testing functions, wiring check-out, operational compliance certification, etc. to satisfy that the facilities meet the contract requirements. The District's testing, if performed, will be done at no additional cost to the Contractor. However, the Contractor shall be responsible for correcting deficiencies revealed by the testing.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract items of work involved and no separate payment will be made therefor.

10-1.48 Contract Closeout

When the Contractor believes all work is complete or near completion, Contractor shall request that the Engineer perform a preliminary inspection of the work to generate a punch list of remaining items of work. The purpose of this inspection will be to determine the state of completion of the project. The preliminary inspection shall be requested by the Contractor at least 48 hours in advance of inspection.

Prior to requesting preliminary inspection, Contractor shall clean site, including, but not limited to, the following:

- Removal of all temporary facilities except as may be required for the performance of work expected to appear on the punch list.
- Clean site and all applicable appurtenances and improvements.
- Remove rubbish, surplus materials, discarded materials, falsework, temporary structures, equipment and debris so that the site is left in a neat, presentable manner.

After all punch list items have been completed by the Contractor and final cleanup and site restoration has been performed, Contractor shall request a final inspection by the Engineer. Engineer will perform final inspection to determine completion of the project work.

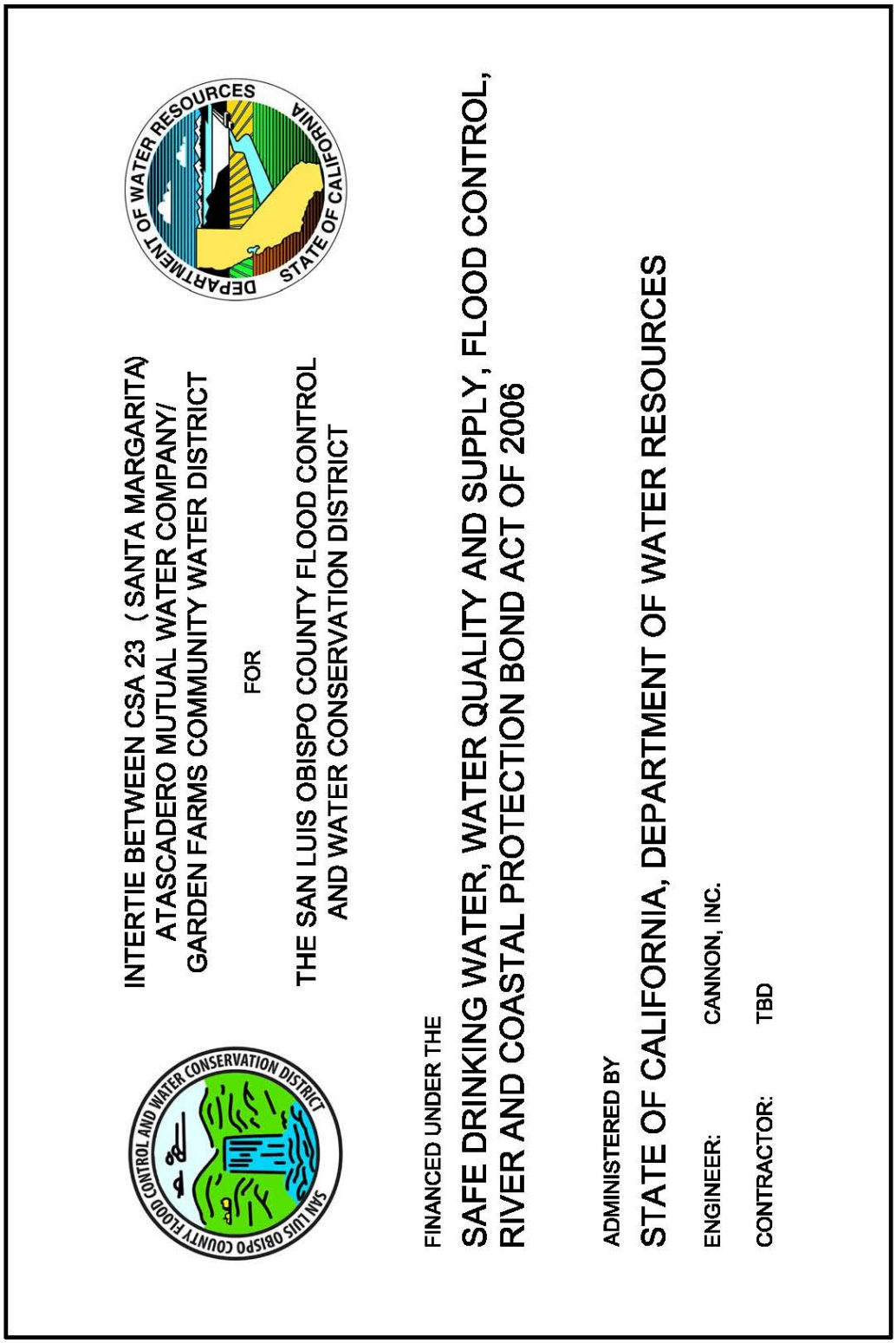
All project work shall not be deemed complete until Engineer has received the following final submittals:

- One complete set of full-size marked-up record drawings.
- "Release of Liens" from all subcontractors, materialmen, fabricators, suppliers and labor suppliers. Recycling Plan Disposal Report
- All keys to permanent gates and locks.
- All remaining Operation and Maintenance manuals.
- All manufacturers' guarantees and warrantees.
- All mill certifications and test data.
- Maintenance stock items, spare parts, and special tools.

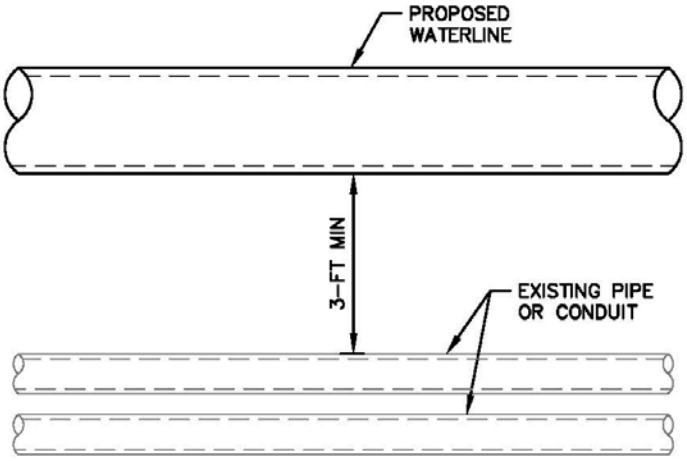
Final completed punch list.

- Completed Startup and Testing Certification and attachments.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract items of work involved and no separate payment will be made therefor.



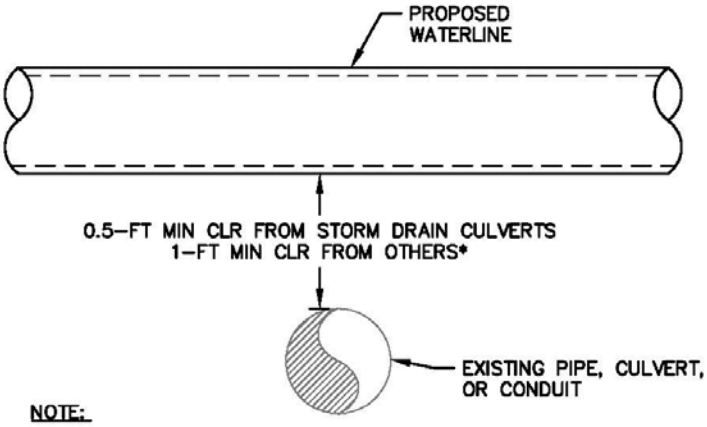
State of California, Department of Water Resources: Typical Project Sign



NOTE:

3-FT MINIMUM HORIZONTAL CLEARANCE FROM EXISTING UTILITIES SHALL BE FROM OUTSIDE EDGE TO OUTSIDE EDGE.

PLAN VIEW



NOTE:

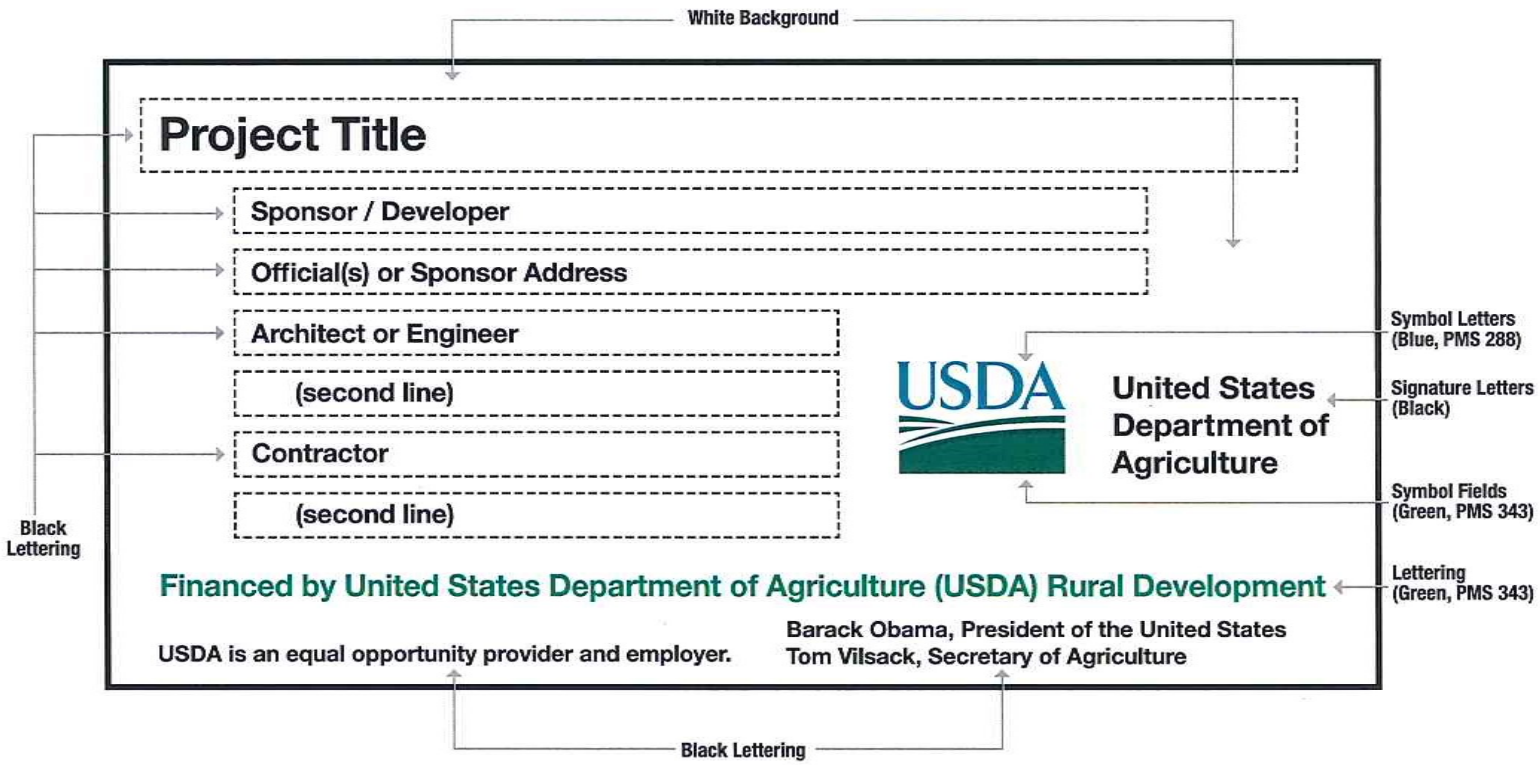
* MINIMUM VERTICAL CLEARANCE FOR CROSSING EXISTING UTILITIES MAY BE INCREASED FOR PARTICULAR CROSSINGS AND UTILITIES AS SHOWN ON PROJECT PLANS. MINIMUM CLEARANCE IS FROM OUTSIDE EDGE TO OUTSIDE EDGE.

PROFILE VIEW

UTILITY SEPARATION DETAIL

NOT TO SCALE

TEMPORARY CONSTRUCTION SIGN FOR RURAL DEVELOPMENT PROJECTS



SIGN DIMENSIONS: 1200 mm x 2400 mm x 19 mm (approx. 4' x 8' x ¾")
PLYWOOD PANEL (APA RATED A-B GRADE–EXTERIOR)

SECTION 10-2 TECHNICAL SECTIONS

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SECTION 09960

HIGH PERFORMANCE COATINGS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Field applied high performance coatings.

1.02 REFERENCES

A. National Sanitation Foundation (NSF):
   1. 61 - Drinking Water System Components - Health Effects.

B. The Society for Protective Coatings (SSPC):
   1. SP-1 - Solvent Cleaning.
   2. SP-2 - Hand Tool Cleaning.
   3. SP-3 - Power Tool Cleaning.
   4. SP-5 - White Blast Cleaning.
   5. SP-6 - Commercial Blast Cleaning.
   6. SP-7 - Brush-Off Blast Cleaning.
   7. SP-10 - Near-White Blast Cleaning.
   8. SP-11 - Power Tool Cleaning to Bare Metal.
   9. SP-12 - High and Ultra-high Pressure Water Jetting.

1.03 DEFINITIONS

A. Submerged Metal: Steel or iron surfaces below tops of channel or structure walls which will contain water even when above expected water level.

B. Submerged Concrete and Masonry Surfaces: Surfaces which are or will be:
   1. Underwater.
   2. In structures which normally contain water.
   3. Below tops of walls of water containing structures.

C. Exposed Surfaces: Any metal or concrete surface, indoors or outdoors, that is exposed to view.

D. Dry Film Thickness: Thickness of fully cured coating, measured in mils.

E. Volatile Organic Compound: Content of air polluting hydrocarbons in uncured coating product measured in units of grams per liter or pounds per gallon, as determined by EPA Method 24.

F. Ferrous: Cast iron, ductile iron, wrought iron, and all steel alloys except stainless steel.

G. Where SSPC surface preparation standards are specified or implied for ductile iron pipe or fittings, the equivalent NAPF surface preparation standard shall be substituted for the SSPC standard.

1.04 PERFORMANCE REQUIREMENTS

A. Coating materials used in conjunction with potable water supply systems shall be certified to NSF 61 or UL 3P83.

1.05 SUBMITTALS

A. Shop Drawings:
   1. Schedule of proposed coating materials.
   2. Schedule of surfaces to be coated with each coating material.

B. Product Data: Include description of physical properties of coatings including solids content and ingredient analysis, VOC content, temperature resistance, typical exposures and limitations, and manufacturer’s standard color chips:
   1. Regulatory Requirements: Include requirements concerning the following.
      a. Volatile organic compound limitations.
      b. Coatings containing lead compounds.
      c. Abrasives and abrasive blast cleaning techniques, and disposal.
      d. NSF or UL certification of coatings for use in potable water supply systems.

C. Samples: Include 8-inch square drawdowns or brush-outs of topcoat finish when required. Identify each sample as to finish, formula, color name and number and sheen name and gloss units.

D. Certificates: Submit in accordance with requirements for Product Data.

E. Manufacturer's Instructions: Include the following:
   1. Special requirements for transportation and storage.
   2. Mixing instructions.
   3. Shelf life.
   4. Pot life of material.
   5. Precautions for applications free of defects.
   6. Surface preparation.
   7. Method of application.
   8. Recommended number of coats.
   9. Recommended dry film thickness (DFT) of each coat.
   10. Recommended total dry film thickness (DFT).
   11. Drying time of each coat, including prime coat.
   12. Required prime coat.
   13. Compatible and non-compatible prime coats.
   14. Recommended thinners, when recommended.
   15. Limits of ambient conditions during and after application.
   16. Time allowed between coats (minimum and maximum).
   17. Required protection from sun, wind, and other conditions.
   18. Touch-up requirements and limitations.
   19. Minimum adhesion of each system submitted in accordance with ASTM D 4541.

F. Manufacturer's Field Reports: Submit for ENGINEER's record only.

G. Operations and Maintenance Data:
   1. Reports on visits to project site to view and approve surface preparation of structures to be coated.

2. Reports on visits to project site to observe and approve coating application procedures.
3. Reports on visits to coating plants to observe and approve surface preparation and coating application on items that are “shop coated”.

H. Quality Assurance Submittals:
1. Quality Assurance plan.
2. Qualifications of coating applicator including List of Similar Projects.
3. UV exposure certification of top coat(s) for vinyl ester.
4. Top coat(s) for vinyl ester should also be chemical resistant.
5. Coating Applicator Licensing: Submit approval and licensing by manufacturer of vinyl ester coating system that Applicator is approved to apply this product.

I. Certifications:
1. Submit notarized certificate that:
   a. All paints and coatings to be used on this project comply with current federal, state, and local VOC regulations.
2. California certificates:
   a. All paints and coatings to be used on this project comply with current VOC regulations of the State of California Air Management District in which the coatings will be used.

1.06 QUALITY ASSURANCE

A. Qualifications of Applicator:
1. Minimum of five years experience applying specified type or types of coatings under conditions similar to those of the Work.
2. Manufacturer approved applicator when manufacturer has approved applicator program.
3. Approved and licensed by vinyl ester coating manufacturer to apply vinyl ester coating system.
4. Approved and licensed by polymorphic polyester resin manufacturer to apply polymorphic polyester resin coating system.
5. Approved and licensed by elastomeric polyurethane (100-percent solids) manufacturer to apply 100-percent solids elastomeric polyurethane system.
6. Applicator of off-site application of coal tar epoxy shall have successfully applied coal tar epoxy on similar surfaces in material, size, and complexity as on the Project.

B. Regulatory Requirements: Comply with governing agencies regulations by using coatings that do not exceed permissible volatile organic compound limits and do not contain lead.
1. Do not use coal tar epoxy in contract with drinking water or exposed to ultraviolet radiation.

C. Certification: Certify that applicable pigments are resistant to discoloration or deterioration when exposed to hydrogen sulfide and other sewage gases and product data fails to designate coating as "fume resistant.”

D. Field Samples: Prepare and coat a minimum 100 square foot area between corners or limits such as control or construction joints of each system. Approved field sample may be part of Work.

E. Compatibility of Coatings: Use products by same manufacturer for prime coats, intermediate coats, and finish coats on same surface, unless specified otherwise.

F. Services of Coating Manufacturer's Representative: Arrange for coating manufacturer's representative to attend pre-construction conference and to make periodic visits at project site to provide consultation and inspection services during surface preparation and application of coatings.

1.07 PROJECT CONDITIONS

A. Surface moisture contents: Do not coat surfaces that exceed manufacturer specified moisture contents, or when not specified by the manufacturer.

B. Do not apply coatings:
   1. Under dusty conditions or adverse environmental conditions, unless tenting, covers, or other such protection is provided for structures to be coated.
   2. When light on surfaces measure less than 15 foot-candles.
   3. When ambient or surface temperature is less than 55 degrees Fahrenheit unless manufacturer allows a lower temperature.
   4. When relative humidity is higher than 85 percent.
   5. When surface temperature is less than 5 degrees Fahrenheit above dew point.
   6. When surface temperature exceeds the manufacturer's recommendation.
   7. When ambient temperature exceeds 90 degrees Fahrenheit, unless manufacturer allows a higher temperature.
   8. Apply clear finishes at minimum 65 degrees Fahrenheit.

C. Provide fans, heating devices, dehumidifiers, or other means recommended by coating manufacturer to prevent formation of condensate or dew on surface of substrate, coating between coats and within curing time following application of last coat.

D. Provide adequate continuous ventilation and sufficient heating facilities to maintain minimum 55 degrees Fahrenheit for 24 hours before, during and 48 hours after application of finishes.

1.08 MAINTENANCE

A. Extra Materials: Include minimum 1 gallon of each type and color of coating applied:
   1. When manufacturer packages material in gallon cans, deliver unopened labeled cans as comes from factory.
   2. When manufacturer does not package material in gallon cans, deliver material in new gallon containers, properly sealed and identified with typed labels indicating brand, type, and color.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Special Coatings: One of the following or equal:
   1. Ameron: Ameron International, Brea, CA.
   2. Carboline: Carboline, St. Louis, MO.
   3. Ceilcote: Ceilcote Corrosion Control, Brecksville, OH.
   4. Devoe: Devoe Coatings, Louisville, KY.
   5. Dudick: Dudick, Inc., Streetsboro, OH
   6. Enduraflex: Global Eco Technologies, Inc., Pittsburg, CA.
   7. IET: Integrated Environmental Technologies, Santa Barbara, CA.
   8. International: International Protective Coatings, Houston, TX.

9. Plasite: Plasite Protective Coatings, Inc., Green Bay, WI.
10. PPC: Polymorphic Polymers Corp., N. Miami, FL.
11. Sanchem: Sanchem, Chicago, IL.
12. Expoxtec CCP.
13. Superior: Superior Environmental Products, Inc., Addison, TX.
14. S-W: Sherwin-Williams Co., Cleveland, OH.
15. Tnemec: Tnemec Co., Kansas City, MO.
16. Wasser: Wasser High Tech Coatings, Kent, WA.
17. Epoxtec Uroflex.

2.02 PREPARATION AND PRETREATMENT MATERIALS

A. Metal Pretreatment: As manufactured by one of the following or equal:
1. Ameron: Galvaprep.
2. International: Galvaprep 5 or Alumiprep 33.
3. S-W: P60G2, Wash Primer.
4. Tnemec: Tneme-Grip 32-1210.

B. Surface Cleaner and Degreaser: As manufactured by one of the following or equal:
1. Carboline: Surface Cleaner No. 3.
2. Devoe: Devprep 88.

2.03 COATING MATERIALS

A. Alkali Resistant Bitumastic: As manufactured by one of the following or equal:
1. Carboline: Bitumastic Super Service Black.
2. Tnemec: 449, Heavy Duty Black.
3. Wasser: MC-Tar

B. Wax Coating: As manufactured by one of the following or equal:
1. Sanchem: No-Ox-Id A special.

C. High Solids Epoxy Primer (Not less than 75 Percent Solids by Volume): As manufactured by one of the following or equal:
1. Ameron: Amerlock 400.
2. Carboline: Super Hi-Gard.
3. Devoe: Bar Rust 233H.
4. International: Intergard 750 HS.
5. Tnemec: Series 135 Chembuild.
6. Expoxtec CCP.

D. High Solids Epoxy (Not less than 75 Percent Solids by Volume): As manufactured by one of the following or equal:
1. Ameron: Amerlock 400.
2. Carboline: Super Hi-Gard.
3. Devoe: Bar Rust 233H.
4. International: Intergard 565HS.
5. Tnemec: Series 135 Chembuild.
6. Expoxtec CCP.

E. Aliphatic or Aliphatic-acrylic Polyurethane: As manufactured by one of the following or equal:
1. Ameron: Amercoat 450HS.
2. Carboline: Carbothane 833.
3. Devoe: Devthane 379

4. International: Interthane 990 HS.
5. Tnemec: Series 75, Semi-Gloss Endura-Shield.

F. Asphalt Varnish: AWWA C 500.

G. Protective Coal Tar: As manufactured by one of the following or equal:
1. Carboline: Bitumastic No. 50.
2. S-W: Cooper Black, No. 750.
3. Tapecoat Co.: T.C. Mastic.

H. Coal Tar Epoxy: As manufactured by one of the following or equal:
1. Ameron: 78HB.
2. Ceilcote: Flexetan 661.
3. Carboline: 300-M, Bitumastic.
4. International: Intertuf 708 HS.
5. S-W: B69B40/B60V40, Hi-Mil Sher-Tar.
6. Tnemec: Series 46H-413.

I. Vinyl Ester: As manufactured by one of the following or equal:
1. Carboline: Semstone 870.
2. Ceilcote: Flakeline 282.
3. Dudick: Protecto-Coat 900 HT.
4. Tnemec: Vinester Series 120.

J. Polyurethane, 100% Solids, ASTM D16 Type V (urethane): As manufactured by:
1. Endura-Flex: Endura-Flex EF-1988.
2. Epoxtec Uroflex.

2.04 MIXES

A. Mix epoxy parts in accordance with manufacturer's instructions.

B. Mix coal tar epoxy in containers furnished by manufacturer for mixing purposes. Mix unit quantities only. Use power mixer for minimum time recommended by manufacturer. Do not include time during pouring or stirring in mixing time.

PART 3 EXECUTION

3.01 GENERAL PREPARATION

A. Prepare surfaces in accordance with coating manufacturer's instructions, unless more stringent requirements are specified in this Specification.

B. Protect following surfaces from abrasive blasting as specified in Section 09910, by masking, or other means:
1. Threaded portions of valve and gate stems.
2. Machined surfaces for sliding contact.
3. Surfaces to be assembled against gaskets.
4. Surfaces of Shafting on which sprockets are to fit.
5. Surfaces of shafting on which bearings are to fit.
6. Machined surfaces of bronze trim, including those slide gates.
7. Cadmium-plated items except cadmium-plated, zinc-plated, or sherardized fasteners used in assembly of equipment requiring abrasive blasting.
8. Galvanized items, unless scheduled to be coated.

C. Protect installed equipment, mechanical drives, and adjacent coated equipment from abrasive blasting to prevent damage caused by entering sand or dust.

D. Concrete: Clean concrete surfaces of dust, mortar, fins, loose concrete particles, form release materials, oil, and grease. Fill voids so that surface is smooth. Etch or brush off-blast clean (SSPC SP-7) as recommended by coating manufacturer.

E. Ferrous Metal Surfaces:
   1. Remove grease and oil in accordance with SSPC SP-1.
   2. Remove rust, scale, and welding slag and spatter, and prepare surfaces in accordance with SSPC SP-2 through SP-10.
   3. Abrasive blast surfaces prior to coating.
   4. When abrasive blasted surfaces rust or discolor before coating, abrasive blast surfaces again to remove rust and discoloration.
   5. When metal surfaces are exposed because of coating damage, abrasive blast surfaces before touching-up.

F. Ferrous Metal Surfaces Not to be Submerged: Abrasive blast in accordance with SSPC SP-6, unless blasting may damage adjacent surfaces, prohibited or specified otherwise. Where not possible to abrasive blast, power tool clean surfaces in accordance with SSPC SP-3.

G. Ferrous Metal Surfaces to be Submerged: Unless specified otherwise, abrasive blast in accordance with SSPC SP-10 or better to clean and provide roughened surface profile of not less than 2 mils and not more than 4 mils in depth when measured with Elcometer 123, or as recommended by the coating manufacturer.

H. Ductile Iron Pipe and Fittings to be Lined or Coated: Abrasive blast clean in accordance with SSPC-7 (Brush-off Blast Cleaning).

I. Sherardized, Aluminum, Copper, and Bronze Surfaces: Prepare in accordance with paint manufacturer's instructions.

J. Galvanized Surface:
   1. Degrease or solvent clean to remove oily residue.
   2. Power tool or hand tool clean or whip abrasive blast.
   3. Apply metal pretreatment within 24 hours before coating galvanized surfaces that cannot be thoroughly abraded physically, such as bolts, nuts, or preformed channels.

K. Shop Primed Metal:
   1. Remove shop primer from metal to be submerged by abrasive blasting in accordance with SSPC SP-10, unless greater degree of surface preparation is required by manufacturer of coating system.
   2. Correct abraded, scratched or otherwise damaged areas of shop prime coat by sanding or abrasive blasting in accordance with SSPC SP-6.
   3. When entire shop priming fails or has weathered excessively, or when recommended bycoating manufacturer, abrasive blast shop prime coat to remove entire coat and prepare surface in accordance with SSPC SP-10.
   4. When incorrect prime coat is applied, remove incorrect prime coat by abrasive blasting in accordance with SSPC SP-10.
   5. When prime coat not authorized by ENGINEER is applied, remove unauthorized prime coat by abrasive blasting in accordance with SSPC SP-10.

6. Shop Applied Bituminous Paint (Asphalt Varnish): Abrasive blast clean shop applied bituminous paint or asphalt varnish from surfaces scheduled to receive non-bituminous coatings.

L. Abrasive blast cadmium-plated, zinc-plated, or sherardized fasteners in same manner as unprotected metal when used in assembly of equipment designated for abrasive blasting.

M. Abrasive blast components to be attached to surfaces which cannot be abrasive blasted before components are attached.

N. Grind sharp edges to approximately 1/8 inch radius.

O. Remove and grind smooth all excessive weld material and weld splatter before abrasive blast cleaning.

3.02 GENERAL PROTECTION

A. Protect adjacent surfaces from coatings and damage. Repair damage resulting from inadequate or unsuitable protection.

B. Protect adjacent surfaces not to be coated from spatter and droppings with drop cloths and other coverings.
   1. Mask off surfaces of items not to be coated or remove items from area.

C. Furnish sufficient drop cloths, shields, and protective equipment to prevent spray or droppings from fouling surfaces not being coated and in particular, surfaces within storage and preparation area.

D. Place cotton waste, cloths, and material which may constitute fire hazard in closed metal containers and remove daily from site.

3.03 GENERAL APPLICATION REQUIREMENTS

A. Apply coatings in accordance with manufacturer's instructions.

B. Coat metal unless specified otherwise.

C. Verify metal surface preparation immediately before applying coating in accordance with SSPC Pictorial Surface Preparation Standard.

D. Allow surfaces to dry, except where coating manufacturer requires surface wetting before coating.

E. Wash coat and prime sherardized, aluminum, copper, and bronze surfaces, or prime with manufacturer's recommended special primer.

F. Prime shop primed metal surfaces. Spot prime exposed metal of shop primed surfaces before applying primer over entire surface.

G. Apply minimum number of specified coats.

H. Apply coats to thicknesses specified, especially at edges and corners.

I. Apply additional coats when necessary to achieve specified thicknesses.

J. Coat surfaces without drops, ridges, waves, holidays, laps, or brush marks.

K. Remove spatter and droppings after completion of coating.

L. When multiple coats of same material are specified, tint prime coat and intermediate coats with suitable pigment to distinguish each coat.

M. Dust coatings between coats. Lightly sand and dust surfaces to receive high gloss finishes, unless instructed otherwise by coating manufacturer.

N. Apply coating by brush, roller, trowel, or spray, unless particular method of application is required by coating manufacturer's instructions or these Specifications.

O. Spray Application:
   1. When using spray application, apply coating to thickness not greater than that suggested in coating manufacturer's instructions for brush coat application.
   2. Use airless spray method, unless air spray method is required by coating manufacturer's instruction or these Specifications.
   3. Conduct spray coating under controlled conditions. Protect adjacent construction and property from coating mist or spray.

P. Drying and Recoating:
   1. Provide fans, heating devices, or other means recommended by coating manufacturer to prevent formation of condensate or dew on surface of substrate, coating between coats and within curing time following application of last coat.
   2. Limit drying time to that required by these Specifications or coating manufacturer's instructions.
   3. Do not allow excessive drying time or exposure which may impair bond between coats.
   4. Recoat epoxies within time limits recommended by epoxy manufacturer.
   5. When time limits are exceeded, abrasive blast coat prior to applying another coat.
   6. When limitation on time between abrasive blasting and coating cannot be met before attachment of components to surfaces which cannot be abrasive blasted, coat components before attachment.
   7. Ensure primer and intermediate coats of coating are unscarred and completely integral at time of application of each succeeding coat.
   8. Touch up suction spots between coats and apply additional coats where required to produce finished surface of solid, even color, free of defects.
   9. Leave no holidays.
   10. Sand and recoat scratched, contaminated, or otherwise damaged coating surfaces so damages are invisible to naked eye.

3.04 ALKALI RESISTANT BITUMASTIC

A. Preparation:
   1. Prepare surfaces in accordance with general preparation requirements.

B. Application:
   1. Apply in accordance with general application requirements and as follows:
      a. Apply at least two coats, 8 to 14 mils dry film thickness each.

3.05 WAX COATING

A. Preparation:
   1. Prepare surfaces in accordance with general preparation requirements.

B. Application:
   1. Apply in accordance with general application requirements and as follows:
      a. Apply at least 1/32 inch thick coat with 2 inch or shorter bristle brush.
      b. Thoroughly rub coating into metal surface with canvas covered wood block or canvas glove.

3.06 HIGH SOLIDS EPOXY SYSTEM

A. Preparation:
   1. Prepare surfaces in accordance with general preparation requirements and as follows:
      a. Abrasive blast ferrous metal surfaces to be submerged at jobsite in accordance with SSPC SP-10 prior to coating. When cleaned surfaces rust or discolor, abrasive blast surfaces in accordance with SSPC SP-10.
      b. Abrasive blast non-submerged ferrous metal surfaces at jobsite in accordance with SSPC SP-6, Commercial Blast Cleaning, prior to coating. When cleaned surfaces rust or discolor, abrasive blast surfaces in accordance with SSPC SP-6.
      c. Abrasive blast clean ductile iron surfaces in accordance with SSPC SP-7 (Brush-off Blast Cleaning).

B. Application:
   1. Apply coatings in accordance with general application requirements and as follows:
      a. Apply minimum two coat system with total dry film thickness of 10 mils.
      b. Recoat or apply succeeding epoxy coats within time limits recommended by manufacturer. Prepare surfaces for recoating in accordance with manufacturer's instructions.
      c. Coat metal to be submerged before installation when necessary, to obtain acceptable finish and to prevent damage to other surfaces.
      d. Coat entire surface of support brackets, stem guides, pipe clips, fasteners, and other metal devices bolted to concrete.
      e. Coat surface of items to be exposed and adjacent 1 inch to be concealed when embedded in concrete or masonry.

3.07 EPOXY AND POLYURETHANE COATING SYSTEM

A. Preparation:
   1. Prepare surfaces in accordance with general preparation requirements and as follows:
      a. Prepare concrete surfaces as for coal tar epoxy.
      b. Touch up shop primed steel and miscellaneous iron.
      c. Abrasive blast ferrous metal surfaces at jobsite in accordance with Steel Structures Painting Council SP-6, Commercial Blast Cleaning, prior to coating. When cleaned surfaces rust or discolor, abrasive blast surfaces in accordance with Steel Structures Painting Council SP-6.
      d. Degrease or solvent clean, whip abrasive blast, power tool, or hand tool clean galvanized metal surfaces.

e. Lightly abrasive blast or sand fiberglass and plastic to be coated to roughen surfaces prior to coating.
f. Abrasive blast clean ductile iron surfaces in accordance with SSPC SP-7 (Brush-off Blast Cleaning).

B. Application:
1. Apply coatings in accordance with general application requirements and as follows:
2. Apply three coat system consisting of:
a. Primer: 4 to 5 mils dry film thickness high solids epoxy primer,
b. Intermediate Coat: 4 to 5 mils dry film thickness high solids epoxy intermediate coat, and
c. Top Coat: 2.5 to 3.5 mils dry film thickness aliphatic or aliphatic-acrylic polyurethane topcoat.
3. Recoat or apply succeeding epoxy coats within 30 days or within time limits recommended by manufacturer, whichever is shorter. Prepare surfaces for recoating in accordance with manufacturer's instructions.

3.08 ASPHALT VARNISH

A. Preparation:
1. Prepare surfaces in accordance with general preparation requirements.

B. Application:
1. Apply coatings in accordance with general application requirements and as follows:
a. Apply minimum two coats.

3.09 COAL TAR EPOXY

A. Preparation:
1. Prepare surfaces in accordance with general preparation requirements and as follows:
a. Abrasive blast iron or steel surfaces to be coated as submerged metal in accordance with SSPC SP-5. Prepare other metal surfaces to be coated with coal tar epoxy in accordance with epoxy manufacturer's instructions.

B. Application:
1. Apply coatings in accordance with general application requirements and as follows:
a. Apply two 8 mils dry film thickness coats.
b. Apply coal tar epoxy on blasted steel on same day that steel is blasted.
c. Apply succeeding coats over previous coat as soon as application does not cause sagging, within the following times, or as recommended by the coating manufacturer, whichever is sooner.

Average Temperature (Degrees Fahrenheit)	Maximum Time Between Coats (Hours)
50 to 60	36
60 to 70	24
70 to 80	12
80 to 120	4

d. Apply additional coats required to obtain specified thickness.
e. When previous coat has cured or set or Maximum Time Between Coats has lapsed, abrasive blast previous coat until surface film is removed. Wash and clean surface with cleaning solvent. Apply succeeding coat within Maximum Time Between Coats or as recommended by coating manufacturer, whichever is sooner.
f. When succeeding coat is applied over previous coat which has cured or set or Maximum Time Between Coats has lapsed, and surface has not been abrasive blasted, remove entire coating system to substrate, and apply new coating system.
g. Where coating system is applied to exterior concrete surfaces below grade, extend system at least 3 inches above finish grade in straight level. Step extended system down 3 inches when extended system reaches 6 inches above finish grade.

3.10 VINYL ESTER

A. Preparation:
1. Prepare surfaces in accordance with coating manufacturer's recommendations and as directed and approved by coating manufacturer's representative.

B. Application:
1. Apply prime coat and minimum of two top coats at total dry film thickness recommended by coating manufacturer.
   a. Final top coat on floors shall include non-skid surface, applied in accordance with manufacturer's instructions.
2. Perform Holiday Detection Test to ensure pin-hole free finished coating system.
3. All work shall be accomplished in strick accordance with coating manufacturer's recommendations and under direction of coating manufacturer's representative.

3.11 POLYURETHANE (100% SOLIDS)

A. Preparation:
1. Prepare surfaces in strict accordance with manufacturer's instructions and as directed and approved by coating manufacturer's representative.

B. Application:
1. Apply epoxy primer at DFT of 1 to 2 mils, in strict accordance with instructions of manufacturer's instructions.
2. Apply Polyurethane coating at minimum total dry film thickness (DFT) as follows:
   a. Steel - 60 mils DFT
   b. Ductile Iron and Ductile Iron Pipe Coating and Lining - 30 mils DFT
   c. Concrete - 120 mils DFT
   d. Or as recommended by coating manufacturer and approved by ENGINEER.
3. For concrete application, provide saw cutting for coating terminations in strict accordance with manufacturer's instructions.

3.12 FIELD QUALITY CONTROL

A. Each coat will be inspected. Strip and remove defective coats, prepare surfaces and recoat. When approved, apply next coat.

B. Control and check dry film thicknesses and integrity of coatings.

C. Measure dry film thickness with calibrated thickness gauge.

D. Dry film thicknesses may be checked with Elcometer or Positector 2000.

E. Verify coat integrity with low-voltage holiday detector. Allow ENGINEER to use detector for additional checking.

F. Check wet film thickness before coal tar epoxy coating cures on concrete or non-ferrous metal substrates.

G. Arrange for services of Coating Manufacturer's representative to provide periodic field consultation and inspection services to ensure proper surface preparation of facilities and items to be coated, and to ensure proper coating application and curing.
   1. Notify ENGINEER 24 hours in advance of each visit by Coating Manufacturer's representative.
   2. Provide ENGINEER with a written report by Coating Manufacturer's representative within 48 hours following each visit.

3.13 SCHEDULE OF ITEMS NOT REQUIRING COATING

A. Items that have received final coat at factory and not listed to receive coating in field.

B. Aluminum, brass, bronze, copper, plastic, rubber, stainless steel, chrome, everdur, or lead.

C. Buried or encased piping or conduit.

D. Exterior Concrete.

E. Galvanized pipe trays and cable trays.

F. Grease fittings.

G. Fiberglass ducting, Parshall flumes, or tanks in concealed locations.

H. Steel to be encased in concrete or masonry.

I. Aluminum grating.

J. Galvanized or aluminum ducting.

3.14 SCHEDULE OF SURFACES TO BE COATED IN THE FIELD

A. In general, apply coatings to steel, iron, and wood surfaces unless specified or otherwise indicated on the Drawings. Coat concrete surfaces and anodized aluminum only when specified or indicated on the Drawings.

B. Following schedule is incomplete. Coat unlisted surfaces with same coating system as similar listed surfaces. Verify questionable surfaces.

C. Concrete:
   1. High Solids Epoxy:

a. Safety markings.

2. Polyurethane:
   a. All interior surfaces of wet wells and pump sumps.

D. Metals:
1. Alkali Resistant Bitumastic:
   a. Aluminum surfaces to be placed in contact with wood, concrete, or masonry.
2. Wax Coating:
   a. Sliding faces of sluice and slide gates and threaded portions of gate stems.
3. Epoxy and Polyurethane System: Exterior non-immersed ferrous metal surfaces including:
   a. Doors, door frames, ventilators, louvers, grilles, exposed sheet metal, and flashing.
   b. Pipe, valves, pipe hangers, supports and saddles, conduit, cable tray hangers, and supports.
   c. Motors and motor accessory equipment.
   d. Drive gear, drive housing, coupling housings, and miscellaneous gear drive equipment.
   e. Valve and gate operators and stands.
   f. Structural steel including galvanized structural steel.
   g. Mechanical equipment supports, drive units, and accessories.
   h. Pumps not submerged.
   i. Bar screens, screw conveyors, screening compactors, frames, supports, and associated equipment.
   j. Other miscellaneous metals.
4. High Solids Epoxy System:
   a. Field priming of Ferrous metal surfaces with defective shop prime coat where no other prime coat is specified.
   b. Bell rings, underside of manhole covers and frames.
   c. Sump pumps and submersible pumps, including underside of base plates and submerged suction and discharge piping.
   d. Exterior of submerged piping and valves and piping in wet wells other than stainless steel or PVC piping.
   e. Submerged pipe supports and hangers.
   f. Stem guides.
   g. Vertical shaft mixers and aerators below supports.
   h. All sluice gates, except mating surfaces of gates, wall thimbles, and stem guides.
   i. Other submerged iron and steel metal unless specified otherwise.
   j. Interior surface of suction inlet and volute of submersible pumps. Apply coating prior to pump testing.
   k. Submerged piping.
   l. Exterior of influent pumps and influent pump submerged discharge piping.
   m. Structural steel platforms inside of sump station.
5. Asphalt Varnish:
   a. Underground valves and valve boxes.
6. Protective Coal Tar:
   a. Underground pipe flanges, excluding pipe, corrugated metal pipe couplings, flexible pipe couplings and miscellaneous underground metals not otherwise specified to receive another protective coating.

E. Fiberglass and Plastic Surfaces:

1. Epoxy and Polyurethane:
    a. Exterior of fiberglass ducting and fan housings.
    b. Fiberglass exposed to sunlight. Do not coat FRP doors or frames.
    c. All exposed PVC piping, valves, and fittings.

END OF SECTION

SECTION 15052

BASIC PIPING MATERIALS AND METHODS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Basic piping materials and methods.

B. Related Sections:
   1. Section 09960 - High Performance Coatings.
   2. Section 15142 - Disinfection of Domestic Water Lines.
   3. Section 15956 - Piping Systems Testing.

1.02 REFERENCES

A. American Society of Testing and Materials (ASTM):
   1. A 53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
   2. A 106 - Specification for Seamless Carbon Steel Pipe for High-Temperature Service.
   3. D 2240 - Test Method for Rubber Property Durometer Hardness.

1.03 DEFINITIONS

A. Exposed Piping: Piping that is located aboveground, or pipe that is located inside a structure, supported by a structure, or cast into a concrete structure.

B. Underground Piping: Piping actually buried in soil or cast in concrete.

C. Underwater Piping: Piping below tops of walls in basins or concrete tanks containing water.

D. Wet Wall: Wall with water on at least one side.

1.04 SYSTEM DESCRIPTION

A. Piping Drawings:
   1. Except in details, piping is indicated diagrammatically. Not every offset and fitting, or structural difficulty that may be encountered has been indicated on the Drawings. Sizes and locations are indicated on the Drawings.
   2. Perform minor modifications to piping alignment where necessary to avoid structural, mechanical, or other type of obstructions that cannot be removed or changed.
      a. Modifications are intended to be of minor scope, not involving a change to the design concept or a change to the Contract Price or Contract Times.
   3. Restraining Piping:
      a. Restrain piping at valves and at fittings where piping changes direction, changes sizes, and at ends.
         1) When piping is underground, use concrete thrust block or mechanical restraints.
         2) When piping is aboveground or under water, use mechanical or structural restraints.

3) Determine thrust forces by multiplying the nominal cross sectional area of the piping by design test pressure of the piping.

b. Provide restraints with ample size to withstand thrust forces resulting from test pressures.

1) During testing, provide suitable temporary restraints where piping does not require permanent restraints.

c. Place concrete thrust blocks against undisturbed soil. Place concrete so piping joints, fittings, and other appurtenances are accessible for assembly and disassembly.

d. Provide underground mechanical restraints where specified in the Piping Schedule.

4. Connections to Existing Piping:

a. Expose existing piping to which connections are to be made with sufficient time to permit, where necessary, field adjustments in line, grade, or fittings.

1) Protect domestic water supplies from contamination.

a) Make connections between domestic water supply and other water systems in accordance with requirements of public health authorities.

b) Provide devices approved by OWNER of domestic water supply system to prevent flow from other sources into the domestic supply system.

b. Make connections to existing piping and valves after sections of new piping to be connected have been tested and found satisfactory.

c. Provide sleeves, flanges, nipples, couplings, adapters, and other fittings needed to install or attach new fittings to existing piping and to make connections to existing piping.

5. Connections to In-service Piping:

a. Shutdown in-service piping in accordance with Section 01140.

1) Establish procedures and timing in a conference attended by CONTRACTOR, ENGINEER, and OWNER of the in-service piping.

b. Where operation and maintenance of existing facilities require that a shutdown be made during hours other than normal working hours, perform the related work in coordination with the hours of actual shutdown.

c. Additional provisions regarding shutdown of existing facilities are specified in Section 01140 Work Restrictions.

6. Connections at Dissimilar Metals:

a. Connect ferrous and nonferrous metal piping, tubing, and fittings with dielectric couplings especially designed for the prevention of chemical reactions between dissimilar metals.

b. Nonferrous metals include aluminum, copper, and copper alloys.

B. Piping Alternatives:

1. Provide piping in accordance with this Section, unless indicated on the Drawings or specified otherwise.

2. Alternative Pipe Ratings: Piping with greater pressure rating than specified may be substituted in lieu of specified piping without changes to the Contract Price. Piping of different material may not be substituted in lieu of specified piping.

3. Alternative Joint Types: Ductile iron piping with mechanical joints or push-on joints may be substituted in lieu of bell and spigot joints.

4. Valves in Piping Sections: Capable of withstanding specified test pressures for piping sections and fabricated with ends to fit piping.

5. For flanged joints, where one of the joining flanges is raised face type, provide a matching raised face type flange for the other joining flange.

PART 2 PRODUCTS

2.01 ESCUTCHEONS

A. Manufacturers: One of the following or equal:
   1. Dearborn Brass Company, Model Number 5358.
   2. Keeney Manufacturing Company, Model Number 102 or Number 105.
   3. Beaton and Corbin, Model Number 1 or Number 13.

B. Material: Chrome plated steel plate.

2.02 LINK TYPE SEALS

A. Manufacturers: One of the following or equal:
   1. Calpico, Inc.
   2. Pipeline Seal and Insulator, Inc., Link-Seal.

B. Characteristics:
   1. Modular mechanical type, consisting of interlocking neoprene or synthetic rubber links shaped to continuously fill the annular space between the pipe and wall opening.
   2. Assemble links solely with stainless steel bolts and nuts to form a continuous rubber belt around the pipe.
   3. Provide a stainless steel or glass reinforced nylon pressure plate under each bolt head and nut. Isolate pressure plate from contact with wall sleeve.

2.03 GASKETS

A. Gaskets for Non-steam Cleaned Ductile Iron and Steel Piping:
   1. Suitable for pressures equal to and less than 150 pounds per square inch gauge, temperatures equal to and less than 250 degrees Fahrenheit, and raw sewage service.
   2. Gasket Material:
      a. Neoprene elastomer with minimum Shore A hardness value of 70.
      b. Reinforcement: Inserted 13 ounce nylon fabric cloth for pipes 20 inch or larger.
      c. Thickness: Minimum 3/32 inch thick for less than 10 inch pipe; minimum 1/8 inch thick for 10 inch and larger pipe.
   3. Manufacturers: One of the following or equal:
      a. Pipe 20 inches in Diameter and Larger:
         1) Garlock, Style 8798.
         2) John Crane, similar product.
      b. Pipe less than 20 inches in Diameter:
         1) Garlock, Style 7797.
         2) John Crane, similar product.

B. Gaskets for Flanged Joints in Polyvinyl Chloride and Polyethylene Piping:
   1. Suitable for pressures equal and less than 150 pounds per square inch gauge, with low flange bolt loadings, temperatures equal and less than 120 degrees Fahrenheit, polymer, chlorine, caustic solutions, and other chemicals, except chemicals which liberate free fluorine including fluorochemicals and gaseous fluorine.
   2. Material: Viton Rubber; 0.125 inch thick.
   3. Manufacturers: One of the following or equal:
      a. Garlock.

b. John Crane, similar product.

C. Gaskets for Flanged Joints in Ductile Iron, or Steel Water Piping:
1. Suitable for hot or cold water, pressures equal and less than 150 pounds per square inch gauge, and temperatures equal and less than 160 degrees Fahrenheit.
2. Material:
a. Neoprene elastomer, compressed, non-asbestos fiber reinforcement.
b. Teflon ring; or teflon envelope with nonasbestos filler.
3. Manufacturers: One of the following or equal:
a. Bluegard, Style 3300.
b. Garlock.
c. John Crane, similar product.

2.04 LEAD LIMITS

A. Comply with NSF 61.

B. Pipe, pipe or plumbing fittings or fixtures, solder, or flux used to convey water for human consumption shall be Lead-free as defined in Section 116875 of the California Health and Safety Code.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Existing Conditions:
1. Locate and expose existing structures, piping, conduits, and other facilities and obstructions which may affect construction of underground piping before starting excavation for new underground piping and appurtenances.
2. Verify sizes, elevations, locations, and other relevant features of existing facilities and obstructions. Determine conflicts for the construction of the new underground piping and appurtenances.
3. Make piping location and grade adjustments to resolve conflicts between new piping and existing facilities and obstructions.

3.02 WALL AND SLAB PENETRATIONS

A. Provide sleeves for piping penetrations through aboveground masonry and concrete walls, floors, ceilings, roofs, pilasters, columns, piers, and beams unless specified or otherwise indicated on the Drawings. When indicated on the Drawings, verify that sleeves are large enough inside diameter to clear piping, and that filler material for spaces between piping and sleeve, and synthetic rubber sealing compound at the end of the sleeves are shown.

B. For piping 1 inch in nominal diameter and larger, provide sleeves with minimum inside diameters of 1 inch plus outside diameter of piping. For piping smaller than 1 inch in nominal diameter, provide sleeve of minimum twice the outside diameter of piping.
1. Arrange sleeves and adjacent joints so piping can be pulled out of sleeves and replaced without disturbing the structure.
2. Cut ends of sleeves flush with surfaces of concrete, masonry, or plaster.
3. Conceal ends of sleeves with escutcheons where piping runs through floors, walls, or ceilings of finished spaces within buildings.

4. Seal spaces between pipes and sleeves with link-type seals when not otherwise specified oindicated on the Drawings.
5. Seal openings around piping running through interior walls and floors of chlorine rooms and chlorine storage rooms gastight with synthetic rubber sealing compound.

C. Cast couplings or wall pieces in walls for penetrations of buried rigid piping including cast iron, ductile iron, reinforced concrete, and vitrified clay through structures.
1. Provide couplings or wall pieces with mechanical push-ons, or similar flexible joints at outside faces of walls.
2. Provide additional similar joints in piping at transition points between trenches and structure excavations.
3. For steel piping, single joints may be used in lieu of 2 joints. Locate single joints outside within 2 feet from outside faces of walls.

D. Link Seal: Use 2 link seals where seal is used to seal at wet wall sleeves. Mount one seal on the inside face of the wall and the other on the outside face of the wall. Coordinate the inside diameter of the wall sleeve with the size of the seal to provide watertight sealing.

E. Where not indicated on the Drawings, penetrations for conditions other than those specified under the preceding subparagraphs shall be 1 of the 3 types specified in such subparagraphs found by ENGINEER to be the most suitable for the particular conditions.

3.03 EXPOSED PIPING

A. Install exposed piping in straight runs parallel to the axes of structures, unless indicated otherwise.
1. Install piping runs plumb and level, unless otherwise indicated on the Drawings. Slope plumbing drain piping with 1/8 inch per foot downward in the direction of flow. Slope digester gas piping to drip traps or low-point drains at minimum 1/2 inch per foot where condensate flows against the gas, or 1/4 inch per foot where condensate flows with gas.

B. Install exposed piping after installing equipment and after piping and fitting locations have been determined.

C. Support piping in accordance with Section 15061.
1. Do not transfer pipe loads and strain to equipment.

D. In addition to the joints indicated on the Drawings, provide unions, flexible couplings, flanged joints, and other types of joints or means which are compatible with and suitable for the piping system, and necessary to allow ready assembly and disassembly of the piping.

E. Assemble piping without distortion or stresses caused by misalignment.
1. Match and properly orient flanges, unions, flexible couplings, and other connections.
2. Do not subject piping to bending or other undue stresses when fitting piping. Do not correct defective orientation or alignment by distorting flanged joints or subjecting flange bolts to bending or other undue stresses.
3. Flange bolts, union halves, flexible connectors, and other connection elements shall slip freely into place.
4. Alter piping assembly to fit when proper fit is not obtained.

5. Install eccentric reducers or increasers with the top horizontal for pump suction piping.

3.04 BURIED PIPING

A. Bury piping with minimum 3 foot cover without air traps, unless otherwise indicated on the Drawings.

B. Where 2 similar services run parallel to each other, piping for such services may be laid in the same trench. Lay piping with sufficient room for assembly and disassembly of joints, for thrust blocks, for other structures, and to meet separation requirements of public health authorities having jurisdiction.

C. Laying Piping:
   1. Lay piping in finished trenches free from water or debris. Begin at the lowest point with bell ends up slope.
   2. Place piping with top or bottom markings with markings in proper position.
   3. Lay piping on an unyielding foundation with uniform bearing under the full length of barrels.
   4. Where joints require external grouting, banding, or pointing, provide space under and immediately in front of the bell end of each section laid with sufficient shape and size for grouting, banding, or pointing of joints.
   5. At the end of each day's construction, plug open ends of piping temporarily to prevent entrance of debris or animals.

3.05 CLEANING

A. Piping Cleaning:
   1. Upon completion of installation, clean piping interior of foreign matter and debris. Perform special cleaning when required by the Contract Documents.

B. Cleaning Potable Water Piping:
   1. Flush and disinfect potable water piping in accordance with Section 15142.

C. Cleaning Chlorine Piping:
   1. Clean chlorine piping by pulling clean cloths saturated with trichloroethylene or other suitable chlorinated solvent through piping.
      a. Do not use hydrocarbons or alcohols which may react with chlorine.
      b. Use chlorinated solvents in accordance with manufacturer's safety recommendations to avoid serious physiological effects.
   2. Disassemble and clean valves and equipment that have oil residues before installation.
   3. Dry piping immediately before effecting final connections for service. Keep piping kept sealed to prevent moisture from entering chlorine piping. Drying procedure shall be as follows:
      a. Pass steam through piping from the high end until piping is thoroughly heated. While steaming, allow condensate and foreign matter to drain out.
      b. Stop steaming and drain pockets and low points.
      c. While piping is hot, blow dry air through piping until piping is dry. Use dry air with a dew point of minus 40 degrees F or below.
      d. Continue blowing dry air through piping until exhausted air has a dew point of minus 30 degrees F or below.
      e. Allow several hours for drying piping.

D. Cleaning Air Piping:

1. Perform special cleaning of filtered air piping from the intake clean air plenums to the discharge points and high pressure air piping. Protect surfaces from contamination.
2. Special cleaning shall include wire brushing, power tool cleaning, wiping down with lint-free cloths, brooming, and vacuuming to remove rust, scale, weld spatter, dust, dirt, oil, and other matter deleterious to operation of the air system.
    a. Do not sandblast installed piping.
3. To the greatest extent possible, clean piping immediately prior to final closure of piping systems.
    a. Enter piping, clean and wipe down surfaces, and vacuum out residue.
    b. Clean surfaces not accessible to this cleaning operation after installation within 6 hours preceding installation.
4. Subsequent to cleaning, protect surfaces from contamination by dust, dirt, construction debris, and moisture, including atmospheric moisture.
    a. Whether or not pipe upstream has been cleaned, temporarily seal openings in partially completed work except when installation is actively in progress.
    b. When installation is actively in progress, seal openings at the end of each day's construction or when construction is temporarily stopped.
5. Suspend cleaning and seal openings when inclement weather, including dust storms, is imminent.
6. Use clean, dry air for testing the piping and other elements of the system.
7. Prior to introduction of air to the system, blow piping clean. Blow with maximum discharge rate possible for minimum 4 hours, using new blowers or compressors and filters.
8. Clean surfaces which become contaminated prior to acceptance.

3.06 PIPING SCHEDULE

A. Abbreviations:
    1. The following abbreviations used in the column of test method refer to the respective methods specified in Section 15956.

AM	Air method
GR	Gravity method
HH	High head method
LH	Low head method
SC	Special case

    2. Abbreviations to designate piping include the following:

CI	Cast iron
Cl	Class, followed by the designation
DIP	Ductile iron piping
Ga	Gauge, preceded by the designation
GE	Grooved end joint
NPS	Nominal pipe size, followed by the number in inches pounds per square inch Pounds per square inch, gauge
PVC	Polyvinyl Chloride
Sch.	Schedule, followed by the designation

SS	Stainless steel
VCP	Vitrified clay piping

SECTION 15076

PIPE IDENTIFICATION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Pipe identification including the following:
   1. Pipe identification by color and legend.
   2. Underground warning tape.
   3. Tracer wire.
   4. Witness markers.
   5. Valve identification.

B. Related sections:
   1. Section 09960 - High-Performance Coatings.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. A13.1 - Scheme for the Identification of Piping Systems.

1.03 SUBMITTALS

A. Submit following:
   1. Product data.
   2. Samples.
   3. Manufacturer's installation instructions.
   4. Submit following as specified in Section 01770:
      a. Operation and Maintenance Data.
      b. Warranty.

PART 2 PRODUCTS

2.01 ABOVEGROUND AND IN-CHASE PIPE IDENTIFICATION

A. Manufacturers:
   1. One of the following or equal:
      a. Seton, Opti Code Pipe Markers.
      b. Lab Safety Supply.
      c. Marking Services, Inc.

B. Materials:
   1. Pipe markers: Self-adhesive vinyl, suitable for outdoor application from -40 degrees to 180 degrees Fahrenheit; in accordance with ASME A13.1 requirements.
      a. Lettering:

Nominal Pipe Diameter	Lettering Size
Less than 1.5	1/2 inch
1.5 inches to 2 inches	3/4 inch
2.5 inches to 6 inches	1-1/4 inches
8 inches to 10 inches	2-1/2 inches
Over 10 inches	3-1/2 inches

      b. Marker colors:

Service	Lettering	Background
Flammables, chemicals, toxics	Black	Yellow
Water, nontoxic solutions or low hazard liquids	White	Green
Nonflammable or nontoxic gases	White	Blue
Fire quenching fluids (foam, fire water, CO_2 Halon)	White	Red

   2. Coating: As specified in Section 09960.
   3. Pipe identification tags: Aluminum or stainless steel with stamped-in 1/4-inch high identifying lettering.
   4. Pipe identification tag chains: Aluminum or stainless steel.
   5. Snap-on markers: Markers with 3/4-inch high letters for 3/4- to 4-inch pipe or covering, or 5-inch high letters for 5-inch or larger pipe or cover, as manufactured by one of following:
      a. Brady Bradysnap-On B-915.
      b. Seton Setmark.

2.02 BURIED PIPELINE IDENTIFICATION

A. Underground warning tape:
   1. Manufacturer: One of the following or equal:
      a. Seton Name Plate Company, Branford, CT.
      b. T. Christy Enterprises, Inc.
   2. Material:
      a. Polyethylene tape for prolonged underground use.

b. Minimum tape thickness: 4 mils.
c. Overall tape width: 6 inches.
d. Message: “CAUTION” with the name of the service followed by “LINE BURIED BELOW” in black lettering on colored background in accordance with approved APWA colors.
1) Water: Blue.
2) Sewer: Green.
3) Telephone: Orange.
4) Gas and other services: Yellow.

B. Tracer wire:
1. Manufacturers: One of the following or equal:
a. Kris-Tech Wire.
b. Corrpro.
2. Materials: One of the following or equal:
a. Solid copper conductor with 30-mil HMWPE.
b. 10-gauge or thicker wire.
c. Match insulation color to the color of the pipe being installed.

C. Witness markers:
1. Manufacturers: One of the following or equal:
a. Carsonite Composites, Utility Marker.
b. Hampton Technical Associates, Inc.
2. Materials:
a. Glass fiber and resin reinforced thermosetting composite material.
b. UV resistant.
3. Constructed as a single piece.
4. Pointed at the bottom end.
5. Information to be included on the marker:
a. “Caution” (type of service) “Pipeline”.
b. Phone number for Underground Service Alert.
c. Phone number for OWNER in case of emergency.
d. Station number.
e. Offset:
1) Only provide offset if marker is not directly over the pipe.
f. Name of appurtenance or fitting (e.g. 45, BO, ARV etc.)

2.03 VALVE IDENTIFICATION

A. The CONTRACTOR shall furnish and install tags for all valves and gates required for the Work.
1. Tags shall be 2-inch diameter round, stainless steel or brass for buried applications.
2. Tags shall be furnished with a non-corrosive metal wire suitable for attaching the tag to the operator base.
3. Tags shall be stamped in 1/4-inch high letters:
a. Tags shall not be attached in such a way as to inhibit the operation of the valve or gate.
4. Buried valve tags shall be secured to concrete s with the specified valve or gate number.
5. Submit 2 samples of the type of tag proposed and the manufacturer’s standard color chart and letter styles to the ENGINEER for review.

6. Manufacturer: The following or equal:
   a. Seton Name Plate Company, Branford, CT.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify satisfactory conditions of substrate for applying identification.

B. Verify that conditions are satisfactory for installation and application of products as specified in Section 01600.

3.02 PREPARATION

A. Prepare and coat surfaces as specified in Section 09960.

B. Prepare surface in accordance with product manufacturer's instructions.

3.03 ABOVE GROUND AND IN-CHASE PIPING IDENTIFICATION

A. Identify exposed piping, valves, and accessories, and piping, valves, and accessories in accessible chases with lettering or tags designating service of each piping system with flow directional arrows and color code.

B. Color code:
   1. Paint all piping with colors as selected by OWNER.

C. Lettering and flow direction arrows:
   1. Stencil lettering on painted bands or use snap-on markers on pipe to identify pipe. When stenciling, stencil 3/4-inch high letters on 3/4- through 4-inch pipe or coverings, or 5-inch high letters on 5-inch and larger pipe or coverings.
   2. Provide lettering and flow direction arrows near equipment served, adjacent to valves, both sides of walls and floors where pipe passes through, at each branch or tee, and at intervals of not more than 50 feet in straight runs of pipe.

D. Where scheduled, space 6-inch wide bands along stainless steel pipe at 10-foot intervals and other pipe at 5-foot intervals.

E. Label chemical tank fill pipelines at locations which are visible from chemical fill stations.

F. Metal tags:
   1. Where outside diameter of pipe or pipe covering is 5/8 inch or smaller, provide metal pipe identification tags instead of lettering.
   2. Fasten pipe identification tags to pipe with chain.
   3. Where tags are used, color code pipe as scheduled.

3.04 BURIED PIPING IDENTIFICATION

A. Underground warning tape:
   1. Place continuous run of warning tape in pipe trench, 12 inches above the pipe.

B. Tracer wire:
   1. Install on all non-metallic pipe.
   2. Install an electrically continuous run of tracer wire along the entire length of the pipe with wire terminations in valve boxes, vaults, or structures.
   3. Install tracer wire on top of the pipe and secure to pipe with tape a minimum of every 10 feet.
   4. Where approved by the ENGINEER, splice sections of wire together using approved direct bury wire nuts.
      a. Twisting the wires together is not acceptable.

C. Witness markers:
   1. Install over pipe in unpaved open-space areas at intervals not greater than 200 feet.
   2. Place markers at appurtenances located in unpaved areas.
   3. Embed markers at least 18 inches into the soil.

3.05 APPLICATION

A. Identify piping with legend markers, directional arrow markers, and number markers; use self-adhesive arrow roll tape to secure ends of piping markers and indicate flow direction.

B. Provide legend markers, directional arrow markers, and number markers where piping passes through walls or floors, at piping intersections and at maximum 15-foot spacing on piping runs.

C. Provide piping marker letters and colors as scheduled.

D. Place markers on piping so they are visible from operator's position in walkway or working platform near piping. Locate markers along horizontal centerline of pipe, unless better visibility is achieved elsewhere.

3.06 PIPING COLOR CODE AND MARKER SCHEDULE

Service Fluid	Pipe Color	Marker Legend
Aeration Air (Sludge Storage)	Light Green	AA
Aluminum Sulfate or Polyaluminum Chloride	Yellow	ALUM
Chemical Drain	Charcoal	CHD
Cold Water	Blue	CW
Condensate Drain	Charcoal	CD
Decant	Dark Brown	DEC
Drain	Charcoal	D
Engine Exhaust	Yellow	EEX
Filter Backwash	Light Brown	FBW
Filter Effluent	Light Brown	FE
Filtrate	Light Brown	FIL

Service Fluid	Pipe Color	Marker Legend
Fire Supply Water	Red	FSW
Floor Drain	Charcoal	FD
Force Main	Dark Brown	FM
Foul Air Duct	Yellow	FAD
Foul Air Pipe	Yellow	FAP
Fuel Oil Return	Orange	FOR
Fuel Oil Supply	Orange	FOS
Hot Water	Light Blue	HW
Irrigation	Purple	IRRIG
Mixed Liquor	Dark Brown	ML
Natural gas	Red	NG
Non-Potable Water	Light Blue	W2
Out-of-Compliance Return	Dark Brown	OOCR
Plant Drain or Process Drain	Charcoal	PD
Plant Drain Force Main	Charcoal	PDFM
Plant Water or Utility Water	Dark Blue	PW
Polymer	Orange	POL
Potable Water	Light Blue	W1
Recycled/Reclaimed Water	Purple	REW
Refrigerant Liquid	Yellow	RL
Refrigerant Vapor	Yellow	RV
Return Activated Sludge	Dark Brown	RAS
Roof Drain	Charcoal	RD
Sample Line	Dark Blue	SA
Sanitary Sewer	Charcoal	SS
Scum	Dark Brown	SC
Secondary Effluent	Dark Blue	SE
Secondary Influent	Dark Blue	SI
Septage	Dark Brown	SEP
Sodium Hypochlorite Solution	Yellow	SHS
Storm Drain	Charcoal	SD
Storm Water (pumped)	Charcoal	STW
Sump Pump Discharge	Dark Brown	SPD

Service Fluid	Pipe Color	Marker Legend
Thickened Waste Activated Sludge	Dark Brown	TWAS
Vent	Yellow	V
Vent Piping	Yellow	VP
Waste Activated Sludge	Dark Brown	WAS

Letters	Color of Pipe	Color of Bands	Color of Letters
AA	Light Green	Dark Green	Black
ALUM	Orange	Yellow	Black
CHD	Charcoal	None	White
CW (return)	Light Brown	Red	White
CW (supply)	Light Brown	Dark Gray	White
CD	Charcoal	None	White
D	Charcoal	None	White
DEC	Dark Brown	None	White
EEX	Yellow	Black	Black
FAD	Yellow	Black	Black
FAP	Yellow	Black	Black
FBW	Light Brown	None	Black
FD	Charcoal	None	White
FE	Light Brown	None	Black
FIL	Light Brown	None	Black
FM	Dark Brown	None	White
FOR	Orange	None	Black
FOS	Orange	None	Black
FSW	Red	None	Black
HW (return)	Light Blue	Black	Black
HW (supply)	Light Blue	White	Black
IRRIG	Purple	None	White
ML	Dark Brown	None	White
NG	Red	Yellow	White
PD	Charcoal	None	White
PDFM	Charcoal	None	White

Letters	Color of Pipe	Color of Bands	Color of Letters
POL	Orange	Dark Green	Black
PW	Dark Blue	None	White
RAS	Dark Brown	None	White
RD	Charcoal	None	White
REW	Purple	None	White
RL	Yellow	White	Black
RV	Yellow	Black	White
SA	Dark Blue	Black	White
SC	Dark Brown	None	White
SD	Charcoal	None	White
SE	Dark Blue	None	White
SEP	Dark Brown	None	White
SHS	Yellow	Dark Green	Black
SI	Dark Blue	None	White
SPD	Dark Brown	None	White
SS	Charcoal	None	White
STW	Charcoal	None	White
TWAS	Dark Brown	None	White
V	Yellow	Black	White
VP	Yellow	Black	White
W1	Light Blue	White	Black
W2	Light Blue	Dark Gray	Black
WAS	Dark Brown	None	White

END OF SECTION

SECTION 15110

COMMON WORK RESULTS FOR VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Basic requirements for valves.

B. Related Sections:
   1. Section 09960 – High-Performance Coatings.
   2. Section 15251 - Ductile Iron Pipe (DIP) and Fittings.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. A 126 - Specification for Gray Iron Casting for Valves, Flanges, and Pipe Fittings.
   2. A 167 - Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
   3. A 536 - Specification for Ductile Iron Castings.

B. American National Standards Institute/American Water Works Association (ANSI/AWWA):
   1. C 111/A21.11 - Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe Fittings.

C. NSF International (NSF):
   1. 61 – Drinking Water System Components – Health Effects.

D. Society for Protective Coatings (SSPC):
   1. SP 7 - Surface Preparation Specification for Brush-Off Blast Cleaning.
   2. SP10 - Surface Preparation Specification for Near-White Blast Cleaning.

1.03 DESIGN REQUIREMENTS

A. Pressure Rating:
   1. Suitable for service under minimum working pressures of 150 pounds per square inch gauge.
   2. When a piping system is specified in the Piping Schedule to be tested at a pressure greater than 150 pounds per square inch gauge, provide valves for that piping system with design working pressure which is sufficient to withstand the test pressure.

B. Valve to Piping Connections:
   1. Valves 3 Inch Nominal Size and Larger: Flanged ends.
   2. Valves less than 3 Inch Nominal Size: Screwed ends.
   3. Plastic Valves in Plastic Piping:
      a. Up to 2.5 inches: Provide solvent or heat welded unions.
      b. 3 Inches and Above: Provide solvent or heat welded flanges.

1.04 SUBMITTALS

A. Submittals Prior to Installation:
   1. Product Data: Submit detailed technical information relating to the valve including description of component parts, materials of construction, performance, dimensions, and weights.

B. Operation and Maintenance Data:
   1. Furnish bound sets of installation, operation, and maintenance instructions for each type of valve 4 inch in nominal size and larger. Include information on valve operators in operation and maintenance instruction manual.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications:
   1. Valves: Manufactured by manufacturers whose valves have had successful operational experience in comparable service.

1.06 DELIVERY STORAGE AND HANDLING

A. Protect valves and protective coatings from damage during handling and installation; repair coating where damaged.

PART 2 PRODUCTS

2.01 MATERIALS

A. Stainless Steel: ASTM A 167, Type 316, or Type 304, UNS Alloy S31600 or S30400.

B. Valve, Gate, and Operator Bolts and Nuts:
   1. Fabricated of stainless steel for the following installation conditions:
      a. Submerged in sewage or water.
      b. In an enclosed space above sewage or water.
      c. In structures containing sewage or water, below top of walls.
      d. At openings in concrete or metal decks.
   2. Where dissimilar metals are being bolted, use stainless steel bolts with isolation bushings and washers.
   3. Underground Bolts: Low-alloy steel in accordance with AWWA C 111/A21.11.

C. Bronze and Brass Alloys: Use bronze and brass alloys with not more than 6 percent zinc and not more than 2 percent aluminum in the manufacture of valve parts; UNS Alloy C83600 or C92200 unless specified otherwise.

D. Valve Bodies: Cast iron in accordance with ASTM A 126 Class 30 minimum or ductile iron in accordance with ASTM A 536 Grade 65-45-12 minimum unless specified otherwise.

2.02 INTERIOR PROTECTIVE COATING

A. Provide valves with type of protective coating specified in the particular valve specification.

B. Apply protective coating to interior, non-working surfaces, except stainless steel surfaces.

C. Coating Types:
   1. Powder Epoxies:
      a. Manufacturers: One of the following or equal:
         1) 3-M Company, ScotchKote 134; certified to NSF 61 for drinking water use.
         2) Michigan Chrome and Chemical Co., Micron 650 or 651.
      b. Clean surfaces to meet SSPC-SP-10, near-white metal blast cleaning, with grit of size recommended by epoxy manufacturer.
      c. Apply in accordance with manufacturer's published instructions.
      d. Coating Thickness: 0.010 to 0.012 inches except that:
         1) Coating Thickness in Grooves for Gaskets: 0.005 inches.
         2) Do not coat seat grooves in valves with bonded seat.
      e. Quality Control:
         1) Coating Thickness: Measured with a non-destructive magnetic type thickness gauge.
         2) Verify coating integrity with a wet sponge testing unit operating at approximately 60 volts.
         3) Consider tests successful when coating thickness meets specified requirements and when no pin holes are found.
         4) Correct defective coating disclosed by unsuccessful tests, and repeat test.
         5) Repair pinholes with liquid epoxy recommended by manufacturer of the epoxy used for coating.
   2. High Solids Polyamine Cured Epoxy:
      a. Product: As specified in Section 09960.
      b. Quality Control: After coating is cured, check coated surface for porosity with a holiday detector set at 1,800 volts.
         1) Repair holidays and other irregularities and retest coating.
         2) Repeat procedure until holidays and other irregularities are corrected.

2.03 UNDERGROUND VALVES

A. Provide underground valves with flanged, mechanical, or other type of joint required for the type of pipe to which the valve is to be connected.

B. Coating and Wrapping:
   1. Prior to installation, coat buried valves with 2 coats of protective coal tar in accordance with Section 09960.
   2. After installation, wrap valves with polyethylene as specified for ductile iron piping in Section 15251.

C. Ascertain that polyethylene wrapping does not affect operation of valve.

2.04 VALVE BOXES

A. Provide cast-iron valve boxes at each buried valve to access valve and valve operators.

B. Do not support boxes on valve, valve operator, or pipe.

C. Boxes:

1. 2-piece, fabricated of cast-iron; provide cover, with asphalt varnish or enamel protective coating.
2. Adjustable to grade, install centered around the upper portions of the valve and valve operator.

D. Manufacturers: One of the following or equal:
1. Tyler Pipe Industries, Inc.
2. Neenah Foundry Company.

2.05 VALVE OPERATORS

A. Valve Operator "Open" Direction: Open counterclockwise.

B. Provide valves located below operating level or deck with extensions for key operation or floor stands and handwheels.

C. Provide manually operated valves and gates located not more than 6 feet above the operating level with tee handles, wrenches, or handwheels.
1. Make the valve operator more conveniently accessible by rolling valves, located more than 5 feet but less than 6 feet above the operating level, toward the operating side.
2. Secure tee handles and wrenches to the valve head or stem, except where a handle or wrench so secured constitutes a hazard to personnel; in which case, stow handle or wrench immediately adjacent to the valve on or in a suitable hanger, bracket, or receptacle.

D. Fit valves located more than 6 feet above operating level with chain operated handles or valve wheels.
1. Chains: Sufficient length to reach approximately 4 feet above the operating level.
2. Where chains constitute a nuisance or hazard to operating personnel, provide hold-backs or other means for keeping the chains out of the way.

E. Provide an operator shaft extension from valve or valve operator to finish grade or deck level when buried valves, and other valves located below the operating deck or level, are specified or indicated on the Drawings to be key operated; provide 2 inch square AWWA operating nut, and box and cover as specified, or a cover where a box is not required.

PART 3 EXECUTION

3.01 EXAMINATION

A. Preparation: Required Information Prior to Installation:
1. Install valves after the required submittal on installation has been accepted.
2. Determine, after flanged valves and flanged check valves are selected, the face-to-face dimensions of flanged valves and flanged check valves.

B. Fabricate piping to lengths taking into account the dimensions of flanged valves and flanged check valves.

3.02 INSTALLATION

A. Provide incidental work and materials necessary for installation of valves including flange gaskets, flange bolts and nuts, valve boxes and covers, concrete bases, blocking, and protective coating.

B. Where needed, furnish and install additional valves for proper operation and maintenance of equipment and plant facilities under the following circumstances:
   1. Where such additional valves are required for operation and maintenance of the particular equipment furnished by CONTRACTOR.
   2. Where such additional valves are required as a result of a substitution or change initiated by CONTRACTOR.

C. Install Valves with their stems in vertical position above the pipe, except as follows:
   1. Butterfly valves, gate valves aboveground, globe valves, ball valves, and angle valves may be installed with their stems in the horizontal position.
   2. Buried plug valves with geared operators shall be installed with their stems in a horizontal position.

D. Install valves so that handles clear obstructions when the valves are operated from fully open to fully closed.

E. Place top of valve boxes flush with finish grade or as otherwise indicated on the Drawings.

F. Valves with Threaded Connections:
   1. Install valves by applying wrench on end of valve nearest the joint to prevent distortion of the valve body.
   2. Apply pipe joint compound and Teflon tape on external (male) threads to prevent forcing compound into valve seat area.

G. Valves with Flanged Connections:
   1. Align flanges and gasket carefully before tightening flange bolts.
   2. When flanges are aligned, install bolts and hand tighten.
   3. Tighten nuts opposite each other with equal tension before moving to next pair of nuts.

H. Valves with Soldered Connections:
   1. Do not overheat connection to prevent damage to resilient seats and metal seat rings.
   2. Position valves in full open position before starting soldering procedure.
   3. Apply heat to piping rather than to valve body.

END OF SECTION

SECTION 15112

BUTTERFLY VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Butterfly valves.

B. Related sections:
1. Section 09960 - High-Performance Coatings.
2. Section 15110 - Common Work Results for Valves.
3. Section 15211 - Ductile Iron Pipe, AWWA C151.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
1. B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, Classes 25, 125 and 250.
2. B16.5 - Pipe Flanges and Flanged Fittings, NPS 1/2 through NPS 24.

B. American Water Works Association (AWWA):
1. C110 - Standard for Ductile-Iron and Gray-Iron Fittings.
2. C504 - Rubber-Seated Butterfly Valves.
3. C540 - Standard for Power-Actuating Devices for Valves and Sluice Gates.
4. C550 - Protective Interior Coatings for Valves & Hydrants.
5. C606 - Standard for Grooved and Shouldered Joints.

C. ASTM International (ASTM):
1. A 126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
2. A 216 - Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for Higher-Temperature Service.
3. A 276 - Standard Specification for Stainless Steel Bars and Shapes.
4. A 351 - Standard Specification for Castings, Austenitic, for Pressure-Containing Parts.
5. A 395 - Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures.
6. A 479 - Standard Specification for Stainless Steel Bars and Shapes for Use in Boilers and Other Pressure Vessels.
7. A 515 - Standard Specification for Pressure Vessel Plates, Carbon Steel, for Intermediate - and Higher-Temperature Service.
8. A 516 - Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate - and Lower-Temperature Service.
9. A 536 - Standard Specification for Ductile Iron Castings.
10. A 564 - Standard Specification for Hot-Rolled and Cold-Finished Age-Hardening Stainless Steel Bars and Shapes.
11. A 582 - Standard Specification for Free-Machining Stainless Steel Bars
12. B 584 - Standard Specification for Copper Alloy Sand Castings for General Applications.
13. D 429 - Standard Test Methods for Rubber Property-Adhesion to Rigid Substrate.

D. Compressed Gas Association (CGA):
   1. Standard G-4.1 - Cleaning Equipment for Oxygen Service.

E. NSF International (NSF):
   1. Standard 61 - Drinking Water System Components - Health Effects.

F. United States Code of Federal Regulations (CFR):
   1. 21 - Food and Drugs.

1.03 SYSTEM DESCRIPTION

A. Design requirements:
   1. General purpose AWWA butterfly valves:
      a. Design standard: Provide valves designed and manufactured in accordance with AWWA C504.
      b. Class:
         1) Provide butterfly valves in accordance with AWWA Class 150B, unless otherwise specified.
         2) Provide butterfly valves in accordance with AWWA Class 250B in piping systems with test pressure greater than 150 pounds per square inch and less than 250 pounds per square inch.
   2. High pressure butterfly valves:
      a. Piping systems designed for operating pressures greater than 250 pounds per square inch and less than 450 pounds per square inch: Provide ASME B16.5, Class 300 high pressure valves.
   3. Industrial class butterfly valves:
      a. Industrial class butterfly valves capable of 150 pounds per square inch leak tight shut off.
   4. Stainless steel butterfly valves:
      a. Stainless steel butterfly valves capable of a minimum of 100 pounds per square inch leak tight shut off and with special cleaning, packaging, and handling.

B. Usage:
   1. Provide and install butterfly valve types as outlined in the Butterfly Valve Application Schedule at the end of this Section.

C. Design requirements for all butterfly valves with power actuating devices:
   1. Design valves and actuators for maximum operating torque, in accordance with and using safety factors required in AWWA C540, using the following values:
      a. Maximum water velocity: 16 feet per second with valve fully open.
      b. Maximum pressure differential across the closed valve equal to the pressure class designation.
      c. Coefficient for seating and unseating torque, dynamic torque, and bearing friction in accordance with valve manufacturer's published recommendations.
   2. Valve disc: Seat in an angular position of 90 degrees to the pipe axis and rotate an angle of 90 degrees between fully open and fully closed positions:
      a. Do not supply valves with stops or lugs cast with or mechanically secured to the body of the valve for limiting the disc travel.
   3. Unacceptable thrust bearings: Do not provide valves with thrust bearings exposed to the fluid in the line and consisting of a metal bearing surface in rubbing contact with an opposing metal bearing surface.

D. Performance requirements:

1. Tight shutoff at the pressure rating of the valve with pressure applied in either direction.
2. Suitable for the following service conditions:
   a. Throttling.
   b. Frequent operation.
   c. Operation after long periods of inactivity.
   d. Installation in any position and flow in either direction.

1.04 SUBMITTALS

A. Shop drawings: Submit the following information as specified in Sections 01330 and 15110:
   1. Product data:
      a. For general purpose AWWA butterfly valves, include description of the method of attachment of the disc edge to the valve disc.
   2. Certificates:
      a. General purpose AWWA butterfly valves:
         1) Proof-of-design tests: Certified statement that proof-of-design tests were performed and all requirements were successfully met.
         2) Affidavit of compliance attesting valves provided comply with all provisions in accordance with AWWA C504.
      b. Interior epoxy coatings: Affidavit of compliance attesting that epoxy coatings applied to interior surfaces of butterfly valves comply with all provisions in accordance with AWWA C550.
      c. Certification, for all valves and coatings in contact with potable water, that the products used are suitable for contact with drinking water in accordance with NSF Standard 61.
   3. Operation and Maintenance Data.

PART 2 PRODUCTS

2.01 GENERAL PURPOSE AWWA BUTTERFLY VALVES

A. Manufacturers: One of the following or equal.
   1. DeZurik/Sartell Model BAW.
   2. Henry Pratt Company.

B. Valve body:
   1. Material: Cast iron, ASTM A 126, Grade B, or ductile iron, ASTM A 536, Grade 65-45-12.
   2. Body design:
      a. Flanged body valves:
         1) Usage: Comply with limitations specified in the Butterfly Valve Application Schedule.
         2) Flanges: In accordance with ASME B16.1 Class 125 flanges for Class 150B valves, in accordance with ASME B16.1 Class 250 flanges for Class 250B valves.
      b. Mechanical joint body valves:
         1) Usage: Comply with limitations specified in the Butterfly Valve Application Schedule.
         2) Mechanical joint design: In accordance with AWWA C110.
         3) When mechanical joint body valves are used, incorporate valve into thrust restraint analysis as specified in Section 15211. Utilize test

pressure on one side of valve and zero pressure on the opposite side of the valve. Restrain pipe joints on both sides of valve as determined by thrust analysis calculations.

c. Wafer body valves:
   1) Usage: Comply with installation limitations specified in the Butterfly Valve Application Schedule.
   2) Body design: Lugged design with boltholes drilled and tapped to accept flange bolts. Wafer body valves that are installed by mating between flanges are not acceptable.
   3) Locate lugged style valves in piping systems such that when the valve is operated, the opening of the valve disc will not interfere with, nor be impaired by, adjacent piping, fittings, valves, equipment, or other installations.

d. Grooved end body valves:
   1) Usage: Butterfly valves with grooved ends may be used in piping systems specified in the Piping Schedule to have grooved end joints. Comply with additional limitations specified in the Butterfly Valve. Application Schedule.
   2) Grooved end joint design: In accordance with AWWA C606.

C. Disc:
   1. Material: Cast iron or ductile iron with Type 316 stainless steel edge that matches seat in valve body.
   2. Secure valve disc to shaft by means of smooth-sided, taper or dowel pins,Type 316 stainless steel, or Monel.
   3. Extend pins through shaft and mechanically secure in place.

D. Shaft and bearings:
   1. Shaft design:
      a. Valves 20-inch and less: 1 piece, through disc design.
      b. Valves greater than 20-inch size: 2 piece, stub shaft design.
   2. Shaft seal: Vee type, chevron design.
   3. Shaft material for Class 150B valves: Type 316 stainless steel, ASTM A 276.
   4. Shaft material for Class 250B valves: Type 17-4 pH stainless steel, ASTM A 564.
   5. Shaft bearings: Self-lubricating sleeve type:
      a. Valves 20-inch and less: Nylatron.
      b. Valves greater than 20-inch size: Teflon® with stainless steel or fiberglass backing.

E. Seats:
   1. Seat materials:
      a. In low-pressure air applications: EPDM.
      b. In all other applications: NBR or natural rubber
   2. For valves 20 inches in nominal size and smaller, bond or vulcanize seat into the valve body.
   3. For valves 24 inches in nominal size and larger, retain seats mechanically or by adhesive:
      a. Mechanical retainage: Retain seat by a clamping ring with segmented clamping ring locks with adjusting locking screws.
         1) Clamping ring, ring locks, and adjusting locking screws: Type 316 stainless steel.
         2) Provide means to prevent ring locks and screws used to retain seats from loosening due to vibration or cavitation.

b. Adhesive retainage: Inset the seat within a groove in the valve body and retain in place with epoxy injected behind the seat so that the seat expands into the body.
c. Do not provide valves with seats retained by snap rings or spring-loaded retainer rings.

4. Resilient seat: Withstand 75 pound per inch pull when tested in accordance with ASTM D 429, Method B.

F. Valve packing:
1. Valves 4 inch to 48 inch nominal size: Self-adjusting V-type packing or chevron-type packing. NBR or EPDM to match seat material.
2. Valves 54 inch nominal size and larger: Adjustable V-type packing with bronze packing gland or self-adjusting V-type packing. NBR or EPDM to match seat material.

2.02 HIGH PRESSURE BUTTERFLY VALVES

A. Manufacturers: One of the following or equal:
1. DeZurik.
2. Crane Flowseal.
3. Neles-Jamesbury.

B. Valve body:
1. Material: Carbon steel ASTM A 515 or A 516, Grade 70, or ASTM A 216, WCB.
2. Body design: Flanged, in accordance with ASME B16.5, Class 300 dimensions. Wafer and lugged style valves may not be used for high-pressure service.

C. Disc:
1. Offset disc.
2. Material: Type 316 stainless steel, ASTM A 351, Grade CF-8M.

D. Shaft and bearings:
1. Shaft: Type 316 stainless steel, ASTM A 479 or Type 17-4 PH stainless steel, ASTM A 564.
2. Shaft bearings: Self-lubricating sleeve type; Teflon® with stainless steel or fiberglass backing.

E. Disc pins: Secure valve disc to shaft by means of solid, smooth-sided, taper or dowel pins, Type 316 stainless steel or Monel:
1. Extend pins through shaft and mechanically secure in place.

F. Seats:
1. Material: Teflon®, or Teflon® with titanium back-up ring.
2. Seat retainer ring:
a. If used on sizes above 20-inch: Type 316 stainless steel with stainless steel fasteners.
b. Type 316 stainless steel for digester gas applications.
c. For all such valves, bond the seat to the retention ring.

G. Valve shaft packing: Teflon®, chevron type design. Field adjustable and field replaceable.

2.03 INDUSTRIAL CLASS BUTTERFLY VALVES

A. Manufacturers: One of the following or equal:
   1. SPX/DeZurik Style BOS.
   2. Tyco-Keystone Figure AR2.

B. Valve body:
   1. Pressure rating: 150 pounds per square inch, minimum.
   2. Material: Cast iron, ASTM A 126, Class B or Ductile Iron, ASTM A 395, Grade 60/40/18.
   3. Body design: Lugged style body with drilled and tapped boltholes in accordance with ASME B16.1, Class 125 and Class 150 flange drilling dimensions.

C. Disc:
   1. Materials:
      a. Air and water service: Cast iron, ASTM A 126, Class B or Ductile Iron, ASTM A 536, Grade 65/45/12 or Type 316 stainless steel, ASTM A 351, Grade CF8M.
      b. Natural gas and digester gas service: Type 316 stainless steel, ASTM A 351, Grade CF8M.
   2. Disc edge: Nickel-plated when cast iron or ductile iron disc is used.

D. Shaft and bearings:
   1. Shaft: Type 316 stainless steel, ASTM A 276 or Type 416 stainless steel, ASTM A 582 / A 582M.
   2. Shaft bearings: Self-lubricating sleeve type, Teflon® with stainless steel or fiberglass backing.

E. Disc pins: Secure valve disc to shaft by means of solid, smooth-sided, taper or dowel pins, Type 316 stainless steel:
   1. Extend pins through shaft and mechanically secure in place.

F. Seats:
   1. Material:
      a. Natural gas applications: Neoprene or Buna N.
      b. All other applications: EPDM.
   2. Seat retention ring, if used on larger sizes: Type 316 stainless steel or bronze, ASTM B 584, with stainless steel fasteners. For all such valves, bond the seat to the retention ring.

G. Valve shaft packing:
   1. Natural gas applications: Neoprene or Buna N.
   2. All other applications: EPDM or Teflon®.

2.04 THERMOPLASTIC BUTTERFLY VALVES (1-1/2 to 16-INCHES)

A. Manufacturers: One of the following, or equal:
   1. ASAHI, Type 56.
   2. Hayward.

B. Valve Body:
   1. Material: PVC, CPVC, PVDF.
   2. Body Design: Lugged, wafer style body with drilled and tapped bolt holes to match ASME/ANSI B 16.1, Class 125 and Class 150 flanged drilling

dimensions.

C. Disc:
   1. Disc shall be offset.
   2. Material: PVC, CPVC, PVDF.

D. Stem and stem older:
   1. Stem: Type 316 stainless steel.
   2. Stem holder: Type 304 stainless steel.

E. Seats:
   1. Material: EPDM or as required to be compatible with the service fluid.
   2. O-rings: EPDM or as required to be compatible with the service fluid.

2.05 BUTTERFLY VALVE ACTUATORS

A. Manual actuators for aboveground valves, 4 inches in nominal size and smaller for liquid service, and 10 inches in nominal size and smaller for aeration air service.
   1. For valves operating at pressures up to and including 250 pounds per square inch, provide hand lever type with locking device so that the valve can be locked in any position with a wing nut.
      a. Locking device: Rigid, allowing no vibration or chattering of the valve.
      b. Hand lever: 12 inches long, with handgrip.
   2. For valves operating at pressures above 250 pounds per square inch, provide totally enclosed worm gear actuator mounted on the valve.

B. Manual actuators for aboveground valves in nominal sizes and in service applications other than specified above, except for valves 30 inches and larger.
   1. For valves operating at pressures up to and including 250 pounds per square inch, provide either a totally enclosed worm gear actuator or a totally enclosed traveling nut actuator mounted on the valve.
   2. For valves operating at pressures above 250 pounds per square inch, provide totally enclosed worm gear actuator mounted on the valve.

C. Manual actuators for aboveground valves 30 inches in nominal size and larger, all pressures.
   1. Provide totally enclosed worm gear actuator mounted on the valve.

D. Manual actuators for buried or submerged valves, all sizes, and pressures.
   1. Provide totally enclosed travelling nut actuator mounted on the valve.
   2. Actuators for buried or submerged valves: Hermetically sealed and grease packed.
   3. For buried valves, provide 2-inch square AWWA nut on enclosed actuator.
   4. For buried valves, provide extension stem, valve box, and valve box cover as specified in Section 15110.
   5. For submerged valves, provide extension stem as indicated on the Drawings.

E. Position indication:
   1. For all aboveground worm gear or traveling nut manual actuators, provide position indication on the actuator enclosure.

F. Limit switches: Provide limit switches on manually actuated valves where indicated on the Drawings:
   1. Limit switches: Heavy-duty, industrial grade, oiltight, with not less than auxiliary contacts.

2. Rating: Rated for 10 amps, 120 volts alternating current.
3. Enclosure: NEMA Type 4X enclosure and with stainless steel levers and arms. Provide switch with NEMA Type 7 enclosure when switch is located within areas with NEC Class 1, Division 1 or Class 1, Division 2 designations as indicated on the Drawings.

2.06 COATINGS

A. Shop coat interior and exterior metal surfaces of valves, except as follows:
   1. Interior machined surfaces.
   2. Surfaces of gaskets and elastomeric seats and stem seals.
   3. Bearing surfaces.
   4. Stainless steel surfaces and components.

B. Coating material for potable water applications:
   1. Formulate coating material from materials in accordance with CFR 21.

C. Field applied coatings:
   1. Additional coating of the valve exterior will be required to match the epoxy or epoxy/polyurethane paint system as specified in Section 09960.
      a. When shop applied finish coating matches field applied coating on adjacent piping, touch up shop coating in damaged areas in accordance with instructions recommended by the paint manufacturer.
      b. When shop applied coating does not match field coating on adjacent piping, or when damage has occurred to the shop applied coating that requires more than touchup, blast clean valve surfaces or utilize other surface preparation recommended by the manufacturer of the coating material and apply the coating system used for coating adjacent piping.

D. Surface coatings:
   1. Interior surfaces, except for valves used in low-pressure air service: High solids epoxy.
   2. Interior surfaces of valves used in low-pressure air service: High temperature coating for range of 150 to 350 degrees Fahrenheit, as specified in Section 09960.
   3. Exterior surfaces of valves, actuators, and accessories:
      a. Submerged valves: High solids epoxy.
      b. Buried valves: Coal tar epoxy.
      c. Other valves: High solids epoxy with polyurethane topcoat.
   4. Polished and machined surfaces: Apply rust-preventive compound.

E. Coating materials:
   1. High solids epoxy and coal tar epoxy:
      a. Products: As specified in Section 09960:
         1) Coating product in contact with potable water must be in accordance with AWWA C550 and NSF 61.
   2. High temperature coating: As specified in Section 09960 and in accordance with AWWA C550.
   3. Rust-preventive compound: One of the following or equal:
      a. Houghton, Rust Veto 344.
      b. Rust-Oleum, R-9.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install valves with valve shafts horizontal, unless a vertical shaft is required to suit a particular installation, and unless a vertical shaft is indicated on the Drawings.

B. Install pipe spools or valve spacers in locations where butterfly valve disc travel may be impaired by adjacent pipe lining, pipe fittings, valves, or other equipment.

3.02 BUTTERFLY VALVE APPLICATION SCHEDULE

A. Acceptable butterfly valve types and body styles are listed in the Butterfly Valve Application Schedule provided at the end of this Section. Furnish and install butterfly valves in accordance with this Schedule.

BUTTERFLY VALVE APPLICATION SCHEDULE	
Valve Type and Style	**Acceptable Applications**
General Purpose AWWA Butterfly Valves - Flanged Body Design	Aboveground or submerged in the following service applications only: - Acceptable in all service applications except oxygen and ozone service and high-pressure service. - May be used in buried applications when required by the specified piping system.
General Purpose AWWA Butterfly Valves - Mechanical Joint Body Design	Buried in the following service applications only: - Acceptable in all service applications except oxygen and ozone service and high-pressure service.
General Purpose AWWA Butterfly Valves – Lugged Body Design	Aboveground in the following service applications only: - Aeration Air Systems
General Purpose AWWA Butterfly Valves – Wafer (not lugged) Body Design	Not allowed.
General Purpose AWWA Butterfly Valves - Grooved End Body Design	Aboveground, in sizes 20-inch and less, with piping system test pressure less than 100 psi, and in the following service applications only: - Acceptable in all service applications, except oxygen and ozone service, where piping for that service is specified in the Piping Schedule to have grooved end joints.
High Pressure Butterfly Valves – Flanged Body Design	Service applications with piping system test pressure greater than 205 psi. Acceptable in aboveground and buried installations.

High Pressure Butterfly Valves - Wafer or Lugged Wafer Body Design	Not allowed.
Industrial Class Butterfly Valves - Lugged Body Design	Aboveground in the following service applications only: - Aeration Air Systems - Natural Gas Systems - Chilled and Hot Water Systems
Industrial Class Butterfly Valves – Wafer (not lugged) Body Design	Not allowed.
Stainless Steel Butterfly Valves – Lugged Body Design	Aboveground in the following service applications only: - Oxygen Systems - Ozone Systems
Stainless Steel Butterfly Valves – Wafer (not lugged) Body Design	Not allowed.

END OF SECTION

SECTION 15115

GATE VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Gate valves.

B. Related Sections:
   1. Section 15110 – Common Work Results for Valves.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME).

B. American Water Works Association (AWWA):
   1. C 509 – Resilient-Seated Gate Valves for Water Supply Service (Includes Addendum C509a-95).
   2. C 515 – Standard for Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Services.
   3. C 550 – Protective Interior Coatings for Valves and Hydrants.

C. American Society for Testing and Materials (ASTM):
   1. B 98 – Standard Specifications for Copper-Silicon Alloy Rob, Bar, and Shapes.

1.03 SUBMITTALS

A. Shop Drawings: Submit the following information as specified:
   1. Product Data: Submit detailed technical information relating to each type of valve including description of component parts, materials of construction, performance, dimensions, and weights.
   2. Certificates:
      a. General purpose AWWA gate valves:
         1) Proof-of-Design Tests: Certified statement that proof-of-design tests were performed and all requirements were successfully met.
         2) Affidavit of compliance attesting valves provided in accordance with all provisions of AWWA C515.
      b. Interior epoxy coatings: Affidavit of compliance attesting that epoxy coatings applied to interior surfaces of valves and hydrants comply in accordance with all provisions of AWWA C550.
   3. Operation and Maintenance Data.

PART 2 PRODUCTS

2.01 GATE VALVES

A. Gate valves aboveground:
   1. Valves less than 3 inches in size for clean water and air service:
      a. Manufacturers: One of the following or equal:
         1) Crane, Figure 431.
         2) Jenkins, Figure 47.

3) Lunkenheimer Company, Figure 2151.

b. Design:

1) Size and configuration: Indicated on the drawings.

2) Manufacturer’s standard bronze, solid wedge disc, rising stem, screwed end, Class 150 pounds.

2. Valves 3 inches in size or larger:

a. Manufacturers: One of the following or equal:

1) M&H/Kennedy Valve Company.

2) Mueller.

3) American Flow Control, Series 2500.

b. Design:

1) Size, material, configuration: Indicated on the drawings.

2) Resilient wedge type in accordance with AWWA C515.

3) Flange, iron body, and bonnet rated for 200 pound working pressure.

a) Provide O-ring seal between valve body and bonnet.

4) Ductile or cast iron wedge encapsulated in nitrile rubber and capable of sealing in either flow direction.

5) Bronze stem with double or triple O-ring or braided packing stem seals.

6) Rising stem configuration with hand wheel diameter sized to allow opening of a valve with no more than a 40-pound pull.

7) Coat interior and exterior surfaces of valve body and bonnet with fusion-bonded epoxy in accordance with AWWA C550.

B. Gate valves underground:

1. Manufacturers: One of the following or equal:

a. M&H/Kennedy Valve Company.

b. Mueller Company.

c. American Flow Control.

2. Design:

a. Size, material, configuration: Indicated on the drawings.

b. Resilient wedge type in accordance with AWWA C515.

c. Stem:

1) Iron body, resilient seat, non-rising stem, double O-ring stem seal.

2) Rising stem configuration with hand wheel diameter sized to allow opening of valve with no more than a 40-pound pull.

3) Ductile or cast iron wedge encapsulated in nitrile rubber and capable of sealing in either flow direction.

4) Bronze stem with double or triple O-ring or braided packing stem seals.

5) Coat interior and exterior surfaces of valve body and bonnet with fusion-bonded epoxy in accordance with AWWA C550.

6) Valve operator: Provide standard AWWA 2-inch operating nut, matching valve key, and valve box for operating stem.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install as specified in Section 15110 and in accordance with manufacturer's published instructions.

END OF SECTION

SECTION 15117

SPECIALTY VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Backflow Preventers.
   2. Corporation stops.
   3. Curb stops.

B. Related Sections:
   1. Section 15110 – Common Work Results for Valves.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. A 48 – Specification for Gray Iron Castings.
   2. A 126 - Specification for Gray Iron Casting for Valves, Flanges, and Pipe Fittings.
   3. A 276 - Specification for Stainless Steel and Heat-Resisting Steel Bars and Shapes.
   4. B 584 - Specification for Copper Alloy Sand Castings for General Application.
   5. D 2000 - Classification System for Rubber Products in Automotive Applications.

B. American Water Works Association (AWWA):
   1. C 511 - Reduced Pressure Principle Backflow Prevention Assembly.
   2. C 800 – Underground Service Line Valves & Fittings.

C. National Electrical Manufacturers Association (NEMA).

1.03 SUBMITTALS

A. Submittals Prior to Installation:
   1. Product Data: Submit detailed technical information relating to each type of valve including description of component parts, materials of construction, performance, dimensions, and weights.

B. Operation and Maintenance Data:
   1. Furnish bound sets of installation, operation, and maintenance instructions for each type of valve. Include information on valve operators in operation and maintenance instruction manual.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufactured by manufacturers whose valves have had successful operational experience in comparable service.

1.05 DELIVERY STORAGE AND HANDLING

A. Protect valves from damage during handling and installation.

PART 2 PRODUCTS

2.01 BACKFLOW PREVENTERS

A. Manufacturers: One of the following or equal:
   1. Febco Backflow Prevention:
      a. Model 825Y for 1/2-inch through 2-inch.
      b. Model 825YD for sizes larger than 2-inch.
   2. Zurn/Wilkins:
      a. Model 975XL for 1/2-inch through 2-inch.
      b. Model 975 for sizes 2-1/2 inch, 3-inch, 8-inch, and 10-inch.
      c. Model 375 and 375DA for sizes 4-inch and 6-inch.
   3. Watts Regulator: Series 909.

B. Design: Reduced pressure chamber type in accordance with AWWA C 511.

C. Include shutoff valves at each end of backflow preventer with properly located test cocks.

D. Shutoff Valves:
   1. Backflow Preventers 2-inch and Smaller: Provide with full-port, quarter turn, resilient seated ball valves.
   2. Backflow Preventers Larger than 2-inch: Provide with resilient seated, outside stem and yoke gate valves.

2.02 CORPORATION STOPS

A. Type: In accordance with AWWA C800.
   1. Manufacturers: One of the following or equal:
      a. Ford.
      b. Mueller Company.

2.03 CURB STOPS

A. Type: In accordance with AWWA C800.
   1. Manufacturers: One of the following or equal:
      a. Ford.
      b. Mueller Company.

B. Description: Round way solid tee head stops.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install as specified in Section 15110 and in accordance with manufacturer's published instructions.

B. Backflow Preventers:
   1. Install with a minimum clearance of 12 inches and with maximum clearance of 30 inches between the relief port and the floor or finished grade.
   2. Install with sufficient side clearance for access for testing and maintenance.
   3. Recertify all new backflow preventers after installation, start-up, and testing.

C. Flow Control Valves:
   1. Install orifice in accordance with manufacturer’s requirements.

END OF SECTION

SECTION 15118

PRESSURE REDUCING AND PRESSURE RELIEF VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Pressure reducing and pressure relief valves for water.

B. Related Sections:
   1. Section 15100 – Common Work Results for Valves.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. B16.42 – Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 to 300.

B. ASTM International (ASTM):
   1. A 48 – Specification for Gray Iron Castings.
   2. A 536 – Specification for Ductile Iron Castings.

C. Underwriters Laboratories, Inc. (UL)

1.03 SUBMITTALS

A. Shop drawings: submit the following:
   1. Product Data.
   2. Operation and Maintenance Data.

PART 2 PRODUCTS

2.01 WATER PRESSURE REDUCING VALVES

A. Water pressure reducing valves, 2 ½ inches and smaller:
   1. Manufacturers: One of the following, or equal:
      a. Watts Regulator, Series 223.
      b. Wilkins, 500 Series
   2. Direct operated, single seat type pressure reducing valve.
   3. Materials:
      a. Body and spring cover: Bronze.
      b. Valve seat: Series 300 stainless steel.
      c. Diaphragm: Buna Nitrile or EPDM.
      d. Disk: Buna Nitrile or EPDM.

B. Water pressure reducing valves, 3 inches and larger:
   1. Manufacturers: One of the following, or equal:
      a. Watts Regulator, Series 115.
      b. Cla-Val Model 49-01.
   2. Design:
      a. Pilot controlled, hydraulically operated, diaphragm actuated, globe patterned valve.

b. Rated for 125 pounds per square inch gauge.
c. Pilot line: Equipped with a strainer.
d. Flanges: 150 pound rating, in accordance with ASME B 16.42.

3. Materials:
a. Body and cover: Cast iron ASTM A 48 or Ductile Iron ASTM A 536.
b. Valve trim: Bronze.
c. Pilot Control: Cast bronze with Series 303 stainless steel trim.
d. Diaphragm: Nylon reinforced Buna N, Neoprene, or EPDM.

2.02 WATER PRESSURE RELIEF VALVES

A. Water Pressure Relief Valves:
1. Manufacturers: One of the following, or equal:
a. Watts ACV Series 116.
b. Cla-Val Model 50-01.

2. Design:
a. Pilot controlled, hydraulically operated, diaphragm actuated, globe patterned valve.
b. Rated for 125 pounds per square inch gauge.
c. Pilot Line: Equipped with a strainer.
d. End Connections:
1) 3-inch and Smaller: Screwed.
2) 4-inch and Larger: 150-pound rated flanges conforming to ANSI B16.42.

3. Materials:
a. Body and Cover: Cast iron ASTM A 48 or Ductile Iron ASTM A 536.
b. Valve Trim: Bronze.
c. Pilot Control: Cast bronze with Series 303 stainless steel trim.
d. Diaphragm: nylon reinforced Buna N or EPDM.

2.03 AIR PRESSURE REGULATING VALVES

A. Air Pressure Regulating Valves:
1. Manufacturers: One of the following, or equal:
a. Fisher Controls Company, Series 95.

2. Type: Self-operated air pressure regulator for high capacity installations.

3. Design:
a. Size: Same size as pipe sizindicated on the Drawings.
b. Inlet Pressure Rating: Not less than 600 pounds per square inch gauge.
c. End Connections: Screwed or flanged, compatible with joint type specified for the piping system.
d. Internal pressure relief capability for minor seat leakage.

4. Materials:
a. Body: Cast iron.
b. Diaphragm and Disc: Fluoroelastomer suitable to 300 degrees Fahrenheit.
c. Valve Trim: Type 416 Stainless steel.

5. Output Pressure: as indicated on the Drawings or as required.
a. Spring Range: Provide lowest spring range that will allow adjustment to the specified output pressure.

B. Air Pressure Regulating Valves for Instrument Air Systems:
1. Manufacturers: One of the following, or equal:
a. Fisher Controls Company, Series 67CFR.

b. Fairchild Industrial Products Company, Model 65A.

2. Design:
   a. Inlet Pressure Rating: Not less than 250 pounds per square inch gauge.
   b. Inlet and Outlet Ports: Tapped, 1/4-inch diameter.
   c. Internal pressure relief capability for minor seat leakage.
   d. Integral 40 micron filter.
   e. Drain valve at low point of body.
   f. Provide pressure gauge integrally mounted on the valve.
      1) Gauge Units: Pounds per square inch gauge.

2.04 COMBINATION WATER FLOW AND PRESSURE REDUCING VALVES

A. Combination Water Flow and Pressure Reducing Valves:
   1. Manufacturers: One of the following, or equal:
      a. Cla-Val, Model 49-01 (49G-01BPSYKC)
   2. Design:
      a. Pilot controlled, hydraulically operated, diaphragm actuated, globe patterned valve.
   3. Materials:
      a. Body and cover: Ductile Iron ASTM A 536.
      b. Disc Retainer: Cast Iron
      c. Trim: Stainless Steel.
      d. Disc: Buna-N Rubber.
      e. Diaphragm: Nylon reinforced Buna N, Neoprene, or EPDM.
      f. Stem, Nut & Spring: Stainless Steel.
      g. Orifice Plate Assembly: Model X52E
         1) 4” Valve, 2.20 Bore Size

PART 3 EXECUTION

A. Install as specified in Section 15110 in accordance with manufacturer’s published instructions.

B. Flow Control Valves:
   1. Install orifice in accordance with the manufacturer’s requirements.

END OF SECTION

SECTION 15119

AIR AND VACUUM RELIEF VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: air and vacuum valves.

B. Related Sections:
   1. Section 15110 – Common Work Results for Valves.

1.02 REFERENCES

A. County of San Luis Obispo Standard Details and Specifications (latest edition)

B. American Society for Testing and Materials (ASTM):
   1. A 126 - Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
   2. A 240 - Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels.
   3. A 270 - Specification for Seamless and Welded Austenitic Stainless Steel Sanitary Tubing.
   4. B 584 - Specification for Copper Alloy Sand Castings for General Applications.

C. American Water Works Association (AWWA).
   1. C512-07 – Air Release, Air/Vacuum, and Combination Air Valves for Waterworks Service

D. American Society of Mechanical Engineers (ASME).
   1. B 16.1 – Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
   2. B 16.5 – Pipe Flanges and Flanged Fittings: NPS ½ through 24.

1.03 SUBMITTALS

A. Shop drawings: submit the following:
   1. Product Data.
   2. Operation and Maintenance Data.

PART 2 PRODUCTS

2.01 AIR RELEASE VALVES, WATER SERVICE

A. Manufacturers: One of the following or equal:
   1. Valve and Primer Corporation, APCO Series 200.
   2. Multiplex Manufacturing Company, Crispin PL Series.

B. Design:
   1. Pressure Rating: 150 pounds per square inch.
   2. Inlet: Screwed, 2-inch
   3. Orifice size ¼ inch diameter.

C. Materials:
   1. Body: Cast-iron.
   2. Float and internal trim: Type 316 stainless steel.
   3. Seat or valve plunger: Buna-N.

2.02 AIR AND VACUUM VALVES, WATER SERVICE

A. Manufacturers: One of the following or equal:
   1. Valve and Primer Corporation, APCO Series 140.
   2. Multiplex Manufacturing Company, Crispin A Series.

B. Design:
   1. Pressure Rating: 250 pounds per square inch.
   2. Inlet: Screwed, 2-inch

C. Materials:
   1. Body: Cast-iron.
   2. Float and internal trim: Type 316 stainless steel.

2.03 COMBINATION AIR VALVES, WATER SERVICE

A. Manufacturers: One of the following or equal:
   1. Multiplex Manufacturing Company, Crispin UL Series.
   2. Valve and Primer Corporation, APCO 140C or 150 Series.

B. Design:
   1. Operation: Automatic exhaust of large quantities of air from pipelines during filling and draining and release of accumulated air while pipeline is under pressure.
   2. Utilize compound lever system in conjunction with large and small orifices.
   3. Internal parts removable through top cover without removing valve from pipeline.
   4. Pressure rating: 150 pounds per square inch.
   5. Inlet:
      a. Screwed: 1-3 inch size.
      b. Flanged: 4-10 inch size.
   6. Outlet: Screwed or flanged.

C. Materials:
   1. Body: Cast-iron.
   2. Float: Stainless steel, type 316.
   3. Needle: Buna-N.
   4. Lever frame: cast iron or Delrin.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with Section 15110 and manufacturer’s instructions.

B. Install air release valves and air and vacuum valves with suitable discharge lines to nearest drainage system.

END OF SECTION

SECTION 15120

PIPING SPECIALTIES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Piping specialties including:
   1. Flexible rubber connections.
   2. Bellows type expansion joints.
   3. Slip type expansion joints.
   4. Rubber expansion joints.
   5. Transition fittings.

B. Related Sections:
   1. Section 15052 - Basic Piping Materials and Methods.

1.02 REFERENCES

A. American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME).

B. American National Standards Institute/American Water Works Association (ANSI/AWWA):
   1. ANSI/AWWA C153/A21.53 - Ductile-iron Compact Fittings.
   2. ANSI/AWWA C111/A21.11 - Rubber Gasket Joints for Ductile-iron and Gray-iron Pressure Pipe and Fittings.
   3. ANSI/AWWA C110/A21.10 - Ductile-iron and Gray-iron Fittings.
   4. ANSI/AWWA C213 - Fusion-bonded Epoxy Coatings and Linings for Steel Water Pipelines.
   5. ANSI/AWWA C151/A21.51 - Ductile-iron Pipe, Centrifugally Cast.

C. American Society for Testing and Materials (ASTM).
   1. ASTM A148 - Specification for steel castings, high- Strength, for Structural Purposes.
   2. ASTM A536 - Specification For Ductile Iron Castings.

D. Society of Automotive Engineers (SAE).

1.03 SUBMITTALS

A. Shop drawings: submit the following:
   1. Product Data.
   2. Operation and Maintenance Data.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Expansion Joints and Vibration Control Joints:
   1. Protect joint bellows and sliding surfaces against damage during packing, shipping and installation, and also during pressure test.
   2. Lock expansion joints against movement until pressure tests are completed.
   3. Replace damaged expansion joints with new and undamaged expansion joints.

PART 2 PRODUCTS

2.01 FLEXIBLE RUBBER CONNECTIONS

A. Manufacturers: One of the following or equal:
   1. Mercer Rubber Company, Type 150 Vibraflex.
   2. Red Valve Company, Inc., Part Number P-5.

B. Provide flexible rubber connections with 3/8 inch thick neoprene rubber tube with full faced flanged ends suitable to withstand a pressure of 150 pounds per square inch gauge.

C. Provide complete flexible rubber connections, including galvanized retaining rings and control rods.

2.02 BELLOWS TYPE EXPANSION JOINTS

A. Expansion Joints for General Service:
   1. Expansion Joints: Flexible bellows type with equalizing rings, except as otherwise specified or indicated on the Drawings.
   2. Manufacturers:
      a. Expansion Joints: One of the following or equal:
         1) Flexonics Inc., Controlled Flexing Expansion Joint.
         2) Flex-Weld Inc., Keflex, Series 308.
      b. Pipe Alignment Guides: One of the following or equal:
         1) Flexonics Inc.
         2) Flex-Weld, Inc.
      c. Intermediate Supports: Provide with protective saddles. One of the following or equal:
         1) Unistrut Corporation, Roller-type.
         2) Bergen-Paterson Pipesupport Corp.
   3. Design:
      a. Expansion Joint Rating: 150 pounds per square inch gauge, at 400 degrees Fahrenheit.
      b. Bellows: Laminated stainless steel, equipped with a self-draining liner guide.
      c. Axial Travel of Expansion Joints: Not less than 1.50 inches.
      d. Ends: 150 pound ANSI flanges, or plain suitable for welding connections, as required for piping in which installed.

2.03 SLIP TYPE EXPANSION JOINTS

A. PVC expansion joints:
   1. Flexible bellows type with equalizing rings.
   2. Manufacturers: One of the following or equal:
      a. Flo Control, Flo-Span.
      b. Chemtrol.
   3. Materials: PVC with EPDM O-ring.
   4. Design:
      a. 150-pound-per-square-inch pressure rating.
      b. Double O-ring seal.
      c. Axial travel: Not less than 1.5 inches.
      d. Ends: 150 pound ASME flanges, or plain end suitable for solvent welding connections.

2.04 RUBBER EXPANSION JOINTS

A. Manufacturers: One of the following or equal
   1. Mercer Rubber Company, Style 500 or 700.
   2. Red Valve Company, Inc. Type J-1.

B. Provide rubber expansion joints complete with control units and split retaining rings.

C. Design:
   1. Material: EPDM, reinforced with embedded steel rings, and a strong synthetic fabric.
   2. Expansion Rings, Suitable for Pressure of at Least 125 Pounds per Square Inch Gauge, Except as follows:
      a. Expansion joints in pump suction piping and where indicated on the Drawings suitable for minimum 90 pounds per square inch gauge, pressure and minimum 30 inches mercury vacuum.
      b. Split retaining rings, galvanized.
      c. Ends of expansion joints, 150 pound ANSI flanges with drilling to match that of the piping.
   3. Expansion Joints at Pump Suction and Discharge: As an alternative, reducing expansion joints at pump suction and discharge can be used with eccentric reducing expansion joints required on pump suction.

2.05 TRANSITION FITTINGS

A. Manufacturers: One of the following or equal
   1. Spears.

B. Materials:
   1. Slip socket: Schedule 80 PVC.
   2. Collar: Type 316 stainless steel.
   3. Threaded insert: Brass or Type 316 stainless steel as required.

PART 3 EXECUTION

3.01 INSTALLATION

A. Expansion Control Joints:
   1. Install bellows type expansion control joints at piping connections to mechanical equipment to prevent damaging stresses due to normal expansion and contraction with temperature changes in piping and connected equipment.
   2. Install bellows type expansion joints so as to allow 2-1/4 inch expansion per 100 linear feet of piping.
   3. Where possible, install expansion joints adjacent to an anchor, and provide one concentric guide on piping within 12 pipe diameters, but not more than 5 feet, from the end of the joint opposite the anchor.
      a. Locate a similar guide approximately 30 diameters but not more than 10 feet from the first.
   4. For expansion joints not installed adjacent to an anchor provide 2 concentric guides similarly located at each end of the joint.
   5. Provide control rods and additional guides where indicated on the Drawings, but at no greater intervals than recommended by the joint manufacturer in published instructions.

6. Space intermediate supports a minimum of 10 feet, and tack weld the protective saddles to the pipe.

B. Transition couplings:
   1. Application:
      a. Use transition couplings with function and design similar to flexible couples and flanged coupling adapters for connecting piping having different outside diameters.
   2. Install transition-coupling products specifically designed and manufactured for that application.

END OF SECTION

SECTION 15121

FLEXIBLE COUPLINGS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Dismantling Joints, grooved joint couplings, flexible couplings, flanged coupling adapters, and restrained flange coupling adapters.

B. Related Sections:
   1. Section 15052 - Basic Piping Materials and Methods.

1.02 REFERENCES

A. American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME).

B. American Society for Testing and Materials (ASTM).
   1. A36 – Carbon Structural Steel.
   2. A53 - Pipe, Steel, Black, and Hot-Dipped, Zinc-Coated Welded, and Seamless.
   3. A126 - Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
   4. A193 – Alloy Steel and Stainless Steel Bolting Materials for High Temperature Service.
   5. A512 - Cold-Drawn Buttweld Carbon Steel Mechanical Tubing.
   6. A536 - Ductile Iron Castings.

C. Society of Automotive Engineers (SAE).

D. American Water Works Association (AWWA).
   1. C111 – Rubber Gasket Joints for Ductile Iron Pipe and Fittings.
   2. C207 – Steel Pipe Flanges for Waterworks Service – Sizes 4 In. Through 133 In.

E. National Science Foundation (NSF)
   1. 61 – Drinking Water System Components – Health Effects.

1.03 SUBMITTALS

A. Shop drawings detailing dimensions and materials.

B. Piping Layout Drawings: Coordinate preparation of required piping layout drawings such that coupling center sleeve sizes are clearly identified on drawings.

C. Manufacturer's published installation instructions.

PART 2 PRODUCTS

2.01 PIPE COUPLINGS IN DUCTILE IRON PIPING

A. Dismantling Joints:
   1. Manufacturers: One of the following or equal:

a. Romac Industries, Inc., Style DJ400.
b. Smith-Blair, Inc., Series 975.

2. Materials:
   a. Flanged Spool:
      1) C207 Schedule 40 steel pipe in accordance with ASTM A 53 for sizes 3 inches to 12 inches.
      2) Steel for pipe in accordance with ASTM A 36 for sizes 14 inches to 72 inches.
   b. End Ring and Body:
      1) For sizes 3 inches to 12 inches, ductile iron in accordance with ASTM A 536.
      2) For sizes 14 inches to 72 inches, steel in accordance with ASTM A 36 or A 53.
   c. Follower Ring: Ductile iron in accordance with ASTM A 536 or steel in accordance with ASTM A 36 or A 576.
   d. Bolts and Hex Nuts:
      1) Aboveground: High strength, low alloy steel in accordance with AWWA C111.
      2) Buried and Underwater: Type 316 stainless steel bolts in accordance with ASTM F 593.
         Tie Rods: High tensile steel in accordance with ASTM A 193 Grade B7.
3. Flange Design: Class D steel ring flange in accordance with AWWA C207, compatible with ANSI Class 125 and 150 bolt circles.
4. Coating and Lining: Manufacturer's standard fusion bonded epoxy, ANSI/NSF 61 certified.

B. Flexible Couplings:
1. Manufacturers: One of the following or equal:
   a. Dresser Industries, Style 153.
   b. Romac Industries, Inc., Style 501.
   c. Smith-Blair, Inc., Series 441.
   d. Victaulic
2. Materials:
   a. Center Sleeve: Ductile iron, ASTM A536.
   b. Follower Flanges: Ductile iron, ASTM A536.
   c. Bolts and Hex Nuts:
      1) Above ground: High strength, low alloy steel.
      2) Buried and Underwater: Type 316 stainless steel.
3. Coating and Lining: Provide product with shop-applied primer which is compatible with finish coating to be applied in the field.
4. Center Sleeve Dimensions: Provide center sleeves with lengths in accordance with following table:

Nominal Pipe Size, Inches	Buried Condition	Aboveground Condition
3 inch and smaller	manufacturer's standard	manufacturer's standard
4 inch to 8 inch, inclusive	7"	5"
10 inch to 14 inch, inclusive	12"	6"
Greater than 16"	use steel flexible coupling per Paragraph 2.02	use steel flexible coupling per Paragraph 2.02

C. Flanged Coupling Adapters, 12 inch size and smaller:

1. Manufacturers: One of the following or equal:
    a. Dresser Industries, Style 127.
    b. Romac Industries, Inc., Style FCA501.
    c. Smith-Blair, Inc., Series 912.
2. Materials:
    a. Flanged Body: Ductile iron, ASTM A126 or ASTM A536.
    b. Follower Ring: Ductile iron, ASTM A536.
    c. Bolts and Hex Nuts:
        1) Aboveground: High strength, low alloy steel.
        2) Buried and Underwater: Type 316 stainless steel bolts.
3. Flange Design: In accordance with AWWA Class D with ANSI 150 pound drilling.
4. Coating and Lining: Provide product with shop-applied primer which is compatible with finish coating to be applied in the field.

D. Flanged Coupling Adapters, greater than 12 inch size:
1. Manufacturers: One of the following or equal:
    a. Dresser Industries, Style 128-W.
    b. Romac Industries, Inc., Style FC400.
    c. Smith-Blair, Inc., Series 913.
2. Materials:
    a. Flange and Flanged Body: Steel, ASTM A53 or ASTM A512.
    b. Follower Ring: Rolled steel.
    c. Bolts and Hex Nuts:
        1) Aboveground: High strength, low alloy steel.
        2) Buried and Underwater: Type 316 stainless steel bolts.
3. Flange Design: In accordance with AWWA Class D with ANSI 150 pound drilling.
4. Coating and Lining: Provide product with shop-applied primer which is compatible with finish coating to be applied in the field.

E. Restrained Flange Couplings Adapters:
1. Manufacturers: One of the following or equal:
    a. “Romac Industries, Inc. Style RFCA.
2. Materials:
    a. Flange and Flanged Body: Ductile iron in accordance with ASTM A 536.
    b. Follower Ring: Lug type restraint system.
        1) Follower Ring: Ductile iron in accordance with ASTM A 563.
        2) Restraining Lugs: Ductile iron in accordance with ASTM A 536.
            a) Designed to contact the pipe and apply forces evenly.
        3) Restraining Bolts: Ductile iron in accordance with ASTM A 536. Bolt heads shall be designed to twist off when the proper torque has been applied.
    c. Bolts and Hex Nuts:
    d. Aboveground: High Strength, low alloy steel in accordance with AWWA C111.
    e. Buried and Underwater: Type 316 stainless steel bolts in accordance with ASTM F 593.
3. Flange Design: Class D steel ring flange in accordance with AWWA C207 compatible with ANSI Class 125 and 150 bolt circles.
4. Coating and Lining: Manufacturer’s standard fusion bonded epoxy, NSF 61 certified.
5. Angular Deflection: Restrained flange coupling adapter must allow angular deflection after assembly.

F. Grooved joint couplings:
   1. Manufacturers: One of the following or equal:
      a. Victaulic Company, Series 31.
   2. Materials:
      a. Housings: Ductile iron in accordance with ASTM A 536.
      b. Gasket:
         1) FlushSeal® type, or equal. Elastomer in accordance with ASTM D 2000.
         2) EPDM.
            a) Bolts and nuts: Electroplated steel in accordance with ASTM A 449.
            b) Coating: As specified in Section 09960.
         3) For use with ridge or flexible radius grooved components in accordance with AWWA C606.
         4) For connection to IPS steel pipe sizes, Victaulic Style 307.

2.02 TRANSITION COUPLINGS

A. Application: Use transition couplings with function and design similar to flexible couplings and flanged coupling adapters for connecting piping having different outside diameters.

B. Install transition coupling products specifically designed and manufactured for that application.

2.03 GASKETS FOR FLEXIBLE COUPLINGS AND FLANGED COUPLING ADAPTERS

A. Provide gasket materials for process piping applications as follows:
   1. Low Pressure and High Pressure Air, Steam, Hot Water: EPDM.
   2. All Other Process Piping Applications: Neoprene rubber or Buna-N or EPDM.

2.04 EXTERIOR COATINGS - UNDERGROUND AND SUBMERSED APPLICATIONS

A. Manufacturers: One of the following or equal:
   1. Tapecoat Company, Inc., T.C. Mastic.
   2. Kop-Coat Company, Inc., Bitumastic Number 50.
   3. Thickness: Minimum 0.040 inch.

PART 3 EXECUTION

3.01 INSTALLATION

A. In underground and underwater installations, coat the coupling exterior after installation with a protective coating.Install pipe couplings with gap between pipe ends in accordance with the following table. Install flexible coupling with pipe gap located in middle of center sleeve. Install flanged coupling adapter with end of plain end pipe in middle of flanged coupling body. Maximum gap tolerance shall be plus or minus 1/8-inch.

Center Ring Length	Gap Dimension and Tolerance
4 inch through 6 inch	3/8-inch plus or minus 1/8-inch
7 inch	5/8-inch plus or minus 1/8-inch

10 inch and greater	7/8-inch plus or minus 1/4-inch.

B. Provide joint harnesses for flexible couplings unless otherwise indicated on the Drawings with a written note.
   1. Design joint harnesses on steel and stainless steel piping for the test pressures specified with the Piping Schedule in Section 15052.

C. Bolted, split-sleeve coupling shall only be used where shown on the Drawings.

END OF SECTION

SECTION 15122

FIRE HYDRANTS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Barrel type fire hydrant

1.02 REFERENCES

A. American Water Works Association (AWWA).
   1. C503-05 – Wet-Barrel Fire Hydrants.
   2. C401-08 – Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water.

B. Atascadero Mutual Water Company Specifications and Details

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: One of the following or equal.
   1. Clow Valve Company, Wet Barrel Hydrant: F960

2.02 MATERIALS

A. Fire hydrants:
   1. Wet barrel in accordance with type AWWA C 503-05 and Atascadero Mutual Water Company Standard Detail 220, as complemented and modified in this Section.
   2. Provide hydrants with ground level break-off feature and manufactured such that the valve stem will not be bent when the hydrant is damaged or broken at or near the ground level.
   3. When shut, provide valves that remain reasonably tight when the upper portion of the barrel is broken off.
   4. Diameter of the main valve opening: Not less than 4 inches.
   5. Inlet connection: 6-inch diameter mechanical joint for ductile iron pipe.
   6. Provide two 2-1/2-inch hose nozzles and one 4-inch pumper nozzle facing the street.
      a. Provide nozzles with hose caps chained to the hydrant barrel.
      b. Nozzle threads: National standard hose thread.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install hydrant with proper extension so that branch pipe to hydrant and supply main are at the same elevation.

B. Attach auxiliary 6-inch gate valve by mechanical joint at least 18 inches from the hydrant joint, and attach piping ductile-iron to the supply.

END OF SECTION

SECTION 15125

PIPE CASING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Materials and installation of open trench pipe casings.

B. Related Sections:
   1. Section 15270 – Steel Pipe
   2. Section 15274 – Plastic Tape Wrap for Pipe

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. A 36/A/A 36M – Standard Specification for Carbon Structural Steel
   2. A 283/A 283M – Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
   3. A 568/A 568M – Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, and Structural Quality Cold Rolled

1.03 SERVICE APPLICATION

A. Generally, pipe casings are used for protection of utilities (carrier pipes) and may be installed for future utility installations. Pipe casings shall be used for the installation of potable water where shown on the Drawings or as required by the Engineer.

1.04 DESIGN REQUIREMENTS

A. Pipe casings shall be provided for carrier piping where shown on the Drawings or as required by the Engineer.

B. The Engineer may select a greater steel thickness and diameter as appropriate for the intended application.

1.05 SUBMITTALS

A. Shop Drawings: Submit the following information:
   1. Product Data

1.06 CASING SPACERS AND END SEALS

A. Casing spacers and end seals shall be used for all carrier pipe installations within casings.

PART 2 PRODUCTS

2.01 PIPE CASING

A. Pipe casing material shall be as indicated below. The size of the pipe casing required for the carrier pipe is as follows:

Carrier Pipe Size	Minimum Casing Size
8”	18”

B. Steel Pipe casing shall be as follows:
   1. Steel pipe casing, unless otherwise approved by the Engineer, shall be butt-welded sheets (spiral welding of pipe not allowed) conforming to ASTM A 36/A 36M, ASTM A 283/A 283M, Grade D, or ASTM A 568/A 568M, Grade 33. Other steel grades may be used upon approval of the Engineer. Steel casings sized 20” or smaller shall have a minimum wall thickness of 3/8”.
   2. Steel pipe casings shall not be lined or coated with any material unless otherwise directed by the Engineer.
      a. If required, steel pipe casing shall be lined and coated with liquid epoxy paint per AWWA C210. Liquid epoxy shall be applied in three coats to a minimum thickness of 0.012” or 12 mils. The final coat of the liquid epoxy shall be blue for potable water steel casing pipe.
   3. Steel pipe casings shall include the installation of an anode as directed by the Engineer.

2.02 CASING SPACERS

A. Manufacturers: One of the following or equal:
   1. Advanced Products & Systems, Inc., Model SSI

B. Materials:
   1. Band and Riser: 304 Stainless Steel
   2. Liner: PVC
   3. Bolts, Nuts, Washers: Stainless Steel
   4. Runners: Glass filled Polymer

2.03 CASING END SEALS

A. Casing end seals shall be a minimum 1/8-inch thick synthetic rubber sheet attached to the carrier pipe and casing with 1/2-inch side stainless steel bands.

B. Manufacturers: One of the following or equal.
   1. Advanced Products & Systems, Inc., Model AW Wrap-Around End Seal

2.04 WARNING/IDENTIFICATION TAPE

A. Warning/Identificatoin tape shall be in accordance with Section 15076.

PART 3 EXECUTION

3.01 INSTALLATION

A. Pipe Casing Installation
   1. Pipe casing shall be installed in an open trench type excavation.
   2. Pipe casings shall be lowered onto the beggind of the proper lines and grades called for on the Drawings.
   3. Pipe casings shall have firm bearing along their full length.

4. Carrier pipe shall be pushed into the casing incorporating the use of casing spacers.
5. Upstream and downstream elevations of the carrier pipe shall be verified prior to installation of the end seals.
6. The portion of the carrier pipes installed within casings shall have pressure, leakage, and infiltration testing completed prior to installation of the end seals.
7. The annular space between the carrier pipe and casing shall not be filled with any material unless otherwise noted on the Drawings.

B. Casing Spacers
1. Casing spacers shall be used to prevent the carrier pipe bell from touching the casing and to maintain a uniform space between the carrier pipe and casing interior. A minimum of three casing spacers shall be installed, equally spaced, on each pipe section at intervals recommend by the manufacturer.

C. Casing End Seals
1. Casing end seals shall be installed in accordance with the manufacturer's recommendations.
2. Carrier pipe shall pass hydrostatic or leakage tests prior to the installation of casing end seals or backfilling operations.

END OF SECTION

SECTION 15142

DISINFECTION OF DOMESTIC WATER LINES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Disinfection of water lines, bacteriological testing, and flushing of lines at completion of treatment.

B. Contractor shall test and disinfect complete system as shown on the plans.

1.02 REFERENCES

A. County of San Luis Obispo Public Works Department Procedural Memorandum 0-3.

B. American Water Works Association (AWWA).
   1. C651 – Disinfecting Water Mains.

C. American Public Health Association (APHA).
   1. Standard Methods for Examination of Water and Wastewater.

1.03 SUBMITTALS

A. Submit disinfection test plan which details procedure to be utilized to disinfect water lines including:
   1. Method and locations of disinfectant application.
   2. Locations of sampling points.
   3. Method of flushing and location of flushing points.
   4. Method of dechlorination.
   5. Disposal location for dechlorinated water.

B. Submit Disinfection Reports and include the following:
   1. Date issued.
   2. Project name and location.
   3. Treatment subcontractor's name, address, and phone number.
   4. Type and form of disinfectant used.
   5. Time and date of disinfectant injection start.
   6. Time and date of disinfectant injection completion.
   7. Test locations.
   8. Initial and 24 hour disinfectant residuals in parts per million for each outlet tested.
   9. Time and date of flushing start.
   10. Time and date of flushing completion.
   11. Disinfectant residual after flushing in parts per million for each outlet tested.

C. Submit Bacteriological Reports and include the following:
   1. Date issued.
   2. Project name and location.
   3. Laboratory's name, certification number, address, and phone number.
   4. Time and date of water sample collection.
   5. Name of person collecting samples.
   6. Test locations.

7. Time and date of laboratory test start.
8. Coliform bacteria test results for each outlet tested.
9. Certification that water conforms or fails to conform to bacterial standards of Federal Safe Drinking Water Act.
10. Bacteriologist's signature and bacteriological laboratory's evidence of certification.

1.04 QUALITY ASSURANCE

A. Bacteriological Laboratory: Certified by the State of California.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Protect against damage and contamination.

B. Maintain caution labels on hazardous materials.

C. Maintain storage room dry and with temperatures as uniform as possible between 60 degrees Fahrenheit and 80 degrees Fahrenheit.

1.06 PROTECTION

A. Provide necessary signs, barricades, and notices to prevent persons from accidently consuming water or disturbing system being treated.

PART 2 PRODUCTS

2.01 MATERIALS

A. Disinfectant: Free chlorine in liquid, powder, tablet, or gas form.

PART 3 EXECUTION

3.01 CLEANING WATER LINES

A. Prior to chlorination, remove by flushing or other means, soil, and debris from the water lines.

3.02 INSPECTION

A. Verify that water line system is completed and cleaned.

B. Start disinfection of water lines when conditions are satisfactory.

3.03 SYSTEM TREATMENT

A. Perform disinfection of water lines in accordance with AWWA C651 and as specified in this Section.

B. Starting at outlet closest to water source, bleed water from each outlet until water produces odor of disinfectant. Repeat process at each outlet throughout system.

C. Test for disinfectant residual at each of the following locations and other locations in accordance with submitted disinfection test plan:
   1. Ends of piping runs.
   2. Remote outlets.

D. Maintain disinfectant in system for 24 hours.

E. When disinfectant residual is less than 25 parts per million after 24 hours, repeat system treatment.

3.04 FLUSHING

A. Remove disinfectant from water lines.

B. Flush water lines with potable water containing no more disinfectant residual than the active distribution system or 1.0 parts per million, whichever is greater.

C. Continue flushing until water at designated flushing ports contains disinfectant residual equal to concentration specified above.

3.05 DISPOSAL OF CHLORINATED WATER

A. Dispose of chlorinate water in accordance with the submitted disinfection test plan and applicable requirements of federal, state, county , and city having jurisdiction over disposal of hazardous wastes in location of the Project and disposal site.

3.06 BACTERIOLOGICAL TEST

A. Instruct bacteriological laboratory to take water samples no sooner than 24 hours after flushing system.

B. A minimum of 24 hours after flushing system and within 24 hours before the water main is placed in service, collect bacteriological quality samples at each of flowing location and other locations in accordance with the submitted disinfection test plan and Standard Methods for Examination of Water and Wastewater:
   1. Where water enters system.
   2. Ends of pipe runs.
   3. Remote outlets.

C. Analyze water samples in accordance with Standard Methods for Examination of Water and Wastewater.

D. When bacteriological test proves water quality to be unacceptable, repeat disinfectant treatment.

END OF SECTION

SECTION 15250

POTABLE WATER HOSE AND ACCESSORIES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Potable Water Hose and Accessories

1.02 REFERENCES

A. National Science Foundation (NSF).
   1. 61 – Drinking Water System Components

PART 2 PRODUCTS

2.01 POTABLE WATER HOSE

A. Manufacturers: One of the following or approved equal.
   1. Portable Pipeline Systems, Aquaman Blue NSF-61 Potable Water Hose

2.02 POTABLE WATER HOSE FIELD ATTACHMENT

A. Manufacturers: One of the following or approved equal.
   1. Portable Pipeline Systems, Aquaman Field Attachable FA6V - End with 3 Piece Collar Victaulic Groove/Set.

2.03 POTABLE WATER HOSE ADAPTER

A. Manufacturers: One of the following or approved equal.
   1. Portable Pipeline Systems, Aquaman Adapter Victaulic X 150# Flange Cast Iron w/ EPDM Gasket

2.04 PRODUCT SUBMITTAL

A. Contractor shall provide submittals to Engineer for review and approval prior to ordering materials.
B. Final hose length to be approved by the Engineer as part of the product submittal.
C. Contractor is required to verify all fittings required for connection of the potable water hose to the Atascadero Mutual Water Company system, and the San Luis Obispo Flood Control & Water Conservation District system, prior to ordering.
D. Contractor is required to verify compatibility of product with existing and proposed water system prior to ordering.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install potable water hose and accessories per the recommendations of the manufacturer.

END OF SECTION

SECTION 15251

DUCTILE IRON PIPE (DIP) AND FITTINGS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Ductile iron piping, joints, fittings, gaskets, and pipe lining and coating.

B. Related Sections:
   1. Section 09960 - High Performance Coatings
   2. Section 15052 - Basic Piping Materials and Methods.

1.02 REFERENCES

A. American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME):
   1. B 16.1 - Cast Iron Pipe Flanges and Flanged Fittings.

B. American Society for Testing and Materials (ASTM):
   1. A 47 - Specifications for Ferritic Malleable Iron Castings.
   2. A 183 - Specifications for Carbon Steel Tank Bolts and Nuts.
   3. A 283 - Specifications for Low and Intermediate Tensile Strength Carbon Steel Plates.
   4. A 536 - Ductile Iron Castings.
   5. A 674 - Practice for Polyethylene Encasement for Ductile Iron Pipe for Water or Other Liquids.
   6. D 792 - Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
   7. D 1248 - Specifications for Polyethylene Plastics Molding and Extrusion Materials.

C. American Water Works Association (AWWA):
   1. C 104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
   2. C 105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
   3. C 110 - Ductile-Iron and Gray-Iron Fittings, 3 Inches Through 48 Inches, for Water and Other Liquids.
   4. C 111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
   5. C 115 - Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
   6. C 150 - Thickness Design of Ductile-Iron Pipe.
   7. C 151 - Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids.
   8. C 153 - Ductile-Iron Compact Fittings, 3 Inches Through 24 Inches, and 54 Inches Through 64 Inches, for Water Service.
   9. C 600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.
   10. C 606 - Grooved and Shouldered Joints.

1.03 SUBMITTALS

A. Shop Drawings:

1. Detailed layout drawings showing alignment of pipes, location of valves, fittings, and appurtenances, types of joints, connections to structures and thrust restraint system layouts.
2. Thrust Restraint Systems: Layouts and supporting calculations for restrained joint thrust restraint systems.

B. Pipe Design Calculations: Calculations for required wall thickness in accordance with AWWA C 150.

C. Product Data: Photographs, drawings, and descriptions of fittings, gaskets, couplings, grooving of pipe and fittings, pipe linings, and coatings.

D. Test Reports:
1. Manufacturer's test reports for polyethylene lining certifying successful performance of the wet sponge spark tests.

E. Certificates: Submit certificates of compliance for pipe, fittings, gaskets, lining, polyethylene encasement, coatings, specials, couplings and sleeves in accordance with this Section.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Block piping material for shipment, prevent damage to castings and linings.

B. Carefully handle piping material during loading, unloading, and installation. Do not drop piping material from cars or trucks. Lower piping material by mechanical means. Do not drop or pound pipe to fit grade.

C. Repair damaged cement mortar lining to match quality, thickness, and bonding of original lining in accordance with AWWA C 104. When lining cannot be repaired or repairs are defective, replace defective piping with undamaged piping.

D. Protect gaskets and polyethylene encasement from long term exposure to sunlight.

E. Store fittings and other accessories such that they do not accumulate and hold rainwater, dirt, and debris.

1.05 QUALITY ASSURANCE

A. Qualifications of Lining Manufacturers: For piping specified to receive polyethylene lining use only a manufacturer having a minimum of 5 years experience supplying this type of product to the wastewater and water treatment industry.

B. Regulatory Requirements: Install work of this Section in accordance with local, state, and federal regulations.

1.06 THRUST RESTRAINT SYSTEM DESIGN

A. Assume responsibility for the restrained joint thrust restraint system design.

B. Determine the length of pipe that must be restrained on each side of the focus of a thrust load in accordance with the procedures and criteria established by the Ductile Iron Pipe Research Association (DIPRA) and the following additional criteria:
1. Design Pressure: Test pressure or 100 pounds per square inch, whichever is greater.

2. Laying Condition: Type 3 as defined by AWWA C150.
3. Soil Type: CL as defined by DIPRA.
4. Unit Friction Resistance: Based upon polyethylene encasement of pipe.
5. Safety Factor: 1.5 (for thrust restraint calculations only).

PART 2 PRODUCTS

2.01 MATERIALS

A. Ductile Iron Piping:
   1. Type, Typical: AWWA C 150 and AWWA C 151 with minimum pressure class wall thickness that meets project pressure and structural requirements, unless otherwise specified or indicated on the Drawings.
   2. Type with Screw-on Flanges or grooved joints: AWWA C 115 with minimum wall thickness that meets project pressure and structural requirements, unless otherwise specified or indicated on the Drawings.
   3. Type with grooved couplings: thickness class as indicated in the Piping Schedule as specified in Section 15052.

B. Joints:
   1. Flanged Joints:
      a. Flanges, Screw-on: Comply with the diameter, thickness, drilling, and other characteristics in accordance with ANSI B 16.1. In addition, comply with the following requirements:
         1) Ductile iron.
         2) Long hub, threaded, and specially designed for ductile iron pipe.
         3) After attaching to pipe, machine flange face to make pipe end and flange even and perpendicular to the axis of the pipe.
      b. Bolt Holes on Flanges: 2-holed and aligned at both ends of pipe.
      c. Cap Screw or Stud Bolt Holes: Tapped.
      d. Bolts and Nuts: As specified in ANSI/ASME B 16.1 except when connecting flanges underground, in concrete pipe valve boxes, or underwater, use Type 304 or Type 316 stainless steel. Cut and finish bolts to project a maximum of 1/4 inch beyond nut when joints are assembled.
      e. Gaskets: As specified in Section 15052.
   2. Mechanical Joints: In accordance with AWWA C 111/ANSI A 21.11.
   3. Restrained Mechanical Joints:
      a. Design: Integral retainer weldment type or lugged type joint with Type 304 stainless steel rods and nuts.
      b. Manufacturers: One of the following or equal:
         1) Pacific States Cast Iron Pipe Company, Lock Mechanical Joint.
         2) American Cast Iron Pipe Company, MJ Coupled Joint.
   4. Push-on Rubber Gasket Joints: AWWA C 111/ANSI A 21.11.
   5. Restrained Push-on Joints:
      a. Manufacturers: One of the following or equal:
         1) United States Pipe and Foundry Company, TR Flex.
         2) Pacific States Cast Iron Pipe Company, Perma Lock.
         3) American Cast Iron Pipe Company, Flex Ring or Lok-Ring.
      b. Design: Suitable for the following working pressures:
         1) For 4 Through 24 inch Pipe: 350 pounds per square inch gauge.
         2) For 30 Through 54 inch Pipe: 250 pounds per square inch gauge.
   6. Grooved Joints: AWWA C 606, as complemented and modified below, radius-cut type, with following components:

a. Couplings: Rigid type, cast from ductile iron in accordance with ASTM A 536, Grade 65-45-12 or malleable iron in accordance with ASTM A 47, Grade 32510.
b. Bolts and nuts in accordance with ASTM A 183, Grade 2.
c. Gaskets: Capable of being applied on surface of piping with cavities to provide for an improved seal with the internal piping pressure; material for following services:
    1) For Liquid Service: Halogenated butyl.
    2) For Air Service: Fluoroelastomer.
    3) For Hot Water Service: EPDM
d. Fittings: AWWA C 606, rigid radius-cut groove.
    1) Center-to-center Dimensions: AWWA C 110/ANSI A 21.10.
    2) Wall Thickness and Other Characteristics: AWWA C 153.
e. Flanged Unit Connections: Flanged to grooved joint adapters or a long enough spool with 1 end flanged and the other grooved to prevent interference with the operation of adjacent valves, pumps, or other items.

2.02 FITTINGS

A. Fittings: Ductile iron conforming with AWWA C 110/ANSI A 21.10 or AWWA C 153/ANSI A 21.53.

B. Joint Type: Same as that of the associated piping as specified in Section 15052.

C. Plain end-to-flanged joint connectors using set screws are not acceptable.

2.03 PIPE LININGS AND COATINGS

A. Asphaltic Base Coating: Apply over cement mortar linings and to outside surface of pipes which will not receive another coating. Apply in accordance with AWWA C151/ANSI A21.51.

B. Cement-mortar Lining: AWWA C 104/ANSI A 21.4, apply on clean bare metal surfaces; extended to faces of flanges, ends of spigots, and shoulders of hubs.

C. Polyethylene Lining:
1. Manufacturers: One of the following or equal:
    a. U. S. Pipe, polylined.
    b. American Ductile Iron Pipe, polybond.
2. Material: ASTM D 1248, blend of high-density and low-density polyethylene powders; compounded with an inert filler and carbon black; minimum 30 mils thick; resistant to ultraviolet light.
3. Application:
    a. Remove minimum 75 percent of high temperature oxide film.
    b. Sandblast fittings to commercial grade.
    c. Uniformly preheat pipe and fittings to a temperature adequate to provide a uniform fusing of the polyethylene powders and proper bonding to pipe and fittings.
4. Coverage:
    a. Push-on Joints: Extend lining from spigot end to edge of gasket sealing area.
    b. Mechanical Joints: Extend lining from spigot end to edge of gauging ring.
5. Source Quality Control: Test pipe and fitting lining with a 400 volt wet sponge spark tester. Discard piping or reline piping when pinholes or discontinuities are found.

2.04 POLYETHYLENE ENCASEMENT

A. Polyethylene Encasement Sheets or Tubes:
   1. 8 mil thickness low density polyethylene, or
   2. 4 mil thickness high density, cross laminated polyethylene.

PART 3 EXECUTION

3.01 INSTALLATION

A. General:
   1. Install ductile iron piping in accordance with AWWA C 600.
   2. Lay mechanical joint or bell and spigot pipe with 1/8 inch space between the spigot and shoulder of the pockets.

B. Polyethylene Encasement:
   1. Wrap ductile iron pipe to be buried with polyethylene encasement in accordance with ASTM A 674 and AWWA C 105.
   2. Repair tears and make joints with two layers of plastic tape.

3.02 JOINTS

A. Install types of joints as specified in piping schedule in Section 15052.

3.03 GROOVED JOINTS

A. Install piping with grooved joints where specified or indicated on the Drawings.

B. Assemble grooved joints in accordance with manufacturer's published instructions.

C. Support grooved-end pipe in accordance with manufacturer's published instructions. Install at least 1 support between consecutive couplings.

D. Grooved joints may be installed where flanged joints are scheduled, except under the following conditions:
   1. In underground and underwater installations.
   2. In piping subject to test pressure of 150 pounds per square inch gauge or more.
   3. In steam and in combustible gas piping systems.
   4. In sludge and scum piping designed to be steam cleaned as indicated on the Drawings.
   5. When wall thickness of pipe is less than the minimum recommended in published instructions by the manufacturer of the grooved end coupling.

E. Make connections to flanged valves, pumps and piping appurtenances by either:
   1. Flanged-to-grooved joint adapters.
   2. Flanged-by-grooved end pipe spool of sufficient length to prevent interference with the operation of adjacent valves, pumps or other items.
   3. Integrally cast flanged-by-grooved end pipe fittings.

3.04 FIELD QUALITY CONTROL

A. Test ductile iron piping as specified in Section 15052.
   1. Do not test sections longer than 1/2 mile in total pipe length.

2. Repair damaged cement mortar lining to match quality, thickness, and bonding or original lining in accordance with AWWA C104. When lining cannot be repaired or repairs are defective, replace defective piping with undamaged piping.

END OF SECTION

SECTION 15265

PLASTIC PIPING AND TUBING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Plastic pipe, tubing, and fittings.

B. Related Sections:
1. Section 15052 - Basic Piping Materials and Methods.
2. Section 15251 - Ductile Iron Piping.
3. Section 15956 - Piping Systems Testing.

1.02 REFERENCES

A. American National Standards Institute (ANSI):
1. B 16.12 - Cast Iron Threaded Screwed Drainage Fittings.

B. American Society for Testing and Materials (ASTM):
1. D 648 - Test Method for Deflection Temperature of Plastics Under Flexural Load.
2. D 1248 - Specification for Polyethylene Plastics Molding and Extrusion Materials.
3. D 1784 - Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
4. D 1785 - Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80 and 120.
5. D 1869 - Specification for Rubber Rings for Asbestos-Cement Pipe.
6. D 2412 - Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.
7. D 2466 - Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
8. D 2467 - Specification for Socket-Type Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
9. D 2513 - Specification for Thermoplastic Gas Pressure Pipe, Tubing and Fittings.
10. D 2564 - Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
11. D 2661 - Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings.
12. D 2665 - Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.
13. D 2680 - Specification for Acrylonitrile-Butadiene-Styrene (ABS) and Poly (Vinyl Chloride) (PVC) Composite Sewer Piping.
14. D 2751 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.
15. D 2855 - Standard Practice for Making Solvent-cemented Joints with Poly (Vinyl Chloride)(PVC) Pipe and Fittings.
16. D 3034 - Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

17. D 3212 - Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
18. D 3261 - Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
19. D 3350 - Specification for Polyethylene Plastic Pipes and Fittings Materials.
20. D 4101 - Specification for Propylene Plastic Injection and Extrusion Materials.
21. F 439 - Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80.
22. F 441 - Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80.
23. F 477 - Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
24. F 483 - Test Method for Total Immersion Corrosion Test for Aircraft Maintenance Chemicals.
25. F 493 - Specification for Solvent Cements for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe and Fittings.
26. F 645 - Guide for Selection, Design and Installation of Thermoplastic Water Pressure Piping Systems.
27. F 679 - Specification for Poly (Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.
28. F 714 - Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter.

C. American Water Works Association (AWWA):
1. C 900 - Polyvinyl/Chloride (PVC) Pressure Pipe, 4 Inches Through 12 Inches, for Water Distribution.

D. Code of Federal Regulations:
1. Title 49 - Transportation.

E. Plastics Pipe Institute (PPI).

F. United States Department of Transportation:
1. Materials Transportation Bureau.

1.03 ABBREVIATIONS

A. ABS: Acrylonitrile-Butadiene-Styrene.

B. CPVC: Chlorinated Polyvinyl Chloride.

C. DWV: Drain, Waste, and Vent.

D. ID: Inside Diameter of piping or tubing.

E. NPS: Nominal pipe size followed by the size designation.

F. NS: Nominal size of piping or tubing.

G. PE: Polyethylene.

H. PP: Polypropylene.

I. PVC: Polyvinyl Chloride.

J. SDR: Standard Dimension Ratio; the Outside Diameter divided by the pipe wall thickness.

1.04 SUBMITTALS

A. Product Data: Describe PVC materials, pipe, fittings, gaskets and solvent cement.

B. Polyethylene Pipe Submittals: Include:
   1. Product Data.
   2. Installation equipment including details on fusion machine used to join polyethylene pipe sections.
   3. Qualifications of installation crew for use of the fusion machine used for joining polyethylene pipe.

C. Manufacturer's Published Installation Instructions.

D. Certificates:
   1. Submit manufacturer's certificate attesting that plastic pipe, tubing, and fitting types meet specified requirements.
      a. PVC gravity sewer piping: Requirements of ASTM D 3034 or ASTM F 679, as applicable.
   2. Manufacturer's certification of date of manufacture of plastic pipe and tubing for each lot delivered.
   3. Copies of solvent cement manufacturer's report and certification in accordance with ASTM D 2564 for PVC piping, and ASTM F 493 for CPVC piping.

1.05 QUALITY ASSURANCE

A. Fusion Machine Technician Qualifications: 1-year experience in the installation of similar PE piping systems from the same manufacturer.

B. Plastic Pipe in Potable Water Applications: Provide pipe and tubing bearing NSF seal.

C. Mark plastic pipe with nominal size, type, class, schedule or pressure rating, manufacturer and all markings required by applicable ASTM and AWWA standards.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect piping materials from sunlight, scoring and distortion.

B. Do not allow surface temperatures on pipe and fittings to exceed 120 degrees Fahrenheit.

C. Store and handle PE pipe and fittings as recommended by manufacturer in published instructions.

PART 2 PRODUCTS

2.01 MATERIALS

A. Extruding and Molding Material: Virgin material containing no scrap, regrind, or rework material except where permitted in the referenced standards.

B. Fittings: Same material as the pipe and of equal or greater pressure rating, except that fittings used in drain, waste and vent piping systems need not be pressure rated.

C. Unions 2-1/2 Inches and Smaller: Socket end screwed unions. Make unions 3 inches and larger of socket flanges with 1/8 inch full-face soft neoprene gasket.

2.02 PVC PIPING, SCHEDULE TYPE

A. Materials:
   1. PVC Schedule Type Piping: Designation PVC 1120 conforming to ASTM D 1785 and appendices thereto.
      a. Pipe and Fittings: Extruded from Type I, Grade 1, Class 12454-B material in accordance with ASTM D 1784.
      b. PVC Schedule Type Piping: Schedule 80 unless otherwise indicated on the Drawings.
   2. Fittings:
      a. Supplied by pipe manufacturer.
      b. Pressure Fittings: In accordance with ASTM D 2466 or ASTM D 2467.
      c. DWV Fittings: In accordance with ASTM D 2665.
   3. Solvent Cement: In accordance with ASTM D 2564.
      a. For CPVC or PVC pipe in sodium hypochlorite service provide IPS Corp Type 724 cement or another cement certified by the manufacturer for high strength hypochlorite service.

2.03 PVC PIPING, CLASS TYPE

A. PVC Pipe, Class Type: AWWA C 900, Pressure Class 150 and DR not more than 18.
   1. PVC Compound: Class 15254-B in accordance with ASTM D 1784.
   2. Fittings: Cast or ductile iron fittings as specified under Section 15251, sized for the dimensions of the pipe being used.
   3. Joint Design: Push-on or mechanical joint type as identified in Piping Schedule.
   4. Restrained Push-on Joint:
      a. Manufacturers: One of the following or equal:
         1) JM Eagle, Eagle Loc 900.
         2) Diamond Plastics, Lok-21.
         3) Certain Teed, Certa-Lok.
   5. Gaskets: Neoprene meeting the requirements of ASTM D 1869 or ASTM F 477.

2.04 CPVC PIPING

A. Materials:
   1. CPVC Pipe, Schedule 80 unless otherwise indicated on the Drawings, in accordance with ASTM F 441 and Appendix, CPVC 4120.
      a. Pipe: Extruded from Type IV, Grade 1, Class 23447 material in accordance with ASTM D 1784.
      b. Manufacturers: One of the following or equal:
         1) Charlotte Pipe and Foundry Company.
         2) Eslon Thermoplastics, Inc.
         3) Harvel Plastics, inc.
   2. Fittings: Conform to ASTM F 438 or ASTM F 439 for pressure fittings, as appropriate to the service and pressure requirement.

a. Fittings: Supplied by the pipe manufacturer.
b. Manufacturers: One of the following or equal:
1) Colonial Engineering.
2) Eslon Thermoplastics, Inc.
3) Chemtrol.
4) Spears Manufacturing Company.
3. Solvent Cement:
a. In accordance with ASTM F 493.
b. For CPVC pipe in sodium hypochlorite service, utilitze IPS Corp 724 cement or another cement certified by the manufacturer for high strength hypochlorite service.

2.05 PE TUBING AND FITTINGS

A. Materials:
1. Extruding and Molding Material: Virgin material containing no scrap, regrind, or rework material except where permitted in the referenced standards.
2. Small Bore PE Tubing: Black flexible virgin PE tubing, OD Copper tubing size.
a. Plastic tubing ID as follows:
1) For NS 1/4 inch, ID of 0.140 inch.
2) For NS 5/16 inch, ID of 0.187 inch.
3) For NS 3/8 inch, ID of 0.251 inch.
4) For NS 1/2 inch, ID of 0.375 inch.
3. Fittings: Compressive fittings, Dekoron E-Z, or equal.
4. Protective Sheath:
a. Manufacturers: One of the following or equal:
1) Dekoron, Poly-Cor.
2) Parker Hannifin Corp./Fluidconnector Products, Parflex Division, Multitube.
5. Plug-In Fittings for Connection to Instruments: Brass quick-connect fittings.

2.06 JOINT RESTRAINT

A. Provide restrained joints at non-flanged fittings and along the pipe where indicated on the Drawings.

B. Manufacturer: EBAA Iron Megalug or equal.

C. Design:
1. Restraining Devices: Multiple gripping wedges and follower gland.
2. Meeting applicable provisions of AWWA C153, C110 and C111.
3. Wedges: Spread load on pipe wall as approved by ENGINEER.
4. Design for full-rate pressure of pipe and a Safety Factor of 2.
5. Conform to ASTM F 1674.

D. Material:
1. Gland, Wedges, and Wedge Actuating Components: ASTM A 536 ductile iron, grade 65-45-12.
2. Hardware and Tie Rods: Type 316 stainless steel.
3. Elastomeric Components in Contact with Product: EPDM.
4. Coatings: Fusion-bonded epoxy per Section 15110, Megabond, or equal.

E. Types Based EBAA Iron, As Applicable:
1. At Mechanical Joint Fittings: Series 2000.
2. At Joints in Straight Pipe, Series 2800.

3. At PVC Pipe Bells: Series 2500.

2.07 SOURCE QUALITY CONTROL

A. PVC Piping, Schedule Type:
   1. Mark pipe and fittings in accordance with ASTM D 1785.

B. CPVC Piping:
   1. Mark pipe and fittings in accordance with ASTM F 441.

C. PVC Piping, Class Type:
   1. Test pipe to withstand, without failure, 600 pounds per square inch, guage, hydrostatic pressure for a minimum of 5 seconds.
   2. Test integral bell with the pipe.

PART 3 EXECUTION

3.01 INSTALLATION

A. General:
   1. Where not otherwise specified, install piping in accordance with ASTM F 645, or manufacturer's published instructions for installation of piping, as applicable to the particular type of piping.
   2. Provide molded transition fittings for transitions from plastic to metal or IPS pipe. Do not thread plastic pipe.
   3. Locate unions where indicated on the Drawings, and elsewhere where required for adequate access and assembly of the piping system.
   4. Provide serrated nipples for transition from plastic pipe to rubber hose.

B. Installation of PVC Piping, Schedule Type:
   1. Solvent weld joints in accordance with ASTM D 2855.
      a. For PVC pipe in sodium hypochlorite service use IPS Corp. Type 724 cement in accordance with manufacturer's instructions.
   2. Install piping in accordance with manufacturer's published instructions.

C. Installation of CPVC Piping:
   1. Clean dirt and moisture from pipe and fittings.
   2. Bevel pipe ends in accordance with manufacturer's instructions with chamfering tool or file. Remove burrs.
   3. Use solvent cement and primer formulated for CPVC.
      a. For CPVC pipe in sodium hypochlorite service use IPS Corp. Type 724 cement in accordance with manufacturer's instructions.
   4. Use primer on pressure and non-pressure joints.
   5. Do not solvent weld joints when ambient temperatures are below 40 degrees Fahrenheit or above 90 degrees Fahrenheit unless solvent cements specially formulated for these conditions are utilized.

D. Installation of Polyethylene (PE) Tubing and Fittings:
   1. Install small bore PE tubing in accordance with manufacturer’s printed instructions, in neat straight lines, supported at close enough intervals to avoid sagging, and in continuous runs wherever possible.
   2. Bundle tubing in groups of parallel tubes within protective sheath.

3. Tubes within protective sheath may be color coded, but protect tubing other than black outside the sheath by wrapping with black plastic electrician's tape.
4. Grade tubing connected to meters in one direction.

E. Installation of PVC Piping, Class Type:
1. Install piping in accordance with the Appendix of AWWA C900 complemented with manufacturer's published instructions.

END OF SECTION

SECTION 15270

STEEL PIPE

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Steel pipe

B. Related Sections:
1. Section 09960 - High-Performance Coatings.
2. Section 15052 – Basic Piping Materials and Methods.
3. Section 15274 - Plastic Tape Wrap for Pipe.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
1. B16.3 - Malleable-Iron Threaded Fittings: Classes 150 and 300.
2. B16.5 - Pipe Flanges and Flanged Fittings.
3. B16.9 - Factory-Made Wrought Buttwelding Fittings.
4. B16.11 - Forged Fittings, Socket-Welding and Threaded.

B. American Water Works Association (AWWA):
1. C200 - Steel Water Pipe- 6 Inches and Larger.
2. C203 - Coal-Tar Protective Coatings and Linings for Steel Water Pipelines-Enamel and Tape-Hot Applied.
3. C205 - Standard for Cement-Mortar Protective Lining and Coating for Steel Water Pipe-4 Inches and Larger-Shop Applied.
4. C206 - Field Welding of Steel Water Pipe.
   C207 - Standard for Steel Pipe Flanges for Waterworks Service-Sizes 4 inches Through 144 inches.
   C602 - Standard for Cement-Mortar Lining of Water Pipelines in Place- 4 inches and Larger.
5. C606 - Standard for Grooved and Shouldered Joints.

C. ASTM International (ASTM):
1. A 47 - Standard Specification for Ferritic Malleable Iron Casting.
2. A 53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
3. A 105 - Standard Specification for Carbon Steel Forgings for Piping Applications.
4. A 153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
5. A 183 - Standard Specification for Carbon Steel Track Bolts and Nuts.
6. A 536 - Standard Specification for Ductile Iron Castings.
7. C 150 - Standard Specification for Portland Cement.
8. D 429 - Standard Test Methods for Rubber Property-Adhesion to Rigid Substrates.
9. D 2000 - Standard Classification System for Rubber Products in Automotive Applications.

1.03 SUBMITTALS

A. Shop drawings: Details of fittings and specials showing thickness and dimensions of plates, detail of welds, and materials; listing of proposed services and locations for use of grooved joint type piping; tabulated layout schedules for cement-mortar lined and coated steel pipe.

B. Pipe layout drawings.

C. Product data: Details of fittings and specials showing thickness and dimensions of plates, detail of welds, and materials; grooved joint piping fittings, gaskets, couplings, grooving of pipe and fittings, and pipe lining and coating.

D. Mill certificates.

E. Test reports:
   1. Gaskets.

PART 2 PRODUCTS

2.01 MATERIALS

A. Portland cement: In accordance with ASTM C 150, Type II, low alkali.

2.02 MANUFACTURED UNITS

A. Steel pipe:
   1. General:
      a. In accordance with ASTM A 53.
         1) Type: Type E - electric-resistance welded or Type S - seamless
         2) Grade: Grade A or B.
      b. Schedule:
         1) As indicated on the Drawings or as specified in Section 15052 pipe schedule.
         2) Minimum Schedule unless otherwise indicated on the Drawings or as specified in Section 15052 pipe schedule.
            a) Pipe 6 inches and smaller: Schedule 40.
            b) Pipe greater than 6 inch to 10 inch: Schedule 40ST.
            c) Pipe 12-inch and above: 0.25 inches.
   2. Pipe fittings:
      a. Flanged and welding fittings:
         1) Butt -welding fittings in accordance with ASME B16.9. Schedule of fittings: same class or thickness as the pipe to which it connects.
      b. Screwed fittings:
         1) Malleable iron:
            a) Class 150 or Class 300in accordance with ASME B16.3, as specified in Section 15052 pipe schedule.
            b) Galvanized in accordance with ASTM A 153 where used with galvanized pipe.
         2) Forged Fittings, Socket-Welding and Threaded.
            a) Class: 150 or 300 in accordance with ASME B16.11.
         3) Grooved joint fittings:
            a) Fittings for grooved joint steel piping: Rigid-grooved type:
            b) Fittings for grooved joint piping:

(1) Manufacturers: One of the following or equal:
(a) Victaulic Company of America.
(b) Grinnell.
(c) Anvil.
(2) Ductile iron fittings:
(a) Larger than 4 inches in diameter: conforming to ASTM A536, Grade 65-45-12, long radius, per AWWA C110.
(b) Less than 4 inches in diameter: Malleable iron conforming to ASTM A47, Grade 32510
(3) Where cast fittings are not made, forged steel in accordance with ASME B 16.9, ASTM A 105, Grade B with 0.375 inch minimum wall thickness.
(a) Bends: Long radius,
(4) Fittings for grooved joint piping shall be furnished by the manufacturer of the grooved joint coupling.
(5) Fittings for grooved joint piping shall be for rigid-grooved type joints. Connection to flanged units shall be by means of a spool with one end flanged and the other grooved, long enough to prevent interference with adjacent valves, pumps, or other items, minimum length, 4 inches.

3. Pipe Joints:
a. General:
1) Use type of pipe joints as indicated on the Drawings or as specified in Section 15052 pipe schedule.
2) In addition to the type of pipe joints indicated on the Drawing or as specified in Section 15052 pipe schedule, use flexible couplings, unions or flanged joints to allow ready assembly and disassembly of the piping.
b. Flanged joints:
1) In accordance with ASME B16.5, steel, 150 or 300 pounds, slip-on or weld neck, galvanized in accordance with ASTM A 153 where used with galvanized pipe.
2) Companion flanges
a) In accordance with ASME B16.5, steel.
b) Class 150 or 300 pounds, slip-on or welding neck.
3) Weld flanges to pipe or fittings before applying lining.
4) Machine flanges or provide tapered filler for changes in grade or to slope lines for drainage.
5) Match pipe flanges to the valve flanges.
6) Flange bolts: As specified in Section 15052.
7) Gaskets: As specified in Section 15052.
c. Grooved joints:
1) Grooves: Cut grooves. Rolled grooves are not acceptable.
2) Couplings housing: Cast in 2 or more segments of ductile iron in accordance with ASTM A 536, Grade 65-45-12 or malleable iron in accordance with ASTM A 47, Grade 32510.
3) Bolts and nuts: In accordance with ASTM A 183, Grade 2.
4) Gaskets: Composition water sealing designed so that the internal piping pressure serves to increase the seal's watertightness.
a) Gaskets for water service and oil-free air systems at temperatures less than 230 degrees Fahrenheit shall be made of ethylene propylene diene monomers (EPDM) in accordance with ASTM D 2000 Line Call Out 2CA615A25B24.
b) Gaskets for use with cement-mortar lined steel piping shall be

captured between the ends of the pipe to protect exposed metal from corrosion, and shall be made of nitrile in accordance with ASTM D 2000, Line Call Out 5BG615A14B24.

5) Perform grooving of the pipe wall only on standard or heavier schedule weight pipe.
   a) For pipe with wall thickness less than standard weight, weld a shouldered end on the pipe in accordance with AWWA C606.
   b) Shoulder: Type B or D in accordance with AWWA C606.
6) Couplings and grooving: Manufacturers: One of the following or equal:
   a) Victaulic Company of America.
   b) Grinnell.
   c) Anvil.
7) Grooved joint piping shall not be used in the following installations:
   a) In underground and underwater installations.
   b) In piping subject to test pressures of 150 pounds per square inch gauge, or more.
   c) In steam and gas piping.
   d) In sludge and scum piping designed to be steam cleaned.

d. Welded joints: Butt welds-2 pass, full depth with beueled ends and no backing rings.

4. Pipe lining and coating:

a. Pipe coating:
1) Extend pipe coating for underground piping 6 inches above finish grade or finish floor, and neatly terminate.
2) Field paint aboveground steel pipe as specified in Execution of this Section.
3) Coat exposed piping as specified in Section 09960.
4) Cement-mortar coating:
   a) Cement-mortar coating: In accordance with AWWA C205, modified as follows:
      (1) Sand: In accordance with AWWA C205 except that the total percentage of deleterious material shall not exceed 3 percent.
5) Plastic tape wrap: As specified in Section 15274.
   a) For buried pipe, wrap fittings, valves, and other odd shaped components in the pipeline with first and finish wrapping over the prime coat, total thickness of tape 80 mils.

b. Pipe lining:
1) Cement-mortar lining:
   a) Shop apply cement-mortar lining in accordance with AWWA C205. At the option of CONTRACTOR, field apply with a pipe lining machine.
2) Coal-tar enamel lining:
   a) Coal-tar enamel lining for interior of steel pipe: In accordance with AWWA C203.
3) Coal-tar epoxy lining:
   a) Coal-tar epoxy lining: Epoxy bituminous coating as specified for submerged metal in Section 09960.
4) Fusion epoxy:
   a) Fusion bonded epoxy as specified for submerged metal or exposed metal.
5) High solids epoxy:
   a) High solids epoxy as specified for submerged metal or exposed

metal in Section 09960.

6) Polyurethane lining:

a) Polyurethane as specified for submerged metal in Section 09960.

2.03 FABRICATION

A. Shop coat of primer:

1. Flanges and portions of pipe not covered with cement-mortar shall be given a shop coating of primer.
2. Primer compatible with finish coating system.

PART 3 EXECUTION

3.01 INSTALLATION

A. Pipe joints:

1. General:
   a. Steel pipe joints shall be screwed, welded, flanged, grooved, or made with flexible joints. The type of joint for piping is as indicated on the Drawings.
   b. In addition to the joints indicated on the Drawings, provide unions, flexible couplings, flanged joints, and other types of joints or means necessary to allow ready assembly and disassembly of the piping.
   c. Unless otherwise indicated on the Drawings pipe joints shall be as follows:
      1) Pipe smaller than 2 inches in nominal diameter shall have screwed joints, welded joints, unions, or flexible couplings.
      2) Pipe 2 inches to 4 inches in nominal diameter shall have screwed joints, flanged joints, welded joints, or joints made with flexible couplings.
      3) Pipe larger than 4 inches in nominal diameter shall have flanged joints, welded joints, or joints made with flexible couplings.
2. Flanged joints:
   a. Flanges shall come together at the proper orientation with no air gaps between the flanges after the gaskets are in place.
   b. Secure welding neck flanges with full penetration butt welds without backing rings.
   c. Secure slip-on flanges with both internal and external welds.
   d. After welding in place, the faces of flanges shall be perpendicular to the axis of the pipe, or, in the case of fittings, at the proper angle to each other, and bolt holes shall be in proper alignment.
3. Grooved joints:
   a. Assemble in accordance with manufacturer's published instructions.
   b. Support grooved joint pipe in accordance with manufacturer's recommendations. In addition, provide at least 1 support between consecutive couplings.
4. Screwed joints:
   a. Perform threading with clean, sharp dies.
      1) Wavy, rough, or otherwise defective pipe threads are not acceptable.
   b. Make screwed joints tight and clean with an application of Teflon tape or paste compound applied to the male threads only, except as follows:
      1) Make up liquid and liquefied petroleum gas lines, with litharge and glycerin.
      2)

3) Provide railroad type unions with bronze-to-iron seat. Galvanized where used with galvanized pipe.
a) Flanged joints may be used instead of unions.

5. Welded joints:
a. Field welded joints: Electric arc welded in accordance with AWWA C206.
b. Welder's qualification: Qualified in accordance with AWWA C206.
1) Welders' testing shall be at the CONTRACTOR's expense, including cost of test nipples, welding rods, and equipment.
c. Do not weld galvanized pipe.

B. Pipe lining and coating:
1. Pipe lining:
a. Field applied cement-mortar lining shall be of the same density, smoothness, and thickness as shop applied lining, and in accordance with AWWA C602.
2. Pipe Coating:
a. Plastic tape wrap application:
1) Wrap fittings, valves, and other odd shaped components in the pipeline with first and finish wrapping over the prime coat.
2) Wrap joints, fittings, valves, and other irregular shapes of piping with extruded coatings with tape as specified in this subparagraph.
b. Field coat aboveground steel pipe as specified in Section 09960.

3.02 FIELD QUALITY CONTROL

A. Field test fabricated steel manifolds with the pipe to which they connect.

END OF SECTION

SECTION 15274

PLASTIC TAPE WRAP FOR PIPE

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Plastic tape wrap for pipe.

1.02 REFERENCES

A. American Water Works Association (AWWA):
   1. C209 - Standard for Cold-Applied Tape Coating for the Exterior of Special Sections, Connections, and Fittings for Steel Water Pipelines.
   2. C214 - Standard for Tape-Coating Systems for the Exterior of Steel Water Pipelines.

1.03 SUBMITTALS

A. Mill certificates.

B. Technical literature and data for holiday detection equipment.

PART 2 PRODUCTS

2.01 MANUFACTURED UNITS

A. Plastic tape wrap for exterior of steel pipe, fittings and specials:
   1. In accordance with AWWA C209 and AWWA C214.
   2. Tape coating system:
      a. Consist of the following:
         1) Primer.
         2) First layer of spirally applied 20 mil inner wrap.
         3) Middle layer of spirally applied 30 mil outer wrap.
         4) Finish layer of spirally applied 30 mil outer wrap.
      b. Minimum total coating thickness of 80 mils.
      c. All materials shall be of products of the same manufacturer.
   3. Primer: Manufacturers: One of the following or equal:
      a. Polyken Pipeline Coatings, Number 1019 or 1027 Primer.
      b. The Tapecoat Company, TC Omniprime Primer.
   4. Pipe wrap:
      a. First wrap: Manufacturers: One of the following or equal:
         1) Polyken Pipeline Coatings, Number 980-20 (932-50 for fittings).
         2) The Tapecoat Company, TC Omniprime Primer.
      b. Middle wrap: Manufacturers: One of the following or equal:
         1) Polyken Pipeline Coatings, Number 955-30.
         2) The Tapecoat Company.
      c. Finish wrap: Manufacturers: One of the following or equal:
         1) Polyken Pipeline Coatings, Number 955-30 White.
         2) The Tapecoat Company.
   5. Filler tape: Manufacturers: One of the following or equal:
      a. Polyken, Number 939.

b. The Tapecoat Company.

6. Joint wrap: Manufacturers: One of the following or equal:
   a. Polyken, Number 932-50, white Hi-Tack Joint Wrap tape.
   b. The Tapecoat Company, TC Omniprime Primer.

PART 3 EXECUTION

3.01 INSTALLATION

A. Plastic tape wrap application procedures shall be in accordance with manufacturer's published instructions.
   1. Apply plastic tape wrap in accordance with AWWA C209.
   2. Apply primer with brush, without runs and drips.
   3. Lap wrapping not less than 1/2 inch. A single wrap lapped 50 percent or more will not be acceptable.
   4. Application on welded joints:
      a. Remove sharp edges of weld spatter and slag with a file or ball peen hammer before wrapping welded joints.
      b. Clean and prime all surfaces.
         1) Then apply a wrap of 0.125-inch thick by 2-inch wide filler tape centered on the weld.
         2) Push and knead the tape into all voids.
         3) Start first wrapping 4 inches back on the pipe wrap, spiral wrap tape over the welded joint holding the proper tension and overlap, and finish 4 inches back on the pipe wrap on the other side of the joint
      c. Apply 2 wraps of 30 mil joint tape, or the tape may be half lapped to obtain the double thickness.
      d. Apply finish wrapping in same manner.
   5. Wrap fittings, valves, and other odd shaped components in the pipeline with first and finish wrapping over the prime coat for a total thickness of 80 mils.
   6. Wrap joints, fittings, valves, and other irregular shapes of piping with extruded coatings with tape.

3.02 FIELD QUALITY CONTROL

A. Holiday detection testing:
   1. Perform a complete high voltage electrical inspection (holiday detection testing) of all steel piping systems and fittings coated with plastic tape wrap prior to burying.
      a. Perform high voltage electrical inspection in accordance with NACE RP0274-74.
      b. Test voltage used for the electrical inspection of the piping and fittings shall be in accordance with the recommendations given by the tape coating manufacturer in their published literature.
      c. Repair all holidays and defects found in the coating system by high voltage electrical inspection in accordance with the tape coating manufacturer's recommendations.
      d. Retest repaired areas in the coating prior to burial of the piping.
   2. Before conducting holiday detection testing on any piping systems, submit technical literature and data describing the testing instrumentation, equipment, electrodes, and other accessories that will be used.
      a. The literature and data shall include complete information covering the operation and use of the testing equipment, including operational voltage

ranges.

3. All holiday detection testing and coating repair work shall be witnessed and inspected by the Engineer.

END OF SECTION

SECTION 15400

WATER SERVICE AND METERS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: basic piping and service meter materials including:
   1. Service Piping
   2. Service Saddle
   3. Meters
   4. Meter Boxes
   5. Corporation Stops

1.02 REFERENCES

A. County of San Luis Obispo Standard Details and Specifications (latest edition)

PART 2 PRODUCTS

2.01 SERVICE PIPING

A. Service lines shall be 3/4 inch minimum inside diameter.

B. Materials
   1. Polyethylene tubing, ASTM D-2239-67 P.E. 3306 – Type II – Grade 3 (Flarable)

2.02 SERVICE SADDLE

A. Service saddles shall be bronze double strap.

B. Manufacturer: One of the following or equal:
   1. Mueller BR2B 0899 IP, 075 or 100

2.03 METERS

A. Flow meter at AMWC Water Main Extension shall be 6 inch Elster EvoQ4 RB Electromagnetic Meter with Replacement Battery including initial battery pack, remote display, and 30 foot remote display cable.
   1. Telemetry Recording Unit shall be Telog Ru-32v with PT-3Ran Sensor

B. Flow meter at Garden Farms CWD Connection shall be 4 inch Omni T2 Flow Meter.

C. Flow meter at CSA 23 Connection shall be 6” Badger Turbo Series 2000 Flow Meter or approved equal.

2.04 Meter Boxes

A. Meter boxes, extensions, and covers shall be commercial products. Boxes shall be large enough to allow easy maintenance, testing, and removal of backflow preventers, meters, or valves. Traffic covers are required within pavement.
   1. Manufacturer: One of the following or equal:
      a. Brooks Product 37-S

B. Angle Meter Stops
   1. Manufacturer: One of the following or equal:
      a. Jones J-1966W, 3/4 or 1 inch

2.05 CORPORATION STOPS

A. Corporation stops shall be bronze, round, with iron pipe standard (I.P.S.) thread for steel pipe, and outlet for the type of service pipe used.
   1. Manufacturer: One of the following or equal:
      a. Mueller H-10012

PART 3 EXECUTION

3.01 INSTALLATION

A. Install water service and meters per the County of San Luis Obispo Standard Plans and Specifications, as shown on the plans, and per the recommendations of the manufacturer.

END OF SECTION

SECTION 15956

PIPING SYSTEMS TESTING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Test requirements for piping systems.

B. Related Sections:
   1. Section 15052 - Basic Piping Materials and Methods.

1.02 REFERENCES

A. County of San Luis Obispo Standard Details and Specifications (latest edition)

B. Uniform Plumbing Code (UPC).

C. National Fuel Gas Code: ANSI Z 223.1 or NFPA 54.

D. American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME):
   1. B31.8 - Gas Transmission and Distribution Piping Systems.
   2. B31.1 - Power Piping.
   3. B31.3 - Process Piping.

E. Uniform Mechanical Code (UMC).

1.03 TESTING REQUIREMENTS

A. General Requirements:
   1. Testing requirements are stipulated in Laws and Regulations; are included in the Piping Schedule in Section 15052; are specified in the specifications covering the various types of piping; and are specified herein.
   2. Requirements in Laws and Regulations supersede other requirements of Contract Documents, except where requirements of Contract Documents are more stringent, including higher test pressures, longer test times, and lower leakage allowances.
   3. Test plumbing piping in accordance with Laws and Regulations, the Uniform Plumbing Code, and UL requirements.
   4. When testing with water, the specified test pressure is considered to be the pressure at the highest point of the piping section under test. Lower test pressure as necessary to prevent testing the lowest point above a safe test pressure.

B. Furnish necessary personnel, materials, and equipment, including bulkheads, restraints, anchors, temporary connections, pumps, water, pressure gauges, and other means and facilities required to perform tests.

C. Water for Testing, Cleaning, and Disinfecting:

1. Water for testing, cleaning, and disinfecting will be provided as specified in Section 01500 and these Special Provisions.

D. Pipes to be Tested: Test only those portions of pipes that have been installed as part of this Contract. Test new pipe sections prior to making final connections to existing piping. Furnish and install test plugs, bulkheads, and restraints required to isolate new pipe sections. Do not use existing valves as test plug or bulkhead.

E. Unsuccessful Tests:
   1. Where tests are not successful, correct defects or remove defective piping and appurtenances and install piping and appurtenances that comply with the specified requirements.
   2. Repeat testing until tests are successful.

F. Test Completion: Drain and leave piping clean after successful testing.

G. Test Water Disposal: Dispose of testing water at headworks in accordance with requirements of federal, state, county, and city regulations governing disposal of wastes in the location of the Project and disposal site.

1.04 SUBMITTALS

A. Schedule and Notification of Tests:
   1. Submit a list of scheduled piping tests by noon of the working day preceding the date of the scheduled tests.
   2. Notification of Readiness to Test: Immediately before testing, notify ENGINEER in writing of readiness, not just intention, to test piping. Have personnel, materials, and equipment specified in place before submitting notification of readiness.

1.05 SEQUENCE

A. Clean piping before pressure or leak tests.

B. Underground pressure piping may be tested before or after backfilling when not indicated or specified otherwise.

C. Backfill and compact trench, or provide blocking that prevents pipe movement before testing underground piping with a maximum leakage allowance.

D. Test underground piping before encasing piping in concrete or covering piping with slab, structure, or permanent improvement.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 TESTING ALIGNMENT, GRADE, AND DEFLECTION

A. Alignment and Grade:
   1. Visually inspect the interior of gravity piping with artificial light, reflected light, or laser beam.
   2. Consider inspection complete when no broken or collapsed piping, no open or poorly made joints, no grade changes that affect the piping capacity, or no other defects are observed.

B. Deflection Test:
   1. Pull a mandrel through the clean piping section under test.
   2. Perform the test not sooner than 30 days after installation and not later than 60 days after installation.
   3. Use a 9 rod mandrel with a contact length of not less than the nominal diameter of the pipe within one percent plus or minus.
   4. Consider test complete when the mandrel can be pulled through the piping with reasonable effort by 1 person, without the aid of mechanical equipment.

3.02 AIR TESTING METHOD FOR PRESSURE PIPING

A. Air test piping, indicated with "AM" in the Piping Schedule, with air or another nonflammable or inert gas.

B. Test gas, air, liquefied petroleum gas, liquid chlorine, and chlorine gas piping by the air test method.
   1. Test chlorine piping with dry air or nitrogen having a dew point of minus 40 degrees Fahrenheit or less. Supply temporary air driers as necessary.

C. Test at pressure as specified in Piping Schedule in Section 15052.
   1. Provide temporary pressure relief valve for piping under test. Set at the lesser of 110 percent of the test pressure or 50 pounds per square inch gauge over the test pressure.
   2. Air method test pressures shall not exceed 110 percent of the piping maximum allowable working pressure calculated in accordance with the most stringent of ANSI/ASME B31.1, ANSI/ASME B31.3, ANSI/ASE B31.8, or the pipe manufacturer's stated maximum working pressure.
   3. Gradually increase test pressure to an initial test pressure equal to the lesser of one-half the test pressure or 25 pounds per square inch gauge.
   4. Perform initial check of joints and fittings for leakage.
   5. Gradually increase test pressure in steps no larger than the initial pressure. Check for leakage at each step increase until test pressure reached.
   6. At each step in the pressure, examine and test piping being air tested for leaks with soap solution.
   7. Consider examination complete when piping section under test holds the test pressure for 15 minutes without losses.

3.03 TESTING HIGH-HEAD PRESSURE PIPING

A. Test piping for which the specified test pressure in the Piping Schedule is 20 pounds per square inch gauge or greater, by the high head pressure test method.

B. General:
   1. Test connections, hydrants, valves, blowoffs, and closure pieces with the piping.
   2. Do not use installed valves for shutoff when the specified test pressure exceeds the valve's maximum allowable seat differential pressure. Provide blinds or other means to isolate test sections.
   3. Do not include valves, equipment or piping specialties in test sections if test pressure exceeds the valve, equipment or piping specialty safe test pressure allowed by the item's manufacturer.
   4. During the performance of the tests, test pressure shall not vary more than plus or minus 5 pounds per square inch gauge with respect to the specified test pressure.
   5. Select the limits of testing to sections of piping. Select sections that have the same piping material and test pressure.
   6. When Test Results Indicate Failure of Selected Sections, Limit Tests to Piping:
      a. Between valves.
      b. Between a valve and the end of the piping.
      c. Less than 500 feet long.
   7. Test piping for minimum 2 hours for visible leaks test and minimum 2 hours for the pressure test with maximum leakage allowance.

C. Testing Procedures:
   1. Fill piping section under test slowly with water while venting air. Use potable water for all potable waterlines and where noted on the Piping Schedule
   2. Before pressurizing for the tests, retain water in piping under slight pressure for a water absorption period of minimum 24 hours.
   3. Raise pressure to the specified test pressure and inspect piping visually for leaks. Consider visible leakage testing complete when no visible leaks are observed.

D. Pressure Test with Maximum Leakage Allowance:
   1. Leakage allowance is zero for piping systems using flanged, National Pipe Thread threaded and welded joints.
   2. Pressure test piping after completion of visible leaks test.
   3. For piping systems using joint designs other than flanged threaded or welded joints, accurately measure the makeup water necessary to maintain the pressure in the piping section under test during the pressure test period.
      a. Consider the pressure test to be complete when makeup water added is less than the allowable leakage and no damage to piping and appurtenances has occurred.
      b. Successful completion of the pressure test with maximum leakage allowance shall have been achieved when the observed leakage during the test period is equal or less than the allowable leakage and no damage to piping and appurtenances has occurred.
      c. When leakage is allowed, calculate the allowable leakage by the following formula:

$$L = S \times D \times P^{1/2} \times 133{,}200^{-1}$$

wherein the terms shall mean:

L = Allowable leakage in gallons per hour.

S = Length of the test section in feet.

D = Nominal diameter of the piping in inches.

P = Average observed test pressure in pounds per square inches, gauge, at the lowest point of the test section, corrected for elevation of the pressure gauge.

x = The multiplication symbol.

3.04 TESTING LOW-HEAD PRESSURE PIPING

A. Test piping for which the specified test pressure is less than 20 pounds per square inch gauge, by the low head pressure test method, indicated "LH" in the Piping Schedule.

B. General:
   1. Test pressures shall be as scheduled in Section 15052.
   2. During the performance of the tests, test pressure shall not vary more than plus or minus 2 pounds per square inch gauge with respect to the specified test pressure.
   3. Test connections, blowoffs, vents, closure pieces, and joints into structures, including existing bell rings and other appurtenances, with the piping.
   4. Test piping for minimum 2 hours for visible leaks test and minimum 2 hours for the pressure test with maximum leakage allowance.

C. Visible Leaks Test:
   1. Subject piping under test to the specified pressure measured at the lowest end.
   2. Fill piping section under test slowly with potable water while venting air.
   3. Before pressurizing for the tests, retain water in piping under slight pressure for the water absorption period of minimum 24 hours.
   4. Raise pressure to the specified test pressure and inspect piping visually for leaks. Consider testing complete when no visible leaks are observed.

D. Pressure Test with Maximum Leakage Allowance:
   1. Pressure test piping after completion of visible leaks test.
   2. Accurately measure the makeup water necessary to maintain the pressure in the piping section under test during the pressure test period.
      a. Consider the pressure test to be complete when makeup water added is less than the allowable leakage of 80 gallons per inch of nominal diameter, per mile of piping section under test after 24 hours and no damage to piping and appurtenances has occurred.
      b. Successful completion of the leakage test shall have been achieved when the observed leakage is equal or less than the allowable leakage and no damage to piping and appurtenances has occurred.

E. Optional Joint Test:
   1. When Joint Testing Is Allowed by Note in the Piping Schedule, the Procedure Shall Be as Follows:
      a. Joint testing will be allowed only for low head pressure piping.
   2. Joint testing may be performed with water or air.
   3. Joint test piping after completion of backfill and compaction to the top of the trench.
   4. Joint Testing with Water:
      a. Measure test pressure at the invert of the pipe. Apply pressure of 4 feet plus the inside diameter of the pipe in water column within 0.20 feet in water column.
      b. Maintain test pressure for one minute.
      c. Base the allowable leakage per joint on 80 gallons per inch nominal diameter, per mile of piping, per 24 hours equally distributed to the actual number of joints per mile for the type of piping.
      d. Consider the pressure test to be complete when makeup water added is less than the allowable leakage.
      e. Successful completion of the joint test with water shall have been achieved when the observed leakage is equal or less than the allowable leakage.
   5. Joint Testing with Air:
      a. Apply test pressure of 3 pounds per square inch gauge with a maximum variation of plus 0.20 and minus 0.00 pounds per square inch.
      b. Maintain test pressure for 2 minutes.
      c. Consider the pressure test to be complete when the test pressure does not drop below 2.7 pounds per square inch for the duration of the test.

END OF SECTION

HIGH PERFORMANCE VACUUM ASSISTED,
FULLY AUTOMATIC, SOUND ATTENUATED PUMPSET,
MOUNTED ON A DOT TRAILER

SIZE: 4"

POWER PRIME MODEL: SiteMax 1500 49HP 4F, or approved equal

IMPELLER DIAMETER: 11.26 INCHES, or approved equal

ENGINE: KUBOTA: V2403-M-E3B-KEA-2, or approved equal

EPA EMISSION LEVEL: INTERIM TIER 4, or approved equal

PRIMING SYSTEM: 16 CFM COMPRESSOR/VENTURI, or approved equal

1.0 GENERAL DESCRIPTION

Specifications detailed herein represent the minimum requirements for a new, latest design, high performance, vacuum assisted, fully automatic self-priming, water-cooled diesel engine powered, sound attenuated, trailer mounted pump. The design of the pump shall be heavy duty of the type used within the construction, mining, rental and municipal markets. The pump design shall be environmentally safe with a demonstrated ability to operate continuously at accepted noise and environmental emissions limits. Additionally, the pump shall be multi-purpose suitable for wastewater and other general purpose duties. An acceptable make and model pump would be the **Power Prime Pumps model, SiteMax 1500 49HP 4F**, size 4 inch and/or approved equal.

The priming system shall be an integral part of the pump design with the ability to function automatically based on demand (Whether liquid is present at the suction hose or pipe). An essential performance requirement for the specified pump is an ability to prime from a dry condition (Pump and suction system totally void of priming liquid) of 28 feet vertical suction lift.

The pump and the engine assembly shall be closed-coupled and mounted within a vandal proof, rotationally molded, sound attenuating canopy/enclosure of double-walled polyethylene construction.

2.0 HYDRAULIC DESIGN

The hydraulic design/shape of the impeller shall combine the positive screw action of two conically shaped vanes extending into the suction front cover to achieve a low NPSHR and non-ragging characteristics. The overall width of the impeller shall not be less than 4.30 inches and shall have a demonstrated dual solids handling passage of 1.6” x 2.95” inches. The volute passage shall be of a single non-split flow path.

Recirculating type self-priming pumps incorporating internal chambers for the detainment of priming liquid are not acceptable due to inherent clogging problems associated with this design.

Maintenance of the impeller to suction cover front clearance along the entire length shall be accomplished through removal of shims between the volute outside machined surface and the front cover. Shims shall be manufactured from a copolymer material.

3.0 HYDRAULIC CONSTRUCTION

The pump shall be of a single stage end suction design. The suction intake shall be on the same axis as the pump shaft. The orientation of the suction and discharge ports shall be in the same direction facing rear opposite the trailer tow tongue. The discharge check valve shall be integral to the volute and incorporate a replace stainless steel seat held captive by stainless steel socket head cap screws. The volute shall incorporate a cover to allow for access and replacement of a BUNA N disc valve and stainless steel seat. The flow area of the discharge check valve shall be 100% at a maximum disc movement of 35° from the resting position.

The bearing system shall be of a heavy duty design, grease lubricated, incorporate back-to- back pair of angular contact bearings at the drive side, held captive by a single stainless steel self-locking bearing retainer for axial thrust protection, and a single cylindrical roller type bearing for radial load protection. The design shall not require shimming or other adjustments. Ingress of contaminates to the drive side bearing shall be prevented via a Viton oil seal.

The B^{1o} bearing life shall not be less than 100,000 hours at normal operating conditions. The impeller shall be secured to the pump shaft via a tapered fit with a rectangular drive key along the length of the taper. The impeller shall be secured to shaft via a stainless steel socket head cap screw, flat washer, and lock washer.

Shaft sealing shall be provided by tandem single face seals operating within a lubrication medium of Mobile DTE FM 32 hydraulic biodegradable oil. The sealing faces shall be silicon carbide x silicon carbide with Viton sealing elastomers, and 316 stainless steel spring and other capture components. The seal shall be capable of operating dry for extended periods without harm. The seal lubrication reservoir shall be, located above the seal chamber, clearly visible, and made of a damage resistant HDPE. The reservoir mounting bracket shall be directly secured to the check valve cover and designed with a hand hole to facilitate removal of the inspection cover.

3.1 MATERIALS OF CONSTRUCTION

Pump shall meet or exceed the following materials of construction:

3.11 Suction Intake: Ductile Iron ASTM A395-76, Grade 60-40-18.
3.12 Volute: ASTM A48 Class 35.
3.14 Impeller: Austempered Ductile Iron (ADI) ASTM A897 (150-11-07) Heat treated to a minimum hardness of, 341 BHN.Cover: Austempered Ductile Iron (ADI) ASTM A897 (150-11-07). Heat treated to a minimum hardness of BHN.
3.15 Rear Wear Cover Plate: Cast Stainless Steel: ASTM A743 (CA40).
3.16 Shaft: Stainless Steel 17-4, ASTM A564, Grade 630.
3.17 Bearing Housing: Ductile Iron ASTM A395-76, Grade 65-45-12.
3.18 Check Valve Seat: ANSI Stainless Steel ANSI 316.
3.19 Elastomers and Gaskets: Viton.

4.0 PERFORMANCE CHARACTERISTICS

The pump shall exhibit a steep head/quantity curve to meet the varied uses. The ***minimum*** total head shall be 200 feet (Maximum shut-off head) and should not be less than 13.0 times the end of curve full flow condition head of 1500 US GPM @ 30 feet TDH when using 6 inch suction and discharge hoses. The pump ***maximum*** working pressure shall not be less than 145psi.

The pump performance shall not be less than the following:

4.1 At a static suction lift of 20 feet: 700 GPM. This should represent a deterioration of no more than 53% of the ***maximum*** capacity i.e., 1500 GPM when operated on 6”x 40’ suction hose.
4.2 At a static suction lift of 28 feet: 400 GPM when operated on 6” x 40’ suction hose. This should represent a deterioration of no more than 73% of the ***maximum*** capacity, i.e., 1500 GPM.
4.3 The nominal operating conditions shall condition shall not be less than:
  4.31 700 GPM at a total head of 130 feet. The ***maximum*** power absorbed should not be greater than 37.0 BHP. This capacity shall be available at a 20 feet ***minimum*** static suction lift when operated on 6” x 40’ suction hose.
  4.32 400 GPM at a total head of 160 feet. The ***maximum*** power absorbed should not be greater than 37.0 BHP. This capacity shall be available at a 28 feet ***minimum*** static suction lift when operated on 6” x 40’ suction hose.
4.4 The pump should be capable of operating over the full range of its performance curve without any restriction or damage to any component.

5.0 PRIMING SYTEM

The pump shall be fitted with a fully-automatic priming system incorporating a centrifugal pump shaft driven 16 cubic feet per minute (Minimum) displacement air compressor.

The compressor shall be mounted on an adjustable bracket, without the use of shims for belt tensioning. The adjustable compressor mounting bracket shall attach directly to the centrifugal pump bearing housing. The drive system shall incorporate a non-slip belt system incorporating a single Gates GT2 continuous poly chain. The drive system shall be guarded to meet EU compliance standards and BS EN 13857.

The compressor shall be directly oil lubricated and water cooled from the engine. This direct lubrication and cooling of the compressor shall be approved by the engine manufacturer.

The air ejector assembly shall be located above the pump suction, mounted to a cast iron separation tank. The air ejector assembly shall operate on the pressure side of the compressor, thus eliminating the possibility of water being drawn into the air source. Priming control shall be via a float actuated compound lever mechanism to control the removal of air from the pump suction system and to prevent the discharge of pumped liquid to atmosphere.

The priming system shall be capable of repeatedly priming the pump from a completely dry/void of any priming liquid condition. The pump must be capable of running dry for indefinite periods and then be capable re-priming and returning to normal pumping volumes. The priming system shall be rated to operate at positive suction inlet conditions equal to the maximum discharge pressure capability of the centrifugal pump. Operation from negative to positive inlet suction conditions must be fully automatic and not require the closure of valves or other manual adjustments. The air ejector assembly shall incorporate a ball type non-return valve to prevent the loss of suction liquid during repeated priming cycles and shutdown. The priming system shall incorporate the following materials of construction:

5.1 MATERIALS OF CONSTRUCTION

Pump shall meet or exceed the following materials of construction:

5.11 Suction Tank: Cast Iron, ASTM A48 Class 35.
5.12 Adjustable Compressor Bracket: Ductile Iron, ASTM A536-84/65-45-12.

5.13 Ejector Assembly: Stainless Steel UNS31600.
5.14 Top Cover: Cast Iron, ASTM A48 Class 30.
5.15 Compound Float Mechanism: Stainless steel UNS31600.
5.16 Pins, Compound Float Mechanism: Stainless steel UNS31600.
5.17 Mounting Plates, Top Cover & Float Mechanism: Steel, ASTM A36.

5.18 Seat, Orifice: Stainless Steel UNS 30300
5.19 Button, Orifice Seal: Viton.

5.20 Internal Non-Valve Seat/Ball: Brass, ASTM B16, C36000/Neoprene
5.21 Elastomers and Gaskets: Viton.
5.22 Air Supply Hose: Smooth bore Teflon tube with 300 series stainless steel over-braiding. Hose assembly shall be covered with a protective fire sleeve or jacket to insulate and prevent chaffing.

A pneumatic schematic drawing shall accompany your bid submission showing compliance with this section.

6.0 TRAILER/CONTAINMENT

The pump and engine shall be close-coupled and mounted on four mobile type anti-vibration mounts on an engine/pump chassis sub-frame. The aforementioned assembly shall be mounted within a containment system of sufficient proportions to retain 167% of the total fuel capacity. The complete integrated assembly shall be manufactured to the following standard:

6.1 The complete assembly shall be certified by an Independent Professional Engineer (Structural). A copy of this certification shall accompany your bid submission showing compliance.
6.2 The trailer manufacturer shall be an audited member of the, National Trailer Manufacturers Association. The trailer shall be affixed with the appropriate safety warning labels.
6.3 The center lifting bracket shall be attached to the chassis sub-frame and include a lift eye with a minimum slot opening of 3.0 x 2.0 inches. The connections shall be of a grade 8 or equivalent bolted design to allow for replacement if this safety related component is damaged. The lifting

eye shall be directly accessible above the top canopy surface when closed without the removal or opening of any access doors or covers.

6.4 For corrosion resistance, and lower maintenance, the fuel cell shall be rotationally molded in cross-linked high density polyethylene, Ingenia Superlink 110 or approved material equal. The fuel cell wall thickness shall be not less than 0.37 inches. The capacity shall not be less than 88.5 gallons sufficient to operate the pump continuously for 43 hours under full load operating conditions. The fuel cell shall include the following accessories:

- 6.41 Mechanical fuel level gauge.
- 6.42 Fuel level sending device of stainless steel construction for indication at control panel.
- 6.43 Extended fuel filler neck with gasketed truncated threaded cap with permanently molded-in words, “Diesel Fuel”. The top surface of the fuel cell shall be recessed to allow spilled fuel to be directed to the containment system.
- 6.44 Two drain plugs for draining and cleaning.

6.5 The containment shall include the following accessories:

- 6.51 Two quick release drain plugs secured to prevent loss by cable lanyards. The drain plug positions shall align with the fuel cell drain plug positions.
- 6.52 Bulkhead type fittings to allow for the external drainage of the following fluids, engine coolant, engine lubricating oil, pump shaft seal and vacuum pump coalescer.

6.6 The trailer running gear shall comprise of four removable assemblies, front tow tongue, axle with electric brakes, fenders and rear bumper assembly. Assemblies shall be attached via a grade 8 bolting system to allow for conversion to base or skid mount configuration if desired. The trailer shall be equipped with LED trailer lights and reflectors to ICC and DOT regulations. All wiring shall be protected. Wiring spices shall be made via Butt type insulated solder type connectors for long term durability and corrosion protection.

6.7 The rear bumper assembly shall include two drop leg style hand cranking style jacks each of 2,500 lbs. capacity. The front tow tongue assembly shall include one retractable wheel jack of 1,500 lbs. rating. All jacks shall be of a bolt-on design.

6.8 Other trailer accessories shall include safety chains and plug connector for lights and brakes.

7.0 SOUND ATTENUATING CANOPY

The sound attenuating canopy shall consist of four sections. Three main double walled sections: Fixed rear air inlet louver section with the external and internal walls offset to aid in sound attenuation, center pivot section for easy access, and fixed front air outlet section. Each of the aforementioned sections shall be rotationally molded in high density polyethylene, Hexane Copolymer, Marlex TR-942/HMN-942G and/or approved equal.

For ease of maintenance and engine radiator cleaning, cooling air discharge shall be through a removable molded louver manufactured from Acrylic Weather Resistant Kydex 510 material, or approved equal, secured to the front canopy section via ten socket head cap screws.

The canopy design shall be vandal and damage resistant with specified imbedded color for a no maintenance finish and long term durability. For access to the pump and engine assembly for maintenance, the single center canopy section shall open/rotate up from a pivot point located about the engine cooling radiator position on the front of the trailer. Access for maintenance shall *only* be accomplished via the opening of this center cover. *Enclosures with multiple doors are deemed non acceptable due to the limited access.* The center canopy shall rotate about its pivot point located 4.1 inches above the top of the containment surface located within the front canopy section. The center canopy shall open with the assistance of two seal-less, gas-less and oil-less mechanical spring struts. *Gas springs are deemed not acceptable in this application due to the eventual weakness of this component in the long term operation.* The center canopy handle force, located at the front of the pump set, shall be 5.0 lbs. (Closed) and 20.0 lbs. (Open). The driver’s side mechanical strut shall include an automatic locking safety device to prevent accidental closing under inclement weather conditions. Manual release of this safety device shall allow the center canopy to close. The center canopy shall be supported by a reinforced/connected by a clear zinc plated ANSI 1018 steel fabricated bracket via a 1.0 inch diameter pivot pin to a clear zinc plated ANSI 1018 steel base bracket secured to the top containment surface. Mechanical strut forces shall only be subjected to the aforementioned steel bracket structures. The canopy structure shall have a minimum wind load rating of 150 MPH center canopy closed, and 40 MPH with the center canopy open. In the closed position the center canopy section shall be secure by two sound and vibration dampening rubber latches. A single style padlock locking device shall be used to secure the sound attenuating canopy during unattended

operation. Storage for Operation and Maintenance Manual shall be provided inside the canopy.

To allow for future emission levels to be met, and future upgrading, the enclosure shall be designed to accept EPA tier 4 engines of the same Kubota model designation. The pump set is intended for use in residential areas day and night, for this purpose the *maximum* acceptable sound pressure level (SPL) shall not to exceed 70 dB (A) @ 23 feet, operating at 1800 rpm. Pump set shall be tested in accordance with ISO 3744 (2010) Acoustics-Determination of sound power levels of noise sources using sound pressure-Engineering method in an essentially free field over a reflecting plane. Factory Certification / Test data will be required to show compliance with this requirement (*Unsubstantiated or non- traceable data will not be accepted for evaluation purposes*). Submittal package shall include the standard production model noise test for the actual product being offered in accordance with ISO 3744 (2010), the noise test shall include, but not limited to, the following data:

Dimensions of equipment – Noise envelope. Operational Speed.

Instrumentation and calibration equipment used during referenced test. Measuring microphone array positions (Minimum of 5)

Noise Levels in dB covering the following Octave Band Center Frequency Ranges (Hertz): 32, 63, 125, 250, 500, 1K, 2K, 4K, 8K, and 16K

SPL results shall be presented in dB (A) at a distance of 3.28 feet plus the Sound Power Level (SWL) at this distance. The SPL shall also be presented graphically, dB (A) versus distances of up to 328 feet; this information is required to enable operations Personnel to apply the equipment in residential areas with known results for varying conditions.

8.0 ENGINE

The engine shall be an EPA interim tier 4, four cylinder, water cooled diesel, naturally aspirated, Kubota model V2403-M-E3B-KEA-2 or approved equal with the following characteristics:

8.1 Bore: 3.43 inches
8.2 Stroke: 4.03 inches.
8.3 Maximum displacement: 148.5 cubic inches.
8.4 Maximum power rating: 49 BHP (Gross)
8.5 The engine shall be equipped with the following:
- 8.51 Battery and cables.
- 8.52 Fuel/water separator, Racor model 445R10 or approved equal.
- 8.53 Micro-disc type critical attenuating silencer.
- 8.54 Removable exhaust insulation from and including the engine exhaust manifold to the to the exit point from the canopy. Insulation is required for operator protection and shall meet the following minimum material requirements:
  - 8.54.1 High temperature thermal blankets consisting of a woven stainless mesh liner, type E fiberglass insulation (to MIL Spec. MIL-16411E) and a cold face of flexible silicon impregnated fiberglass cloth. The blanket edges shall be machined stitched with high-grade fiberglass thread and secured in place with stainless steel springs and or wires. The exhaust external discharge shall be oriented in such a manner.

8.6 The exhaust shall exit through the top of the center sound attenuating canopy and shall terminate in a 90º bend to prevent the ingress of rain without the use of a rain cap for quietest operation.

8.7 Power from the engine shall be transmitted to the pump shaft via an elastomeric coupling. The coupling manufacturer shall provide torsional analysis calculations establishing suitability of the coupling based on the pump and engine mass elastic data. To allow for the eventual replacement of vacuum pump drive belts the geared driver coupling shaft hub shall be of a split diameter design to facilitate replacements of aforementioned belts without disconnection of the pump from the engine.

9.0 ENGINE CONTROL PANEL (Auto-Start)

Pump shall be equipped with a microprocessor-based control panel that meets the minimum requirements listed below:

9.1 The engine control system shall be integrated into the sound attenuating enclosure on the driver's side of the pump. The control system shall be mounted on a single fascia plate. An emergency stop button shall be prominently located in the center control panel.

9.2 Electrical Specifications: The panel shall have an operating voltage range of 5.5VDC to 36VDC and come with reverse polarity protection, transient voltage suppression and load dump protection. The panel shall have a "sleep mode" for standby/auto operation with a maximum current draw less than 15mA. The panel shall have single analog inputs configurable via the panel for 4-20mA, 0-5VDC or ratiometric. The panel shall have 8 digital inputs configurable as normally open or normally closed. The panel shall have relay outputs that can be configure for alarms, shutdowns or discrete outputs. The initial relay state shall be selectable as either "on" or "off" upon Panel power up.

9.3 Environmental Specifications: All internal panel components such as the display module and key switch need to be water tight, IP67 rated components with water tight connectors. The panel shall have a storage and operating temperature range of -40°C to +80°C.

9.4 Physical Specifications: The panel shall have an OLED (organic light emitting diode) digital display with large ½" characters for easy viewing. The panel shall have both a yellow alarm lamp and a red shutdown lamp. The key switch will come labeled with four positions (AUTO, OFF, RUN & CRANK). The panel shall come with a clear door that can be latched and locked. The panel keypad buttons shall be stainless steel domed membrane switches that are water tight and provide a direct physical contact with a tactile response to the operator. Capacitive touch sensing buttons are not acceptable.

9.5 Operating Specifications:

9.51 Start/Stop: The panel shall be capable of both manual and automatic start/stop. Automatic start/stop shall function interchangeably from single float, dual float, pressure switch, level transducer or pressure transducer by selection via keypad buttons. The panel shall be capable of using a 4-20mA, 0-5V or ratiometric transducer for automatic start/stop.

9.52 Recharge Monitor: The panel shall have a battery recharge monitor system that can be selected that monitors the battery voltage during standby operation and will exercise the engine to recharge the battery according to selected settings.

9.53 Safety Shutdowns: Panel shall provide automatic shutdown in the following instances:

9.531 Low Oil Pressure.
9.532 High Engine Temperature
9.533 Over Speed.
9.534 Emergency Stop.
9.635 Low Coolant Level.
9.536 Low Oil Level
9.537 Loss of Water Level.
9.538 Loss of Inlet Pressure.
9.539 Fuel Level.

9.54 When an "alarm" occurs, the following indication occurs:

9.541 RED LED Lamp Illumination.
9.542 Message on Display "Low Oil Pressure" or other applicable message.
9.543 Engine shut down.
9.544 Alarm is stored in the alarm log.

9.55 The panel shall store a minimum of 32 alarms occurrences in the panel alarm log. The alarm message and the engine hours at the time of the occurrence shall be provided in the log.

9.56 Panel Settings: All panel settings shall be available via the keypad buttons. No additional external devices are required to change panel settings. All operational settings shall be password protected. The panel shall have a label with instructions for accessing and navigating the panel settings.

9.57 Service/Maintenance: The panel shall have selectable service and maintenance messages and warnings.

9.58 Float Connectors: Two Four Pin Amp connectors with screw with water tight sealing

caps with beaded chain lanyards shall be provided for single or dual float operation.

10.0 DIMENSION & WEIGHT PARAMETERS

The sound attenuating pump is intended for operation in areas where space is limited; it is, therefore, essential that the pump overall operating dimensions shall be of a limited. Maximum operating parameters are:

10.1 Length: 152.0
10.2 Width: 79.1
10.3 Height: 71.2
10.4 Weight: 3,685 (Less fuel)

11.0 WARRANTY

The pump-set shall be warranted for a period of not less than 24 months or 2,000 hours, whichever occurs first. A copy of the manufacturer's and bidder's warranty forms shall be provided as part of the submittal package noted in section 12.0, below. Bidder shall maintain a service and repair facility within a 150 mile radius of Santa Margarita, CA and shall also provide an uptime guarantee. The uptime guarantee shall provide, if at any time during the warranty period that a warrantable failure occurs, where on-site repairs cannot be made within a 24 hour period, at no-charge a replacement pump-set of similar size and performance characteristics will be provided within the aforesaid 24 hour period. Bidder shall provide specific details of this warranty as required in section 12.0.

12.0 REQUIRED DOCUMENTATION: RESPONSE PUMP FORM CHECKLIST

Minimum information required at time of submittal:

12.1 Make / Model of Pump being offered: _____

12.2 Make/ Model of engine being offered: _____

12.3 Emission certification: _____

		YES	NO
12.4	Performance documentation provided:		
12.41	Head / Capacity	_____	_____
12.42	Pump absorbed power curve	_____	_____
12.43	NPSH-R Feet Data	_____	_____
12.44	Solids Handling Capacity shown on curve	_____	_____
12.45	Capacity: 700 GPM @ 130 feet total head with @ 37.0 BHP power consumption/25 feet suction lift	_____	_____
12.46	Capacity: 400 GPM @ 160 feet total head with 37.0 BHP power consumption/ 28 feet suction lift	_____	_____
12.5	Shaft Seal capable of dry operation.	_____	_____
12.6	Pneumatic schematic included (Section 5.0).	_____	_____
12.7	Drawing showing dimensions and weights parameters (Section 10.0)	_____	_____
12.8	Spherical solids handling capability not less than 1.6 inches (Section 2.0)	_____	_____
12.9	Rotationally molded sound attenuating enclosure and fuel cell of specified material	_____	_____
12.10	Trailer certified by independent Professional Engineer	_____	_____
12.11	Manufacturer's & Bidder's warranty form per Sect. 11.0	_____	_____
12.12	Fuel cell rated for 43 hour run time.	_____	_____
12.13	Engine conversion to final tier 4 possible?	_____	_____

12.14 Location of bidder's service facility

_____

_____

End of Section

SECTION 11. AMENDMENTS TO STANDARD SPECIFICATIONS

SECTION 5 CONTROL OF WORK
(Issued 06-10-10)

Add:

5-1.055 SUBCONTRACTING

5-1.055A General

No subcontract releases you from the contract or relieves you of your responsibility for a subcontractor's work.

If you violate Pub Cont Code § 4100 et seq., the Department may exercise the remedies provided under Pub Cont Code § 4110. The Department may refer the violation to the Contractors State License Board as provided under Pub Cont Code § 4111.

Except for a building-construction non-federal-aid contract, perform work equaling at least 30 percent of the value of the original total bid with your employees and with equipment owned or rented by you, with or without operators.

Each subcontract must comply with the contract.

The Department encourages you to include a dispute resolution process in each subcontract.

Each subcontractor must have an active and valid State contractor's license with a classification appropriate for the work to be performed (Bus & Prof Code, § 7000 et seq.).

Submit copies of subcontracts upon request.

Before subcontracted work starts, submit a Subcontracting Request form.

Do not use a debarred contractor; a current list of debarred contractors is available at the Department of Industrial Relations' Web site.

Upon request, immediately remove and not again use a subcontractor who fails to prosecute the work satisfactorily.

5-1.116 DIFFERING SITE CONDITIONS (23 CFR 635.109)

5-1.116A Contractor's Notification

Promptly notify the Engineer if you find either of the following:

1. Physical conditions differing materially from either of the following:

    1.1. Contract documents
    1.2. Job site examination

2. 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

Include details explaining the information you relied on and the material differences you discovered.

If you fail to notify the Engineer promptly, you waive the differing site condition claim for the period between your discovery of the differing site condition and your notification to the Engineer.

If you disturb the site after discovery and before the Engineer's investigation, you waive the differing site condition claim.

5-1.116B Engineer's Investigation and Decision

Upon your notification, the Engineer investigates job site conditions and:

1. Notifies you whether to resume affected work
2. Decides whether the condition differs materially and is cause for an adjustment of time, payment, or both

You may protest the Engineer's decision.

SECTION 6 CONTROL OF MATERIALS
(Issued 05-01-09)

Replace Section 6-1.05 with:

6-1.05 SPECIFIC BRAND OR TRADE NAME AND SUBSTITUTION

A reference to a specific brand or trade name establishes a quality standard and is not intended to limit competition. You may use a product that is equal to or better than the specified brand or trade name if approved.

Submit a substitution request within a time period that:

1. Follows Contract award
2. Allows 30 days for review
3. Causes no delay

Include substantiating data with the substitution request that proves the substitution:

1. Is of equal or better quality and suitability
2. Causes no delay in product delivery and installation

6-1.075 GUARANTEE

Guarantee the work remains free from substantial defects for 1 year after contract acceptance except for work parts for which you were relieved of maintenance and protection. Guarantee each of these relieved work parts for 1 year after the relief date.

The guarantee excludes damage or displacement caused by an event outside your control including:

1. Normal wear and tear
2. Improper operation
3. Insufficient maintenance
4. Abuse
5. Unauthorized change
6. Act of God

During the guarantee period, repair or replace each work portion having a substantial defect.

The Department does not pay for corrective work.

During corrective work activities, provide insurance coverage specified for coverage before contract acceptance.

The contract bonds must be in full force and effect until the later of:

1. Expiration of guarantee period
2. Completion of corrective work

If a warranty specification conflicts with Section 6-1.075, "Guarantee," comply with the warranty specification.

During the guarantee period, the Engineer monitors the completed work. If the Engineer finds work having a substantial defect, the Engineer lists work parts and furnishes you the list.

Within 10 days of receipt of the list, submit for authorization a detailed plan for correcting the work. Include a schedule that includes:

1. Start and completion dates
2. List of labor, equipment, materials, and any special services you plan to use
3. Work related to the corrective work, including traffic control and temporary and permanent pavement markings

The Engineer notifies you when the plan is authorized. Start corrective work and related work within 15 days of notice.

If the Engineer determines corrective work is urgently required to prevent injury or property damage:

1. The Engineer furnishes you a request to start emergency repair work and a list of parts requiring corrective work
2. Mobilize within 24 hours and start work
3. Submit a corrective work plan within 5 days of starting emergency repair work

If you fail to perform work as specified, the Department may perform the work and bill you.

SECTION 9 MEASUREMENT AND PAYMENT
(Issued 03-11-10)

In Section 9-1.03A replace the 2nd paragraph with:

To the total of the direct costs computed as provided in Sections 9-1.03A(1), "Labor," 9-1.03A(2), "Materials," and 9-1.03A(3), "Equipment Rental," there will be added a markup of 35 percent to the cost of labor, 15 percent to the cost of materials, and 15 percent to the cost of equipment rental.

In Section 9-1.03A replace the 4th paragraph with:

If a subcontractor performs work at force account, accept an additional 10 percent markup to the total cost of that work paid at force account, including markups specified in Section 9-1.03, "Force Account Payment," as reimbursement for additional administrative costs.

Replace Section 9-1.03B with:

The Contractor, and all subcontractors obtained before or after contract execution, shall itemize the labor, material, and equipment rental costs, and shall not be deemed specialists unless the selected Contractor or available subcontractors on site are not capable of performing the specialty work and it is not the special service industry's established practice to provide cost itemization. In addition, the Engineer may approve work required to be performed at an off-site manufacturing plant or machine shop to be paid as a non-itemized specialist billing. To obtain approval as a specialist, the Contractor shall submit on behalf of the subcontractor a request to the Engineer prior to the start of the proposed specialist work.

If approval is granted, the Engineer will accept the non-itemized invoices for specialty work performed, provided the invoices are at current market rates. Markup percentages of Section 9-1.03A, "Work Performed by Contractor," will not apply. A markup of 10 percent will be added to the total cost of the extra work. The 10 percent markup shall reimburse the Contractor for additional administrative costs, and no other payment will be made by reason of performance of the extra work by a specialist.

If approval is not granted prior to the start of the proposed specialty work, the Contractor or subcontractor shall itemize labor, material, and equipment rental costs and apply percentage markups as required by Section 9-1.03A, "Work Performed by Contractor."

In Section 9-1.03C delete the 6th paragraph.

SECTION 12 CONSTRUCTION AREA TRAFFIC CONTROL DEVICES
(Issued 11-07-08)

In Section 12-1.01 in the 2nd paragraph, replace the 1st sentence with:

Attention is directed to Part 6 of the California MUTCD.

Replace Section 12-2.01 with:

12-2.01 FLAGGERS

Flaggers while on duty and assigned to traffic control or to give warning to the public that the highway is under construction and of any dangerous conditions to be encountered as a result thereof, shall perform their duties and shall be provided with the necessary equipment in conformance with Part 6 of the California MUTCD. The equipment shall be furnished and kept clean and in good repair by the Contractor at the Contractor's expense.

All flaggers shall wear safety apparel meeting the requirements of ANSI/ISEA 107-2004 for Class 2 or 3 garment and complying with 71 Fed Reg 67792.

In Section 12-3.01 replace the 1st paragraph with:

In addition to the requirements in Part 6 of the California MUTCD, all devices used by the Contractor in the performance of the work shall conform to the provisions in this Section 12-3.

In Section 12-3.06 in the 1st paragraph, replace the 2nd sentence with:

Construction area signs are shown in or referred to in Part 6 of the California MUTCD.

In Section 12-3.06 in the 4th paragraph, replace the 1st sentence with:

All construction area signs shall conform to the dimensions, color and legend requirements of the plans, Part 6 of the California MUTCD and these specifications.

In Section 12-3.06 in the 8th paragraph, replace the 1st sentence with:

Used signs with the specified sheeting material will be considered satisfactory if they conform to the requirements for visibility and legibility and the colors conform to the requirements in Part 6 of the California MUTCD.

SECTION 14 (BLANK)
(Issued 06-05-09)

Replace Section 14 with:

SECTION 14 ENVIRONMENTAL STEWARDSHIP

14-1 GENERAL

14-1.01 GENERAL

Environmental stewardship includes both environmental compliance and environmental resource management.

If an ESA is shown on the plans:

1. The boundaries shown are approximate; the Department marks the exact boundaries on the ground
2. Do not enter the ESA unless authorized
3. If the ESA is breached, immediately:
   - 3.1. Secure the area and stop all operations within 60 feet of the ESA boundary
   - 3.2. Notify the Engineer
4. If the ESA is damaged, the Department determines what efforts are necessary to remedy the damage and who performs the remedy; you are responsible for remedies and charges.

14-2 CULTURAL RESOURCES

14-2.01 GENERAL

Reserved

14-2.02 ARCHAEOLOGICAL RESOURCES

If archaeological resources are discovered at the job site, do not disturb the resources and immediately:

1. Stop all work within a 60-foot radius of the discovery
2. Protect the discovery area
3. Notify the Engineer

The Department investigates. Do not take archaeological resources from the job site. Do not resume work within the discovery area until authorized.

If, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of an archaeological find, or investigation or recovery of archeological materials, you will be compensated for resulting losses, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays."

If ordered, furnish resources to assist in the investigation or recovery of archaeological resources. This work will be paid for as extra work as specified in Section 4-1.03D, "Extra Work."

14-2.03 ARCHAEOLOGICAL MONITORING AREA

Section 14-2.03 applies if an AMA is described in the Contract.

The Department assigns an archaeological monitor to monitor job site activities within the AMA. Do not work within the AMA unless the archeological monitor is present.

The Engineer and the Department archaeological monitor conduct an AMA location field review with you at least 5 business days before start of work. The Department marks the exact boundaries of the AMA on the ground.

If temporary fence (Type ESA) for an AMA is described in the Contract, install temporary fence (Type ESA) to define the boundaries of the AMA during the AMA location field review.

At least 5 business days before starting work within an AMA, submit a schedule of days and hours to be worked for the Engineer's approval. If you require changes in the schedule, submit an update for the Engineer's approval at least 5 business days before any changed work day.

If archaeological resources are discovered within an AMA, comply with Section 14-2.02, "Archaeological Resources."

14-2.04 HISTORIC STRUCTURES

Reserved

14-3 COMMUNITY IMPACTS AND ENVIRONMENTAL JUSTICE

Reserved

14-4 NATIVE AMERICAN CONCERNS

Reserved

14-5 AESTHETICS

Reserved

14-6 BIOLOGICAL RESOURCES

14-6.01 GENERAL

Reserved

14-6.02 BIRD PROTECTION

Protect migratory and nongame birds, their occupied nests, and their eggs.

The Department anticipates nesting or attempted nesting from February 15 to September 1.

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

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

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

If migratory or nongame bird nests are discovered that may be adversely affected by construction activities or an injured or killed bird is found, immediately:

1. Stop all work within a 100-foot radius of the discovery.
2. Notify the Engineer.

The Department investigates. Do not resume work within the specified radius of the discovery until authorized.

When ordered, use exclusion devices, take nesting prevention measures, remove and dispose of partially constructed and unoccupied nests of migratory or nongame birds on a regular basis to prevent their occupation, or perform any combination of these. This work will be paid for as extra work as specified in Section 4-1.03D, "Extra Work."

Prevent nest materials from falling into waterways.

Bird protection that causes a delay to the controlling activity is a condition unfavorable to the suitable prosecution of work as specified in Section 8-1.05, "Temporary Suspension of Work."

14-7 PALEONTOLOGICAL RESOURCES

If paleontological resources are discovered at the job site, do not disturb the material and immediately:

1. Stop all work within a 60-foot radius of the discovery
2. Protect the area
3. Notify the Engineer

The Department investigates and modifies the dimensions of the protected area if necessary. Do not take paleontological resources from the job site. Do not resume work within the specified radius of the discovery until authorized.

14-8 NOISE AND VIBRATION

14-8.01 GENERAL

Reserved

14-8.02 NOISE CONTROL

Do not exceed 86 dBa at 50 feet from the job site activities from 9 p.m. to 6 a.m.

Equip an internal combustion engine with the manufacturer-recommended muffler. Do not operate an internal combustion engine on the job site without the appropriate muffler.

14-9 AIR QUALITY

14-9.01 AIR POLLUTION CONTROL

Comply with air pollution control rules, regulations, ordinances, and statutes that apply to work performed under the Contract, including air pollution control rules, regulations, ordinances, and statutes provided in Govt Code § 11017 (Pub Cont Code § 10231).

Do not burn material to be disposed of.

14-9.02 DUST CONTROL

Prevent and alleviate dust by applying water, dust palliative, or both under Section 14-9.01.

Apply water under Section 17, "Watering."

Apply dust palliative under Section 18,"Dust Palliative."

If ordered, apply water, dust palliative, or both to control dust caused by public traffic. This work will be paid for as extra work as specified in Section 4-1.03D, "Extra Work."

14-10 SOLID WASTE DISPOSAL AND RECYCLING

14-10.01 SOLID WASTE DISPOSAL AND RECYCLING

Submit an annual Solid Waste Disposal and Recycling Report between January 1 and 15 for each year work is performed under the Contract at any time during the previous calendar year. Show the types and amounts of project-generated solid waste taken to or diverted from landfills or reused on the project from January 1 through December 31 of the previous calendar year.

Submit a final annual Solid Waste Disposal and Recycling Report within 5 business days after Contract acceptance. Show the types and amounts of project-generated solid waste taken to or diverted from landfills or reused on the project from January 1 to Contract acceptance.

For each failure to submit a completed form, the Department withholds $10,000.

14-11 HAZARDOUS WASTE AND CONTAMINATION

14-11.01 GENERAL

Reserved

14-11.02 ASBESTOS AND HAZARDOUS SUBSTANCES

Upon discovery, immediately stop working in and notify the Engineer of areas where asbestos or a hazardous substance is present if the:

1. Contractor reasonably believes the substance is asbestos as defined in Labor Code § 6501.7 or a hazardous substance as defined in Health & Safety Code §§ 25316 and 25317
2. Presence is not described in the Contract
3. Substance has not been made harmless

14-12 OTHER INTERAGENCY RELATIONS

Reserved

14-13 PAYMENT

Payment for work specified in Section 14 is included in the payment for the bid items involved unless:

1. Bid item for the work is shown in the verified Bid Item List
2. Work is specified as paid for as extra work

ast 2,500 vibrations per minute and must be equipped with amplitude and frequency controls.

The roller's gross static weight must be at least 7.5 tons.

SECTION 15 EXISTING HIGHWAY FACILITIES
(Issued 05-01-09)

In Section 15-1.02 replace the 1st paragraph with:

Existing facilities which are to remain in place shall be protected in conformance with the provisions in Sections 5-1.18, "Property and Facility Preservation," and 7-1.12, "Indemnification and Insurance."

SECTION 19 EARTHWORK
(Issued 09-16-11)

Replace Section 19-1.02 with:

19-1.02 (BLANK)

Replace Section 19-1.03 with:

19-1.03 GRADE TOLERANCE

Immediately prior to placing subsequent layers of material thereon, the grading plane shall conform to one of the following:

A. When hot mix asphalt is to be placed on the grading plane, the grading plane at any point shall not vary more than 0.05 foot above or below the grade established by the Engineer.
B. When subbase or base material to be placed on the grading plane is to be paid for by the ton, the grading plane at any point shall not vary more than 0.10 foot above or below the grade established by the Engineer.
C. When the material to be placed on the grading plane is to be paid for by the cubic yard, the grading plane at any point shall be not more than 0.05 foot above the grade established by the Engineer.

In Section 19-3.025C replace the 1st paragraph with:

Cementitious material used in soil cement bedding shall conform to the provisions in Section 90-2.01, "Cementitious Materials." Supplementary cementitious material will not be required.

In Section 19-3.025C replace the 4th paragraph with:

The aggregate, cementitious material, and water shall be proportioned either by weight or by volume. Soil cement bedding shall contain not less than 282 pounds of cementitious material per cubic yard. The water content shall be sufficient to produce a fluid, workable mix that will flow and can be pumped without segregation of the aggregate while being placed.

In Section 19-3.06 replace the 9th paragraph with:

Unless otherwise shown on the plans or specified in these specifications or the special provisions, material for structure backfill to be compacted to a relative compaction of not less

than 90 percent, except material to be placed behind retaining walls, shall consist of material free of rocks, broken concrete, other solid material exceeding 3 inches in greatest dimension, or organic or other unsatisfactory material.

In Section 19-3.062 replace the 1st paragraph with:

Slurry cement backfill shall consist of a fluid, workable mixture of aggregate, cementitious material, and water.

In Section 19-3.062 replace the 5th paragraph with:

Cementitious material shall conform to the provisions in Section 90-2.01, "Cementitious Materials." Supplementary cementitious material will not be required.

In Section 19-3.062 replace the 8th paragraph with:

The aggregate, cementitious material, and water shall be proportioned either by weight or by volume. Slurry cement backfill shall contain not less than 188 pounds of cementitious material per cubic yard. The water content shall be sufficient to produce a fluid, workable mix that will flow and can be pumped without segregation of the aggregate while being placed.

SECTION 20 EROSION CONTROL AND HIGHWAY PLANTING
(Issued 04-20-12)

Replace Section 20-2.03 with:

20-2.03 SOIL AMENDMENT

Soil amendment must comply with the Food & Agri Code.

In Section 20-2.10 delete the 8th, 9th, and 10th paragraphs.

In Section 20-3.04A delete the last paragraph.

In Section 20-4.026 replace the 3rd paragraph with:

Oil or pelleted forms of pesticides for weed control shall not be used.

Replace Section 20-4.055 with:

20-4.055 PRUNING

Prune plants under ANSI A300 (Part 1) published by the Tree Care Industry Association.

SECTION 26 AGGREGATE BASES
(Issued 02-16-07)

In Section 26-1.02A replace the 1st paragraph with:

Aggregate must be clean and free from organic matter and other deleterious substances. Aggregate must consist of any combination of:

1. Broken stone
2. Crushed gravel
3. Natural rough surfaced gravel
4. Sand
5. Up to 100 percent of any combination of processed:

    5.1. Asphalt concrete
    5.2. Portland cement concrete
    5.3. Lean concrete base
    5.4. Cement treated base

In Section 26-1.02B replace the 1st paragraph with:

Aggregate must be clean and free from organic matter and other deleterious substances. Aggregate must consist of any combination of:

1. Broken stone
2. Crushed gravel
3. Natural rough surfaced gravel
4. Sand
5. Up to 100 percent of any combination of processed:

    5.1. Asphalt concrete
    5.2. Portland cement concrete
    5.3. Lean concrete base
    5.4. Cement treated base

SECTION 39 ASPHALT CONCRETE
(Issued 10-19-12)

Replace Section 39 with:

SECTION 39 HOT MIX ASPHALT

39-1 GENERAL

39-1.01 DESCRIPTION

Section 39 includes specifications for producing and placing hot mix asphalt (HMA) by mixing aggregate and asphalt binder at a mixing plant and spreading and compacting the HMA mixture.

The special provisions specify one or more types of HMA, including:

1. Type A
2. Type B
3. Open graded friction course (OGFC). OGFC includes hot mix asphalt (open graded)[HMA-O], rubberized hot mix asphalt (open graded) [RHMA-O] and rubberized hot mix asphalt (open graded high binder) [RHMA-O-HB]
4. Rubberized hot mix asphalt (gap graded) [RHMA-G]

The special provisions specify the HMA construction process, including:

1. Standard
2. Method
3. Quality Control / Quality Assurance (QC / QA)

39-1.02 MATERIALS

39-1.02A Geosynthetic Pavement Interlayer

Geosynthetic pavement interlayer must comply with the specifications in Section 88-1.07, "Pavement Interlayer," for the type of interlayer shown on the plans.

39-1.02B Tack Coat

Tack coat must comply with the specifications for asphaltic emulsion in Section 94, "Asphaltic Emulsion," or asphalt binder in Section 92, "Asphalts." Choose the type and grade.

Notify the Engineer if you dilute asphaltic emulsion with water. The weight ratio of added water to asphaltic emulsion must not exceed 1 to 1.

Measure added water either by weight or volume in compliance with the specifications for weighing, measuring, and metering devices under Section 9-1.01, "Measurement of Quantities," or you may use water meters from water districts, cities, or counties. If you measure water by volume, apply a conversion factor to determine the correct weight.

With each dilution, submit in writing:

1. The weight ratio of water to bituminous material in the original asphaltic emulsion
2. The weight of asphaltic emulsion before diluting
3. The weight of added water
4. The final dilution weight ratio of water to asphaltic emulsion

39-1.02C Asphalt Binder

Asphalt binder in HMA must comply with Section 92, "Asphalts," or Section 39-1.02D, "Asphalt Rubber Binder." The special provisions specify the grade.

Asphalt binder for geosynthetic pavement interlayer must comply with Section 92, "Asphalts." Choose from Grades PG 64-10, PG 64-16, or PG 70-10.

39-1.02D Asphalt Rubber Binder

General

Use asphalt rubber binder in RHMA-G, RHMA-O, and RHMA-O-HB. Asphalt rubber binder must be a combination of:

1. Asphalt binder
2. Asphalt modifier
3. Crumb rubber modifier (CRM)

The combined asphalt binder and asphalt modifier must be 80.0 ± 2.0 percent by weight of the asphalt rubber binder.

Asphalt Modifier

Asphalt modifier must be a resinous, high flash point, and aromatic hydrocarbon, and comply with:

Asphalt Modifier for Asphalt Rubber Binder

Quality Characteristic	ASTM	Specification
Viscosity, m^2/s (x 10^{-6}) at 100 °C	D 445	X ± 3 [a]
Flash Point, CL.O.C., °C	D 92	207 minimum
Molecular Analysis		
Asphaltenes, percent by mass	D 2007	0.1 maximum
Aromatics, percent by mass	D 2007	55 minimum

Note:
[a] The symbol "X" is the proposed asphalt modifier viscosity. "X" must be between 19 and 36. A change in "X" requires a new asphalt rubber binder design.

Asphalt modifier must be from 2.0 percent to 6.0 percent by weight of the asphalt binder in the asphalt rubber binder.

Crumb Rubber Modifier

CRM consists of a ground or granulated combination of scrap tire CRM and high natural CRM. CRM must be 75.0 ± 2.0 percent scrap tire CRM and 25.0 ± 2.0 percent high natural CRM by total weight of CRM. Scrap tire CRM must be from any combination of automobile tires, truck tires, or tire buffings.

Sample and test scrap tire CRM and high natural CRM separately. CRM must comply with:

Crumb Rubber Modifier for Asphalt Rubber Binder

Quality Characteristic	Test Method	Specification
Scrap tire CRM gradation (% passing No. 8 sieve)	LP-10	100
High natural CRM gradation (% passing No. 10 sieve)	LP-10	100
Wire in CRM (% max.)	LP-10	0.01
Fabric in CRM (% max.)	LP-10	0.05
CRM particle length (inch max.) [a]	--	3/16
CRM specific gravity [a]	CT 208	1.1 – 1.2
Natural rubber content in high natural CRM (%) [a]	ASTM D 297	40.0 – 48.0

Note:
[a] Test at mix design and for Certificate of Compliance.

Only use CRM ground and granulated at ambient temperature. If steel and fiber are cryogenically separated, it must occur before grinding and granulating. Only use cryogenically produced CRM particles that can be ground or granulated and not pass through the grinder or granulator.

CRM must be dry, free-flowing particles that do not stick together. CRM must not cause foaming when combined with the asphalt binder and asphalt modifier. You may add calcium carbonate or talc up to 3 percent by weight of CRM.

Asphalt Rubber Binder Design and Profile

Submit in writing an asphalt rubber binder design and profile that complies with the asphalt rubber binder specifications. In the design, designate the asphalt, asphalt modifier, and CRM and their proportions. The profile is not a performance specification and only serves to indicate expected trends in asphalt rubber binder properties during binder production. The profile must include the same component sources for the asphalt rubber binder used.

Design the asphalt rubber binder from testing you perform for each quality characteristic and for the reaction temperatures expected during production. The 24-hour (1,440-minute) interaction period determines the design profile. At a minimum, mix asphalt rubber binder components, take samples, and perform and record the following tests:

Asphalt Rubber Binder Reaction Design Profile

Test	Minutes of Reaction [a]							Limits
	45	60	90	120	240	360	1440	
Cone penetration @ 77 °F, 0.10-mm (ASTM D 217)	X [b]				X		X	25 - 70
Resilience @ 77 °F, percent rebound (ASTM D 5329)	X				X		X	18 min.
Field softening point, °F (ASTM D 36)	X				X		X	125 - 165
Viscosity, centipoises (LP-11)	X	X	X	X	X	X	X	1,500 - 4,000

Notes:
[a] Six hours (360 minutes) after CRM addition, reduce the oven temperature to 275 °F for a period of 16 hours. After the 16-hour (1320 minutes) cool-down after CRM addition, reheat the binder to the reaction temperature expected during production for sampling and testing at 24 hours (1440 minutes).
[b] "X" denotes required testing

Asphalt Rubber Binder

After interacting for a minimum of 45 minutes, asphalt rubber binder must comply with:

Asphalt Rubber Binder

Quality Characteristic	Test for Quality Control or Acceptance	Test Method	Specification	
			Minimum	Maximum
Cone penetration @ 77 °F, 0.10-mm	Acceptance	ASTM D 217	25	70
Resilience @ 77 °F, percent rebound	Acceptance	ASTM D 5329	18	--
Field softening point, °F	Acceptance	ASTM D 36	125	165
Viscosity @ 375 °F, centipoises	Quality Control	LP-11	1,500	4,000

39-1.02E Aggregate

Aggregate must be clean and free from deleterious substances. Aggregate:

1. Retained on the No. 4 sieve is coarse
2. Passing the No. 4 sieve is fine
3. Added and passing the No. 30 sieve is supplemental fine, including:

   3.1. Hydrated lime

3.2. Portland cement
3.3. Fines from dust collectors

The special provisions specify the aggregate gradation for each HMA type.

The specified aggregate gradation is before the addition of asphalt binder and includes supplemental fines. The Engineer tests for aggregate grading under California Test 202, modified by California Test 105 if there is a difference in specific gravity of 0.2 or more between the coarse and fine parts of different aggregate blends.

Choose a sieve size target value (TV) within each target value limit presented in the aggregate gradation tables.

Aggregate Gradation
(Percentage Passing)
HMA Types A and B

3/4–inch HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
1"	100	—
3/4"	90 - 100	TV ±5
1/2"	70 - 90	TV ±6
No. 4	45 - 55	TV ±7
No. 8	32 - 40	TV ±5
No. 30	12 - 21	TV ±4
No. 200	2 - 7	TV ±2

1/2–inch HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
3/4"	100	—
1/2"	95 - 99	TV ±6
3/8"	75 - 95	TV ±6
No. 4	55 - 66	TV ±7
No. 8	38 - 49	TV ±5
No. 30	15 - 27	TV ±4
No. 200	2 - 8	TV ±2

3/8–inch HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
1/2"	100	—
3/8"	95 - 100	TV ±6
No. 4	58 - 72	TV ±7
No. 8	34 - 48	TV ±6
No. 30	18 - 32	TV ±5
No. 200	2 - 9	TV ±2

No. 4 HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
3/8"	100	—
No. 4	95 - 100	TV ±7
No. 8	72 - 77	TV ±7
No. 30	37 - 43	TV ±7
No. 200	2 - 12	TV ±4

Rubberized Hot Mix Asphalt - Gap Graded (RHMA-G)

3/4–inch RHMA-G

Sieve Sizes	Target Value Limits	Allowable Tolerance
1"	100	—
3/4"	95 - 100	TV ±5
1/2"	83 - 87	TV ±6
3/8"	65 - 70	TV ±6
No. 4	28 - 42	TV ±7
No. 8	14 - 22	TV ±5
No. 200	0 - 6	TV ±2

1/2–inch RHMA-G

Sieve Sizes	Target Value Limits	Allowable Tolerance
3/4"	100	—
1/2"	90 - 100	TV ±6
3/8"	83 - 87	TV ±6
No. 4	28 - 42	TV ±7
No. 8	14 - 22	TV ±5
No. 200	0 - 6	TV ±2

Open Graded Friction Course (OGFC)

1–inch OGFC

Sieve Sizes	Target Value Limits	Allowable Tolerance
1 1/2"	100	—
1"	99 - 100	TV ±5
3/4"	85 - 96	TV ±5
1/2"	55 - 71	TV ±6
No. 4	10 - 25	TV ±7
No. 8	6 - 16	TV ±5
No. 200	1 - 6	TV ±2

1/2–inch OGFC

Sieve Sizes	Target Value Limits	Allowable Tolerance
3/4"	100	—
1/2"	95 - 100	TV ±6
3/8"	78 - 89	TV ±6
No. 4	28 - 37	TV ±7
No. 8	7 - 18	TV ±5
No. 30	0 - 10	TV ±4
No. 200	0 - 3	TV ±2

3/8–inch OGFC

Sieve Sizes	Target Value Limits	Allowable Tolerance
1/2"	100	—
3/8"	90 - 100	TV ±6
No. 4	29 - 36	TV ±7
No. 8	7 - 18	TV ±6
No. 30	0 - 10	TV ±5
No. 200	0 - 3	TV ±2

Before the addition of asphalt binder and lime treatment, aggregate must comply with:

Aggregate Quality

Quality Characteristic	Test Method	HMA Type			
		A	B	RHMA-G	OGFC
Percent of crushed particles	CT 205				
Coarse aggregate (% min.)					
One fractured face		90	25	--	90
Two fractured faces		75	--	90	75
Fine aggregate (% min) (Passing No. 4 sieve and retained on No. 8 sieve.)					
One fractured face		70	20	70	90
Los Angeles Rattler (% max.)	CT 211				
Loss at 100 Rev.		12	--	12	12
Loss at 500 Rev.		45	50	40	40
Sand equivalent (min.) [a]	CT 217	47	42	47	--
Fine aggregate angularity (% min.) [b]	CT 234	45	45	45	--
Flat and elongated particles (% max. by weight @ 5:1)	CT 235	10	10	10	10

Notes:
[a] Reported value must be the average of 3 tests from a single sample.
[b] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.

39-1.02F Reclaimed Asphalt Pavement

You may produce HMA using reclaimed asphalt pavement (RAP). HMA produced using RAP must comply with the specifications for HMA except aggregate quality specifications do not apply to RAP. You may substitute RAP aggregate for a part of the virgin aggregate in HMA in a quantity not exceeding 15.0 percent of the aggregate blend. Do not use RAP in OGFC and RHMA-G.

Assign the substitution rate of RAP aggregate for virgin aggregate with the job mix formula (JMF) submittal. The JMF must include the percent of RAP used. If you change your assigned RAP aggregate substitution rate by more than 5 percent (within the 15.0 percent limit), submit a new JMF.

Process RAP from asphalt concrete. You may process and stockpile RAP throughout the project's life. Prevent material contamination and segregation. Store RAP in stockpiles on smooth surfaces free of debris and organic material. Processed RAP stockpiles must consist only of homogeneous RAP.

39-1.03 HOT MIX ASPHALT MIX DESIGN REQUIREMENTS

39-1.03A General

A mix design consists of performing California Test 367 and laboratory procedures on combinations of aggregate gradations and asphalt binder contents to determine the optimum binder content (OBC) and HMA mixture qualities. If RAP is used, use Laboratory Procedure LP-9. The result of the mix design becomes the proposed JMF.

Use Form CEM-3512 to document aggregate quality and mix design data. Use Form CEM-3511 to present the JMF.

Laboratories testing aggregate qualities and preparing the mix design and JMF must be qualified under the Department's Independent Assurance Program. Take samples under California Test 125.

The Engineer reviews the aggregate qualities, mix design, and JMF and verifies and accepts the JMF.

You may change the JMF during production. Do not use the changed JMF until the Engineer accepts it. Except when adjusting the JMF in compliance with Section 39-1.03E, "Job Mix Formula Verification," perform a new mix design and submit in writing a new JMF submittal for changing any of the following:

1. Target asphalt binder percentage
2. Asphalt binder supplier
3. Asphalt rubber binder supplier
4. Component materials used in asphalt rubber binder or percentage of any component materials
5. Combined aggregate gradation
6. Aggregate sources
7. Substitution rate for RAP aggregate of more than 5 percent
8. Any material in the JMF

For OGFC, submit in writing a complete JMF submittal except asphalt binder content. The Engineer determines the asphalt binder content under California Test 368 within 20 days of your complete JMF submittal and provides you a Form CEM-3513.

39-1.03B Hot Mix Asphalt Mix Design

Perform a mix design that produces HMA in compliance with:

Hot Mix Asphalt Mix Design Requirements

Quality Characteristic	Test Method	HMA Type		
		A	B	RHMA-G
Air voids content (%)	CT 367[a]	4.0	4.0	Special Provisions
Voids in mineral aggregate (% min.)	LP-2			
No. 4 grading		17.0	17.0	--
3/8" grading		15.0	15.0	--
1/2" grading		14.0	14.0	18.0 – 23.0[b]
3/4" grading		13.0	13.0	18.0 – 23.0[b]
Voids filled with asphalt (%)	LP-3			
No. 4 grading		76.0 – 80.0	76.0 – 80.0	Note d
3/8" grading		73.0 – 76.0	73.0 – 76.0	
1/2" grading		65.0 – 75.0	65.0 – 75.0	
3/4" grading		65.0 – 75.0	65.0 – 75.0	
Dust proportion	LP-4			
No. 4 and 3/8" gradings		0.9 – 2.0	0.9 – 2.0	Note d
1/2" and 3/4" gradings		0.6 – 1.3	0.6 – 1.3	
Stabilometer value (min.) [c]	CT 366			
No. 4 and 3/8" gradings		30	30	--
1/2" and 3/4" gradings		37	35	23

Notes:

[a] Calculate the air voids content of each specimen using California Test 309 and Lab Procedure LP-1. Modify California Test 367, Paragraph C5, to use the exact air voids content specified in the selection of OBC.

[b] Voids in mineral aggregate for RHMA-G must be within this range.

[c] Modify California Test 304, Part 2.B.2.c: "After compaction in the compactor, cool to 140 °± 5 °F by allowing the briquettes to cool at room temperature for 0.5-hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."

[d] Report this value in the JMF submittal.

For stability and air voids content, prepare 3 briquettes at the OBC and test for compliance. Report the average of 3 tests. Prepare new briquettes and test if the range of stability for the 3 briquettes is more than 8 points. The average air void content may vary from the specified air void content by ±0.5 percent.

You may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If you use the same briquettes and tests using bulk specific gravity fail, you may prepare 3 new briquettes and determine a new bulk specific gravity.

39-1.03C Job Mix Formula Submittal

Each JMF submittal must consist of:

1. Proposed JMF on Form CEM-3511
2. Mix design documentation on Form CEM-3512 dated within 12 months of submittal
3. JMF verification on Form CEM-3513, if applicable
4. JMF renewal on Form CEM-3514, if applicable
5. Materials Safety Data Sheets (MSDS) for:

    5.1. Asphalt binder
    5.2. Base asphalt binder used in asphalt rubber binder
    5.3. CRM and asphalt modifier used in asphalt rubber binder
    5.4. Blended asphalt rubber binder mixture
    5.5. Supplemental fine aggregate except fines from dust collectors
    5.6. Antistrip additives

If the Engineer requests in writing, sample the following materials in the presence of the Engineer and place in labeled containers weighing no more than 50 pounds each:

1. Coarse, fine, and supplemental fine aggregate from stockpiles, cold feed belts, or hot bins. Samples must include at least 120 pounds for each coarse aggregate, 80 pounds for each fine aggregate, and 10 pounds for each type of supplemental fines. The Department combines these aggregate samples to comply with the JMF target values submitted on Form CEM-3511.
2. RAP from stockpiles or RAP system. Samples must be at least 60 pounds.
3. Asphalt binder from the binder supplier. Samples must be in two 1-quart cylindrical shaped cans with open top and friction lids.
4. Asphalt rubber binder with the components blended in the proportions to be used. Samples must be in four 1-quart cylindrical shaped cans with open top and friction lids.

Notify the Engineer in writing at least 2 business days before sampling materials. For aggregate and RAP, split the samples into at least 4 parts. Submit 3 parts to the Engineer and use 1 part for your testing.

39-1.03D Job Mix Formula Review

The Engineer reviews each mix design and proposed JMF within 5 business days from the complete JMF submittal. The review consists of reviewing the mix design procedures and comparing the proposed JMF with the specifications.

The Engineer may verify aggregate qualities during this review period.

39-1.03E Job Mix Formula Verification

If you cannot submit a Department-verified JMF on Form CEM-3513 dated within 12 months before HMA production, the Engineer verifies the JMF.

Based on your testing and production experience, you may submit on Form CEM-3511 an adjusted JMF before the Engineer's verification testing. JMF adjustments may include a change in the:

1. Asphalt binder content target value up to ±0.6 percent from the optimum binder content value submitted on Form CEM-3512 except do not adjust the target value for asphalt rubber binder for RHMA-G below 7.0 percent
2. Aggregate gradation target values within the target value limits specified in the aggregate gradation tables

For HMA Type A, Type B, and RHMA-G, the Engineer verifies the JMF from samples taken from HMA produced by the plant to be used. Notify the Engineer in writing at least 2 business days before sampling materials.

In the Engineer's presence and from the same production run, take samples of:

1. Aggregate
2. Asphalt binder
3. RAP
4. HMA

Sample aggregate from cold feed belts or hot bins. Sample RAP from the RAP system. Sample HMA under California Test 125 except if you request in writing and the Engineer approves, you may sample from any of the following locations:

1. The plant
2. A truck
3. A windrow
4. The paver hopper
5. The mat behind the paver

You may sample from a different project including a non-Department project if you make arrangements for the Engineer to be present during sampling.

For aggregate, RAP, and HMA, split the samples into at least 4 parts and label their containers. Submit 3 split parts to the Engineer and use 1 part for your testing.

The Engineer verifies each proposed JMF within 20 days of receiving all verification samples and the JMF submittal has been accepted. If you request in writing, the Engineer verifies RHMA-G quality requirements within 3 business days of sampling. Verification is testing for compliance with the specifications for:

1. Aggregate quality
2. Aggregate gradation (JMF TV ± tolerance)
3. Asphalt binder content (JMF TV ± tolerance)
4. HMA quality specified in the table Hot Mix Asphalt Mix Design Requirements except:

    4.1. Air voids content (design value ± 2.0 percent)

4.2. Voids filled with asphalt (report only if an adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC)
4.3. Dust proportion (report only if an adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC)

The Engineer prepares 3 briquettes from a single split sample. To verify the JMF for stability and air voids content, the Engineer tests the 3 briquettes and reports the average of 3 tests. The Engineer prepares new briquettes if the range of stability for the 3 briquettes is more than 8 points.

The Engineer may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If the Engineer uses the same briquettes and the tests using bulk specific gravity fail, the Engineer prepares 3 new briquettes and determines a new bulk specific gravity.

If the Engineer verifies the JMF, the Engineer provides you a Form CEM-3513.

If the Engineer's tests on plant-produced samples do not verify the JMF, the Engineer notifies you in writing and you must submit a new JMF submittal or submit an adjusted JMF based on your testing. JMF adjustments may include a change in the:

1. Asphalt binder content target value up to ±0.6 percent from the optimum binder content value submitted on Form CEM-3512 except do not adjust the target value for asphalt rubber binder for RHMA-G below 7.0 percent
2. Aggregate gradation target values within the target value limits specified in the aggregate gradation tables

You may adjust the JMF only once due to a failed verification test. An adjusted JMF requires a new Form CEM-3511 and verification of a plant-produced sample.

A verified JMF is valid for 12 months.

For each HMA type and aggregate size specified, the Engineer verifies at the State's expense up to 2 proposed JMF including a JMF adjusted after verification failure. The Engineer deducts $3,000 from payments for each verification exceeding this limit. This deduction does not apply to verifications initiated by the Engineer or JMF renewal.

39-1.03F Job Mix Formula Renewal

You may request a JMF renewal by submitting the following:

1. Proposed JMF on Form CEM-3511
2. A previously verified JMF documented on Form CEM-3513 dated within 12 months
3. Mix design documentation on Form CEM-3512 used for the previously verified JMF

If the Engineer requests in writing, sample the following materials in the presence of the Engineer and place in labeled containers weighing no more than 50 pounds each:

1. Coarse, fine, and supplemental fine aggregate from stockpiles, cold feed belts, or hot bins. Samples must include at least 120 pounds for each coarse aggregate, 80 pounds for each fine aggregate, and 10 pounds for each type of supplemental fines. The Department combines these aggregate samples to comply with the JMF target values submitted on Form CEM-3511.
2. RAP from stockpiles or RAP system. Samples must be at least 60 pounds.
3. Asphalt binder from the binder supplier. Samples must be in two 1-quart cylindrical shaped cans with open top and friction lids.

4. Asphalt rubber binder with the components blended in the proportions to be used. Samples must be in four 1-quart cylindrical shaped cans with open top and friction lids.

Notify the Engineer in writing at least 2 business days before sampling materials. For aggregate and RAP, split samples into at least 4 parts. Submit 3 parts to the Engineer and use 1 part for your testing.

The Engineer may verify aggregate qualities during this review period.

Notify the Engineer in writing at least 2 business days before sampling materials. For aggregate, RAP, and HMA, split the samples into at least 4 parts. Submit 3 parts to the Engineer and use 1 part for your testing.

The Engineer verifies the JMF renewal submittal under Section 39-1.03E, "Job Mix Formula Verification," except:

1. The Engineer retains samples until you provide test results for your part on Form CEM-3514.
2. The Engineer tests samples of materials obtained from the HMA production unit after you submit test results that comply with the specifications for the quality characteristics under Section 39-1.03E, "Job Mix Formula Verification."
3. The Engineer verifies each proposed JMF renewal within 20 days of receiving verification samples.
4. You may not adjust the JMF due to a failed verification.
5. For each HMA type and aggregate gradation specified, the Engineer verifies at the State's expense 1 proposed JMF renewal within a 12-month period.

The most recent aggregate quality test results within the past 12 months may be used for verification of JMF renewal or the Engineer may perform aggregate quality tests for verification of JMF renewal.

If the Engineer verifies the JMF renewal, the Engineer provides you a Form CEM-3513.

39-1.03G Job Mix Formula Modification

For an accepted JMF, you may change binder source one time during production.

Submit your modified JMF request a minimum of 3 business days before production. Each modified JMF submittal must consist of:

1. Proposed modified JMF on Form CEM-3511.
2. Mix design records on Form CEM-3512 for the accepted JMF to be modified.
3. JMF verification on Form CEM-3513 for the accepted JMF to be modified.
4. Quality characteristics test results for the modified JMF as specified in section 39-1.03B. Perform tests at the mix design OBC as shown on Form CEM-3512.
5. If required, California Test 371 test results for the modified JMF.

With an accepted modified JMF submittal, the Engineer verifies each modified JMF within 5 business days of receiving all verification samples. If California Test 371 is required, the Engineer tests for California Test 371 within 10 days of receiving verification samples.

The Engineer verifies the modified JMF after the modified JMF HMA is placed on the project and verification samples are taken within the first 750 tons following sampling requirements in Section 39-1.03E, "Job Mix Formula Verification." The Engineer tests verification samples for compliance with:

1. Stability as shown in the table titled "Hot Mix Asphalt Mix Design Requirements"
2. Air void content at design value ±2.0 percent
3. Voids in mineral aggregate as shown in the table titled "Hot Mix Asphalt Mix Design Requirements"
4. Voids filled with asphalt if an adjustment for asphalt binder content TV is more than ±0.3 percent from the original OBC shown on Form CEM-3512.
5. Dust proportion if an adjustment for asphalt binder content TV is more than ±0.3 percent from OBC shown on Form CEM-3512.

If the modified JMF is verified, the Engineer revises your Form CEM-3513 to include the new binder source. Your revised Form CEM-3513 will have the same expiration date as the original Form CEM-3513 for the accepted JMF that is modified.

If a modified JMF is not verified, stop production and any HMA placed using the modified JMF is rejected.

The Engineer deducts $2,000 from payments for each modified JMF verification. The Engineer deducts an additional $2,000 from payments for each modified JMF verification that requires California Test 371.

39-1.03H Job Mix Formula Acceptance

You may start HMA production if:

1. The Engineer's review of the JMF shows compliance with the specifications.
2. The Department has verified the JMF within 12 months before HMA production.
3. The Engineer accepts the verified JMF.

39-1.04 CONTRACTOR QUALITY CONTROL

39-1.04A General

Establish, maintain, and change a quality control system to ensure materials and work comply with the specifications. Submit quality control test results to the Engineer within 3 business days of a request except when QC / QA is specified.

You must identify the HMA sampling location in your Quality Control Plan. During production, take samples under California Test 125. You may sample HMA from:

1. The plant
2. The truck
3. A windrow
4. The paver hopper
5. The mat behind the paver

39-1.04B Prepaving Conference

Meet with the Engineer at a prepaving conference at a mutually agreed time and place. Discuss methods of performing the production and paving work.

39-1.04C Asphalt Rubber Binder

Take asphalt rubber binder samples from the feed line connecting the asphalt rubber binder tank to the HMA plant. Sample and test asphalt rubber binder under Laboratory Procedure LP-11.

Test asphalt rubber binder for compliance with the viscosity specifications in Section 39-1.02, "Materials." During asphalt rubber binder production and HMA production using asphalt rubber binder, measure viscosity every hour with not less than 1 reading for each asphalt rubber binder batch. Log measurements with corresponding time and asphalt rubber binder temperature. Submit the log daily in writing.

Submit a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance." With the Certificate of Compliance, submit test results in writing for CRM and asphalt modifier with each truckload delivered to the HMA plant. A Certificate of Compliance for asphalt modifier must not represent more than 5,000 pounds. Use an AASHTO-certified laboratory for testing.

Sample and test gradation and wire and fabric content of CRM once per 10,000 pounds of scrap tire CRM and once per 3,400 pounds of high natural CRM. Sample and test scrap tire CRM and high natural CRM separately.

Submit certified weight slips in writing for the CRM and asphalt modifier furnished.

39-1.04D Aggregate

Determine the aggregate moisture content and RAP moisture content in continuous mixing plants at least twice a day during production and adjust the plant controller. Determine the RAP moisture content in batch mixing plants at least twice a day during production and adjust the plant controller.

39-1.04E Reclaimed Asphalt Pavement

Perform RAP quality control testing each day.

Sample RAP once daily and determine the RAP aggregate gradation under Laboratory Procedure LP-9 and submit the results to the Engineer in writing with the combined aggregate gradation.

39-1.04F Density Cores

To determine density for Standard and QC / QA projects, take 4-inch or 6-inch diameter density cores at least once every 5 business days. Take 1 density core for every 250 tons of HMA from random locations the Engineer designates. Take density cores in the Engineer's presence and backfill and compact holes with material authorized by the Engineer. Before submitting a density core to the Engineer, mark it with the density core's location and place it in a protective container.

If a density core is damaged, replace it with a density core taken within 1 foot longitudinally from the original density core. Relocate any density core located within 1 foot of a rumble strip to 1 foot transversely away from the rumble strip.

39-1.04G Briquettes

Prepare 3 briquettes for each stability and air voids content determination. Report the average of 3 tests. Prepare new briquettes and test if the range of stability for the 3 briquettes is more than 12 points.

You may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If you use these briquettes and tests using bulk specific gravity fail, you may prepare 3 new briquettes and determine a new bulk specific gravity.

39-1.05 ENGINEER'S ACCEPTANCE

The Engineer's acceptance of HMA is specified in the sections for each HMA construction process.

The Engineer samples materials for testing under California Test 125 and the applicable test method except samples may be taken from:

1. The plant from:

    1.1. A truck
    1.2. An automatic sampling device

2. The mat behind the paver

Sampling must be independent of Contractor quality control, statistically-based, and random. If you request, the Engineer splits samples and provides you with a part.

The Engineer accepts HMA based on:

1. Accepted JMF
2. Accepted QCP for Standard and QC / QA
3. Compliance with the HMA Acceptance tables
4. Acceptance of a lot for QC / QA
5. Visual inspection

The Engineer prepares 3 briquettes for each stability and air voids content determination. The Engineer reports the average of 3 tests. The Engineer prepares new briquettes and test if the range of stability for the 3 briquettes is more than 8 points.

The Engineer may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If the Engineer uses the same briquettes and the tests using bulk specific gravity fail, the Engineer prepares 3 new briquettes and determines a new bulk specific gravity.

39-1.06 DISPUTE RESOLUTION

You and the Engineer must work together to avoid potential conflicts and to resolve disputes regarding test result discrepancies. Notify the Engineer in writing within 5 business days of receiving a test result if you dispute the test result.

If you or the Engineer dispute each other's test results, submit written quality control test results and copies of paperwork including worksheets used to determine the disputed test results to the Engineer. An Independent Third Party (ITP) performs referee testing. Before the ITP participates in a dispute resolution, the ITP must be accredited under the Department's Independent Assurance Program. The ITP must be independent of the project. By mutual agreement, the ITP is chosen from:

1. A Department laboratory
2. A Department laboratory in a district or region not in the district or region the project is located
3. The Transportation Laboratory
4. A laboratory not currently employed by you or your HMA producer

If split quality control or acceptance samples are not available, the ITP uses any available material representing the disputed HMA for evaluation.

39-1.07 PRODUCTION START-UP EVALUATION

The Engineer evaluates HMA production and placement at production start-up.

Within the first 750 tons produced on the first day of HMA production, in the Engineer's presence and from the same production run, take samples of:

1. Aggregate
2. Asphalt binder
3. RAP
4. HMA

Sample aggregate from cold feed belts or hot bins. Take RAP samples from the RAP system. Sample HMA under California Test 125 except if you request in writing and the Engineer approves, you may sample HMA from:

1. The plant
2. The truck
3. A windrow
4. The paver hopper
5. The mat behind the paver

For aggregate, RAP, and HMA, split the samples into at least 4 parts and label their containers. Submit 3 split parts to the Engineer and keep 1 part.

For Standard and QC / QA projects, you and the Engineer must test the split samples and report test results in writing within 3 business days of sampling. If you proceed before receipt of the test results, the Engineer may consider the HMA placed to be represented by these test results.

For Standard and QC / QA projects, take 4-inch or 6-inch diameter density cores within the first 750 tons on the first day of HMA production. For each density core, the Engineer reports the bulk specific gravity determined under California Test 308, Method A in addition to the percent of maximum theoretical density. You may test for in-place density at the density core locations and include them in your production tests for percent of maximum theoretical density.

39-1.08 PRODUCTION

39-1.08A General

Produce HMA in a batch mixing plant or a continuous mixing plant. Proportion aggregate by hot or cold feed control.

HMA plants must be Department-qualified. Before production, the HMA plant must have a current qualification under the Department's Materials Plant Quality Program.

During production, you may adjust:

1. Hot or cold feed proportion controls for virgin aggregate and RAP
2. The set point for asphalt binder content

39-1.08B Mixing

Mix HMA ingredients into a homogeneous mixture of coated aggregates.

Asphalt binder must be between 275 °F and 375 °F when mixed with aggregate.

Asphalt rubber binder must be between 375 °F and 425 °F when mixed with aggregate.

When mixed with asphalt binder, aggregate must not be more than 325 °F except aggregate for OGFC with unmodified asphalt binder must be not more than 275 °F. Aggregate temperature specifications do not apply when you use RAP.

HMA with or without RAP must not be more than 325 °F.

39-1.08C Asphalt Rubber Binder

Deliver scrap tire CRM and high natural CRM in separate bags.

Either proportion and mix asphalt binder, asphalt modifier, and CRM simultaneously or premix the asphalt binder and asphalt modifier before adding CRM. If you premix asphalt binder and asphalt modifier, asphalt binder must be from 375 to 425 degrees F when you add the asphalt modifier. Mix them for at least 20 minutes. When you add CRM, the asphalt binder and asphalt modifier must be between 375 °F and 425 °F.

Do not use asphalt rubber binder during the first 45 minutes of the reaction period. During this period, the asphalt rubber binder mixture must be between 375 °F and the lower of 425 °F or 25 °F below the asphalt binder's flash point indicated in the MSDS.

If any asphalt rubber binder is not used within 4 hours after the reaction period, discontinue heating. If the asphalt rubber binder drops below 375 °F, reheat before use. If you add more scrap tire CRM to the reheated asphalt rubber binder, the binder must undergo a 45-minute reaction period. The added scrap tire CRM must not exceed 10 percent of the total asphalt rubber binder weight. Reheated and reacted asphalt rubber binder must comply with the viscosity specifications for asphalt rubber binder in Section 39-1.02, "Materials." Do not reheat asphalt rubber binder more than twice.

39-1.09 SUBGRADE, TACK COAT, AND GEOSYNTHETIC PAVEMENT INTERLAYER

39-1.09A General

Prepare subgrade or apply tack coat to surfaces receiving HMA. If specified, place geosynthetic pavement interlayer over a coat of asphalt binder.

39-1.09B Subgrade

Subgrade to receive HMA must comply with the compaction and elevation tolerance specifications in the sections for the material involved. Subgrade must be free of loose and extraneous material. If HMA is paved on existing base or pavement, remove loose paving particles, dirt, and other extraneous material by any means including flushing and sweeping.

39-1.09C Tack Coat

Apply tack coat:

1. To existing pavement including planed surfaces
2. Between HMA layers
3. To vertical surfaces of:

    3.1. Curbs
    3.2. Gutters
    3.3. Construction joints

Before placing HMA, apply tack coat in 1 application at the minimum residual rate specified for the condition of the underlying surface:

Tack Coat Application Rates for HMA Type A, Type B, and RHMA-G

HMA over:	Minimum Residual Rates (gallons per square yard)		
	CSS1/CSS1h, SS1/SS1h and QS1h/CQS1h Asphaltic Emulsion	CRS1/CRS2, RS1/RS2 and QS1/CQS1 Asphaltic Emulsion	Asphalt Binder and PMRS2/PMCRS2 and PMRS2h/PMCRS2h Asphaltic Emulsion
New HMA (between layers)	0.02	0.03	0.02
PCC and existing HMA (AC) surfaces	0.03	0.04	0.03
Planed PCC and HMA (AC) surfaces	0.05	0.06	0.04

Tack Coat Application Rates for OGFC

OGFC over:	Minimum Residual Rates (gallons per square yard)		
	CSS1/CSS1h, SS1/SS1h and QS1h/CQS1h Asphaltic Emulsion	CRS1/CRS2, RS1/RS2 and QS1/CQS1 Asphaltic Emulsion	Asphalt Binder and PMRS2/PMCRS2 and PMRS2h/PMCRS2h Asphaltic Emulsion
New HMA	0.03	0.04	0.03
PCC and existing HMA (AC) surfaces	0.05	0.06	0.04
Planed PCC and HMA (AC) surfaces	0.06	0.07	0.05

If you dilute asphaltic emulsion, mix until homogeneous before application.

Apply to vertical surfaces with a residual tack coat rate that will thoroughly coat the vertical face without running off.

If you request in writing and the Engineer authorizes, you may:

1. Change tack coat rates
2. Omit tack coat between layers of new HMA during the same work shift if:

    2.1. No dust, dirt, or extraneous material is present
    2.2. The surface is at least 140 °F

Immediately in advance of placing HMA, apply additional tack coat to damaged areas or where loose or extraneous material is removed.

Close areas receiving tack coat to traffic. Do not track tack coat onto pavement surfaces beyond the job site.

Asphalt binder tack coat must be between 285 °F and 350 °F when applied.

39-1.09D Geosynthetic Pavement Interlayer

Place geosynthetic pavement interlayer in compliance with the manufacturer's recommendations.

Before placing the geosynthetic pavement interlayer and asphalt binder:

1. Repair cracks 1/4 inch and wider, spalls, and holes in the pavement. The State pays for this repair work under Section 4-1.03D, "Extra Work."
2. Clean the pavement of loose and extraneous material.

Immediately before placing the interlayer, apply 0.25 gallon ± 0.03 gallon of asphalt binder per square yard of interlayer or until the fabric is saturated. Apply asphalt binder the width of the geosynthetic pavement interlayer plus 3 inches on each side. At interlayer overlaps, apply asphalt binder on the lower interlayer the same overlap distance as the upper interlayer.

Asphalt binder must be from 285 °F to 350 °F and below the minimum melting point of the geosynthetic pavement interlayer when applied.

Align and place the interlayer with no overlapping wrinkles, except a wrinkle that overlaps may remain if it is less than 1/2 inch thick. If the overlapping wrinkle is more than 1/2 inch thick, cut the wrinkle out and overlap the interlayer no more than 2 inches.

The minimum HMA thickness over the interlayer must be 0.12 foot thick including conform tapers. Do not place the interlayer on a wet or frozen surface.

Overlap the interlayer borders between 2 inches and 4 inches. In the direction of paving, overlap the following roll with the preceding roll at any break.

You may use rolling equipment to correct distortions or wrinkles in the interlayer.

If asphalt binder tracked onto the interlayer or brought to the surface by construction equipment causes interlayer displacement, cover it with a small quantity of HMA.

Before placing HMA on the interlayer, do not expose the interlayer to:

1. Traffic except for crossings under traffic control and only after you place a small HMA quantity
2. Sharp turns from construction equipment
3. Damaging elements

Pave HMA on the interlayer during the same work shift.

39-1.10 SPREADING AND COMPACTING EQUIPMENT

Paving equipment for spreading must be:

1. Self-propelled
2. Mechanical
3. Equipped with a screed or strike-off assembly that can distribute HMA the full width of a traffic lane
4. Equipped with a full-width compacting device
5. Equipped with automatic screed controls and sensing devices that control the thickness, longitudinal grade, and transverse screed slope

Install and maintain grade and slope references.

The screed must produce a uniform HMA surface texture without tearing, shoving, or gouging.

The paver must not leave marks such as ridges and indentations unless you can eliminate them by rolling.

Rollers must be equipped with a system that prevents HMA from sticking to the wheels. You may use a parting agent that does not damage the HMA or impede the bonding of layers.

In areas inaccessible to spreading and compacting equipment:

1. Spread the HMA by any means to obtain the specified lines, grades and cross sections.
2. Use a pneumatic tamper, plate compactor, or equivalent to achieve thorough compaction.

39-1.11 TRANSPORTING, SPREADING, AND COMPACTING

Do not pave HMA on a wet pavement or frozen surface.

You may deposit HMA in a windrow and load it in the paver if:

1. Paver is equipped with a hopper that automatically feeds the screed
2. Loading equipment can pick up the windrowed material and deposit it in the paver hopper without damaging base material
3. Activities for deposit, pick-up, loading, and paving are continuous
4. HMA temperature in the windrow does not fall below 260 °F

You may pave HMA in 1 or more layers on areas less than 5 feet wide and outside the traveled way including shoulders. You may use mechanical equipment other than a paver for these areas. The equipment must produce a uniform smoothness and texture.

HMA handled, spread, or windrowed must not stain the finished surface of any improvement including pavement.

Do not use petroleum products such as kerosene or diesel fuel to release HMA from trucks, spreaders, or compactors.

HMA must be free of:

1. Segregation
2. Coarse or fine aggregate pockets
3. Hardened lumps

Longitudinal joints in the top layer must match specified lane edges. Alternate longitudinal joint offsets in lower layers at least 0.5 foot from each side of the specified lane edges. You may request in writing other longitudinal joint placement patterns.

Until the adjoining through lane's top layer has been paved, do not pave the top layer of:

1. Shoulders
2. Tapers
3. Transitions
4. Road connections
5. Driveways
6. Curve widenings
7. Chain control lanes
8. Turnouts
9. Turn pockets

If the number of lanes change, pave each through lane's top layer before paving a tapering lane's top layer. Simultaneous to paving a through lane's top layer, you may pave an adjoining area's top layer including shoulders. Do not operate spreading equipment on any area's top layer until completing final compaction.

If HMA (leveling) is specified, fill and level irregularities and ruts with HMA before spreading HMA over base, existing surfaces, or bridge decks. You may use mechanical equipment other than a paver for these areas. The equipment must produce a uniform

smoothness and texture. HMA used to change an existing surface's cross slope or profile is not HMA (leveling).

If placing HMA against the edge of existing pavement, sawcut or grind the pavement straight and vertical along the joint and remove extraneous material without damaging the surface remaining in place. If placing HMA against the edge of a longitudinal or transverse construction joint and the joint is damaged or not placed to a neat line, sawcut or grind the pavement straight and vertical along the joint and remove extraneous material without damaging the surface remaining in place. Repair or remove and replace damaged pavement at your expense.

Rolling must leave the completed surface compacted and smooth without tearing, cracking, or shoving. Complete finish rolling activities before the pavement surface temperature is:

1. Below 150 °F for HMA with unmodified binder
2. Below 140 °F for HMA with modified binder
3. Below 200 °F for RHMA-G

If a vibratory roller is used as a finish roller, turn the vibrator off.

Do not use a pneumatic tired roller to compact RHMA-G.

For Standard and QC/QA, if a 3/4-inch aggregate grading is specified, you may use a 1/2-inch aggregate grading if the specified total paved thickness is at least 0.15 foot and less than 0.20 foot thick.

Spread and compact HMA under Section 39-3.03, "Spreading and Compacting Equipment," and Section 39-3.04, "Transporting, Spreading, and Compacting," for any of the following:

1. Specified paved thickness is less than 0.15 foot.
2. Specified paved thickness is less than 0.20 foot and a 3/4-inch aggregate grading is specified and used.
3. You spread and compact at:

    3.1. Asphalt concrete surfacing replacement areas
    3.2. Leveling courses
    3.3. Areas the Engineer determines conventional compaction and compaction measurement methods are impeded

Do not open new HMA pavement to public traffic until its mid-depth temperature is below 160 °F.

If you request in writing and the Engineer authorizes, you may cool HMA Type A and Type B with water when rolling activities are complete. Apply water under Section 17, "Watering."

Spread sand at a rate between 1 pound and 2 pounds per square yard on new RHMA-G, RHMA-O, and RHMA-O-HB pavement when finish rolling is complete. Sand must be free of clay or organic matter. Sand must comply with Section 90-3.03, "Fine Aggregate Grading." Keep traffic off the pavement until spreading sand is complete.

39-1.12 SMOOTHNESS

39-1.12A General

Determine HMA smoothness with a profilograph and a straightedge.

Smoothness specifications do not apply to OGFC placed on existing pavement not constructed under the same project.

If portland cement concrete is placed on HMA:

1. Cold plane the HMA finished surface to within specified tolerances if it is higher than the grade specified by the Engineer.
2. Remove and replace HMA if the finished surface is lower than 0.05 foot below the grade specified by the Engineer.

39-1.12B Straightedge

The HMA pavement top layer must not vary from the lower edge of a 12-foot long straightedge:

1. More than 0.01 foot when the straight edge is laid parallel with the centerline
2. More than 0.02 foot when the straightedge is laid perpendicular to the centerline and extends from edge to edge of a traffic lane
3. More than 0.02 foot when the straightedge is laid within 24 feet of a pavement conform

39-1.12C Profilograph

Under California Test 526, determine the zero (null) blanking band Profile Index (PI_0) and must-grinds on the top layer of HMA Type A, Type B, and RHMA-G pavement. Take 2 profiles within each traffic lane, 3 feet from and parallel with the edge of each lane.

A must-grind is a deviation of 0.3 inch or more in a length of 25 feet. You must correct must-grinds.

For OGFC, only determine must-grinds when placed over HMA constructed under the same project. The top layer of the underlying HMA must comply with the smoothness specifications before placing OGFC.

Profile pavement in the Engineer's presence. Choose the time of profiling.

On tangents and horizontal curves with a centerline radius of curvature 2,000 feet or more, the PI_0 must be at most 2.5 inches per 0.1-mile section.

On horizontal curves with a centerline radius of curvature between 1,000 feet and 2,000 feet including pavement within the superelevation transitions, the PI_0 must be at most 5 inches per 0.1-mile section.

Before the Engineer accepts HMA pavement for smoothness, submit written final profilograms.

Submit 1 electronic copy of profile information in Microsoft Excel and 1 electronic copy of longitudinal pavement profiles in ".erd" format or other ProVAL compatible format to the Engineer and to:

Smoothness@dot.ca.gov

The following HMA pavement areas do not require a PI_0. You must measure these areas with a 12-foot straightedge and determine must-grinds with a profilograph:

1. New HMA with a total thickness less than 0.25 foot
2. HMA sections of city or county streets and roads, turn lanes and collector lanes that are less than 1,500 feet in length

The following HMA pavement areas do not require a PI_0. You must measure these areas with a 12-foot straightedge:

1. Horizontal curves with a centerline radius of curvature less than 1,000 feet including pavement within the superelevation transitions of those curves

2. Within 12 feet of a transverse joint separating the pavement from:

    2.1. Existing pavement not constructed under the same project
    2.2. A bridge deck or approach slab

3. Exit ramp termini, truck weigh stations, and weigh-in-motion areas
4. If steep grades and superelevation rates greater than 6 percent are present on:

    4.1. Ramps
    4.2. Connectors

5. Turn lanes
6. Areas within 15 feet of manholes or drainage transitions
7. Acceleration and deceleration lanes for at-grade intersections
8. Shoulders and miscellaneous areas
9. HMA pavement within 3 feet from and parallel to the construction joints formed between curbs, gutters, or existing pavement

39-1.12D Smoothness Correction

If the top layer of HMA Type A, Type B, or RHMA-G pavement does not comply with the smoothness specifications, grind the pavement to within tolerances, remove and replace it, or place a layer of HMA. The Engineer must authorize your choice of correction before the work begins.

Remove and replace the areas of OGFC not in compliance with the must-grind and straightedge specifications, except you may grind OGFC for correcting smoothness:

1. At a transverse joint separating the pavement from pavement not constructed under the same project
2. Within 12 feet of a transverse joint separating the pavement from a bridge deck or approach slab

Corrected HMA pavement areas must be uniform rectangles with edges:

1. Parallel to the nearest HMA pavement edge or lane line
2. Perpendicular to the pavement centerline

Measure the corrected HMA pavement surface with a profilograph and a 12-foot straightedge and correct the pavement to within specified tolerances. If a must-grind area or straightedged pavement cannot be corrected to within specified tolerances, remove and replace the pavement.

On ground areas not overlaid with OGFC, apply fog seal coat under Section 37-1, "Seal Coats."

39-1.13 MISCELLANEOUS AREAS AND DIKES

Miscellaneous areas are outside the traveled way and include:

1. Median areas not including inside shoulders
2. Island areas
3. Sidewalks
4. Gutters

5. Gutter flares
6. Ditches
7. Overside drains
8. Aprons at the ends of drainage structures

Spread miscellaneous areas in 1 layer and compact to the specified lines and grades.
For miscellaneous areas and dikes:

1. Do not submit a JMF.
2. Choose the 3/8-inch or 1/2-inch HMA Type A and Type B aggregate gradations.
3. Minimum asphalt binder content must be 6.8 percent for 3/8-inch aggregate and 6.0 percent for 1/2-inch aggregate. If you request in writing and the Engineer authorizes, you may reduce the minimum asphalt binder content.
4. Choose asphalt binder Grade PG 70-10 or the same grade specified for HMA.

39-2 STANDARD

39-2.01 DESCRIPTION

If HMA is specified as Standard, construct it under Section 39-1, "General," this Section 39-2, "Standard," and Section 39-5, "Measurement and Payment."

39-2.02 CONTRACTOR QUALITY CONTROL

39-2.02A Quality Control Plan

Establish, implement, and maintain a Quality Control Plan (QCP) for HMA. The QCP must describe the organization and procedures you will use to:

1. Control the quality characteristics
2. Determine when corrective actions are needed (action limits)
3. Implement corrective actions

When you submit the proposed JMF, submit the written QCP. You and the Engineer must discuss the QCP during the prepaving conference.
The QCP must address the elements affecting HMA quality including:

1. Aggregate
2. Asphalt binder
3. Additives
4. Production
5. Paving

The Engineer reviews each QCP within 5 business days from the submittal. Hold HMA production until the Engineer accepts the QCP in writing. The Engineer's QCP acceptance does not mean your compliance with the QCP will result in acceptable HMA. Section 39-1.05, "Engineer's Acceptance," specifies HMA acceptance.

39-2.02B Quality Control Testing

Perform sampling and testing at the specified frequency for the following quality characteristics:

Minimum Quality Control – Standard

Quality Characteristic	Test Method	Minimum Sampling and Testing Frequency	HMA Type			
			A	B	RHMA-G	OGFC
Aggregate gradation[a]	CT 202	1 per 750 tons and any remaining part at the end of the project	JMF ± Tolerance [b]	JMF ± Tolerance [b]	JMF ± Tolerance [b]	JMF ± Tolerance [b]
Sand equivalent (min.) [c]	CT 217		47	42	47	--
Asphalt binder content (%)	CT 379 or 382		JMF ± 0.45	JMF ± 0.45	JMF ± 0.50	JMF ± 0.50
HMA moisture content (%, max.)	CT 226 or CT 370	1 per 2,500 tons but not less than 1 per paving day	1.0	1.0	1.0	1.0
Field compaction, (%, max. theoretical density) [d,e]	Quality control plan	2 per business day (min.)	91 - 97	91 - 97	91 - 97	--
Stabilometer value (min.) [c, f]	CT 366	One per 4,000 tons or 2 per 5 business days, which-ever is more				
No. 4 and 3/8" gradings			30	30	--	--
1/2" and 3/4" gradings			37	35	23	--
Air voids content (%) [c, g]	CT 367		4 ± 2	4 ± 2	Specification ± 2	--
Aggregate moisture content at continuous mixing plants and RAP moisture content at continuous mixing plants and batch mixing plants [h]	CT 226 or CT 370	2 per day during production	--	--	--	--
Percent of crushed particles coarse aggregate (%, min.)	CT 205	As necessary and designat-ed in the QCP. At least once per project				
One fractured face			90	25	--	90
Two fractured faces			75	--	90	75
Fine aggregate (%, min) (Passing No. 4 sieve and retained on No. 8 sieve.) One fractured face			70	20	70	90
Los Angeles Rattler (%, max.)	CT 211					
Loss at 100 rev.			12	--	12	12
Loss at 500 rev.			45	50	40	40

Flat and elongated particles (%, max. by weight @ 5:1)	CT 235		Report only	Report only	Report only	Report only
Fine aggregate angularity (%, min.)[i]	CT 234		45	45	45	--
Voids filled with asphalt (%)[j] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	LP-3		 76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0	 76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0	Report only	--
Voids in mineral aggregate (% min.)[j] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	LP-2		 17.0 15.0 14.0 13.0	 17.0 15.0 14.0 13.0	 -- -- 18.0 – 23.0 [k] 18.0 – 23.0 [k]	--
Dust proportion[j] No. 4 and 3/8" gradings 1/2" and 3/4" gradings	LP-4		 0.9 – 2.0 0.6 – 1.3	 0.9 – 2.0 0.6 – 1.3	Report only	--
Smoothness	Section 39-1.12	--	12-foot straightedge, must-grind, and PI_0	12-foot straightedge, must-grind, and PI_0	12-foot straightedge, must-grind, and PI_0	12-foot straightedge and must-grind
Asphalt rubber binder viscosity @ 375 °F, centipoises	Section 39-1.02D	Section 39-1.04C	--	--	1,500 – 4,000	1,500 – 4,000
Asphalt modifier	Section 39-1.02D	Section 39-1.04C	--	--	Section 39-1.02D	Section 39-1.02D
Crumb rubber modifier	Section 39-1.02D	Section 39-1.04C	--	--	Section 39-1.02D	Section 39-1.02D

Notes:

[a] Determine combined aggregate gradation containing RAP under Laboratory Procedure LP-9.

[b] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."

[c] Report the average of 3 tests from a single split sample.

[d] Determine field compaction for any of the following conditions:

1. 1/2-inch, 3/8-inch, No. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.

[e] To determine field compaction use:

1. In-place density measurements using the method specified in your QC.
2. California Test 309 to determine maximum theoretical density at the frequency specified in California Test 375, Part 5C.

[f] Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 140 °F ± 5 °F by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."

[g] Determine the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.

[h] For adjusting the plant controller at the HMA plant.

[i] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.

[j] Report only if the adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC.

[k] Voids in mineral aggregate for RHMA-G must be within this range.

For any single quality characteristic except smoothness, if 2 consecutive quality control test results do not comply with the action limits or specifications:

1. Stop production.
2. Notify the Engineer in writing.
3. Take corrective action.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

39-2.03 ENGINEER'S ACCEPTANCE

39-2.03A Testing

The Engineer samples for acceptance testing and tests for:

HMA Acceptance - Standard

Quality Characteristic	Test Method	HMA Type			
		A	B	RHMA-G	OGFC
Aggregate gradation [a]	CT 202	JMF ± Tolerance [c]	JMF ± Tolerance [c]	JMF ± Tolerance [c]	JMF ± Tolerance [c]
Sieve / 3/4" / 1/2" / 3/8"					
1/2" / X [b]					
3/8" / X					
No. 4 / X					
No. 8 / X / X / X					
No. 200 / X / X / X					
Sand equivalent (min.) [d]	CT 217	47	42	47	--
Asphalt binder content (%)	CT 379 or 382	JMF ± 0.45	JMF ± 0.45	JMF ± 0.50	JMF ± 0.50
HMA moisture content (%, max.)	CT 226 or CT 370	1.0	1.0	1.0	1.0
Field compaction (% max. theoretical density) [e,f]	CT 375	91 – 97	91 – 97	91 – 97	--
Stabilometer value (min.) [d,g]	CT 366				
No. 4 and 3/8" gradings		30	30	--	--
1/2" and 3/4" gradings		37	35	23	--
Air voids content (%) [d, h]	CT 367	4 ± 2	4 ± 2	Specification ± 2	--
Percent of crushed particles	CT 205				
Coarse aggregate (%, min.)					
One fractured face		90	25	--	90
Two fractured faces		75	--	90	75
Fine aggregate (%, min) (Passing No. 4 sieve and retained on No. 8 sieve.)					
One fractured face		70	20	70	90
Los Angeles Rattler (%, max.)	CT 211				
Loss at 100 rev.		12	--	12	12
Loss at 500 rev.		45	50	40	40
Fine aggregate angularity (%, min.) [i]	CT 234	45	45	45	--
Flat and elongated particles (%, max. by weight @ 5:1)	CT 235	Report only	Report only	Report only	Report only
Voids filled with asphalt (%) [j]	LP-3				
No. 4 grading		76.0 – 80.0	76.0 – 80.0	Report only	--
3/8" grading		73.0 – 76.0	73.0 – 76.0		
1/2" grading		65.0 – 75.0	65.0 – 75.0		
3/4" grading		65.0 – 75.0	65.0 – 75.0		
Voids in mineral aggregate (% min.) [j]	LP-2				
No. 4 grading		17.0	17.0	--	--
3/8" grading		15.0	15.0	--	
1/2" grading		14.0	14.0	18.0 – 23.0 [k]	
3/4" grading		13.0	13.0	18.0 – 23.0 [k]	
Dust proportion [j]	LP-4				
No. 4 and 3/8" gradings		0.9 – 2.0	0.9 – 2.0	Report only	--
1/2" and 3/4" gradings		0.6 – 1.3	0.6 – 1.3		
Smoothness	Section 39-1.12	12-foot straightedge, must-grind, and PI_0	12-foot straightedge, must-grind, and PI_0	12-foot straightedge, must-grind, and PI_0	12-foot straightedge and must-grind
Asphalt binder	Various	Section 92	Section 92	Section 92	Section 92
Asphalt rubber binder	Various	--	--	Section 92-	Section 92-

				1.02(C) and Section 39-1.02D	1.02(C) and Section 39-1.02D
Asphalt modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D
Crumb rubber modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D

[a] The Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.
[b] "X" denotes the sieves the Engineer considers for the specified aggregate gradation.
[c] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."
[d] The Engineer reports the average of 3 tests from a single split sample.
[e] The Engineer determines field compaction for any of the following conditions:

1. 1/2-inch, 3/8-inch, or No.4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.

[f] To determined field compaction, the Engineer uses:

1. California Test 308, Method A, to determine in-place density of each density core.
2. California Test 309 to determine maximum theoretical density at the frequency specified in California Test 375, Part 5C.

[g] Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 140 °F ±5 °F by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."
[h] The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.
[i] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.
[j] Report only if the adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC.
[k] Voids in mineral aggregate for RHMA-G must be within this range.

No single test result may represent more than the smaller of 750 tons or 1 day's production.

For any single quality characteristic except smoothness, if 2 consecutive acceptance test results do not comply with the specifications:

1. Stop production.
2. Take corrective action.
3. In the Engineer's presence, take samples and split each sample into 4 parts. Test 1 part for compliance with the specifications and submit 3 parts to the Engineer. The Engineer tests 1 part for compliance with the specifications and reserves and stores 2 parts.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

The Engineer tests the density core you take from each 250 tons of HMA production. The Engineer determines the percent of maximum theoretical density for each density core by determining the density core's density and dividing by the maximum theoretical density.

The Engineer determines the percent of maximum theoretical density from density cores taken from the final layer measured the full depth of the total paved HMA thickness if any of the following applies:

1. 1/2-inch, 3/8-inch, or No. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot and any layer is less than 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot and any layer is less than 0.20 foot.

For percent of maximum theoretical density, the Engineer determines a deduction for each test result outside the specifications in compliance with:

Reduced Payment Factors for Percent of Maximum Theoretical Density

HMA Type A and B and RHMA-G Percent of Maximum Theoretical Density	Reduced Payment Factor	HMA Type A and B and RHMA-G Percent of Maximum Theoretical Density	Reduced Payment Factor
91.0	0.0000	97.0	0.0000
90.9	0.0125	97.1	0.0125
90.8	0.0250	97.2	0.0250
90.7	0.0375	97.3	0.0375
90.6	0.0500	97.4	0.0500
90.5	0.0625	97.5	0.0625
90.4	0.0750	97.6	0.0750
90.3	0.0875	97.7	0.0875
90.2	0.1000	97.8	0.1000
90.1	0.1125	97.9	0.1125
90.0	0.1250	98.0	0.1250
89.9	0.1375	98.1	0.1375
89.8	0.1500	98.2	0.1500
89.7	0.1625	98.3	0.1625
89.6	0.1750	98.4	0.1750
89.5	0.1875	98.5	0.1875
89.4	0.2000	98.6	0.2000
89.3	0.2125	98.7	0.2125
89.2	0.2250	98.8	0.2250
89.1	0.2375	98.9	0.2375
89.0	0.2500	99.0	0.2500
< 89.0	Remove and Replace	> 99.0	Remove and Replace

39-2.04 TRANSPORTING, SPREADING, AND COMPACTING

Determine the number of rollers needed to obtain the specified density and surface finish.

39-3 METHOD

39-3.01 DESCRIPTION

If HMA is specified as Method, construct it under Section 39-1, "General," this Section 39-3, "Method," and Section 39-5, "Measurement and Payment."

39-3.02 ENGINEER'S ACCEPTANCE

39-3.02A Testing

The Engineer samples for acceptance testing and tests for:

HMA Acceptance - Method

Quality Characteristic	Test Method	HMA Type			
		A	B	RHMA-G	OGFC
Aggregate gradation [a]	CT 202	JMF ± Tolerance [b]	JMF ± Tolerance [b]	JMF ± Tolerance [b]	JMF ± Tolerance [b]
Sand equivalent (min.) [c]	CT 217	47	42	47	--
Asphalt binder content (%)	CT 379 or 382	JMF ± 0.45	JMF ± 0.45	JMF ± 0.50	JMF ± 0.50
HMA moisture content (%, max.)	CT 226 or CT 370	1.0	1.0	1.0	1.0
Stabilometer value (min.) [c,d]	CT 366				
No. 4 and 3/8" gradings		30	30	--	--
1/2" and 3/4" gradings		37	35	23	--
Percent of crushed particles	CT 205				
Coarse aggregate (% min.)					
One fractured face		90	25	--	90
Two fractured faces		75	--	90	75
Fine aggregate (% min) (Passing No. 4 sieve and retained on No. 8 sieve.)					
One fractured face		70	20	70	90
Los Angeles Rattler (% max.)	CT 211				
Loss at 100 rev.		12	--	12	12
Loss at 500 rev.		45	50	40	40
Air voids content (%) [c, e]	CT 367	4 ± 2	4 ± 2	Specification ± 2	--
Fine aggregate angularity (% min.) [f]	CT 234	45	45	45	--
Flat and elongated particles (% max. by weight @ 5:1)	CT 235	Report only	Report only	Report only	Report only
Voids filled with asphalt (%) [g]	LP-3			Report only	
No. 4 grading		76.0 – 80.0	76.0 – 80.0		--
3/8" grading		73.0 – 76.0	73.0 – 76.0		
1/2" grading		65.0 – 75.0	65.0 – 75.0		
3/4" grading		65.0 – 75.0	65.0 – 75.0		
Voids in mineral aggregate (% min.) [g]	LP-2				
No. 4 grading		17.0	17.0	--	--
3/8" grading		15.0	15.0	--	
1/2" grading		14.0	14.0	18.0 – 23.0 [h]	
3/4" grading		13.0	13.0	18.0 – 23.0 [h]	
Dust proportion [g]	LP-4			Report only	--
No. 4 and 3/8" gradings		0.9 – 2.0	0.9 – 2.0		
1/2" and 3/4" gradings		0.6 – 1.3	0.6 – 1.3		
Smoothness	Section 39-1.12	12-foot straightedge and must-grind	12-foot straightedge and must-grind	12-foot straightedge and must-grind	12-foot straightedge and must-grind
Asphalt binder	Various	Section 92	Section 92	Section 92	Section 92
Asphalt rubber binder	Various	--	--	Section 92-1.02(C) and Section 39-	Section 92-1.02(C) and Section 39-

				1.02D	1.02D
Asphalt modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D
Crumb rubber modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D

[a] The Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.
[b] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."
[c] The Engineer reports the average of 3 tests from a single split sample.
[d] Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 140 °F ±5 °F by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."
[e] The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.
[f] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.
[g] Report only if the adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC.
[h] Voids in mineral aggregate for RHMA-G must be within this range.

No single test result may represent more than the smaller of 750 tons or 1 day's production.

For any single quality characteristic except smoothness, if 2 consecutive acceptance test results do not comply with the specifications:

1. Stop production.
2. Take corrective action.
3. In the Engineer's presence, take samples and split each sample into 4 parts. Test 1 part for compliance with the specifications and submit 3 parts to the Engineer. The Engineer tests 1 part for compliance with the specifications and reserves and stores 2 parts.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

39-3.03 SPREADING AND COMPACTING EQUIPMENT

Each paver spreading HMA Type A and Type B must be followed by 3 rollers:

1. One vibratory roller specifically designed to compact HMA. The roller must be capable of at least 2,500 vibrations per minute and must be equipped with amplitude and frequency controls. The roller's gross static weight must be at least 7.5 tons.
2. One oscillating type pneumatic-tired roller at least 4 feet wide. Pneumatic tires must be of equal size, diameter, type, and ply. The tires must be inflated to 60 psi minimum and maintained so that the air pressure does not vary more than 5 psi.
3. One steel-tired, 2-axle tandem roller. The roller's gross static weight must be at least 7.5 tons.

Each roller must have a separate operator. Rollers must be self-propelled and reversible.

Compact RHMA-G under the specifications for compacting HMA Type A and Type B except do not use pneumatic-tired rollers.

Compact OGFC with steel-tired, 2-axle tandem rollers. If placing over 300 tons of OGFC per hour, use at least 3 rollers for each paver. If placing less than 300 tons of OGFC per hour, use at least 2 rollers for each paver. Each roller must weigh between 126 pounds to 172 pounds per linear inch of drum width. Turn the vibrator off.

39-3.04 TRANSPORTING, SPREADING, AND COMPACTING

Pave HMA in maximum 0.25-foot thick compacted layers.

If the surface to be paved is both in sunlight and shade, pavement surface temperatures are taken in the shade.

Spread HMA Type A and Type B only if atmospheric and surface temperatures are:

Minimum Atmospheric and Surface Temperatures

Compacted Layer Thickness, feet	Atmospheric,° F		Surface,° F	
	Unmodified Asphalt Binder	Modified Asphalt Binder[a]	Unmodified Asphalt Binder	Modified Asphalt Binder [a]
< 0.15	55	50	60	55
0.15 – 0.25	45	45	50	50

Note:
[a] Except asphalt rubber binder.

If the asphalt binder for HMA Type A and Type B is:

1. Unmodified asphalt binder, complete:

   1.1. First coverage of breakdown compaction before the surface temperature drops below 250 °F
   1.2. Breakdown and intermediate compaction before the surface temperature drops below 200 °F
   1.3. Finish compaction before the surface temperature drops below 150 °F

2. Modified asphalt binder, complete:

   2.1. First coverage of breakdown compaction before the surface temperature drops below 240 °F
   2.2. Breakdown and intermediate compaction before the surface temperature drops below 180 °F
   2.3. Finish compaction before the surface temperature drops below 140 °F

For RHMA-G:

1. Only spread and compact if the atmospheric temperature is at least 55 °F and the surface temperature is at least 60 °F.
2. Complete the first coverage of breakdown compaction before the surface temperature drops below 285 °F.
3. Complete breakdown and intermediate compaction before the surface temperature drops below 250 °F.
4. Complete finish compaction before the surface temperature drops below 200 °F.
5. If the atmospheric temperature is below 70 °F, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until you transfer the mixture to the paver's hopper or to the pavement surface.

For OGFC with unmodified asphalt binder:

1. Only spread and compact if the atmospheric temperature is at least 55 °F and the surface temperature is at least 60 °F.
2. Complete first coverage using 2 rollers before the surface temperature drops below 240 °F.
3. Complete all compaction before the surface temperature drops below 200 °F.
4. If the atmospheric temperature is below 70 °F, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until you transfer the mixture to the paver's hopper or to the pavement surface.

For OGFC with modified asphalt binder except asphalt rubber binder:

1. Only spread and compact if the atmospheric temperature is at least 50 °F and the surface temperature is at least 50 °F.
2. Complete first coverage using 2 rollers before the surface temperature drops below 240 °F.
3. Complete all compaction before the surface temperature drops below 180 °F.
4. If the atmospheric temperature is below 70 °F, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until you transfer the mixture to the paver's hopper or to the pavement surface.

For RHMA-O and RHMA-O-HB:

1. Only spread and compact if the atmospheric temperature is at least 55 °F and surface temperature is at least 60 °F.
2 Complete the 1st coverage using 2 rollers before the surface temperature drops below 280 °F.
3. Complete compaction before the surface temperature drops below 250 °F.
4. If the atmospheric temperature is below 70 °F, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until the mixture is transferred to the paver's hopper or to the pavement surface.

For RHMA-G and OGFC, tarpaulins are not required if the time from discharge to truck until transfer to the paver's hopper or the pavement surface is less than 30 minutes.

HMA compaction coverage is the number of passes needed to cover the paving width. A pass is 1 roller's movement parallel to the paving in either direction. Overlapping passes are part of the coverage being made and are not a subsequent coverage. Do not start a coverage until completing the prior coverage.

Start rolling at the lower edge and progress toward the highest part.

Perform breakdown compaction of each layer of HMA Type A, Type B, and RHMA-G with 3 coverages using a vibratory roller. The speed of the vibratory roller in miles per hour must not exceed the vibrations per minute divided by 1,000. If the HMA layer thickness is less than 0.08 foot, turn the vibrator off. The Engineer may order fewer coverages if the HMA layer thickness is less than 0.15 foot.

Perform intermediate compaction of each layer of HMA Type A and Type B with 3 coverages using a pneumatic-tired roller at a speed not to exceed 5 mph.

Perform finish compaction of HMA Type A, Type B, and RHMA-G with 1 coverage using a steel-tired roller.

Compact OGFC with 2 coverages using steel-tired rollers.

39-4 QUALITY CONTROL / QUALITY ASSURANCE

39-4.01 DESCRIPTION

If HMA is specified as Quality Control / Quality Assurance, construct it under Section 39-1, "General," this Section 39-4, "Quality Control / Quality Assurance," and Section 39-5, "Measurement and Payment."

39-4.02 GENERAL

The QC / QA construction process consists of:

1. Establishing, maintaining, and changing if needed a quality control system providing assurance the HMA complies with the specifications
2. Sampling and testing at specified intervals, or sublots, to demonstrate compliance and to control process
3. The Engineer sampling and testing at specified intervals to verify testing process and HMA quality
4. The Engineer using test results, statistical evaluation of verified quality control tests, and inspection to accept HMA for payment

A lot is a quantity of HMA. The Engineer designates a new lot when:

1. 20 sublots are complete
2. The JMF changes
3. Production stops for more than 30 days

Each lot consists of no more than 20 sublots. A sublot is 750 tons except HMA paved at day's end greater than 250 tons is a sublot. If HMA paved at day's end is less than 250 tons, you may either make this quantity a sublot or include it in the previous sublot's test results for statistical evaluation.

39-4.03 CONTRACTOR QUALITY CONTROL

39-4.03A General

Use a composite quality factor, QF_C, and individual quality factors, QF_{QCi}, to control your process and evaluate your quality control program. For quality characteristics without quality factors, use your quality control plan's action limits to control process.

Control HMA quality including:

1. Materials
2. Proportioning
3. Spreading and compacting
4. Finished roadway surface

Develop, implement, and maintain a quality control program that includes:

1. Inspection
2. Sampling
3. Testing

39-4.03B Quality Control Plan

With the JMF submittal, submit a written Quality Control Plan (QCP). The QCP must comply with the Department's Quality Control Manual for Hot Mix Asphalt Production and Placement. Discuss the QCP with the Engineer during the prepaving conference.

The Engineer reviews each QCP within 5 business days from the submittal. Hold HMA production until the Engineer accepts the QCP in writing. The Engineer's QCP acceptance does not mean your compliance with the QCP will result in acceptable HMA. Section 39-1.05, "Engineer's Acceptance," specifies HMA acceptance.

The QCP must include the name and qualifications of a Quality Control Manager. The Quality Control Manager administers the QCP and during paving must be at the job site within 3 hours of receiving notice. The Quality Control Manager must not be any of the following on the project:

1. Foreman
2. Production or paving crewmember
3. Inspector
4. Tester

The QCP must include action limits and details of corrective action you will take if a test result for any quality characteristic falls outside an action limit.

As work progresses, you must submit a written QCP supplement to change quality control procedures, personnel, tester qualification status, or laboratory accreditation status.

39-4.03C Quality Control Inspection, Sampling, And Testing

Sample, test, inspect, and manage HMA quality control.

Provide a roadway inspector while HMA paving activities are in progress. Provide a plant inspector during HMA production.

Inspectors must comply with the Department's Quality Control Manual for Hot Mix Asphalt Production and Placement.

Provide a testing laboratory and personnel for quality control testing. Provide the Engineer unrestricted access to the quality control activities. Before providing services for the project, the Engineer reviews, accredits, and qualifies the testing laboratory and personnel under the Department's Independent Assurance Program.

The minimum random sampling and testing for quality control is:

Minimum Quality Control – QC / QA

Quality Characteristic	Test Method	Min-imum Sampl-ing and Testing Frequen-cy	HMA Type			Location of Sampling	Max. Report-ing Time Allow-ance
			A	B	RHMA-G		
Aggregate gradation [a]	CT 202	1 per 750 tons	JMF ± Tolerance [b]	JMF ± Tolerance [b]	JMF ± Tolerance [b]	CT 125	24 hours
Asphalt binder content (%)	CT 379 or 382		JMF ±0.45	JMF ±0.45	JMF ±0.5	Loose Mix Behind Paver See CT 125	
Field compaction (% max. theoretical density) [c,d]	QC Plan		92 - 96	92 - 96	91 - 96	QC Plan	
Aggregate moisture content at continuous mixing plants and RAP moisture content at continuous mixing plants and batch mixing plants [e]	CT 226 or CT 370	2 per day during produc-tion	--	--	--	Stock-piles or cold feed belts	--
Sand equivalent (min.) [f]	CT 217	1 per 750 tons	47	42	47	CT 125	24 hours
HMA moisture content (%,max.)	CT 226 or CT 370	1 per 2,500 tons but not less than 1 per paving day	1.0	1.0	1.0	Loose Mix Behind Paver See CT 125	24 hours
Stabilometer Value (min.) [f, g] No. 4 and 3/8" gradings 1/2" and 3/4" gradings	CT 366	1 per 4,000 tons or 2 per 5 bus-iness days, which-ever is more	30 37	30 35	-- 23		48 hours
Air voids content (%)[f, h]	CT 367		4 ± 2	4 ± 2	Specifica-tion ± 2		

Percent of crushed particles coarse aggregate (% min.) One fractured face Two fractured faces Fine aggregate (% min) (Passing No. 4 sieve and retained on No. 8 sieve.) One fractured face	CT 205	As neces-sary and designat-ed in QCP. At least once per project.	90 75 70	25 -- 20	-- 90 70	CT 125	48 hours
Los Angeles Rattler (% max.) Loss at 100 rev. Loss at 500 rev.	CT 211		12 45	-- 50	12 40	CT 125	
Fine aggregate angularity (% min.) [i]	CT 234		45	45	45	CT 125	
Flat and elongated particle (% max. by weight @ 5:1)	CT 235		Report only	Report only	Report only	CT 125	
Voids filled with asphalt (%) [j] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	LP-3		76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0	76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0	Report only	LP-3	
Voids in mineral aggregate (% min.) [j] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	LP-2		17.0 15.0 14.0 13.0	17.0 15.0 14.0 13.0	-- -- 18.0 – 23.0 [k] 18.0 – 23.0 [k]	LP-2	
Dust proportion [j] No. 4 and 3/8" gradings 1/2" and 3/4" gradings	LP-4		0.9 – 2.0 0.6 – 1.3	0.9 – 2.0 0.6 – 1.3	Report only	LP-4	
Smoothness	Section 39-1.12	--	12-foot straight-edge, must-grind, and PI_0	12-foot straight-edge, must-grind, and PI_0	12-foot straight-edge, must-grind, and PI_0	--	
Asphalt rubber binder viscosity @ 375 °F, centipoises	Section 39-1.02D	--	--	--	1,500 – 4,000	Section 39-1.02D	24 hours
Crumb rubber modifier	Section 39-1.02D	--	--	--	Section 39-1.02D	Section 39-1.02D	48 hours

Notes:

[a] Determine combined aggregate gradation containing RAP under Laboratory Procedure LP-9.

[b] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."

[c] Determine field compaction for any of the following conditions:

1. 1/2-inch, 3/8-inch, No. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.

[d] To determine field compaction use:

1. In-place density measurements using the method specified in your QC.
2. California Test 309 to determine maximum theoretical density at the frequency specified in California Test 375, Part 5C.

[e] For adjusting the plant controller at the HMA plant.
[f] Report the average of 3 tests from a single split sample.
[g] Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 140 °F ± 5 °F by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."
[h] Determine the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.
[i] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.
[j] Report only if the adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC.
[k] Voids in mineral aggregate for RHMA-G must be within this range.

Within the specified reporting time, submit written test results including:

1. Sampling location, quantity, and time
2. Testing results
3. Supporting data and calculations

If test results for any quality characteristic are beyond the action limits in the QCP, take corrective actions. Document the corrective actions taken in the inspection records under Section 39-4.03E, "Records of Inspection and Testing."

Stop production, notify the Engineer in writing, take corrective action, and demonstrate compliance with the specifications before resuming production and placement on the State highway if:

1. A lot's composite quality factor, QF_C, or an individual quality factor, QF_{QCi} for i = 3, 4, or 5, is below 0.90 determined under Section 39-4.03F, "Statistical Evaluation," using quality control data
2. An individual quality factor, QF_{QCi} for i = 1 or 2, is below 0.75 using quality control data
3. Quality characteristics for which a quality factor, QF_{QCi}, is not determined has 2 consecutive quality control tests not in compliance with the specifications

39-4.03D Charts And Records

Record sampling and testing results for quality control on forms provided in the "Quality Control Manual for Hot Mix Asphalt," or on forms you submit with the QCP. The QCP must also include form posting locations and submittal times.

Submit quality control test results using the Department's statistical evaluation program, HMAPay, available at

www.dot.ca.gov/hq/construc/hma/index.htm

39-4.03E Records Of Inspection And Testing

During HMA production, submit in writing a daily:

1. HMA Construction Daily Record of Inspection. Also make this record available at the HMA plant and job site each day.

2. HMA Inspection and Testing Summary. Include in the summary:

    2.1. QC worksheet with updated test results from the HMAPay program
    2.2. Test forms with the testers' signatures and Quality Control Manager's initials.
    2.3. Inspection forms with the inspectors' signatures and Quality Control Manager's initials.
    2.4. A list and explanation of deviations from the specifications or regular practices.
    2.5. A signed statement by the Quality Control Manager that says:

    "It is hereby certified that the information contained in this record is accurate, and that information, tests, or calculations documented herein comply with the specifications of the contract and the standards set forth in the testing procedures. Exceptions to this certification are documented as part of this record."

Retain for inspection the records generated as part of quality control including inspection, sampling, and testing for at least 3 years after final acceptance.

39-4.03F Statistical Evaluation

General

Determine a lot's composite quality factor, QF_C, and the individual quality factors, QF_{QCi}. Perform statistical evaluation calculations to determine these quality factors based on quality control test results for:

1. Aggregate gradation
2. Asphalt binder content
3. Percent of maximum theoretical density

The Engineer grants a waiver and you must use 1.0 as the individual quality factor for percent of maximum theoretical density, QF_{QC5}, for HMA paved in:

1. Areas where the total paved thickness is less than 0.15 foot
2. Areas where the total paved thickness is less than 0.20 foot and a 3/4-inch grading is specified and used
3. Dig outs
4. Leveling courses
5. Areas where, in the opinion of the Engineer, compaction or compaction measurement by conventional methods is impeded

Statistical Evaluation Calculations

Use the Variability-Unknown / Standard Deviation Method to determine the percentage of a lot not in compliance with the specifications.

Determine the percentage of work not in compliance with the specification limits for each quality characteristic as follows:

1. Calculate the arithmetic mean ($\bar{X}$) of the test values

$$\bar{X} = \frac{\Sigma x}{n}$$

where:

x = individual test values
n = number of test values

2. Calculate the standard deviation

$$s = \sqrt{\frac{n\,(\Sigma x^2)-(\Sigma x)^2}{n(n-1)}}$$

where:

$\sum(x^2)$ = sum of the squares of individual test values
$(\sum x)^2$ = sum of the individual test values squared
n = number of test values

3. Calculate the upper quality index (Qu)

$$Q_u = \frac{USL - \overline{X}}{s}$$

where:

USL = target value plus the production tolerance or upper specification limit
s = standard deviation
$\overline{X}$ = arithmetic mean

4. Calculate the lower quality index (QL);

$$Q_L = \frac{\overline{X} - LSL}{s}$$

where:

LSL = target value minus production tolerance or lower specification limit
s = standard deviation
$\overline{X}$ = arithmetic mean

5. From the table, Upper Quality Index Q_U or Lower Quality Index Q_L, of this Section 39-4.03F, "Statistical Evaluation", determine P_U ;

where:

P_U = the estimated percentage of work outside the USL.
$P_U = 0$, when USL is not specified.

6. From the table, Upper Quality Index Q_U or Lower Quality Index Q_L, of this Section 39-4.03F, "Statistical Evaluation," determine P_L;

where:

P_L = the estimated percentage of work outside the LSL.
$P_L = 0$, when LSL is not specified.

7. Calculate the total estimated percentage of work outside the USL and LSL, percent defective

   Percent defective $= P_U + P_L$

P_U and P_L are determined from:

P_U or P_L	**Upper Quality Index Q_U or Lower Quality Index Q_L**												
	Sample Size (n)												
	5	6	7	8	9	10-11	12-14	15-17	18-22	23-29	30-42	43-66	>66
0	1.72	1.88	1.99	2.07	2.13	2.20	2.28	2.34	2.39	2.44	2.48	2.51	2.56
1	1.64	1.75	1.82	1.88	1.91	1.96	2.01	2.04	2.07	2.09	2.12	2.14	2.16
2	1.58	1.66	1.72	1.75	1.78	1.81	1.84	1.87	1.89	1.91	1.93	1.94	1.95
3	1.52	1.59	1.63	1.66	1.68	1.71	1.73	1.75	1.76	1.78	1.79	1.80	1.81
4	1.47	1.52	1.56	1.58	1.60	1.62	1.64	1.65	1.66	1.67	1.68	1.69	1.70
5	1.42	1.47	1.49	1.51	1.52	1.54	1.55	1.56	1.57	1.58	1.59	1.59	1.60
6	1.38	1.41	1.43	1.45	1.46	1.47	1.48	1.49	1.50	1.50	1.51	1.51	1.52
7	1.33	1.36	1.38	1.39	1.40	1.41	1.41	1.42	1.43	1.43	1.44	1.44	1.44
8	1.29	1.31	1.33	1.33	1.34	1.35	1.35	1.36	1.36	1.37	1.37	1.37	1.38
9	1.25	1.27	1.28	1.28	1.29	1.29	1.30	1.30	1.30	1.31	1.31	1.31	1.31
10	1.21	1.23	1.23	1.24	1.24	1.24	1.25	1.25	1.25	1.25	1.25	1.26	1.26
11	1.18	1.18	1.19	1.19	1.19	1.19	1.20	1.20	1.20	1.20	1.20	1.20	1.20
12	1.14	1.14	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
13	1.10	1.10	1.10	1.10	1.10	1.10	1.11	1.11	1.11	1.11	1.11	1.11	1.11
14	1.07	1.07	1.07	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
15	1.03	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
16	1.00	0.99	0.99	0.99	0.99	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
17	0.97	0.96	0.95	0.95	0.95	0.95	0.94	0.94	0.94	0.94	0.94	0.94	0.94
18	0.93	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.90	0.90	0.90	0.90	0.90
19	0.90	0.89	0.88	0.88	0.88	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
20	0.87	0.86	0.85	0.85	0.84	0.84	0.84	0.83	0.83	0.83	0.83	0.83	0.83
21	0.84	0.82	0.82	0.81	0.81	0.81	0.80	0.80	0.80	0.80	0.80	0.80	0.79
22	0.81	0.79	0.79	0.78	0.78	0.77	0.77	0.77	0.76	0.76	0.76	0.76	0.76
23	0.77	0.76	0.75	0.75	0.74	0.74	0.74	0.73	0.73	0.73	0.73	0.73	0.73
24	0.74	0.73	0.72	0.72	0.71	0.71	0.70	0.70	0.70	0.70	0.70	0.70	0.70
25	0.71	0.70	0.69	0.69	0.68	0.68	0.67	0.67	0.67	0.67	0.67	0.67	0.66
26	0.68	0.67	0.67	0.65	0.65	0.65	0.64	0.64	0.64	0.64	0.64	0.64	0.63
27	0.65	0.64	0.63	0.62	0.62	0.62	0.61	0.61	0.61	0.61	0.61	0.61	0.60
28	0.62	0.61	0.60	0.59	0.59	0.59	0.58	0.58	0.58	0.58	0.58	0.58	0.57
29	0.59	0.58	0.57	0.57	0.56	0.56	0.55	0.55	0.55	0.55	0.55	0.55	0.54
30	0.56	0.55	0.54	0.54	0.53	0.53	0.52	0.52	0.52	0.52	0.52	0.52	0.52
31	0.53	0.52	0.51	0.51	0.50	0.50	0.50	0.49	0.49	0.49	0.49	0.49	0.49
32	0.50	0.49	0.48	0.48	0.48	0.47	0.47	0.47	0.46	0.46	0.46	0.46	0.46
33	0.47	0.48	0.45	0.45	0.45	0.44	0.44	0.44	0.44	0.43	0.43	0.43	0.43
34	0.45	0.43	0.43	0.42	0.42	0.42	0.41	0.41	0.41	0.41	0.41	0.41	0.40
35	0.42	0.40	0.40	0.39	0.39	0.39	0.38	0.38	0.38	0.38	0.38	0.38	0.38
36	0.39	0.38	0.37	0.37	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
37	0.36	0.35	0.34	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.32
38	0.33	0.32	0.32	0.31	0.31	0.31	0.30	0.30	0.30	0.30	0.30	0.30	0.30
39	0.30	0.30	0.29	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
40	0.28	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
41	0.25	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
42	0.23	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
43	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
44	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
45	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
46	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
47	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
48	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
49	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

1. If the value of Q_U or Q_L does not correspond to a value in the table, use the next lower value.
2. If Q_U or Q_L are negative values, P_U or P_L is equal to 100 minus the table value for P_U or P_L.

Quality Factor Determination

Determine individual quality factors, QF_{QCi}, using percent defective = $P_U + P_L$ and:

Quality Factors

Quality Factor	Maximum Allowable Percent Defective ($P_U + P_L$)												
	Sample Size (n)												
	5	6	7	8	9	10-11	12-14	15-17	18-22	23-29	30-42	43-66	>66
1.05				0	0	0	0	0	0	0	0	0	0
1.04			0	1	3	5	4	4	4	3	3	3	3
1.03		0	2	4	6	8	7	7	6	5	5	4	4
1.02		1	3	6	9	11	10	9	8	7	7	6	6
1.01	0	2	5	8	11	13	12	11	10	9	8	8	7
1.00	22	20	18	17	16	15	14	13	12	11	10	9	8
0.99	24	22	20	19	18	17	16	15	14	13	11	10	9
0.98	26	24	22	21	20	19	18	16	15	14	13	12	10
0.97	28	26	24	23	22	21	19	18	17	16	14	13	12
0.96	30	28	26	25	24	22	21	19	18	17	16	14	13
0.95	32	29	28	26	25	24	22	21	20	18	17	16	14
0.94	33	31	29	28	27	25	24	22	21	20	18	17	15
0.93	35	33	31	29	28	27	25	24	22	21	20	18	16
0.92	37	34	32	31	30	28	27	25	24	22	21	19	18
0.91	38	36	34	32	31	30	28	26	25	24	22	21	19
0.90	39	37	35	34	33	31	29	28	26	25	23	22	20
0.89	41	38	37	35	34	32	31	29	28	26	25	23	21
0.88	42	40	38	36	35	34	32	30	29	27	26	24	22
0.87	43	41	39	38	37	35	33	32	30	29	27	25	23
0.86	45	42	41	39	38	36	34	33	31	30	28	26	24
0.85	46	44	42	40	39	38	36	34	33	31	29	28	25
0.84	47	45	43	42	40	39	37	35	34	32	30	29	27
0.83	49	46	44	43	42	40	38	36	35	33	31	30	28
0.82	50	47	46	44	43	41	39	38	36	34	33	31	29
0.81	51	49	47	45	44	42	41	39	37	36	34	32	30
0.80	52	50	48	46	45	44	42	40	38	37	35	33	31
0.79	54	51	49	48	46	45	43	41	39	38	36	34	32
0.78	55	52	50	49	48	46	44	42	41	39	37	35	33
0.77	56	54	52	50	49	47	45	43	42	40	38	36	34
0.76	57	55	53	51	50	48	46	44	43	41	39	37	35
0.75	58	56	54	52	51	49	47	46	44	42	40	38	36
	60	57	55	53	52	51	48	47	45	43	41	40	37
	61	58	56	55	53	52	50	48	46	44	43	41	38
Reject	62	59	57	56	54	53	51	49	47	45	44	42	39
	63	61	58	57	55	54	52	50	48	47	45	43	40
	64	62	60	58	57	55	53	51	49	48	46	44	41
Reject Values Greater Than Those Shown Above													

Notes:

1. To obtain a quality factor when the estimated percent outside specification limits from table, "Upper Quality Index Q_U or Lower Quality Index Q_L," does not correspond to a value in the table, use the next larger value.

Compute the composite of single quality factors, QF_C, for a lot using:

$$QF_C = \sum_{i=1}^{5} w_i \, QF_{QC_i}$$

where:

QF_C = the composite quality factor for the lot rounded to 2 decimal places.

QF_{QCi} = the quality factor for the individual quality characteristic.
w = the weighting factor listed in the table HMA Acceptance – QC / QA.
i = the quality characteristic index number in the table HMA Acceptance – QC / QA.

39-4.04 ENGINEER'S QUALITY ASSURANCE

39-4.04A General

The Engineer assures quality by:

1. Reviewing mix designs and proposed JMF
2. Inspecting procedures
3. Conducting oversight of quality control inspection and records
4. Verification sampling and testing during production and paving

39-4.04B Verification Sampling And Testing

General

The Engineer samples:

1. Aggregate to verify gradation
2. HMA to verify asphalt binder content

Verification

For aggregate gradation and asphalt binder content, the minimum ratio of verification testing frequency to quality control testing frequency is 1:5. The Engineer performs at least 3 verification tests per lot.

Using the t-test, the Engineer compares quality control tests results for aggregate gradation and asphalt binder content with corresponding verification test results. The Engineer uses the average and standard deviation of up to 20 sequential sublots for the comparison. The Engineer uses production start-up evaluation tests to represent the first sublot. When there are less than 20 sequential sublots, the Engineer uses the maximum number of sequential sublots available. The 21st sublot becomes the 1st sublot (n = 1) in the next lot.

The t-value for a group of test data is computed as follows:

$$t = \frac{|\overline{X}_c - \overline{X}_v|}{S_p\sqrt{\frac{1}{n_c} + \frac{1}{n_v}}} \quad \text{and} \quad S_p^2 = \frac{S_c^2(n_c - 1) + S_v^2(n_v - 1)}{n_c + n_v - 2}$$

where:

n_c = Number of quality control tests (2 minimum, 20 maximum).
n_v = Number of verification tests (minimum of 1 required).
$\overline{X}_c$ = Mean of quality control tests.
$\overline{X}_v$ = Mean of verification tests.
S_p = Pooled standard deviation (When $n_v = 1$, $S_p = S_c$).
S_c = Standard deviation of quality control tests.
S_v = Standard deviation of verification tests (when $n_v > 1$).

The comparison of quality control test results and the verification test results is at a level of significance of $\alpha = 0.025$. The Engineer computes t and compares it to the critical t-value, t_{crit}, from:

Critical T-Value

Degrees of freedom (n_c+n_v-2)	t_{crit} (for $\alpha = 0.025$)	Degrees of freedom (n_c+n_v-2)	t_{crit} (for $\alpha = 0.025$)
1	24.452	18	2.445
2	6.205	19	2.433
3	4.177	20	2.423
4	3.495	21	2.414
5	3.163	22	2.405
6	2.969	23	2.398
7	2.841	24	2.391
8	2.752	25	2.385
9	2.685	26	2.379
10	2.634	27	2.373
11	2.593	28	2.368
12	2.560	29	2.364
13	2.533	30	2.360
14	2.510	40	2.329
15	2.490	60	2.299
16	2.473	120	2.270
17	2.458	∞	2.241

If the t-value computed is less than or equal to t_{crit}, quality control test results are verified.

If the t-value computed is greater than t_{crit} and both $\overline{X}_v$ and $\overline{X}_c$ comply with acceptance specifications, the quality control tests are verified. You may continue to produce and place HMA with the following allowable differences:

1. $\left|\overline{X}_v - \overline{X}_c\right| \leq 1.0$ percent for any grading
2. $\left|\overline{X}_v - \overline{X}_c\right| \leq 0.1$ percent for asphalt binder content

If the t-value computed is greater than t_{crit} and the $\left|\overline{X}_v - \overline{X}_c\right|$ for grading or asphalt binder content are greater than the allowable differences, quality control test results are not verified and:

1. The Engineer notifies you in writing.
2. You and the Engineer must investigate why the difference exist.
3. If the reason for the difference cannot be found and corrected, the Engineer's test results are used for acceptance and pay.

39-4.05 ENGINEER'S ACCEPTANCE

39-4.05A Testing

The Engineer samples for acceptance testing and tests for:

HMA Acceptance – QC / QA

Index (i)	Quality Characteristic				Weight-ing Factor (w)	Test Method	HMA Type		
							A	B	RHMA-G
		Aggregate gradation [a]							
	Sieve	3/4"	1/2"	3/8"					
1	1/2"	X [b]	--	--	0.05	CT 202	JMF ± Tolerance [c]		
1	3/8"	--	X	--	0.05				
1	No. 4	--	--	X	0.05				
2	No. 8	X	X	X	0.10				
3	No. 200	X	X	X	0.15				
4	Asphalt binder content (%)				0.30	CT 379 or 382	JMF ± 0.45	JMF ± 0.45	JMF ± 0.5
5	Field compaction (% max. theoretical density) [d,e]				0.40	CT 375	92 – 96	92 – 96	91 – 96
	Sand equivalent (min.) [f]					CT 217	47	42	47
	Stabilometer value (min.) [f, g] No. 4 and 3/8" gradings 1/2" and 3/4" gradings					CT 366	 30 37	 30 35	 -- 23
	Air voids content (%)[f, h]					CT 367	4 ± 2	4 ± 2	Specifica-tion ± 2
	Percent of crushed particles coarse aggregate (% min.) One fractured face Two fractured faces Fine aggregate (% min) (Passing No. 4 sieve and retained on No. 8 sieve.) One fractured face					CT 205	 90 75 70	 25 -- 20	 -- 90 70
	HMA moisture content (%, max.)					CT 226 or CT 370	1.0	1.0	1.0
	Los Angeles Rattler (% max.) Loss at 100 rev. Loss at 500 rev.					CT 211	 12 45	 -- 50	 12 40
	Fine aggregate angularity (% min.) [i]					CT 234	45	45	45
	Flat and elongated particle (% max. by weight @ 5:1)					CT 235	Report only	Report only	Report only
	Voids in mineral aggregate (% min.) [j] No. 4 grading 3/8" grading 1/2" grading 3/4" grading					LP-2	 17.0 15.0 14.0 13.0	 17.0 15.0 14.0 13.0	(Note k) -- -- 18.0 - 23.0 18.0 - 23.0
	Voids filled with asphalt (%) [j] No. 4 grading 3/8" grading 1/2" grading 3/4" grading					LP-3	 76.0 - 80.0 73.0 - 76.0 65.0 - 75.0 65.0 - 75.0	 76.0 - 80.0 73.0 - 76.0 65.0 - 75.0 65.0 - 75.0	Report only
	Dust proportion [j] No. 4 and 3/8" gradings 1/2" and 3/4" gradings					LP-4	 0.9 - 2.0 0.6 - 1.3	 0.9 – 2.0 0.6 – 1.3	Report only

	Smoothness		Section 39-1.12	12-foot straight-edge, must-grind, and PI_0	12-foot straight-edge, must-grind, and PI_0	12-foot straight-edge, must-grind, and PI_0
	Asphalt binder		Various	Section 92	Section 92	Section 92
	Asphalt rubber binder		Various	--	--	Section 92-1.02(C) and Section 39-1.02D
	Asphalt modifier		Various	--	--	Section 39-1.02D
	Crumb rubber modifier		Various	--	--	Section 39-1.02D

Notes:
[a] The Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.
[b] "X" denotes the sieves the Engineer considers for the specified aggregate gradation.
[c] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."
[d] The Engineer determines field compaction for any of the following conditions:
1. 1/2-inch, 3/8-inch, or No.4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.

[e] To determined field compaction, the Engineer uses:
1. California Test 308, Method A, to determine in-place density of each density core.
2. California Test 309 to determine maximum theoretical density at the frequency specified in California Test 375, Part 5C.

[f] The Engineer reports the average of 3 tests from a single split sample.
[g] Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 140 °F ± 5 °F by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."
[h] The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.
[i] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.
[j] Report only if the adjustment for asphalt binder content target value is less than or equal to ± 0.3 percent from OBC.
[k] Voids in mineral aggregate for RHMA-G must be within this range.

The Engineer determines the percent of maximum theoretical density from the average density of 3 density cores you take from every 750 tons of production or part thereof divided by the maximum theoretical density.

The Engineer determines the percent of maximum theoretical density from density cores taken from the final layer measured the full depth of the total paved HMA thickness if any of the following applies:

1. If 1/2-inch, 3/8-inch, or No. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot and any layer is less than 0.15 foot.
2. If 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot and any layer is less than 0.20 foot.

The Engineer calculates QF_{QCi} for i = 1, 2, 3, and 4 using quality control data and QF_{QCi} for i = 5 using quality assurance data.

The Engineer stops production and terminates a lot if:

1. The lot's composite quality factor, QF_C, or an individual quality factor, QF_{QCi} for i = 3, 4, or 5, is below 0.90 determined under Section 39-4.03F, "Statistical Evaluation"
2. An individual quality factor, QF_{QCi} for i = 1 or 2, is below 0.75
3. Quality characteristics for which a quality factor, QF_{QCi}, is not determined has 2 consecutive acceptance or quality control tests not in compliance with the specifications

For any single quality characteristic for which a quality factor, QF_{QCi}, is not determined, except smoothness, if 2 consecutive acceptance test results do not comply with specifications:

1. Stop production.
2. Take corrective action.
3. In the Engineer's presence, take samples and split each sample into 4 parts. Test 1 part for compliance with the specifications and submit 3 parts to the Engineer. The Engineer tests 1 part for compliance with the specifications and reserves and stores 2 parts.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

39-4.05B Statistical Evaluation, Determination Of Quality Factors And Acceptance

Statistical Evaluation and Determination of Quality Factors

To determine the individual quality factor, $QF_{QCi,}$ for any quality factor i = 1 through 5 or a lot's composite quality factor, QF_C, for acceptance and payment adjustment, the Engineer uses the evaluation specifications under Section 39-4.03F, "Statistical Evaluation," and:

1. Verified quality control test results for aggregate gradation
2. Verified quality control test results for asphalt binder content
3. The Engineer's test results for percent of maximum theoretical density

Lot Acceptance Based on Quality Factors

The Engineer accepts a lot based on the quality factors determined for aggregate gradation and asphalt binder content, QF_{QCi} for i = 1 through 4, using the total number of verified quality control test result values and the total percent defective ($P_U + P_L$).

The Engineer accepts a lot based on the quality factor determined for maximum theoretical density, QF_{QC5}, using the total number of test result values from density cores and the total percent defective ($P_U + P_L$).

The Engineer calculates the quality factor for the lot, QF_C, which is a composite of weighted individual quality factors, QF_{QCi}, determined for each quality characteristic in the HMA Acceptance – QC / QA table in Section 39-4.05A, "Testing."

The Engineer accepts a lot based on quality factors if:

1. The current composite quality factor, QF_C, is 0.90 or greater
2. Each individual quality factor, QF_{QCi} for i = 3, 4, and 5, is 0.90 or greater
3. Each individual quality factor, QF_{QCi} for i = 1 and 2, is 0.75 or greater

No single quality characteristic test may represent more than the smaller of 750 tons or 1 day's production.

Payment Adjustment

If a lot is accepted, the Engineer adjusts payment with the following formula:

$$PA = \sum_{i=1}^{n} HMACP * w_i * \left[QF_{QCi} * (HMATT - WHMATT_i) + WHMATT_i\right] - (HMACP * HMATT)$$

where:

PA =	Payment adjustment rounded to 2 decimal places.
HMACP =	HMA contract price.
HMATT =	HMA total tons represented in the lot.
$WHMATT_i$ =	Total tons of waived quality characteristic HMA.
QF_{QCi} =	Running quality factor for the individual quality characteristic. QF_{QCi} for i = 1 through 4 must be from verified Contractor's QC results. QF_{QC5} must be determined from the Engineer's results on density cores taken for percent of maximum theoretical density determination.
w =	Weighting factor listed in the HMA acceptance table.
i =	Quality characteristic index number in the HMA acceptance table.

If the payment adjustment is a negative value, the Engineer deducts this amount from payment. If the payment adjustment is a positive value, the Engineer adds this amount to payment.

The 21st sublot becomes the 1st sublot (n = 1) in the next lot. When the 21st sequential sublot becomes the 1st sublot, the previous 20 sequential sublots become a lot for which the Engineer determines a quality factor. The Engineer uses this quality factor to pay for the HMA in the lot. If the next lot consists of less than 8 sublots, these sublots must be added to the previous lot for quality factor determination using 21 to 27 sublots.

39-4.05C Dispute Resolution

For a lot, if you or the Engineer dispute any quality factor, QF_{QCi}, or verification test result, every sublot in that lot must be retested.

Referee tests must be performed under the specifications for acceptance testing.

Any quality factor, QF_{QCi}, must be determined using the referee tests.

For any quality factor, QF_{QCi}, for i = 1 through 5, dispute resolution:

1. If the difference between the quality factors for QF_{QCi} using the referee test result and the disputed test result is less than or equal to 0.01, the original test result is correct.
2. If the difference between the quality factor for QF_{QCi} using the referee test result and the disputed test result is more than 0.01, the quality factor determined from the referee tests supersedes the previously determined quality factor.

39-5 MEASUREMENT AND PAYMENT

39-5.01 MEASUREMENT

The contract item for HMA is measured by weight. The weight of each HMA mixture designated in the Engineer's Estimate must be the combined mixture weight.

If tack coat, asphalt binder, and asphaltic emulsion are paid with separate contract items, their contract items are measured under Section 92, "Asphalts," or Section 94, "Asphaltic Emulsions," as the case may be.

If recorded batch weights are printed automatically, the contract item for HMA is measured by using the printed batch weights, provided:

1. Total aggregate and supplemental fine aggregate weight per batch is printed. If supplemental fine aggregate is weighed cumulatively with the aggregate, the total aggregate batch weight must include the supplemental fine aggregate weight.
2. Total asphalt binder weight per batch is printed.
3. Each truckload's zero tolerance weight is printed before weighing the first batch and after weighing the last batch.
4. Time, date, mix number, load number and truck identification is correlated with a load slip.
5. A copy of the recorded batch weights is certified by a licensed weighmaster and submitted to the Engineer.

The contract item for placing HMA dike is measured by the linear foot along the completed length. The contract item for placing HMA in miscellaneous areas is measured as the in-place compacted area in square yards. In addition to the quantities measured on a linear foot or square yard basis, the HMA for dike and miscellaneous areas are measured by weight.

The contract item for geosynthetic pavement interlayer is measured by the square yard for the actual pavement area covered.

39-5.02 PAYMENT

The contract prices paid per ton for hot mix asphalt as designated in the Engineer's Estimate include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in constructing hot mix asphalt, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

If HMA is specified to comply with Section 39-4, "Quality Control / Quality Assurance," the Engineer adjusts payment under that section.

Full compensation for the Quality Control Plan and prepaving conference is included in the contract prices paid per ton for hot mix asphalt as designated in the Engineer's Estimate and no additional compensation will be allowed therefor.

Full compensation for performing and submitting mix designs and for Contractor sampling, testing, inspection, testing facilities, and preparation and submittal of results is included in the contract prices paid per ton for HMA as designated in the Engineer's Estimate and no additional compensation will be allowed therefor.

Full compensation for reclaimed asphalt pavement is included in the contract prices paid per ton for HMA as designated in the Engineer's Estimate and no additional compensation will be allowed therefor.

The contract price paid per ton for hot mix asphalt (leveling) includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in hot mix asphalt (leveling), complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The State pays for HMA dike at the contract price per linear foot for place HMA dike and by the ton for HMA. The contract prices paid per linear foot for place hot mix asphalt dike as designated in the Engineer's Estimate include full compensation for furnishing all labor, tools, equipment, and incidentals, and for doing all the work involved in placing HMA dike, complete in place, including excavation, backfill, and preparation of the area to receive the dike, as shown

on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The State pays for HMA specified to be a miscellaneous area at the contract price per square yard for place hot mix asphalt (miscellaneous area) and per ton for hot mix asphalt. The contract price paid per square yard for place hot mix asphalt (miscellaneous area) includes full compensation for furnishing all labor, tools, equipment, and incidentals, and for doing all the work involved in placing HMA (miscellaneous area) complete in place, including excavation, backfill, and preparation of the area to receive HMA (miscellaneous area), as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

If the Quality Control / Quality Assurance construction process is specified, HMA placed in dikes and miscellaneous areas is paid for at the contract price per ton for hot mix asphalt under Section 39-4, "Quality Control / Quality Assurance." Section 39-4.05B, "Statistical Evaluation, Determination of Quality Factors and Acceptance," does not apply to HMA placed in dikes and miscellaneous areas.

If there are no contract items for place hot mix asphalt dike and place hot mix asphalt (miscellaneous area) and the work is specified, full compensation for constructing HMA dikes and HMA (miscellaneous areas) including excavation, backfill, and preparation of the area to receive HMA dike or HMA (miscellaneous area) is included in the contract price paid per ton for the hot mix asphalt designated in the Engineer's Estimate and no separate payment will be made therefor.

The contract price paid per square yard for geosynthetic pavement interlayer of the type shown on the verified Bid Item List includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in placing geosynthetic pavement interlayer, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The contract price paid per ton for paving asphalt (binder, geosynthetic pavement interlayer) includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in applying paving asphalt (binder, geosynthetic pavement interlayer), complete in place, including spreading sand to cover exposed binder material, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

Full compensation for small quantities of HMA placed on geosynthetic pavement interlayer to prevent displacement during construction is included in the contract price paid per ton for the HMA being paved over the interlayer and no separate payment will be made therefor.

The contract price paid per ton for tack coat includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in applying tack coat, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The Engineer does not adjust payment for increases or decreases in the quantities for tack coat, regardless of the reason for the increase or decrease. Section 4-1.03B, "Increased or Decreased Quantities," does not apply to the items for tack coat.

Full compensation for performing smoothness testing, submitting written and electronic copies of tests, and performing corrective work including applying fog seal coat is included in the contract price paid per ton for the HMA designated in the Engineer's Estimate and no separate payment will be made therefor.

Full compensation for spreading sand on RHMA-G, RHMA-O, and RHMA-O-HB surfaces and for sweeping and removing excess sand is included in the contract price paid per ton for

rubberized hot mix asphalt as designated in the Engineer's Estimate and no separate payment will be made therefor.

If the dispute resolution ITP determines the Engineer's test results are correct, the Engineer deducts the ITP's testing costs from payments. If the ITP determines your test results are correct, the State pays the ITP's testing costs. If, in the Engineer's opinion, work completion is delayed because of incorrect Engineer test results, the Department makes payment and time adjustments under Section 8-1.09, "Delays."

SECTION 42 GROOVE AND GRIND PAVEMENT
(Issued 05-15-09)

In Section 42-2.02 replace the 3rd paragraph with:

Existing portland cement concrete pavement not constructed as part of the project shall be ground as follows:

> Grinding shall be performed so that the pavement surface on both sides of all transverse joints and cracks has essentially the same depth of texture and does not vary from a true plane enough to permit a 0.006-foot thick shim 0.25-foot wide to pass under a 3-foot straightedge adjacent to either side of the joint or crack when the straightedge is laid on the pavement parallel to centerline with its midpoint at the joint or crack. After grinding has been completed, the pavement shall conform to the straightedge and profile requirements specified in Section 40-1.03, "Quality Control and Assurance."
> Abnormally depressed areas due to subsidence or other localized causes will be excluded from testing with the profilograph and 12-foot straightedge specified in Section 40-1.03. The accumulated total of the excluded areas shall not exceed 5 percent of the total area to be ground. Profilograph testing shall end 25 feet prior to excluded areas and shall resume 25 feet following the excluded areas.

In Section 42-2.03 replace the 2nd paragraph with:

Replacement concrete paving shall conform to the provisions in Section 40, "Concrete Pavement." Replacement pavement may be spread and shaped by any suitable powered finishing machines, supplemented by handwork as necessary. Consolidation of the concrete shall be by means of high-frequency internal vibrators within 15 minutes after the concrete is deposited on the subgrade. Vibrating shall be done with care and in such manner to assure adequate consolidation adjacent to forms and uniformly across the full paving width. Use of vibrators for extensive shifting of the mass of concrete will not be permitted. Methods of spreading, shaping and compacting that result in segregation, voids or rock pockets shall be discontinued, and the Contractor shall adopt methods which will produce dense homogeneous pavement conforming to the required cross section. Finishing may be performed by hand method, as specified in Section 40-3.11B, "Stationary Side Form Finishing."

SECTION 80 FENCES
(Issued 01-05-07)

In Section 80-3.01F replace the 4th paragraph with:

Portland cement concrete for metal post and brace footings and for deadmen shall be minor concrete conforming to the provisions in Section 90-10, "Minor Concrete." Minor concrete shall contain not less than 470 pounds of cementitious material per cubic yard.

In Section 80-4.01C replace the 4th paragraph with:

Portland cement concrete for metal post and for deadmen shall be produced from minor concrete conforming to the provisions in Section 90-10, "Minor Concrete." Minor concrete shall contain not less than 470 pounds of cementitious material per cubic yard.

SECTION 85 PAVEMENT MARKERS
(Issued 07-31-07)

In Section 85-1.06 replace the 6th paragraph with:

Pavement markers shall not be placed on new hot mix asphalt surfacing or seal coat until the surfacing or seal coat has been opened to public traffic for a period of not less than 7 days when hot melt bituminous adhesive is used, and not less than 14 days when epoxy adhesive is used.

In Section 85-1.06 in the 14th paragraph, replace the 2nd sentence with:

Cleaning shall be done by blast cleaning on all surfaces regardless of age or type, except that blast cleaning of clean, new hot mix asphalt and clean, new seal coat surfaces will not be required when hot melt bituminous adhesive is used.

SECTION 90 PORTLAND CEMENT CONCRETE
(Issued 08-05-11)

Replace Section 90 with:

SECTION 90 PORTLAND CEMENT CONCRETE

90-1 GENERAL

90-1.01 DESCRIPTION

Portland cement concrete shall be composed of cementitious material, fine aggregate, coarse aggregate, admixtures if used, and water, proportioned and mixed as specified in these specifications.

The Contractor shall determine the mix proportions for concrete in conformance with these specifications.

Minor concrete shall contain not less than 505 pounds of cementitious material per cubic yard unless otherwise specified in these specifications or the special provisions.

Unless otherwise designated on the plans or specified in these specifications or the special provisions, the amount of cementitious material used per cubic yard of concrete in structures or portions of structures shall conform to the following:

Use	Cementitious Material Content (Pounds/CY)
Concrete designated by compressive strength:	
Deck slabs and slab spans of bridges	675 min., 800 max.
Roof sections of exposed top box culverts	675 min., 800 max.
Other portions of structures	590 min., 800 max.
Concrete not designated by compressive strength:	
Deck slabs and slab spans of bridges	675 min.
Roof sections of exposed top box culverts	675 min.
Prestressed members	675 min.
Seal courses	675 min.
Other portions of structures	590 min.
Concrete for precast members	590 min., 925 max.

Except for minor structures, the minimum required compressive strength for concrete in structures or portions of structures shall be the strength specified, or 3600 pounds per square inch at 28 days, whichever is greater.

Except for when a modulus of rupture is specified, the minimum required compressive strength for concrete shall be the strength specified, or 2,500 pounds per square inch, whichever is greater. Concrete shall be proportioned such that the concrete will attain the minimum required compressive strength.

If the specified 28-day compressive strength is 3,600 pounds per square inch or greater, the concrete is designated by compressive strength. For concrete with a 28-day compressive strength greater than 3,600 pounds per square inch, 42 days will be allowed to obtain the specified strength.

For concrete not designated by compressive strength, the Engineer may test the concrete for compressive strength. The concrete will be accepted if the compressive strength at 28 days attains 85 percent or more of the minimum required compressive strength.

Concrete shall be proportioned to conform to the following shrinkage limitations when tested in conformance with the requirements of AASHTO Designation: T 160, modified as follows:

Condition	Maximum Shrinkage of Laboratory Cast Specimens at 28 days Drying (average of 3, %)
Paving and approach slab concrete	0.050
Bridge deck concrete	0.045

Note: Shrinkage requirement is waived for concrete that is used for precast elements.

Shrinkage tests shall be either:

A. Performed by a laboratory accredited to perform AASHTO Designation: T 160, or
B. Performed by a laboratory that maintains a current rating of 3 or better for the Cement and Concrete Reference Laboratory (CCRL) concrete proficiency sample program.

Laboratory cast specimens shall have a 4" x 4" cross section. Specimens shall be removed from the molds 23 ± 1 hours after mixing the concrete and placed in lime water at 73 ± 3 °F to 7

days age. A comparator reading shall be taken at 7 days age and recorded as the initial reading. Specimens then shall be stored in a humidity controlled room maintained at 73 ± 3 °F and 50 ± 4 percent relative humidity for the remainder of the test. Subsequent readings shall be taken at 7, 14, 21, and 28 days drying.

Test data verifying conformance to the shrinkage limitations shall be submitted with the mix design. Shrinkage testing data accepted by the Engineer no more than 3 years prior to the first working day of this contract will be acceptable for this entire contract, provided the data was for concrete with similar proportions and the same materials and material sources to be used on this contract. Concrete shall be considered to have similar proportions if, when compared to concrete to be used on this project, no more than 2 mix design elements are varied. Varied mix design elements shall fall within the tolerances in the following table:

Mix Design Element	Tolerance (±)
Water to cementitious material ratio	0.03
Total water content	5 %
Coarse aggregate (weight per cubic yard)	10 %
Fine aggregate (weight per cubic yard)	10 %
Supplementary cementitious material content	5 %
Admixture (as originally dosed)	25 %

Note: Admixtures must be of the same brand.

Before using concrete or in advance of revising the mix proportions, the Contractor shall submit in writing to the Engineer a copy of the mix design.

Compliance with cementitious material content requirements will be verified in conformance with procedures described in California Test 518 for cement content. For testing purposes, supplementary cementitious material (SCM) shall be considered to be cement. Batch proportions shall be adjusted as necessary to produce concrete having the specified cementitious material content.

If any concrete has a cementitious material, portland cement, or SCM content that is less than the minimum required, the concrete shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place and the Contractor shall pay to the State $0.25 for each pound of cementitious material, portland cement, or SCM that is less than the minimum required. The Department may deduct the amount from any moneys due, or that may become due, the Contractor under the contract. The deductions will not be made unless the difference between the contents required and those actually provided exceeds the batching tolerances permitted by Section 90-5, "Proportioning." No deductions will be made based on the results of California Test 518.

The requirements of the preceding paragraph shall not apply to minor concrete.

90-2 MATERIALS

90-2.01 CEMENTITIOUS MATERIALS

Unless otherwise specified, cementitious material shall be either a combination of Type II or Type V portland cement and SCM, or a blended cement. No cementitious material shall be used in the work unless it is on the Department's Pre-Qualified Products List at the time of mix design submittal. Information regarding cementitious material qualification and placement on the Department's approved list can be obtained at the Transportation Laboratory.

Cementitious materials used in cast-in-place concrete for exposed surfaces of like elements of a structure shall be from the same sources and of the same proportions.

Cementitious materials shall be protected from moisture until used. Sacked cementitious materials shall be piled to permit access for tallying, inspecting, and identifying each shipment.

Facilities shall be provided to ensure that the various cementitious materials meeting this Section 90-2.01 are kept separate from each other and from other cementitious materials. A storage silo containing a cementitous material shall be emptied before using that silo for a different cementitious material. Blended cements with a percentage of SCM differing by more than 2 percentage points are considered different cementitious materials. Sampling cementitious materials shall be in conformance with California Test 125.

The Contractor shall furnish a Certificate of Compliance for cementitious materials in conformance with the provisions in Section 6-1.07, "Certificates of Compliance." The Certificate of Compliance shall indicate the source by name and location (including country, state, and city). If cementitious material is delivered directly to the job site, the Certificate of Compliance shall be signed by the cementitious material supplier. If the cementitious material is used in ready-mixed concrete or in precast concrete products purchased as such by the Contractor, the Certificate of Compliance shall be signed by the manufacturer of the concrete or product. If blended cement is used, the Certificate of Compliance shall include a statement signed by the blended cement supplier that indicates the actual percentage, by weight, of SCM in the blend. Weight of SCM shall be by weighing device conforming to Section 9-1.01, "Measurement of Quantities," or as determined by chemical analysis.

90-2.01A Cement

Portland cement shall conform to the requirements in ASTM Designation: C 150 except the C_3S content of Type II cement shall not exceed 65 percent.

Blended cement shall conform to the requirements for Portland Blast-Furnace Slag Cement, Type IS (MS) or Portland-Pozzolan Cement, Type IP (MS) in AASHTO Designation: M 240, except that the maximum limits on the pozzolan content shall not apply. Blended cement shall be comprised of Type II or Type V cement and SCM produced by intergrinding portland cement clinker and granulated blast furnace slag, ground granulated blast furnace slag (GGBFS), or pozzolan; by blending portland cement and either GGBFS or finely divided pozzolan; or by a combination of intergrinding and blending.

In addition, Type II portland cement and Type V portland cement shall conform to the following requirements:

A. The cement shall not contain more than 0.60-percent by mass of alkalies, calculated as the percentage of Na_2O plus 0.658 times the percentage of K_2O, when determined by methods as required in AASHTO Designation: T 105; and
B. The autoclave expansion shall not exceed 0.50-percent

Type III portland cement shall be used only as specified or with the approval of the Engineer. Type III portland cement shall conform to the additional requirements listed above for Type II portland cement. The Contractor may use Type III portland cement in the manufacturing of precast concrete.

90-2.01B Supplementary Cementitious Materials

Each supplementary cementitious material shall conform to one of the following:

A. Fly ash conforming to the requirements in AASHTO Designation: M 295, Class F, and these specifications. The available alkali, as sodium oxide equivalent, shall not exceed 1.5 percent when determined in conformance with the requirements in ASTM Designation: C 311 or the total alkali, as sodium oxide equivalent, shall not exceed 5.0

percent when determined in conformance with the requirements in AASHTO Designation: T 105.

B. Ultra fine fly ash (UFFA) conforming to the requirements in AASHTO Designation: M 295, Class F, and the following chemical and physical requirements:

Chemical Requirements	Percent
Sulfur Trioxide (SO_3)	1.5 max.
Loss on ignition	1.2 max.
Available Alkalies (as Na_2O) equivalent	1.5 max.

Physical Requirements	Percent
Particle size distribution	
Less than 3.5 microns	50
Less than 9.0 microns	90
Strength Activity Index with portland cement	
7 days	95 (minimum % of control)
28 days	110 (minimum % of control)
Expansion at 16 days when testing job materials in conformance with ASTM C 1567*	0.10 max.

* In the test mix, Type II or Type V portland cement shall be replaced with at least 12% UFFA by weight.

C. Raw or calcined natural pozzolans conforming to the requirements in AASHTO Designation: M 295, Class N. and the following requirements and these specifications. The available alkali, as sodium oxide equivalent, shall not exceed 1.5 percent when determined in conformance with the requirements in ASTM Designation: C 311 or the total alkali, as sodium oxide equivalent, shall not exceed 5.0 percent when determined in conformance with the requirements in AASHTO Designation: T 105.

D. Metakaolin conforming to the requirements in AASHTO Designation: M 295, Class N, and the following chemical and physical requirements:

Chemical Requirements	Percent
Silicon Dioxide (SiO_2) + Aluminum Oxide (Al_2O_3)	92.0 min.
Calcium Oxide (CaO)	1.0 max
Sulfur Trioxide (SO_3)	1.0 max.
Loss on ignition	1.2 max.
Available Alkalies (as Na_2O) equivalent	1.0 max.

Physical Requirements	Percent
Particle size distribution Less than 45 microns	95
Strength Activity Index with portland cement	
7 days	100 (minimum % of control)
28 days	100 (minimum % of control)

E. Ground Granulated Blast Furnace Slag (GGBFS) conforming to the requirements in AASHTO Designation: M 302, Grade 100 or Grade 120.

F. Silica Fume conforming to the requirements of AASHTO Designation: M 307, with reduction in mortar expansion of 80 percent, minimum, using the cement from the proposed mix design.

Commingling of fly ash from different sources at uncontrolled ratios is permissible only if the following criteria are satisfied:

A. Sources of fly ash to be commingled shall each produce fly ash that conforms to the requirements in AASHTO Designation: M 295, Class F.
B. Testing of the commingled product is the responsibility of the fly ash supplier.
C. Each fly ash's running average of relative density shall not differ from any other by more than 0.25 at the time of commingling.
D. Each fly ash's running average of loss on ignition shall not differ from any other by more than one percent at the time of commingling.
E. The final product of commingled fly ash shall conform to the requirements in AASHTO Designation: M 295, Class F.

90-2.01C Required Use Of Supplementary Cementitious Materials

General

The amount of portland cement and SCM used in portland cement concrete shall conform to the minimum cementitious material content provisions in Section 90-1.01, "Description," or Section 90-4.05, "Optional Use of Chemical Admixtures," and these specifications.

The SCM content in portland cement concrete shall conform to one of the following:

A. Any combination of portland cement and at least one SCM, satisfying Equations (1) and (2):

Equation (1)

$$\frac{(25 \times UF) + (12 \times FA) + (10 \times FB) + (6 \times SL)}{MC} \geq X$$

Where:

UF = Silica fume, metakaolin, or UFFA, including the amount in blended cement, pounds per cubic yard.
FA = Fly ash or natural pozzolan conforming to the requirements in AASHTO Designation: M 295, Class F or N with a CaO content up to 10 percent, including the amount in blended cement, pounds per cubic yard.
FB = Fly ash or natural pozzolan conforming to the requirements in AASHTO Designation: M 295, Class F or N with a CaO content greater than 10 percent and up to 15 percent, including the amount in blended cement, pounds per cubic yard.
SL = GGBFS, including the amount in blended cement, pounds per cubic yard.
MC = Minimum amount of cementitious material specified, pounds per cubic yard.
X = 1.8 for innocuous aggregate, 3.0 for all other aggregate.

Equation (2)

$$MC - MSCM - PC \geq 0$$

Where:

MC = Minimum amount of cementitious material specified, pounds per cubic yard.
MSCM = The minimum sum of SCMs that satisfies Equation (1) above, pounds per cubic yard.
PC = The amount of portland cement, including the amount in blended cement, pounds per cubic yard.

B. 15 percent of Class F fly ash with at least 48 ounces of $LiNO_3$ solution added per 100 pounds of portland cement. CaO content of the fly ash shall not exceed 15 percent.

Precast Concrete

The SCM content in precast portland cement concrete shall conform to one of the following:

A. Any combination of portland cement and SCM, satisfying the following equation:

Equation (3)

$$\frac{(25 \times UF) + (12 \times FA) + (10 \times FB) + (6 \times SL)}{TC} \geq X$$

Where:

UF = Silica fume, metakaolin, or UFFA, including the amount in blended cement, pounds per cubic yard.
FA = Fly ash or natural pozzolan conforming to the requirements in AASHTO Designation: M 295, Class F or N with a CaO content up to 10 percent, including the amount in blended cement, pounds per cubic yard.
FB = Fly ash or natural pozzolan conforming to the requirements in AASHTO Designation: M 295, Class F or N with a CaO content greater than 10 percent and up to 15 percent, including the amount in blended cement, pounds per cubic yard.
SL = GGBFS, including the amount in blended cement, pounds per cubic yard.
TC = Total amount of cementitious material used in the mix, pounds per cubic yard.
X = 0.0 if precast members are constructed with portland cement concrete using aggregate that is "innocuous" in conformance with the provisions in Section 90-2.02, "Aggregates."
X = 3.0 for all other aggregate.

B. 15 percent of Class F fly ash with at least 48 ounces of $LiNO_3$ solution added per 100 pounds of portland cement. CaO content of the fly ash shall not exceed 15 percent.
C. Any combination of supplementary cementitious material and portland cement may be used if the expansion of cementitious material and aggregate does not exceed 0.10 percent when tested in conformance with the requirements in ASTM C 1567. Test data shall be submitted with each mix design. Test data accepted by the Engineer no more than 3 years prior to the first working day of this contract will be acceptable for this entire contract, provided the data was for the same concrete mix and the same materials and material sources to be used on this contract.

90-2.02 AGGREGATES

To be considered innocuous, aggregate must be on the Department's approved list, "Innocuous Aggregates for use in Concrete." Information regarding aggregate qualification and placement on the Department's approved list can be obtained at the Transportation Laboratory.

Both coarse and fine aggregate must be on the approved list for the aggregate used in concrete to be considered innocuous.

Aggregates shall be free from deleterious coatings, clay balls, roots, bark, sticks, rags, and other extraneous material.

The Contractor shall provide safe and suitable facilities, including necessary splitting devices for obtaining samples of aggregates, in conformance with California Test 125.

Aggregates shall be of such character that it will be possible to produce workable concrete within the limits of water content provided in Section 90-6.06, "Amount of Water and Penetration."

Aggregates shall have not more than 10 percent loss when tested for soundness in conformance with the requirements in California Test 214. The soundness requirement for fine aggregate will be waived, provided that the durability index, D_f, of the fine aggregate is 60 or greater when tested for durability in conformance with California Test 229.

If the results of any one or more of the Cleanness Value, Sand Equivalent, or aggregate grading tests do not meet the requirements specified for "Operating Range" but all meet the "Contract Compliance" requirements, the placement of concrete shall be suspended at the completion of the current pour until tests or other information indicate that the next material to be used in the work will comply with the requirements specified for "Operating Range."

If the results of either or both the Cleanness Value and coarse aggregate grading tests do not meet the requirements specified for "Contract Compliance," the concrete that is represented by the tests shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place, and the Contractor shall pay to the State $3.50 per cubic yard for paving concrete and $5.50 per cubic yard for all other concrete for the concrete represented by these tests and left in place. The Department may deduct the amount from any moneys due, or that may become due, the Contractor under the contract.

If the results of either or both the Sand Equivalent and fine aggregate grading tests do not meet the requirements specified for "Contract Compliance," the concrete which is represented by the tests shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place, and the Contractor shall pay to the State $3.50 per cubic yard for paving concrete and $5.50 per cubic yard for all other concrete for the concrete represented by these tests and left in place. The Department may deduct the amount from any moneys due, or that may become due, the Contractor under the contract.

The 2 preceding paragraphs apply individually to the "Contract Compliance" requirements for coarse aggregate and fine aggregate. When both coarse aggregate and fine aggregate do not conform to the "Contract Compliance" requirements, both paragraphs shall apply. The payments specified in those paragraphs are in addition to any payments made in conformance with the provisions in Section 90-1.01, "Description."

No single Cleanness Value, Sand Equivalent, or aggregate grading test shall represent more than 300 cubic yards of concrete or one day's pour, whichever is smaller.

When the source of an aggregate is changed, the Contractor shall adjust the mix proportions and submit in writing to the Engineer a copy of the mix design before using the aggregates.

90-2.02A Coarse Aggregate

Coarse aggregate shall consist of gravel, crushed gravel, crushed rock, reclaimed aggregate, crushed air-cooled iron blast furnace slag or combinations thereof. Crushed air-cooled blast furnace slag shall not be used in reinforced or prestressed concrete.

Reclaimed aggregate is aggregate that has been recovered from plastic concrete by washing away the cementitious material. Reclaimed aggregate shall conform to all aggregate requirements.

Coarse aggregate shall conform to the following quality requirements:

Tests	California Test	Requirements
Loss in Los Angeles Rattler (after 500 revolutions)	211	45% max.
Cleanness Value		
Operating Range	227	75 min.
Contract Compliance	227	71 min.

In lieu of the above Cleanness Value requirements, a Cleanness Value "Operating Range" limit of 71, minimum, and a Cleanness Value "Contract Compliance" limit of 68, minimum, will be used to determine the acceptability of the coarse aggregate if the Contractor furnishes a Certificate of Compliance, as provided in Section 6-1.07, "Certificates of Compliance," certifying that:

A. Coarse aggregate sampled at the completion of processing at the aggregate production plant had a Cleanness Value of not less than 82 when tested in conformance with the requirements in California Test 227; and
B. Prequalification tests performed in conformance with the requirements in California Test 549 indicated that the aggregate would develop a relative strength of not less than 95 percent and would have a relative shrinkage not greater than 105 percent, based on concrete.

90-2.02B Fine Aggregate

Fine aggregate shall consist of natural sand, manufactured sand produced from larger aggregate or a combination thereof. Manufactured sand shall be well graded.

Fine aggregate shall conform to the following quality requirements:

Test	California Test	Requirements
Organic Impurities	213	Satisfactory[a]
Sand Equivalent:		
Operating Range	217	75, min.
Contract Compliance	217	71, min.

[a] Fine aggregate developing a color darker than the reference standard color may be accepted if 95% relative mortar strength is achieved when tested in conformance with ASTM C87.

In lieu of the above Sand Equivalent requirements, a Sand Equivalent "Operating Range" limit of 71, minimum, and a Sand Equivalent "Contract Compliance" limit of 68, minimum, will be used to determine the acceptability of the fine aggregate if the Contractor furnishes a Certificate of Compliance, as provided in Section 6-1.07, "Certificates of Compliance," certifying that:

A. Fine aggregate sampled at the completion of processing at the aggregate production plant had a Sand Equivalent value of not less than 82 when tested by California Test 217; and
B. Prequalification tests performed in conformance with California Test 549 indicated that the aggregate would develop a relative strength of not less than 95 percent and would have a relative shrinkage not greater than 105 percent, based on concrete.

90-2.03 WATER

In conventionally reinforced concrete work, the water for curing, for washing aggregates, and for mixing shall be free from oil and shall not contain more than 1,000 parts per million of chlorides as Cl, when tested in conformance with California Test 422, nor more than 1,300 parts per million of sulfates as SO_4, when tested in conformance with California Test 417. In prestressed concrete work, the water for curing, for washing aggregates, and for mixing shall be free from oil and shall not contain more than 650 parts per million of chlorides as Cl, when tested in conformance with California Test 422, nor more than 1,300 parts per million of sulfates as SO_4, when tested in conformance with California Test 417. In no case shall the water contain an amount of impurities that will cause either of the following results when compared to the same test using distilled or deionized water: 1) a change in the setting time of cement of more than 25 percent when tested in conformance with the requirements in ASTM Designation: C 191 or ASTM Designation: C 266 or 2) a reduction in the compressive strength of mortar at 14 days of more than 5 percent, when tested in conformance with the requirements in ASTM Designation: C 109.

In nonreinforced concrete work, the water for curing, for washing aggregates and for mixing shall be free from oil and shall not contain more than 2,000 parts per million of chlorides as Cl, when tested in conformance with California Test 422, or more than 1,500 parts per million of sulfates as SO_4, when tested in conformance with California Test 417.

In addition to the above provisions, water for curing concrete shall not contain impurities in a sufficient amount to cause discoloration of the concrete or produce etching of the surface.

Water reclaimed from mixer wash-out operations may be used in mixing concrete. The water shall not contain coloring agents or more than 300 parts per million of alkalis (Na_2O + 0.658 K_2O) as determined on the filtrate. The specific gravity of the water shall not exceed 1.03 and shall not vary more than ±0.010 during a day's operations.

90-2.04 Admixture Materials

Admixture materials shall be stored and dispensed in liquid form and conform to the following requirements:

A. Chemical Admixtures—ASTM Designation: C 494.
B. Air-entraining Admixtures—ASTM Designation: C 260.
C. Lithium Nitrate shall be in an aqueous solution conforming to the following:

    1. Lithium Nitrate ($LiNO_3$) must be 30 percent +/- 0.5 percent by weight
    2. Sulfate (SO_4) must be less than 1000 ppm
    3. Chloride (Cl) must be less than 1000 ppm
    4. Alkalis (Na_2O + 0.658 K_2O) must be less than 1000 ppm

90-3 AGGREGATE GRADINGS

90-3.01 GENERAL

Before beginning concrete work, the Contractor shall submit in writing to the Engineer the gradation of the primary aggregate nominal sizes that the Contractor proposes to furnish. If a primary coarse aggregate or the fine aggregate is separated into 2 or more sizes, the proposed gradation shall consist of the gradation for each individual size, and the proposed proportions of each individual size, combined mathematically to indicate one proposed gradation. The proposed gradation shall meet the grading requirements shown in the table in this section, and shall show the percentage passing each of the sieve sizes used in determining the end result.

The Engineer may waive, in writing, the gradation requirements in this Section 90-3.01 and in Sections 90-3.02, "Coarse Aggregate Grading," 90-3.03, "Fine Aggregate Grading," and 90-3.04, "Combined Aggregate Gradings," if, in the Engineer's opinion, furnishing the gradation is not necessary for the type or amount of concrete work to be constructed.

Gradations proposed by the Contractor shall be within the following percentage passing limits:

Primary Aggregate Nominal Size	Sieve Size	Limits of Proposed Gradation
1-1/2" x 3/4"	1"	19 - 41
1" x No. 4	3/4"	52 - 85
1" x No. 4	3/8"	15 - 38
1/2" x No. 4	3/8"	40 - 78
3/8" x No. 8	3/8"	50 - 85
Fine Aggregate	No. 16	55 - 75
Fine Aggregate	No. 30	34 - 46
Fine Aggregate	No. 50	16 - 29

Should the Contractor change the source of supply, the Contractor shall submit in writing to the Engineer the new gradations before their intended use.

90-3.02 COARSE AGGREGATE GRADING

The grading requirements for coarse aggregates are shown in the following table for each size of coarse aggregate:

	Percentage Passing Primary Aggregate Nominal Sizes							
	1-1/2" x 3/4"		1" x No. 4		1/2" x No. 4		3/8" x No. 8	
Sieve Sizes	Operating Range	Contract Compliance	Operating Range	Contract Compliance	Operating Range	Contract Compliance	Operating Range	Contract Compliance
2"	100	100	—	—	—	—	—	—
1-1/2"	88 - 100	85 - 100	100	100	—	—	—	—
1"	X ±18	X ±25	88 - 100	86 - 100	—	—	—	—
3/4"	0 - 17	0 - 20	X ±15	X ±22	100	100	—	—
1/2"	—	—	—	—	82 - 100	80 - 100	100	100
3/8"	0 - 7	0 - 9	X ±15	X ±22	X ±15	X ±22	X ±15	X ±20
No. 4	—	—	0 - 16	0 - 18	0 - 15	0 - 18	0 - 25	0 - 28
No. 8	—	—	0 - 6	0 - 7	0 - 6	0 - 7	0 - 6	0 - 7

In the above table, the symbol X is the gradation that the Contractor proposes to furnish for the specific sieve size as provided in Section 90-3.01, "General."

Coarse aggregate for the 1-1/2 inch, maximum, combined aggregate grading as provided in Section 90-3.04, "Combined Aggregate Gradings," shall be furnished in 2 or more primary aggregate nominal sizes. Each primary aggregate nominal size may be separated into 2 sizes and

stored separately, provided that the combined material conforms to the grading requirements for that particular primary aggregate nominal size.

When the one inch, maximum, combined aggregate grading as provided in Section 90-3.04, "Combined Aggregate Gradings," is to be used, the coarse aggregate may be separated into 2 sizes and stored separately, provided that the combined material shall conform to the grading requirements for the 1" x No. 4 primary aggregate nominal size.

90-3.03 FINE AGGREGATE GRADING

Fine aggregate shall be graded within the following limits:

Sieve Sizes	Percentage Passing	
	Operating Range	Contract Compliance
3/8"	100	100
No. 4	95 - 100	93 - 100
No. 8	65 - 95	61 - 99
No. 16	X ±10	X ±13
No. 30	X ±9	X ±12
No. 50	X ±6	X ±9
No. 100	2 - 12	1 - 15
No. 200	0 - 8	0 - 10

In the above table, the symbol X is the gradation that the Contractor proposes to furnish for the specific sieve size as provided in Section 90-3.01, "General."

In addition to the above required grading analysis, the distribution of the fine aggregate sizes shall be such that the difference between the total percentage passing the No. 16 sieve and the total percentage passing the No. 30 sieve shall be between 10 and 40, and the difference between the percentage passing the No. 30 and No. 50 sieves shall be between 10 and 40.

Fine aggregate may be separated into 2 or more sizes and stored separately, provided that the combined material conforms to the grading requirements specified in this Section 90-3.03.

90-3.04 COMBINED AGGREGATE GRADINGS

Combined aggregate grading limits shall be used only for the design of concrete mixes. Concrete mixes shall be designed so that aggregates are combined in proportions that shall produce a mixture within the grading limits for combined aggregates as specified herein.

The combined aggregate grading, except when otherwise specified in these specifications or the special provisions, shall be either the 1-1/2 inch, maximum grading, or the 1 inch, maximum grading, at the option of the Contractor.

Grading Limits of Combined Aggregates

	Percentage Passing			
Sieve Sizes	1-1/2" Max.	1" Max.	1/2" Max.	3/8" Max.
2"	100	—	—	—
1-1/2"	90 - 100	100	—	—
1"	50 - 86	90 - 100	—	—
3/4"	45 - 75	55 - 100	100	—
1/2"	—	—	90 - 100	100
3/8"	38 - 55	45 - 75	55 - 86	50 - 100
No. 4	30 - 45	35 - 60	45 - 63	45 - 63
No. 8	23 - 38	27 - 45	35 - 49	35 - 49
No. 16	17 - 33	20 - 35	25 - 37	25 - 37
No. 30	10 - 22	12 - 25	15 - 25	15 - 25
No. 50	4 - 10	5 - 15	5 - 15	5 - 15
No. 100	1 - 6	1 - 8	1 - 8	1 - 8
No. 200	0 - 3	0 - 4	0 - 4	0 - 4

Changes from one grading to another shall not be made during the progress of the work unless permitted by the Engineer.

90-4 ADMIXTURES

90-4.01 GENERAL

Admixtures used in portland cement concrete shall conform to and be used in conformance with the provisions in this Section 90-4 and the special provisions. Admixtures shall be used when specified or ordered by the Engineer and may be used at the Contractor's option as provided herein.

Chemical admixtures and air-entraining admixtures containing chlorides as Cl in excess of one percent by weight of admixture, as determined by California Test 415, shall not be used.

Admixtures shall be uniform in properties throughout their use in the work. Should it be found that an admixture as furnished is not uniform in properties, its use shall be discontinued.

If more than one admixture is used, the admixtures shall be compatible with each other so that the desirable effects of all admixtures used will be realized.

Chemical admixtures shall be used in conformance with the manufacturer's written recommendations. The manufacturer's written recommendations shall include a statement that the admixtures are compatible with the types and amounts of SCMs used.

90-4.02 MATERIALS

Admixture materials shall conform to the provisions in Section 90-2.04, "Admixture Materials."

90-4.03 ADMIXTURE APPROVAL

No admixture brand shall be used in the work unless it is on the Department's current list of approved brands for the type of admixture involved. Information regarding admixture qualification and placement on the Department's list can be obtained at the Transportation Laboratory.

If the Contractor proposes to use an admixture of a brand and type on the current list of approved admixture brands, the Contractor shall furnish a Certificate of Compliance from the manufacturer, as provided in Section 6-1.07, "Certificates of Compliance," certifying that the admixture furnished is the same as that previously approved. If a previously approved admixture is not accompanied by a Certificate of Compliance, the admixture shall not be used in the work

until the Engineer has had sufficient time to make the appropriate tests and has approved the admixture for use. The Engineer may take samples for testing at any time, whether or not the admixture has been accompanied by a Certificate of Compliance.

90-4.04 REQUIRED USE OF CHEMICAL ADMIXTURES

If the use of a chemical admixture is specified, the admixture shall be used at the dosage specified, except that if no dosage is specified, the admixture shall be used at the dosage normally recommended by the manufacturer of the admixture.

90-4.05 OPTIONAL USE OF CHEMICAL ADMIXTURES

The Contractor may use Type A or F, water-reducing; Type B, retarding; or Type D or G, water-reducing and retarding admixtures as described in ASTM Designation: C 494 to conserve cementitious material or to facilitate any concrete construction application subject to the following conditions:

A. If a water-reducing admixture or a water-reducing and retarding admixture is used, the cementitious material content specified or ordered may be reduced by a maximum of 5 percent by weight, except that the resultant cementitious material content shall be not less than 505 pounds per cubic yard; and
B. When a reduction in cementitious material content is made, the dosage of admixture used shall be no less than the dosage used in determining approval of the admixture.

The Contractor may use Type S admixtures conforming to the requirements in ASTM Designation: C 494.

Unless otherwise specified, a Type C accelerating chemical admixture conforming to the requirements in ASTM Designation: C 494, may be used in portland cement concrete. Inclusion in the mix design submitted for approval will not be required provided that the admixture is added to counteract changing conditions that contribute to delayed setting of the portland cement concrete, and the use or change in dosage of the admixture is approved in writing by the Engineer.

90-4.06 REQUIRED USE OF AIR-ENTRAINING ADMIXTURES

When air-entrainment is specified or ordered by the Engineer, the air-entraining admixture shall be used in amounts to produce a concrete having the specified air content as determined by California Test 504.

90-4.07 OPTIONAL USE OF AIR-ENTRAINING ADMIXTURES

When air-entrainment has not been specified or ordered by the Engineer, the Contractor will be permitted to use an air-entraining admixture to facilitate the use of any construction procedure or equipment provided that the average air content, as determined by California Test 504, of 3 successive tests does not exceed 4 percent, and no single test value exceeds 5.5 percent. If the Contractor elects to use an air-entraining admixture in concrete for pavement, the Contractor shall so indicate at the time the Contractor designates the source of aggregate.

90-4.08 BLANK

90-4.09 BLANK

90-4.10 PROPORTIONING AND DISPENSING LIQUID ADMIXTURES

Chemical admixtures and air-entraining admixtures shall be dispensed in liquid form. Dispensers for liquid admixtures shall have sufficient capacity to measure at one time the prescribed quantity required for each batch of concrete. Each dispenser shall include a graduated measuring unit into which liquid admixtures are measured to within ±5 percent of the prescribed quantity for each batch. Dispensers shall be located and maintained so that the graduations can be accurately read from the point at which proportioning operations are controlled to permit a visual check of batching accuracy prior to discharge. Each measuring unit shall be clearly marked for the type and quantity of admixture.

Each liquid admixture dispensing system shall be equipped with a sampling device consisting of a valve located in a safe and readily accessible position such that a sample of the admixture may be withdrawn slowly by the Engineer.

If more than one liquid admixture is used in the concrete mix, each liquid admixture shall have a separate measuring unit and shall be dispensed by injecting equipment located in such a manner that the admixtures are not mixed at high concentrations and do not interfere with the effectiveness of each other. When air-entraining admixtures are used in conjunction with other liquid admixtures, the air-entraining admixture shall be the first to be incorporated into the mix, unless it is demonstrated that a different sequence improves performance.

When automatic proportioning devices are used, dispensers for liquid admixtures shall operate automatically with the batching control equipment. The dispensers shall be equipped with an automatic warning system in good operating condition that will provide a visible or audible signal at the point at which proportioning operations are controlled when the quantity of admixture measured for each batch of concrete varies from the preselected dosage by more than 5 percent, or when the entire contents of the measuring unit are not emptied from the dispenser into each batch of concrete.

Unless liquid admixtures are added to premeasured water for the batch, their discharge into the batch shall be arranged to flow into the stream of water so that the admixtures are well dispersed throughout the batch, except that air-entraining admixtures may be dispensed directly into moist sand in the batching bins provided that adequate control of the air content of the concrete can be maintained.

Liquid admixtures requiring dosages greater than one-half gallon per cubic yard shall be considered to be water when determining the total amount of free water as specified in Section 90-6.06, "Amount of Water and Penetration."

90-4.11 BLANK

90-5 PROPORTIONING

90-5.01 STORAGE OF AGGREGATES

Aggregates shall be stored or stockpiled in such a manner that separation of coarse and fine particles of each size shall be avoided and the various sizes shall not become intermixed before proportioning.

Aggregates shall be stored or stockpiled and handled in a manner that prevent contamination by foreign materials. In addition, storage of aggregates at batching or mixing facilities that are erected subsequent to the award of the contract and that furnish concrete to the project shall conform to the following:

A. Intermingling of the different sizes of aggregates shall be positively prevented. The Contractor shall take the necessary measures to prevent intermingling. The preventive

measures may include, but are not necessarily limited to, physical separation of stockpiles or construction of bulkheads of adequate length and height; and

B. Contamination of aggregates by contact with the ground shall be positively prevented. The Contractor shall take the necessary measures to prevent contamination. The preventive measures shall include, but are not necessarily limited to, placing aggregates on wooden platforms or on hardened surfaces consisting of portland cement concrete, asphalt concrete, or cement treated material.

In placing aggregates in storage or in moving the aggregates from storage to the weigh hopper of the batching plant, any method that may cause segregation, degradation, or the combining of materials of different gradings that will result in any size of aggregate at the weigh hopper failing to meet the grading requirements, shall be discontinued. Any method of handling aggregates that results in excessive breakage of particles shall be discontinued. The use of suitable devices to reduce impact of falling aggregates may be required by the Engineer.

90-5.02 PROPORTIONING DEVICES

Weighing, measuring, or metering devices used for proportioning materials shall conform to the requirements in Section 9-1.01, "Measurement of Quantities," and this Section 90-5.02. In addition, automatic weighing systems shall comply with the requirements for automatic proportioning devices in Section 90-5.03A, "Automatic Proportioning." Automatic devices shall be automatic to the extent that the only manual operation required for proportioning the aggregates, cement, and SCM for one batch of concrete is a single operation of a switch or starter.

For concrete pavement, aggregate and bulk cementitious material must be proportioned by weight by means of automatic proportioning devices.

Proportioning devices shall be tested as frequently as the Engineer may deem necessary to ensure their accuracy.

Weighing equipment shall be insulated against vibration or movement of other operating equipment in the plant. When the plant is in operation, the weight of each batch of material shall not vary from the weight designated by the Engineer by more than the tolerances specified herein.

Equipment for cumulative weighing of aggregate shall have a zero tolerance of ±0.5 percent of the designated total batch weight of the aggregate. For systems with individual weigh hoppers for the various sizes of aggregate, the zero tolerance shall be ±0.5 percent of the individual batch weight designated for each size of aggregate. Equipment for cumulative weighing of cement and SCM shall have a zero tolerance of ±0.5 percent of the designated total batch weight of the cement and SCM. Equipment for weighing cement or SCM separately shall have a zero tolerance of ±0.5 percent of their designated individual batch weights. Equipment for measuring water shall have a zero tolerance of ±0.5 percent of its designated weight or volume.

The weight indicated for any batch of material shall not vary from the preselected scale setting by more than the following:

A. Aggregate weighed cumulatively shall be within 1.0 percent of the designated total batch weight of the aggregate. Aggregates weighed individually shall be within 1.5 percent of their respective designated batch weights; and

B. Cement shall be 99 to 102 percent of its designated batch weight. When weighed individually, SCM shall be 99 to 102 percent of its designated batch weight. When SCM and cement are permitted to be weighed cumulatively, cement shall be weighed first to 99 to 102 percent of its designated batch weight, and the total for cement and SCM shall be

99 to 102 percent of the sum of their designated batch weights When a blended cement is used, the percentages of cement and SCM used for calculating batch weights shall be based on the percentage of SCM indicated in the Certificate of Compliance from the blended cement supplier; and

C. Water shall be within 1.5 percent of its designated weight or volume.

Each scale graduation shall be approximately 0.001 of the total capacity of the scale. The capacity of scales for weighing cement, SCM, or cement plus SCM and aggregates shall not exceed that of commercially available scales having single graduations indicating a weight not exceeding the maximum permissible weight variation above, except that no scale shall be required having a capacity of less than 1,000 pounds, with one pound graduations.

90-5.03 PROPORTIONING

Proportioning shall consist of dividing the aggregates into the specified sizes, each stored in a separate bin, and combining them with cementitious material and water as provided in these specifications. Aggregates shall be proportioned by weight.

At the time of batching, aggregates shall have been dried or drained sufficiently to result in a stable moisture content such that no visible separation of water from aggregate will take place during transportation from the proportioning plant to the point of mixing. In no event shall the free moisture content of the fine aggregate at the time of batching exceed 8 percent of its saturated, surface-dry weight.

Should separate supplies of aggregate material of the same size group, but of different moisture content or specific gravity or surface characteristics affecting workability, be available at the proportioning plant, withdrawals shall be made from one supply exclusively and the materials therein completely exhausted before starting upon another.

Bulk Type IP (MS) or Type IS (MS) cement shall be weighed in an individual hopper and shall be kept separate from the aggregates until the ingredients are released for discharge into the mixer.

Bulk cement and SCM may be weighed in separate, individual weigh hoppers or may be weighed in the same weigh hopper and shall be kept separate from the aggregates until the ingredients are released for discharge into the mixer. If the cement and SCM are weighed cumulatively, the cement shall be weighed first.

If cement and SCM are weighed in separate weigh hoppers, the weigh systems for the proportioning of the aggregate, the cement, and the SCM shall be individual and distinct from all other weigh systems. Each weigh system shall be equipped with a hopper, a lever system, and an indicator to constitute an individual and independent material-weighing device. The cement and the SCM shall be discharged into the mixer simultaneously with the aggregate.

The scales and weigh hoppers for bulk weighing cement, SCM, or cement plus SCM shall be separate and distinct from the aggregate weighing equipment.

For batches of one cubic yard or more, the batching equipment shall conform to one of the following combinations:

A. Separate boxes and separate scale and indicator for weighing each size of aggregate.
B. Single box and scale indicator for all aggregates.
C. Single box or separate boxes and automatic weighing mechanism for all aggregates.

In order to check the accuracy of batch weights, the gross weight and tare weight of batch trucks, truck mixers, truck agitators, and non-agitating hauling equipment shall be determined

when ordered by the Engineer. The equipment shall be weighed on scales designated by the Engineer.

90-5.03A Automatic Proportioning

Automatic proportioning devices shall be authorized by the Department.

For concrete pavement, the Contractor shall install and maintain in operating condition an electronically actuated moisture meter that will indicate, on a readily visible scale, changes in the moisture content of the fine aggregate as it is batched within a sensitivity of 0.5 percent by weight of the fine aggregate.

The batching of cement, SCM, or cement plus SCM and aggregate shall be interlocked so that a new batch cannot be started until all weigh hoppers are empty, the proportioning devices are within zero tolerance, and the discharge gates are closed. The interlock shall permit no part of the batch to be discharged until all aggregate hoppers and the cement and SCM hoppers or the cement plus SCM hopper are charged with weights that are within the tolerances specified in Section 90-5.02, "Proportioning Devices."

If interlocks are required for cement and SCM charging mechanisms and cement and SCM are weighed cumulatively, their charging mechanisms shall be interlocked to prevent the introduction of SCM until the weight of cement in the cement weigh hopper is within the tolerances specified in Section 90-5.02, "Proportioning Devices."

If concrete is completely mixed in stationary mixers, the SCMs shall be weighed in a separate weigh hopper and the SCM and cement shall be introduced simultaneously into the mixer proportionately with the aggregate. If the Contractor provides certification that the stationary mixer is capable of mixing the cement, SCM, aggregates, and water uniformly before discharge, weighing the SCM cumulatively with the cement is permitted. Certification shall contain the following:

A. Test results for 2 compressive strength test cylinders of concrete taken within the first one-third and 2 compressive strength test cylinders of concrete taken within the last one-third of the concrete discharged from a single batch from the stationary mixer. Strength tests and cylinder preparation will be in conformance with the provisions of Section 90-9, "Compressive Strength";
B. Calculations demonstrating that the difference in the averages of 2 compressive strengths taken in the first one-third is no greater than 7.5 percent different than the averages of 2 compressive strengths taken in the last one-third of the concrete discharged from a single batch from the stationary mixer. Strength tests and cylinder preparation will be in conformance with the provisions of Section 90-9, "Compressive Strength;" and
C. The mixer rotation speed and time of mixing before discharge that are required to produce a mix that meets the requirements above.

The discharge gate on the cement and SCM hoppers or the cement plus SCM hopper shall be designed to permit regulating the flow of cement, SCM, or cement plus SCM into the aggregate as directed by the Engineer.

If separate weigh boxes are used for each size of aggregate, the discharge gates shall permit regulating the flow of each size of aggregate as directed by the Engineer.

Material discharged from the several bins shall be controlled by gates or by mechanical conveyors. The means of withdrawal from the several bins, and of discharge from the weigh box, shall be interlocked so that not more than one bin can discharge at a time, and so that the weigh box cannot be tripped until the required quantity from each of the several bins has been

deposited therein. Should a separate weigh box be used for each size of aggregate, all may be operated and discharged simultaneously.

If the discharge from the several bins is controlled by gates, each gate shall be actuated automatically so that the required weight is discharged into the weigh box, after which the gate shall automatically close and lock.

The automatic weighing system shall be designed so that all proportions required may be set on the weighing controller at the same time.

90-6 MIXING AND TRANSPORTING

90-6.01 GENERAL

Concrete shall be mixed in mechanically operated mixers, except that when permitted by the Engineer, batches not exceeding 1/3 cubic yard may be mixed by hand methods in conformance with the provisions in Section 90-6.05, "Hand-Mixing."

Equipment having components made of aluminum or magnesium alloys that would have contact with plastic concrete during mixing, transporting, or pumping of portland cement concrete shall not be used.

Concrete shall be homogeneous and thoroughly mixed, and there shall be no lumps or evidence of undispersed cementitious material.

Uniformity of concrete mixtures will be determined by differences in penetration as determined by California Test 533, or slump as determined by ASTM Designation: C 143, and by variations in the proportion of coarse aggregate as determined by California Test 529.

When the mix design specifies a penetration value, the difference in penetration, determined by comparing penetration tests on 2 samples of mixed concrete from the same batch or truck mixer load, shall not exceed 1/2 inch. When the mix design specifies a slump value, the difference in slump, determined by comparing slump tests on 2 samples of mixed concrete from the same batch or truck mixer load, shall not exceed the values given in the table below. Variation in the proportion of coarse aggregate will be determined by comparing the results of tests of 2 samples of mixed concrete from the same batch or truck mixer load and the difference between the 2 results shall not exceed 170 pounds per cubic yard of concrete.

Average Slump	Maximum Permissible Difference
Less than 4"	1"
4" to 6"	1-1/2"
Greater than 6" to 9"	2"

The Contractor shall furnish samples of the freshly mixed concrete and provide satisfactory facilities for obtaining the samples.

90-6.02 MACHINE MIXING

Concrete mixers may be of the revolving drum or the revolving blade type, and the mixing drum or blades shall be operated uniformly at the mixing speed recommended by the manufacturer. Mixers and agitators that have an accumulation of hard concrete or mortar shall not be used.

The temperature of mixed concrete, immediately before placing, shall be not less than 50 °F or more than 90 °F. Aggregates and water shall be heated or cooled as necessary to produce concrete within these temperature limits. Neither aggregates nor mixing water shall be heated to exceed 150 °F. If ice is used to cool the concrete, discharge of the mixer will not be permitted until all ice is melted.

The batch shall be so charged into the mixer that some water will enter in advance of cementitious materials and aggregates. All water shall be in the drum by the end of the first one-fourth of the specified mixing time. When concrete is delivered in a truck mixer, a portion of the mixing water may be withheld and, if allowed by the Engineer, may be added at the point of delivery as specified under Section 90-6.03, "Transporting Mixed Concrete."

Cementitious materials shall be batched and charged into the mixer by means that will not result either in loss of cementitious materials due to the effect of wind, in accumulation of cementitious materials on surfaces of conveyors or hoppers, or in other conditions that reduce or vary the required quantity of cementitious material in the concrete mixture.

Stationary mixers shall be operated with an automatic timing device. The timing device and discharge mechanism shall be interlocked so that during normal operation no part of the batch will be discharged until the specified mixing time has elapsed.

The total elapsed time between the intermingling of damp aggregates and all cementitious materials and the start of mixing shall not exceed 30 minutes.

The size of batch shall not exceed the manufacturer's guaranteed capacity.

When producing concrete for pavement or base, suitable batch counters shall be installed and maintained in good operating condition at job site batching plants and stationary mixers. The batch counters shall indicate the exact number of batches proportioned and mixed.

Concrete shall be mixed and delivered to the job site by means of one of the following combinations of operations:

A. Mixed completely in a stationary mixer and the mixed concrete transported to the point of delivery in truck agitators or in nonagitating hauling equipment (central-mixed concrete).
B. Mixed partially in a stationary mixer, and the mixing completed in a truck mixer (shrink-mixed concrete).
C. Mixed completely in a truck mixer (transit-mixed concrete).

Agitators may be truck mixers operating at agitating speed or truck agitators. Each mixer and agitator shall have attached thereto in a prominent place a metal plate or plates on which is plainly marked the various uses for which the equipment is designed, the manufacturer's guaranteed capacity of the drum or container in terms of the volume of mixed concrete and the speed of rotation of the mixing drum or blades.

Truck mixers shall be equipped with electrically or mechanically actuated revolution counters by which the number of revolutions of the drum or blades may readily be verified.

When shrink-mixed concrete is furnished, concrete that has been partially mixed at a central plant shall be transferred to a truck mixer and all requirements for transit-mixed concrete shall apply. No credit in the number of revolutions at mixing speed will be allowed for partial mixing in a central plant.

90-6.03 TRANSPORTING MIXED CONCRETE

Mixed concrete may be transported to the delivery point in truck agitators or truck mixers operating at the speed designated by the manufacturer of the equipment as agitating speed, or in non-agitating hauling equipment, provided the consistency and workability of the mixed concrete upon discharge at the delivery point is suitable for adequate placement and consolidation in place, and provided the mixed concrete after hauling to the delivery point conforms to the provisions in Section 90-6.01, "General."

Truck agitators shall be loaded not to exceed the manufacturer's guaranteed capacity and shall maintain the mixed concrete in a thoroughly mixed and uniform mass during hauling.

Bodies of nonagitating hauling equipment shall be constructed so that leakage of the concrete mix, or any part thereof, will not occur at any time.

Concrete hauled in open-top vehicles shall be protected during hauling against rain or against exposure to the sun for more than 20 minutes when the ambient temperature exceeds 75 °F.

No water in excess of that in the approved mix design shall be incorporated into the concrete. If approved by the Engineer, water withheld during batching may be added to the concrete at the delivery point in one operation before the discharge of more than 1/4 cubic yard. Equipment for supplying the water shall conform to Section 90-6.06, "Amount of Water and Penetration." When water is added at the point of delivery, the drum shall be revolved not less than 30 revolutions at mixing speed after the water is added and before discharged is commenced.

The rate of discharge of mixed concrete from a truck mixer or agitator shall be controlled by the speed of rotation of the drum in the discharge direction with the discharge gate fully open.

If a truck mixer or agitator is used for transporting concrete to the delivery point, discharge shall be completed within 1.5 hours or before 250 revolutions of the drum or blades, whichever occurs first, after the introduction of the cementitious materials to the aggregates. Under conditions contributing to quick stiffening of the concrete, or if the temperature of the concrete is 85 °F or above, the time allowed may be less than 1.5 hours. If an admixture is used to retard the set time, the temperature of the concrete shall not exceed 85 °F, the time limit shall be 2 hours, and the revolution limitation shall be 300.

If nonagitating hauling equipment is used for transporting concrete to the delivery point, discharge shall be completed within one hour after the addition of the cementitious materials to the aggregates. Under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 85 °F or above, the time between the introduction of cementitious materials to the aggregates and discharge shall not exceed 45 minutes.

Each load of concrete delivered at the job site shall be accompanied by a weighmaster certificate showing the mix identification number, nonrepeating load number, date and time at which the materials were batched, the total amount of water added to the load, and for transit-mixed concrete, the reading of the revolution counter at the time the truck mixer is charged with cement. This weighmaster certificate shall also show the actual scale weights (pounds) for the ingredients batched. Theoretical or target batch weights shall not be used as a substitute for actual scale weights.

Weighmaster certificates shall be provided in printed form, or if approved by the Engineer, the data may be submitted in electronic media. Electronic media shall be presented in a tab-delimited format on a CD or DVD. Captured data, for the ingredients represented by each batch shall be "line feed, carriage return" (LFCR) and "one line, separate record" with allowances for sufficient fields to satisfy the amount of data required by these specifications.

The Contractor may furnish a weighmaster certificate accompanied by a separate certificate that lists the actual batch weights or measurements for a load of concrete provided that both certificates are imprinted with the same nonrepeating load number that is unique to the contract and delivered to the jobsite with the load.

Weighmaster certificates furnished by the Contractor shall conform to the provisions in Section 9-1.01, "Measurement of Quantities."

90-6.04 TIME OR AMOUNT OF MIXING

Mixing of concrete in stationary mixers shall continue for the required mixing time after all ingredients, except water and admixture, if added with the water, are in the mixing compartment of the mixer before any part of the batch is released. Transfer time in multiple drum mixers shall not be counted as part of the required mixing time.

The required mixing time, in stationary mixers, of concrete used for concrete structures, except minor structures, shall be not less than 90 seconds or more than 5 minutes, except that when directed by the Engineer in writing, the requirements of the following paragraph shall apply.

The required mixing time in stationary mixers, except as provided in the preceding paragraph, shall be not less than 50 seconds or more than 5 minutes.

The minimum required revolutions at the mixing speed for transit-mixed concrete shall not be less than that recommended by the mixer manufacturer, but in no case shall the number of revolutions be less than that required to consistently produce concrete conforming to the provisions for uniformity in Section 90-6.01, "General."

When a high range water-reducing admixture is added to the concrete at the job site, the total number of revolutions shall not exceed 300.

90-6.05 HAND-MIXING

Hand-mixed concrete shall be made in batches of not more than 1/3 cubic yard and shall be mixed on a watertight, level platform. The proper amount of coarse aggregate shall be measured in measuring boxes and spread on the platform and the fine aggregate shall be spread on this layer, the 2 layers being not more than one foot in total depth. On this mixture shall be spread the dry cementitious materials and the whole mass turned no fewer than 2 times dry; then sufficient clean water shall be added, evenly distributed, and the whole mass again turned no fewer than 3 times, not including placing in the carriers or forms.

90-6.06 AMOUNT OF WATER AND PENETRATION

The amount of water used in concrete mixes shall be regulated so that the penetration of the concrete as determined by California Test 533 or the slump of the concrete as determined by ASTM Designation: C 143 is within the nominal values shown in the following table. When the penetration or slump of the concrete is found to exceed the nominal values listed, the mixture of subsequent batches shall be adjusted to reduce the penetration or slump to a value within the nominal range shown. Batches of concrete with a penetration or slump exceeding the maximum values listed shall not be used in the work. If Type F or Type G chemical admixtures are added to the mix, the penetration requirements shall not apply and the slump shall not exceed 9 inches after the chemical admixtures are added.

Type of Work	Nominal		Maximum	
	Penetration (inches)	Slump (inches)	Penetration (inches)	Slump (inches)
Concrete Pavement	0 - 1	—	1-1/2	—
Non-reinforced concrete facilities	0 – 1-1/2	—	2	—
Reinforced concrete structures				
Sections over 12 inches thick	0 – 1-1/2	—	2-1/2	—
Sections 12 inches thick or less	0 - 2	—	3	—
Concrete placed under water	—	6 - 8	—	9
Cast-in-place concrete piles	2-1/2 – 3-1/2	5 - 7	4	8

The amount of free water used in concrete shall not exceed 310 pounds per cubic yard, plus 20 pounds for each required 100 pounds of cementitious material in excess of 550 pounds per cubic yard.

The term free water is defined as the total water in the mixture minus the water absorbed by the aggregates in reaching a saturated surface-dry condition.

If there are adverse or difficult conditions that affect the placing of concrete, the above specified penetration and free water content limitations may be exceeded providing the Contractor is granted permission by the Engineer in writing to increase the cementitious material content per cubic yard of concrete. The increase in water and cementitious material shall be at a ratio not to exceed 30 pounds of water per added 100 pounds of cementitious material per cubic yard. Full compensation for additional cementitious material and water added under these conditions shall be considered as included in the contract price paid for the concrete work involved and no additional compensation will be allowed therefor.

The equipment for supplying water to the mixer shall be constructed and arranged so that the amount of water added can be measured accurately. Any method of discharging water into the mixer for a batch shall be accurate within 1.5 percent of the quantity of water required to be added to the mix for any position of the mixer. Tanks used to measure water shall be designed so that water cannot enter while water is being discharged into the mixer and discharge into the mixer shall be made rapidly in one operation without dribbling. All equipment shall be arranged so as to permit checking the amount of water delivered by discharging into measured containers.

90-7 CURING CONCRETE

90-7.01 METHODS OF CURING

Newly placed concrete shall be cured by the methods specified in this Section 90-7.01 and the special provisions.

90-7.01A Water Method

The concrete shall be kept continuously wet by the application of water for a minimum curing period of 7 days after the concrete has been placed.

Cotton mats, rugs, carpets, or earth or sand blankets may be used as a curing medium to retain the moisture during the curing period.

If a curing medium consisting of cotton mats, rugs, carpets, polyethylene sheeting, polyethylene sheeting on burlap, or earth or sand blankets is to be used to retain the moisture, the entire surface of the concrete shall be kept damp by applying water with a nozzle that so atomizes the flow that a mist and not a spray is formed, until the surface of the concrete is covered with the curing medium. The moisture from the nozzle shall not be applied under pressure directly upon the concrete and shall not be allowed to accumulate on the concrete in a quantity sufficient to cause a flow or wash the surface. At the expiration of the curing period, the concrete surfaces shall be cleared of all curing media.

At the option of the Contractor, a curing medium consisting of white opaque polyethylene sheeting extruded onto burlap may be used to cure concrete structures. The polyethylene sheeting shall have a minimum thickness of 4-mil, and shall be extruded onto 10-ounce burlap.

At the option of the Contractor, a curing medium consisting of polyethylene sheeting may be used to cure concrete columns. The polyethylene sheeting shall have a minimum thickness of 10-mil achieved in a single layer of material.

If the Contractor chooses to use polyethylene sheeting or polyethylene sheeting on burlap as a curing medium, these media and any joints therein shall be secured as necessary to provide moisture retention and shall be within 3 inches of the concrete at all points along the surface being cured. When these media are used, the temperature of the concrete shall be monitored during curing. If the temperature of the concrete cannot be maintained below 140° F, use of these curing media shall be disallowed.

When concrete bridge decks and flat slabs are to be cured without the use of a curing medium, the entire surface of the bridge deck or slab shall be kept damp by the application of

water with an atomizing nozzle as specified above, until the concrete has set, after which the entire surface of the concrete shall be sprinkled continuously with water for a period of not less than 7 days.

90-7.01B Curing Compound Method

Surfaces of the concrete that are exposed to the air shall be sprayed uniformly with a curing compound.

Curing compounds to be used shall be as follows:

1. Pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 2, Class B, except the resin type shall be poly-alpha-methylstyrene.
2. Pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 2, Class B.
3. Pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 2, Class A.
4. Nonpigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 1, Class B.
5. Nonpigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 1, Class A.
6. Nonpigmented curing compound with fugitive dye conforming to the requirements in ASTM Designation: C 309, Type 1-D, Class A.

The infrared scan for the dried vehicle from curing compound (1) shall match the infrared scan on file at the Transportation Laboratory.

The loss of water for each type of curing compound, when tested in conformance with the requirements in California Test 534, shall not be more than 0.28 pounds per square yard in 24 hours.

The curing compound to be used will be specified elsewhere in these specifications or in the special provisions.

If the use of curing compound is required or permitted elsewhere in these specifications or in the special provisions and no specific kind is specified, any of the curing compounds listed above may be used.

Curing compound shall be applied at a nominal rate of one gallon per 150 square feet, unless otherwise specified.

At any point, the application rate shall be within ±50 square feet per gallon of the nominal rate specified, and the average application rate shall be within ±25 square feet per gallon of the nominal rate specified when tested in conformance with the requirements in California Test 535. Runs, sags, thin areas, skips, or holidays in the applied curing compound shall be evidence that the application is not satisfactory.

Curing compounds shall be applied using power operated spray equipment. The power operated spraying equipment shall be equipped with an operational pressure gage and a means of controlling the pressure. Hand spraying of small and irregular areas that are not reasonably accessible to mechanical spraying equipment, in the opinion of the Engineer, may be permitted.

The curing compound shall be applied to the concrete following the surface finishing operation, immediately before the moisture sheen disappears from the surface, but before any drying shrinkage or craze cracks begin to appear. In the event of any drying or cracking of the surface, application of water with an atomizing nozzle as specified in Section 90-7.01A, "Water Method," shall be started immediately and shall be continued until application of the compound

is resumed or started; however, the compound shall not be applied over any resulting freestanding water. Should the film of compound be damaged from any cause before the expiration of 7 days after the concrete is placed in the case of structures and 72 hours in the case of pavement, the damaged portion shall be repaired immediately with additional compound.

At the time of use, compounds containing pigments shall be in a thoroughly mixed condition with the pigment uniformly dispersed throughout the vehicle. A paddle shall be used to loosen all settled pigment from the bottom of the container, and a power driven agitator shall be used to disperse the pigment uniformly throughout the vehicle.

Agitation shall not introduce air or other foreign substance into the curing compound.

The manufacturer shall include in the curing compound the necessary additives for control of sagging, pigment settling, leveling, de-emulsification, or other requisite qualities of a satisfactory working material. Pigmented curing compounds shall be manufactured so that the pigment does not settle badly, does not cake or thicken in the container, and does not become granular or curdled. Settlement of pigment shall be a thoroughly wetted, soft, mushy mass permitting the complete and easy vertical penetration of a paddle. Settled pigment shall be easily redispersed, with minimum resistance to the sideways manual motion of the paddle across the bottom of the container, to form a smooth uniform product of the proper consistency.

Curing compounds shall remain sprayable at temperatures above 40 °F and shall not be diluted or altered after manufacture.

The curing compound shall be packaged in clean 274-gallon totes, 55-gallon barrels or 5-gallon pails shall be supplied from a suitable storage tank located at the jobsite. The containers shall comply with "Title 49, Code of Federal Regulations, Hazardous Materials Regulations." The 274-gallon totes and the 55-gallon barrels shall have removable lids and airtight fasteners. The 5-gallon pails shall be round and have standard full open head and bail. Lids with bungholes will not be permitted. Settling or separation of solids in containers, except tanks, must be completely redispersed with low speed mixing prior to use, in conformance with these specifications and the manufacturer's recommendations. Mixing shall be accomplished either manually by use of a paddle or by use of a mixing blade driven by a drill motor, at low speed. Mixing blades shall be the type used for mixing paint. On-site storage tanks shall be kept clean and free of contaminants. Each tank shall have a permanent system designed to completely redisperse settled material without introducing air or other foreign substances.

Steel containers and lids shall be lined with a coating that will prevent destructive action by the compound or chemical agents in the air space above the compound. The coating shall not come off the container or lid as skins. Containers shall be filled in a manner that will prevent skinning. Plastic containers shall not react with the compound.

Each container shall be labeled with the manufacturer's name, kind of curing compound, batch number, volume, date of manufacture, and volatile organic compound (VOC) content. The label shall also warn that the curing compound containing pigment shall be well stirred before use. Precautions concerning the handling and the application of curing compound shall be shown on the label of the curing compound containers in conformance with the Construction Safety Orders and General Industry Safety Orders of the State.

Containers of curing compound shall be labeled to indicate that the contents fully comply with the rules and regulations concerning air pollution control in the State.

When the curing compound is shipped in tanks or tank trucks, a shipping invoice shall accompany each load. The invoice shall contain the same information as that required herein for container labels.

Curing compound will be sampled by the Engineer at the source of supply, at the job site, or at both locations.

Curing compound shall be formulated so as to maintain the specified properties for a minimum of one year. The Engineer may require additional testing before use to determine compliance with these specifications if the compound has not been used within one year or whenever the Engineer has reason to believe the compound is no longer satisfactory.

Tests will be conducted in conformance with the latest ASTM test methods and methods in use by the Transportation Laboratory.

90-7.01C Waterproof Membrane Method

The exposed finished surfaces of concrete shall be sprayed with water, using a nozzle that so atomizes the flow that a mist and not a spray is formed, until the concrete has set, after which the curing membrane, shall be placed. The curing membrane shall remain in place for a period of not less than 72 hours.

Sheeting material for curing concrete shall conform to the requirements in AASHTO Designation: M 171 for white reflective materials.

The sheeting material shall be fabricated into sheets of such width as to provide a complete cover for the entire concrete surface. Joints in the sheets shall be securely cemented together in such a manner as to provide a waterproof joint. The joint seams shall have a minimum lap of 0.33 foot.

The sheets shall be securely weighted down by placing a bank of earth on the edges of the sheets or by other means satisfactory to the Engineer.

Should any portion of the sheets be broken or damaged before the expiration of 72 hours after being placed, the broken or damaged portions shall be immediately repaired with new sheets properly cemented into place.

Sections of membrane that have lost their waterproof qualities or have been damaged to such an extent as to render them unfit for curing the concrete shall not be used.

90-7.01D Forms-In-Place Method

Formed surfaces of concrete may be cured by retaining the forms in place. The forms shall remain in place for a minimum period of 7 days after the concrete has been placed, except that for members over 20 inches in least dimension the forms shall remain in place for a minimum period of 5 days.

Joints in the forms and the joints between the end of forms and concrete shall be kept moisture tight during the curing period. Cracks in the forms and cracks between the forms and the concrete shall be resealed by methods subject to the approval of the Engineer.

90-7.02 BLANK

90-7.03 CURING STRUCTURES

Newly placed concrete for cast-in-place structures, other than highway bridge decks, shall be cured by the water method, the forms-in-place method, or, as permitted herein, by the curing compound method, in conformance with the provisions in Section 90-7.01, "Methods of Curing."

The curing compound method using a pigmented curing compound may be used on concrete surfaces of construction joints, surfaces that are to be buried underground, and surfaces where only ordinary surface finish is to be applied and on which a uniform color is not required and that will not be visible from a public traveled way. If the Contractor elects to use the curing compound method on the bottom slab of box girder spans, the curing compound shall be curing compound (1).

The top surface of highway bridge decks shall be cured by both the curing compound method and the water method. The curing compound shall be curing compound (1).

Concrete surfaces of minor structures, as defined in Section 51-1.02, "Minor Structures," shall be cured by the water method, the forms-in-place method or the curing compound method.

When deemed necessary by the Engineer during periods of hot weather, water shall be applied to concrete surfaces being cured by the curing compound method or by the forms-in-place method, until the Engineer determines that a cooling effect is no longer required. Application of water for this purpose will be paid for as extra work as provided in Section 4-1.03D, "Extra Work."

90-7.04 CURING PRECAST CONCRETE MEMBERS

Precast concrete members shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing." Curing shall be provided for the minimum time specified for each method or until the concrete reaches its design strength, whichever is less. Steam curing may also be used for precast members and shall conform to the following provisions:

A. After placement of the concrete, members shall be held for a minimum 4-hour presteaming period. If the ambient air temperature is below 50 °F, steam shall be applied during the presteaming period to hold the air surrounding the member at a temperature between 50 °F and 90 °F.
B. To prevent moisture loss on exposed surfaces during the presteaming period, members shall be covered as soon as possible after casting or the exposed surfaces shall be kept wet by fog spray or wet blankets.
C. Enclosures for steam curing shall allow free circulation of steam about the member and shall be constructed to contain the live steam with a minimum moisture loss. The use of tarpaulins or similar flexible covers will be permitted, provided they are kept in good repair and secured in such a manner as to prevent the loss of steam and moisture.
D. Steam at the jets shall be at low pressure and in a saturated condition. Steam jets shall not impinge directly on the concrete, test cylinders, or forms. During application of the steam, the temperature rise within the enclosure shall not exceed 40 °F per hour. The curing temperature throughout the enclosure shall not exceed 150 °F and shall be maintained at a constant level for a sufficient time necessary to develop the required transfer strength. Control cylinders shall be covered to prevent moisture loss and shall be placed in a location where temperature is representative of the average temperature of the enclosure.
E. Temperature recording devices that will provide an accurate, continuous, permanent record of the curing temperature shall be provided. A minimum of one temperature recording device per 200 feet of continuous bed length will be required for checking temperature.
F. Members in pretension beds shall be detensioned immediately after the termination of steam curing while the concrete and forms are still warm, or the temperature under the enclosure shall be maintained above 60 °F until the stress is transferred to the concrete.
G. Curing of precast concrete will be considered completed after termination of the steam curing cycle.

90-7.05 CURING PRECAST PRESTRESSED CONCRETE PILES

Newly placed concrete for precast prestressed concrete piles shall be cured in conformance with the provisions in Section 90-7.04, "Curing Precast Concrete Members," except that piles in a corrosive environment shall be cured as follows:

A. Piles shall be either steam cured or water cured. If water curing is used, the piles shall be kept continuously wet by the application of water in conformance with the provisions in Section 90-7.01A, "Water Method."
B. If steam curing is used, the steam curing provisions in Section 90-7.04, "Curing Precast Concrete Members," shall apply except that the piles shall be kept continuously wet for their entire length for a period of not less than 3 days, including the holding and steam curing periods.

90-7.06 CURING SLOPE PROTECTION

Concrete slope protection shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing."

Concreted-rock slope protection shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing," with a blanket of earth kept wet for 72 hours, or by sprinkling with a fine spray of water every 2 hours during the daytime for a period of 3 days.

90-7.07 CURING MISCELLANEOUS CONCRETE WORK

Exposed surfaces of curbs shall be cured by pigmented curing compounds as specified in Section 90-7.01B, "Curing Compound Method."

Concrete sidewalks, gutter depressions, island paving, curb ramps, driveways, and other miscellaneous concrete areas shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing."

Shotcrete shall be cured for at least 72 hours by spraying with water, by a moist earth blanket, or by any of the methods provided in Section 90-7.01, "Methods of Curing."

Mortar and grout shall be cured by keeping the surface damp for 3 days.

After placing, the exposed surfaces of sign structure foundations, including pedestal portions, if constructed, shall be cured for at least 72 hours by spraying with water, by a moist earth blanket, or by any of the methods provided in Section 90-7.01, "Methods of Curing."

90-8 PROTECTING CONCRETE

90-8.01 GENERAL

In addition to the provisions in Section 7-1.16, "Contractor's Responsibility for the Work and Materials," the Contractor shall protect concrete as provided in this Section 90-8. If required by the Engineer, the Contractor shall submit a written outline of the proposed methods for protecting the concrete.

The Contractor shall protect concrete from damage from any cause, which shall include, but not be limited to: rain, heat, cold, wind, Contractor's actions, and actions of others.

Concrete shall not be placed on frozen or ice-coated ground or subgrade nor on ice-coated forms, reinforcing steel, structural steel, conduits, precast members, or construction joints.

Under rainy conditions, placing of concrete shall be stopped before the quantity of surface water is sufficient to damage surface mortar or cause a flow or wash of the concrete surface, unless the Contractor provides adequate protection against damage.

Concrete that has been frozen or damaged by other causes, as determined by the Engineer, shall be removed and replaced by the Contractor at the Contractor's expense.

90-8.02 PROTECTING CONCRETE STRUCTURES

Structure concrete and shotcrete used as structure concrete shall be maintained at a temperature of not less than 45 °F for 72 hours after placing and at not less than 40 °F for an additional 4 days.

90-9 COMPRESSIVE STRENGTH

90-9.01 GENERAL

Concrete compressive strength requirements consist of a minimum strength that shall be attained before various loads or stresses are applied to the concrete and, for concrete designated by compressive strength, a minimum strength at the age of 28 days or at the age otherwise allowed in Section 90-1.01, "Description." The various strengths required are specified in these specifications or the special provisions or are shown on the plans.

The compressive strength of concrete will be determined from test cylinders that have been fabricated from concrete sampled in conformance with the requirements of California Test 539. Test cylinders will be molded and initially field cured in conformance with California Test 540. Test cylinders will be cured and tested after receipt at the testing laboratory in conformance with the requirements of California Test 521. A strength test shall consist of the average strength of 2 cylinders fabricated from material taken from a single load of concrete, except that, if any cylinder should show evidence of improper sampling, molding, or testing, that cylinder shall be discarded and the strength test shall consist of the strength of the remaining cylinder.

When concrete compressive strength is specified as a prerequisite to applying loads or stresses to a concrete structure or member, test cylinders for other than steam cured concrete will be cured in conformance with Method 1 of California Test 540. The compressive strength of concrete determined for these purposes will be evaluated on the basis of individual tests.

When concrete is designated by compressive strength rather than by cementitious material content, the concrete strength to be used as a basis for acceptance of other than steam cured concrete will be determined from cylinders cured in conformance with Method 1 of California Test 540. If the result of a single compressive strength test at the maximum age specified or allowed is below the specified strength but is 95 percent or more of the specified strength, the Contractor shall make corrective changes, subject to approval of the Engineer, in the mix proportions or in the concrete fabrication procedures, before placing additional concrete, and shall pay to the State $10 for each in-place cubic yard of concrete represented by the deficient test. If the result of a single compressive strength test at the maximum age specified or allowed is below 95 percent of the specified strength, but is 85 percent or more of the specified strength, the Contractor shall make the corrective changes specified above, and shall pay to the State $15 for each in-place cubic yard of concrete represented by the deficient test. In addition, such corrective changes shall be made when the compressive strength of concrete tested at 7 days indicates, in the judgment of the Engineer, that the concrete will not attain the required compressive strength at the maximum age specified or allowed. Concrete represented by a single test that indicates a compressive strength of less than 85 percent of the specified 28-day compressive strength will be rejected in conformance with the provisions in Section 6-1.04, "Defective Materials."

If the test result indicates that the compressive strength at the maximum age specified or allowed is below the specified strength, but is 85 percent or more of the specified strength, payments to the State as required above shall be made, unless the Contractor, at the Contractor's

expense, obtains and submits evidence acceptable to the Engineer that the strength of the concrete placed in the work meets or exceeds the specified 28-day compressive strength. If the test result indicates a compressive strength at the maximum age specified or allowed below 85 percent, the concrete represented by that test will be rejected, unless the Contractor, at the Contractor's expense, obtains and submits evidence acceptable to the Engineer that the strength of the concrete placed in the work is at least 85 percent of the specified strength. If the evidence consists of tests made on cores taken from the work, the cores shall be obtained and tested in conformance with the requirements in ASTM Designation: C 42.

No single compressive strength test shall represent more than 320 cubic yards.

If a precast concrete member is steam cured, the compressive strength of the concrete will be determined from test cylinders that have been handled and stored in conformance with Method 3 of California Test 540. The compressive strength of steam cured concrete will be evaluated on the basis of individual tests representing specific portions of production. If the concrete is designated by 28-day compressive strength rather than by cementitious material content, the concrete shall be considered to be acceptable whenever its compressive strength reaches the specified 28-day compressive strength provided that strength is reached in not more than the maximum number of days specified or allowed after the member is cast.

When concrete has a specified 28-day compressive strength greater than 3,600 pounds per square inch or when prequalification is specified, prequalification of materials, mix proportions, mixing equipment, and procedures proposed for use will be required prior to placement of the concrete. Prequalification shall be accomplished by the submission of acceptable certified test data or trial batch reports by the Contractor. Prequalification data shall be based on the use of materials, mix proportions, mixing equipment, procedures, and size of batch proposed for use in the work.

Certified test data, in order to be acceptable, shall indicate that not less than 90 percent of at least 20 consecutive tests exceed the specified strength at the maximum number of days specified or allowed, and none of those tests are less than 95 percent of specified strength. Strength tests included in the data shall be the most recent tests made on concrete of the proposed mix design and all shall have been made within one year of the proposed use of the concrete.

Trial batch test reports, in order to be acceptable, shall indicate that the average compressive strength of 5 consecutive concrete cylinders, taken from a single batch, at not more than 28 days (or the maximum age allowed) after molding shall be at least 600 pounds per square inch greater than the specified 28-day compressive strength, and no individual cylinder shall have a strength less than the specified strength at the maximum age specified or allowed. Data contained in the report shall be from trial batches that were produced within one year of the proposed use of specified strength concrete in the project. Whenever air-entrainment is required, the air content of trial batches shall be equal to or greater than the air content specified for the concrete without reduction due to tolerances.

Tests shall be performed in conformance with either the appropriate California Test methods or the comparable ASTM test methods. Equipment employed in testing shall be in good condition and shall be properly calibrated. If the tests are performed during the life of the contract, the Engineer shall be notified sufficiently in advance of performing the tests in order to witness the test procedures.

The certified test data and trial batch test reports shall include the following information:

A. Date of mixing.
B. Mixing equipment and procedures used.
C. The size of batch in cubic yards and the weight, type, and source of all ingredients used.

D. Penetration or slump (if the concrete will be placed under water or placed in cast-in-place concrete piles) of the concrete.
E. The air content of the concrete if an air-entraining admixture is used.
F. The age at time of testing and strength of all concrete cylinders tested.

Certified test data and trial batch test reports shall be signed by an official of the firm that performed the tests.

When approved by the Engineer, concrete from trial batches may be used in the work at locations where concrete of a lower quality is required and the concrete will be paid for as the type of concrete required at that location.

After materials, mix proportions, mixing equipment, and procedures for concrete have been prequalified for use, additional prequalification by testing of trial batches will be required prior to making changes that, in the judgment of the Engineer, could result in a strength of concrete below that specified.

The Contractor's attention is directed to the time required to test trial batches and the Contractor shall be responsible for production of trial batches at a sufficiently early date so that the progress of the work is not delayed.

When precast concrete members are manufactured at the plant of an established manufacturer of precast concrete members, the mix proportions of the concrete shall be determined by the Contractor, and a trial batch and prequalification of the materials, mix proportions, mixing equipment, and procedures will not be required.

90-10 MINOR CONCRETE

90-10.01 GENERAL

Concrete for minor structures, slope paving, curbs, sidewalks and other concrete work, when designated as minor concrete on the plans, in the specifications, or in the contract item, shall conform to the provisions specified herein.

The Engineer, at the Engineer's discretion, will inspect and test the facilities, materials and methods for producing the concrete to ensure that minor concrete of the quality suitable for use in the work is obtained.

Before using minor concrete or in advance of revising the mix proportions, the Contractor shall submit in writing to the Engineer a copy of the mix design. When required by the following table, the Contractor shall include compressive strength test results verifying the minimum specified compressive strength:

SCM	Test Submittal Required
Fly Ash used alone	When portland cement content<350 lbs/cy
GGBFS used alone	When portland cement content <250 lbs/cy
Natural Pozzolan used alone	When portland cement content <350 lbs/cy
More than 1 SCM	Always

Tests shall be performed by an ACI certified technician.

90-10.02 MATERIALS

Minor concrete shall conform to the following requirements:

90-10.02A Cementitious Material

Cementitious material shall conform to the provisions in Section 90-1.01, "Description," and 90-2, "Materials."

90-10.02B Aggregate

Aggregate shall be clean and free from deleterious coatings, clay balls, roots, and other extraneous materials.

Use of crushed concrete or reclaimed aggregate is acceptable only if the aggregate satisfies all aggregate requirements.

The Contractor shall submit to the Engineer for approval, a grading of the combined aggregate proposed for use in the minor concrete. After acceptance of the grading, aggregate furnished for minor concrete shall conform to that grading, unless a change is authorized in writing by the Engineer.

The Engineer may require the Contractor to furnish periodic test reports of the aggregate grading furnished. The maximum size of aggregate used shall be at the option of the Contractor, but in no case shall the maximum size be larger than 1-1/2-inch or smaller than 3/4 inch.

The Engineer may waive, in writing, the gradation requirements in this Section 90-10.02B, if, in the Engineer's opinion, the furnishing of the gradation is not necessary for the type or amount of concrete work to be constructed.

90-10.02C Water

Water used for washing, mixing, and curing shall be free from oil, salts, and other impurities that would discolor or etch the surface or have an adverse affect on the quality of the concrete.

90-10.02D Admixtures

The use of admixtures shall conform to the provisions in Section 90-4, "Admixtures."

90-10.03 PRODUCTION

Cementitious material, water, aggregate, and admixtures shall be stored, proportioned, mixed, transported, and discharged in conformance with recognized standards of good practice that will result in concrete that is thoroughly and uniformly mixed, that is suitable for the use intended, and that conforms to requirements specified herein. Recognized standards of good practice are outlined in various industry publications such as are issued by American Concrete Institute, AASHTO, or the Department.

The cementitious material content of minor concrete shall conform to the provisions in Section 90-1.01, "Description."

The amount of water used shall result in a consistency of concrete conforming to the provisions in Section 90-6.06, "Amount of Water and Penetration." Additional mixing water shall not be incorporated into the concrete during hauling or after arrival at the delivery point, unless allowed by the Engineer.

Discharge of ready-mixed concrete from the transporting vehicle shall be made while the concrete is still plastic and before stiffening occurs. An elapsed time of 1.5 hours (one hour in non-agitating hauling equipment), or more than 250 revolutions of the drum or blades, after the introduction of the cementitious material to the aggregates, or a temperature of concrete of more than 90 °F will be considered conditions contributing to the quick stiffening of concrete. The Contractor shall take whatever action is necessary to eliminate quick stiffening, except that the addition of water will not be permitted.

The required mixing time in stationary mixers shall be not less than 50 seconds or more than 5 minutes.

The minimum required revolutions at mixing speed for transit-mixed concrete shall be not less than that recommended by the mixer manufacturer, and shall be increased, if necessary, to produce thoroughly and uniformly mixed concrete.

When a high range water-reducing admixture is added to the concrete at the job site, the total number of revolutions shall not exceed 300.

Each load of ready-mixed concrete shall be accompanied by a weighmaster certificate that shall be delivered to the Engineer at the discharge location of the concrete, unless otherwise directed by the Engineer. The weighmaster certificate shall be clearly marked with the date and time of day when the load left the batching plant and, if hauled in truck mixers or agitators, the time the mixing cycle started.

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," shall be furnished to the Engineer, prior to placing minor concrete from a source not previously used on the contract, stating that minor concrete to be furnished meets contract requirements, including minimum cementitious material content specified.

90-10.04 CURING MINOR CONCRETE

Curing minor concrete shall conform to the provisions in Section 90-7, "Curing Concrete."

90-10.05 PROTECTING MINOR CONCRETE

Protecting minor concrete shall conform to the provisions in Section 90-8, "Protecting Concrete," except the concrete shall be maintained at a temperature of not less than 40 °F for 72 hours after placing.

90-10.06 MEASUREMENT AND PAYMENT

Minor concrete will be measured and paid for in conformance with the provisions specified in the various sections of these specifications covering concrete construction when minor concrete is specified in the specifications, shown on the plans, or indicated by contract item in the Engineer's Estimate.

90-11 MEASUREMENT AND PAYMENT

90-11.01 MEASUREMENT

Portland cement concrete will be measured in conformance with the provisions specified in the various sections of these specifications covering construction requiring concrete.

For concrete measured at the mixer, the volume in cubic feet shall be computed as the total weight of the batch in pounds divided by the density of the concrete in pounds per cubic foot. The total weight of the batch shall be calculated as the sum of all materials, including water, entering the batch. The density of the concrete will be determined in conformance with the requirements in California Test 518.

90-11.02 PAYMENT

Portland cement concrete will be paid for in conformance with the provisions specified in the various sections of these specifications covering construction requiring concrete.

Full compensation for furnishing and incorporating admixtures required by these specifications or the special provisions will be considered as included in the contract prices paid for the concrete involved and no additional compensation will be allowed therefor.

Should the Engineer order the Contractor to incorporate any admixtures in the concrete when their use is not required by these specifications or the special provisions, furnishing the

admixtures and adding them to the concrete will be paid for as extra work as provided in Section 4-1.03D, "Extra Work."

Should the Contractor use admixtures in conformance with the provisions in Section 90-4.05, "Optional Use of Chemical Admixtures," or Section 90-4.07, "Optional Use of Air-entraining Admixtures," or should the Contractor request and obtain permission to use other admixtures for the Contractor's benefit, the Contractor shall furnish those admixtures and incorporate them into the concrete at the Contractor's expense and no additional compensation will be allowed therefor.

SECTION 91 PAINT
(Issued 05-1-06)

Replace Section 91-3 with:

91-3 PAINTS FOR TIMBER

91-3.01 WOOD PRIMER, LATEX-BASE

Classification:

This specification covers a ready-mixed priming paint for use on unpainted wood or exterior woodwork. It shall conform with the requirements in the Detailed Performance Standards of the Master Painters Institute (MPI) for exterior wood primers, and be listed on the Exterior Latex Wood Primer MPI List Number 6.

91-3.02 PAINT; LATEX-BASE FOR EXTERIOR WOOD, WHITE AND TINTS

Classification:

This specification covers a ready-mixed paint for use on wood surfaces subject to outside exposures. This paint shall conform to the requirements in the Detailed Performance Standards of the Master Painters Institute (MPI) for Paint, Latex, Exterior, and shall be listed on the following MPI Approved Products List:

A. Exterior Latex, Flat MPI Gloss Level 1, MPI List Number 10.
B. Exterior Latex, Semi-Gloss, MPI Gloss Level 5, MPI List Number 11.
C. Exterior Latex, Gloss, MPI Gloss Level 6, MPI List Number 119.

Unpainted wood shall first be primed with wood primer conforming to the provisions in Section 91-3.01, "Wood Primer, Latex-Base."

Replace Section 91-4 with:

91-4 MISCELLANEOUS PAINTS

91-4.01 THROUGH 91-4.04 (BLANK)

91-4.05 PAINT; ACRYLIC EMULSION, EXTERIOR WHITE AND LIGHT AND MEDIUM TINTS

Classification:

This specification covers an acrylic emulsion paint designed for use on exterior masonry. This paint shall conform to the requirements in the Detailed Performance Standards of the Master Painters Institute (MPI) for Paint, Latex, Exterior, and shall be listed on the following MPI Approved Products Lists:

A. Exterior Latex, Flat MPI Gloss Level 1, MPI List Number 10.
B. Exterior Latex, Semi-Gloss, MPI Gloss Level 5, MPI List Number 11.
C. Exterior Latex, Gloss, MPI Gloss Level 6, MPI List Number 119.

This paint may be tinted by using "universal" or "all purpose" concentrates.

SECTION 92 ASPHALTS
(Issued 01-20-12)

Replace Section 92 with:

SECTION 92 ASPHALTS

92-1.01 DESCRIPTION

Asphalt is refined petroleum or a mixture of refined liquid asphalt and refined solid asphalt that are prepared from crude petroleum. Asphalt is:

1. Free from residues caused by the artificial distillation of coal, coal tar, or paraffin
2. Free from water
3. Homogeneous

92-1.02 MATERIALS

GENERAL

Furnish asphalt under the Department's "Certification Program for Suppliers of Asphalt." The Department maintains the program requirements, procedures, and a list of approved suppliers at:

http://www.dot.ca.gov/hq/esc/Translab/fpm/fpmcoc.htm

Transport, store, use, and dispose of asphalt safely.

Prevent the formation of carbonized particles caused by overheating asphalt during manufacturing or construction.

GRADES

Performance graded (PG) asphalt binder is:

Performance Graded Asphalt Binder

Property	AASHTO Test Method	Specification Grade				
		PG 58-22 [a]	PG 64-10	PG 64-16	PG 64-28	PG 70-10
Original Binder						
Flash Point, Minimum °C	T 48	230	230	230	230	230
Solubility, Minimum % [b]	T 44	99	99	99	99	99
Viscosity at 135°C, [c]	T 316					
Maximum, Pa·s		3.0	3.0	3.0	3.0	3.0
Dynamic Shear,	T 315					
Test Temp. at 10 rad/s, °C		58	64	64	64	70
Minimum G*/sin(delta), kPa		1.00	1.00	1.00	1.00	1.00
Maximum G*/sin(delta), kPa		2.00	2.00	2.00	2.00	2.00
RTFO Test, [e]	T 240					
Mass Loss, Maximum, %		1.00	1.00	1.00	1.00	1.00
RTFO Test Aged Binder						
Dynamic Shear,	T 315					
Test Temp. at 10 rad/s, °C		58	64	64	64	70
Minimum G*/sin(delta), kPa		2.20	2.20	2.20	2.20	2.20
Ductility at 25°C	T 51					
Minimum, cm		75	75	75	75	75
PAV [f] Aging,	R 28					
Temperature, °C		100	100	100	100	110
RTFO Test and PAV Aged Binder						
Dynamic Shear,	T 315					
Test Temp. at 10 rad/s, °C		22 [d]	31 [d]	28 [d]	22 [d]	34 [d]
Maximum G*sin(delta), kPa		5000	5000	5000	5000	5000
Creep Stiffness,	T 313					
Test Temperature, °C		-12	0	-6	-18	0
Maximum S-value, Mpa		300	300	300	300	300
Minimum M-value		0.300	0.300	0.300	0.300	0.300

Notes:

a. Use as asphalt rubber base stock for high mountain and high desert area.

b. The Engineer waives this specification if the supplier is a Quality Supplier as defined by the Department's "Certification Program for Suppliers of Asphalt."

c. The Engineer waives this specification if the supplier certifies the asphalt binder can be adequately pumped and mixed at temperatures meeting applicable safety standards.

d. Test the sample at 3°C higher if it fails at the specified test temperature. G*sin(delta) remains 5000 kPa maximum.

e. "RTFO Test" means the asphaltic residue obtained using the Rolling Thin Film Oven Test, AASHTO Test Method T 240 or ASTM Designation: D 2872. The residue from mass change determination may be used for other tests.

f. "PAV" means Pressurized Aging Vessel.

Performance graded polymer modified asphalt binder (PG Polymer Modified) is:

Performance Graded Polymer Modified Asphalt Binder [a]

Property	AASHTO Test Method	Specification Grade		
		PG 58-34 PM	PG 64-28 PM	PG 76-22 PM
Original Binder				
Flash Point, Minimum °C	T 48	230	230	230
Solubility, Minimum % [b]	T 44[c]	98.5	98.5	98.5
Viscosity at 135°C, [d] Maximum, Pa·s	T 316	3.0	3.0	3.0
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum G*/sin(delta), kPa	T 315	58 1.00	64 1.00	76 1.00
RTFO Test , Mass Loss, Maximum, %	T 240	1.00	1.00	1.00
RTFO Test Aged Binder				
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum G*/sin(delta), kPa	T 315	58 2.20	64 2.20	76 2.20
Dynamic Shear, Test Temp. at 10 rad/s, °C Maximum (delta), %	T 315	Note e 80	Note e 80	Note e 80
Elastic Recovery[f], Test Temp., °C Minimum recovery, %	T 301	25 75	25 75	25 65
PAV[g] Aging, Temperature, °C	R 28	100	100	110
RTFO Test and PAV Aged Binder				
Dynamic Shear, Test Temp. at 10 rad/s, °C Maximum G*sin(delta), kPa	T 315	16 5000	22 5000	31 5000
Creep Stiffness, Test Temperature, °C Maximum S-value, MPa Minimum M-value	T 313	-24 300 0.300	-18 300 0.300	-12 300 0.300

Notes:

a. Do not modify PG Polymer Modified using acid modification.

b. The Engineer waives this specification if the supplier is a Quality Supplier as defined by the Department's "Certification Program for Suppliers of Asphalt."

c. The Department allows ASTM D 5546 instead of AASHTO T 44

d. The Engineer waives this specification if the supplier certifies the asphalt binder can be adequately pumped and mixed at temperatures meeting applicable safety standards.

e. Test temperature is the temperature at which G*/sin(delta) is 2.2 kPa. A graph of log G*/sin(delta) plotted against temperature may be used to determine the test temperature when G*/sin(delta) is 2.2 kPa. A graph of (delta) versus temperature may be used to determine delta at the temperature when G*/sin(delta) is 2.2 kPa. The Engineer also accepts direct measurement of (delta) at the temperature when G*/sin(delta) is 2.2 kPa.

f. Tests without a force ductility clamp may be performed.

g. "PAV" means Pressurized Aging Vessel.

SAMPLING

Provide a sampling device in the asphalt feed line connecting the plant storage tanks to the asphalt weighing system or spray bar. Make the sampling device accessible between 24 and 30 inches above the platform. Provide a receptacle for flushing the sampling device.

Include with the sampling device a valve:

1. Between 1/2 and 3/4 inch in diameter
2. Manufactured in a manner that a one-quart sample may be taken slowly at any time during plant operations
3. Maintained in good condition

Replace failed valves.

In the Engineer's presence, take 2 one-quart samples per operating day. Provide round, friction top, one-quart containers for storing samples.

92-1.03 EXECUTION

If asphalt is applied, you must comply with the heating and application specifications for liquid asphalt in Section 93, "Liquid Asphalts."

92-1.04 MEASUREMENT

If the contract work item for asphalt is paid by weight, the Department measures asphalt tons by complying with the specifications for weight determination of liquid asphalt in Section 93, "Liquid Asphalts."

The Engineer determines the asphalt weight from volumetric measurements if you:

1. Use a partial asphalt load
2. Use asphalt at a location other than a mixing plant and no scales within 20 miles are available and suitable
3. Deliver asphalt in either of the following:

    3.1. A calibrated truck with each tank accompanied by its measuring stick and calibration card

    3.2. A truck equipped with a calibrated thermometer that determines the asphalt temperature at the delivery time and with a vehicle tank meter complying with the specifications for weighing, measuring, and metering devices in Section 9-1.01, "Measurement of Quantities"

If you furnish hot mix asphalt from a mixing plant producing material for only one project, the Engineer determines the asphalt quantity by measuring the volume in the tank at the project's start and end provided the tank is calibrated and equipped with its measuring stick and calibration card.

The Engineer determines pay quantities from volumetric measurements as follows:

1. Before converting the volume to weight, the Engineer reduces the measured volume to that which the asphalt would occupy at 60 °F.
2. The Engineer uses 235 gallons per ton and 8.51 pounds per gallon for the average weight and volume for PG and PG Polymer Modified asphalt grades at 60 °F.
3. The Engineer uses the Conversion Table in Section 93, "Liquid Asphalts."

SECTION 93 LIQUID ASPHALTS
(Issued 11-03-06)

In Section 93-1.04 replace the 9th paragraph with:

The following Legend and Conversion Table is to be used for converting volumes of liquid asphalt products, Grades 70 to 3000, inclusive, and paving asphalt Grades PG 58-22, PG 64-10, PG 64-16, PG 64-28, and PG 70-10, and Grades PG 58-34 PM, PG 64-28 PM, and PG 76-22 PM.

SECTION 12. ENVIRONMENTAL PERMIT SUMMARY FORM

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SAN LUIS OBISPO COUNTY
DEPARTMENT OF PUBLIC WORKS
Wade Horton, Director

County Government Center, Room 206 • San Luis Obispo CA 93408 • (805) 781-5252
Fax (805) 781-1229 email address: pwd@co.slo.ca.us

ENVIRONMENTAL PERMIT SUMMARY FORM

Date: March 19, 2015

To: Jeff Lee, P.E., Project Manager

From: Eric Wier, Environmental Resource Specialist EMW

Subject: **Environmental Review & Permit Status for the** CSA 23 – Atascadero MWC – Garden Farms CWD Emergency Intertie Project; 300536

Project description: The San Luis Obispo County Flood Control and Water Conservation District (District) will install emergency water system connections from CSA 23 to Garden Farms Community Water District and from CSA 23 to Atascadero Mutual Water Company.

The environmental review and regulatory permit processes for the above referenced project are complete. The following is a summary of the environmental requirements for the project:

Permit	Status	Attachments?
CEQA Review	Addendum to Final EIR for Nacimiento Water Project	X
NEPA Review	Environmental Certification by USDA (2/9/15)	X
Coastal Permit	Not applicable, not in coastal zone	
CZMA	Not applicable, not in coastal zone	
CDFW 1601	Not applicable, no effects within CDFW jurisdiction	
USACOE 404	Not applicable, no fill in Waters of the U.S.	
NMFS ESA	Not applicable, no listed species effects	
USFWS ESA	Not applicable, no listed species effects	
RWQCB 401	Not applicable, no 404 permit required	
NPDES	Required if more than 1 acre disturbance	

Measure #	**Special Environmental Conditions**	**Responsibility: Contractor, District or Both**
1	Please notify the Environmental Programs Division if the project description changes.	District

2	"No fueling" zones shall be designated wherein fueling of vehicles or equipment is prohibited within 25-feet of all drainages. All equipment used in or near drainages shall be clean and free of leaks and/or grease. Emergency provisions should be in place at all drainage crossings prior to onset of construction to deal with unintentional spills.	Contactor
3	Prepare an Erosion Control Plan in conjunction with the Storm Water Pollution Prevention Plan (if required) to devise specific soil erosion control measures. The plan would include but not be limited to the following measures: • Construction activities through areas of concern (i.e., rivers, streams, large drainages) shall be scheduled during the dry season (April 15 to October 15) to reduce erosion. • Revegetation of areas disturbed or cleared during construction shall occur after construction is completed and before the rainy season.	Contactor
4	Prepare in advance and have construction crews ready to implement an emergency construction site securing procedure, which shall include personnel and equipment evacuation, trench closure, and materials removal procedures.	Contactor
5	Heavy equipment and construction activities will be restricted to the defined construction ROW. Equipment access and construction through drainages should be conducted from the banks rather than within the drainage.	Contactor
6	Do not store construction materials or spoils within the channel or overbanks.	Contactor
7	Obtain weather updates on a daily basis, or more frequently if inclement conditions are threatening.	Contactor
8	Erosion and sedimentation impacts will be mitigated by employing standard erosion control procedures such as use of silt fencing, sandbagging, wattles, water bars, diversion ditches, and stream bank stabilization procedures. In addition, drainages will be spanned to the maximum degree feasible, subject to engineering or other concerns, in an attempt to avoid direct and indirect impacts.	Contactor
9	Store excavated soil and stockpiles of imported fill outside of the channel and setback at least 20 feet from the active channel banks. Protect stockpiles of loose material with secured tarps and provide silt fencing or straw bales down gradient of the stockpiles.	Contactor
10	Develop and implement a plan providing the emergency response and repair procedures for an accidental rupture. The plan will include remedial erosion control measures for areas downstream of the rupture.	Contactor
11	Implement a regular inspection and maintenance program to detect possible problems with pipeline integrity.	Contactor
12	Areas disturbed during construction should be revegetated, as soon as is practical, prior to the beginning of the rainy season.	Contactor
13	Implement a regular inspection and maintenance program to detect and repair damaged discharge piping, and to monitor bank erosion. Annual repairs or repairs following high stream flows should be anticipated as long as the system is in place.	District
14	Discharge system will be designed so that concentrated flows do not discharge onto an unprotected stream bank.	District
15	In coordination with the SLOAPCD, implement the following APCD standard dust reduction measures during construction. All PM10 mitigation measures required are as shown below: • Reduce the amount of the disturbed area where possible; • Use water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. Increased watering	Contactor

	frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible; • All dirt stockpile areas should be sprayed daily as needed; • Permanent dust control measures should be implemented as soon as possible following completion of any soil disturbing activities; • Exposed ground areas that are planned to be reworked at dates greater than one month after initial grading should be sown with a fast germinating, non-invasive grass seed and watered until vegetation is established; • All disturbed soil areas not subject to revegetation should be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the APCD; • Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site; • All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114; • Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site; • Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible; and • Designate a person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize dust complaints, reduce visible emissions below 20% opacity, and to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the APCD Compliance Division prior to the start of any grading, earthwork or demolition.	
16	Implement the following standard NOx and ROG reduction measures to the maximum extent feasible: • Maintain all construction equipment in proper tune according to manufacturer's specifications; • Fuel all off-road and portable diesel powered equipment with ARB certified motor vehicle diesel fuel (non-taxed version suitable for use off-road); • Use diesel construction equipment meeting ARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines, and comply with the State off-Road Regulation; • Use on-road heavy-duty trucks that meet the ARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation; • Construction or trucking companies with fleets that that do not have engines in their fleet that meet the engine standards identified in the above two measures (e.g. captive or NOx exempt area fleets) may be eligible by proving alternative compliance; • All on and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated queuing	Contactor

	areas and or job sites to remind drivers and operators of the 5 minute idling limit; • Diesel idling within 1,000 feet of sensitive receptors is not permitted; • Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors; • Electrify equipment when feasible; • Substitute gasoline-powered in place of diesel-powered equipment, where feasible; and, • Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel.	
17	In addition to the requirements specified in Sections 10-1.01, "Order of Work" and the Special Provisions, construction activities will be limited to 7:00 a.m. and 7:00 p.m. on weekdays and between 8:00 a.m. and 5:00 p.m. on Saturdays except when local governments want pipeline construction through nonresidential commercial areas to occur at night to avoid disrupting daytime commerce and traffic. Construction equipment maintenance shall be limited to the same hours. Non-noise generating construction activities are not subject to these restrictions. Signs stating these restrictions will be posted onsite. Signs will be in place throughout grading and construction activities. Directional drilling will be exempt from this mitigation measure only if a drilling event is predicted to take more than 12 hours and is begun promptly at the beginning of the work day.	Contactor
18	Provide two-week advance notice to sensitive receptors within 300 feet of the construction zone by mail and newspaper. The announcements will state where and when construction will be scheduled, and will provide tips on reducing noise intrusion, e.g. closing windows facing the construction area.	Contactor
19	Maintain proper mufflers on all internal combustion and vehicle engines to reduce noise to the maximum extent feasible.	Contactor
20	In the event of an accidental release of a hazardous material (including fuel spills) during construction, determine whether the release is reportable pursuant to any local, State, or Federal law, and if so, notify the regulatory agency to which the report should be submitted. Adhere to the procedures listed below in the event of an accidental release of a hazardous material. • implement and coordinate with local jurisdiction on procedures for immediate evacuation of persons from the vicinity of the spill; • promptly notify appropriate personnel and responsible agencies of the incident, such as the local fire department. Releases may not be of a "hazardous waste" and accordingly may not have to be managed as such. However, substances not classified as hazardous wastes may still be subject to restrictive handling requirements and would be managed in accordance with such requirements.	Contactor
21	The HazMat Contingency Plan will state that the Contractor will conduct routine inspection and maintenance of construction vehicles and equipment.	Contactor
22	A Biology Education Program for Contractors will be implemented to ensure that all construction personnel are fully informed of the biological sensitivities associated with this project. The program will be conducted by a qualified biologist, hired and retained by the County, and will be a requirement for all construction personnel. This program will focus on:	District

	• the purpose for resource protection; • identification of sensitive resources areas in the field (e.g., areas delineated on plans and by flags or fencing); • sensitive construction practices; • protocol to resolve conflicts that may arise during the construction process; and • ramifications of noncompliance.	
23	"Sensitive resource zones" are shown on the construction plans and encompass the construction zone: a) detailed in the "AMWC Waterline Extension-Enlargement View on Sheet 15 of the plans, b) between Stations 52+00 and 56+00, and c) between Stations 135+50 through the southern limits of the construction zone. Sensitive resource zones are defined as areas where construction would be limited to a 15- to 30-foot corridor, depending on the particular construction requirements, to avoid impacts to special status biological resources. The project biologist will demark the limits of sensitive populations on the project plans, including as feasible, an adequate buffer area to avoid direct and indirect impacts. During construction, the contractor shall erect temporary fencing under supervision of the project biologist to provide protection within the sensitive resource zones.	District
24	Staging areas will be located in disturbed habitat, to the maximum degree feasible. Staging areas are prohibited within sensitive habitat areas. All staging areas will be in accordance with Section 10-1.07, "Contractor's Staging and Storage Areas" of the Specifications and reviewed by the project biologist.	Contactor
25	Construction through sensitive areas will be scheduled to minimize potential impacts to biological resources. A specific schedule will be developed by the project biologist and changed if necessary. The guidelines for this schedule shall be as follows: • to protect breeding sensitive bird species in wetland areas or drainages schedule construction only from mid-September through October, provided that no significant rainfall occurs within this time-frame. However, if breeding bird surveys are conducted from March 15 through June 15, and no breeding birds are detected, then this window could be widened to include July and August. • to protect Tiger salamander habitat (i.e., grasslands) avoid construction in March and April. • to protect Steelhead trout habitat avoid construction in the habitat from November through May. • to protect California red legged frog habitat (wetlands) avoid construction in wetlands from December to August.	District
26	Impacts to avian species will be avoided by not allowing construction during the breeding season in habitats special status birds are known to be breeding. Preconstruction surveys will be conducted to assess the presence or absence of special status bird species in their breeding habitats, and areas that are in use will be flagged and avoided until the end of the breeding season.	District
27	Construction activities within and/or immediately adjacent to all creek crossings, wetlands, special status plant species populations, or suitable habitats of special status wildlife of the pipeline will be limited to a 15- to 30-foot corridor.	Contactor
28	All equipment used in or near drainages will be clean and free of leaks and/or grease. Emergency provisions will be in place at all drainage crossings prior to the onset of construction to deal with accidental spills.	Contactor

29	Preconstruction surveys will be conducted in riparian areas for presence of sensitive bird species no earlier than March 15 and at least three visits shall occur between this date and June 15. If no sensitive breeding birds are detected by June 15, it can be assumed that they will not nest in that location for that year and construction can proceed. If sensitive breeding birds are detected, construction activities shall be limited to those which will not produce significant noise impacts during the breeding season of the particular bird species (e.g., March 15 to September 15). Exact breeding time interval will be determined by the qualified biologist.	Both
30	Prior to Notice to Proceed, the construction foreman, project manager(s), and all construction workers associated with the proposed project that would be involved in site disturbance will participate in a cultural resources training/workshop to be conducted by the approved cultural resources monitor. The training shall highlight on the significance of cultural resources and the legal consequences of looting, disturbing, destroying these resources or violating approved mitigation measures. A declaration confirming the training's occurrence shall be prepared by the monitor and signed by all persons in attendance. This signed declaration shall be submitted to the appropriate jurisdiction.	Both
31	During any soil disturbance activities (e.g., trenching, boring, excavation) between Station 87+00 and Station 137+09, cultural resource monitoring will be conducted by a County provided qualified professional archaeologist (or their monitor) and Native American monitor familiar with the resource types potentially present in these locations. The qualified archaeologist and Native American will conduct monitoring activities based on the cultural resources monitoring plan.	District
32	In the event unknown archaeological resources are discovered, the following standards will apply: • Construction activities shall cease, and the project archaeologist shall be notified so that the extent and location of discovered materials may be recorded by a qualified professional archaeologist and disposition of artifacts may be accomplished in accordance with state and federal law. The project archaeological monitor (professional archaeologist or their representative) shall be responsible to notify the local jurisdiction. • In the event archaeological resources are found to include human remains, or in any other case when human remains are discovered during construction, the County or City Coroner shall be notified in addition to the appropriate jurisdictions so proper disposition may be accomplished.	Both
33	In the event of discovered looting or disturbance of resources, all responsible parties shall be reported to the appropriate jurisdiction and local authorities for legal action pursuant to the approved cultural resources monitoring plan.	Both
34	Contractor shall prepare a Wildland Fire Prevention Plan (WFPP) and obtain approval from CalFire prior to the start of construction. This plan will help to reduce the threat of wildland fires and provide a fire safe environment to communities in the area of the proposed pipeline construction.	Contactor
35	Ensure all driveways blocked by construction are provided with suitable means of vehicular access and egress.	Contactor
36	All affected parties in the vicinity of construction activities will be notified a minimum of 30 days in advance of potential obstructions and	Contactor

	alternative access provisions prior to the commencement of project activities.	
37	Coordinate in advance with emergency service providers to avoid restricting movements of emergency vehicles. The County Sheriff Department, fire departments, ambulance services, and paramedic services will be notified in advance by the Contractor of the proposed locations, nature, timing, and duration of any construction activities and consulted regarding potential access restrictions that could impact their effectiveness.	Contactor
38	At locations where access to nearby property is blocked, provision will be ready at all times to accommodate emergency vehicles, such as plating over trenches, short detours, and alternate routes.	Contactor
39	Designate alternative routes, accessible to disabled persons, when construction activities obstruct pedestrian routes.	Contactor
40	At locations where trenching activities cross sidewalks or other established pedestrian routes, plating will be provided to maintain access to these routes.	Contactor
41	Properly restore all roads disturbed by construction activities to ensure the long term protection of road surfaces and safety of roadway users.	Contactor
42	The full width of the traveled way will be available to traffic, including bicyclists, before 8:30 a.m. and after 3:00 p.m., Monday through Friday, and at all times on weekends, and holidays. • A maximum delay of 20 minutes shall be permitted, requiring that a minimum of one lane of traffic is available. • If the contractor is unable to restore or place temporary surface, then the trench will be covered with steel plates capable of carrying the weight of traffic; and adequate signage, reflectors or other warning devices shall be used to warn motorists of the plated roadway.	Contactor
43	Implement equipment wash stations (or other effective equipment cleaning devices) and insure that equipment is cleaned prior to leaving the project site to avoid spreading noxious weeds into other areas.	Contractor
44	Any soil, road base, or hay (for erosion control) brought into the area should be obtained from either local sources or certified as weed free.	Contractor
45	To the maximum extent feasible, excavated materials shall be replaced in the same location they were removed from, and shall not be transported offsite.	Contactor
46	Prior to initiating construction, provide signage along the length of affected roads advising bicyclists of the temporary construction and the estimated period of construction along these routes. The signage should also alert bicyclists and vehicular traffic of the need to exercise caution.	Contactor
47	During construction of segments at the edge of or off pavement, construction crews will keep all pot hole and bore equipment and trenching equipment off of the paved roadway to the maximum extent feasible to allow bicyclists to continue to use the road. (Note: Exceptions to this measure shall include situations where sensitive habitat is located adjacent to roadways and where safety issues exist.)	Contactor
48	During construction when equipment is located in the roadway, provide one flag person to separately guide bicyclists and motor vehicles past the construction zone.	Contactor

Per Environmental Permit Summary Form Item 31: Solid black line represents where cultural resources monitoring will occur during construction (Station 87+00 to Station 137+09)

County File Number: ED00-603 (201R020117) SCH Number: 2001061022

COUNTY PUBLIC WORKS:
ADDENDUM TO FINAL EIR
FOR THE NACIMEINTO WATER PROJECT
COUNTY OF SAN LUIS OBISPO
CSA 23 – ATASCADERO MUTUAL WATER COMPANY – GARDEN FARMS CWD EMERGENCY INTERTIE PROJECT

Abstract

A proposal by the San Luis Obispo County Flood Control & Water Conservation District to construct emergency water system connections from CSA 23 to Garden Farms Community Water District and from CSA 23 to Atascadero Mutual Water Company. The proposed project is in the North County Planning Area, Salinas River Sub Area, and within the Residential Suburban land use category.

The Final Project EIR was completed in 2003 and certified by the Board of Supervisors in 2004. This Addendum evaluates the potential for additional minor modifications to result in significant impacts not already addressed in the 2003 EIR, and concludes that no new significant impacts will occur as a result.

The following persons may be contacted for additional information concerning this document:

Eric Wier, Environmental Programs Div.
County Public Works Department
County Government Center, Room 207
San Luis Obispo, CA 93408
(805) 781-5252

Jeff Lee, P.E., Project Manager
County Public Works Department
County Government Center, Room 207
San Luis Obispo, CA 93408
(805) 781-5252

This proposed EIR Addendum has been issued by:

6-12-2014
Date

Ellen Carroll, Environmental Coordinator
County of San Luis Obispo

The project proponent, who agrees to implement the mitigation measures for the project, is:

6/12/14
Date

For PKO
Paavo Ogren, Director of Public Works
County of San Luis Obispo

Addendum to the Final EIR
for the Nacimiento Water Project
County of San Luis Obispo
CSA23 - Atascadero MWC - Garden Farms CWD Emergency Intertie Project
ED 00-603 (201R020117)

Summary

The County of San Luis Obispo has applied for Proposition 84 grant funding for the CSA 23 – Atascadero MWC – Garden Farms CWD Emergency Intertie Project (Project). The Project location, project description and environmental impacts are discussed in this EIR Addendum. This EIR Addendum addresses connections between the Atascadero Municipal Water Company water system, the Garden Farms Community Water District and the community of Santa Margarita's water system.

Project Location

San Luis Obispo County Service Area No. 23 (CSA 23), formerly known as San Luis Obispo County Water Works District No. 6, is the water purveyor for the community of Santa Margarita in the County of San Luis Obispo. The CSA 23 water distribution system generally consists of two active groundwater wells and pumps, two inactive wells, two storage tanks and 6.5 miles of 6-inch and 8-inch pipeline. Santa Margarita is located near the intersection of Highway 58 and Highway 101, roughly 10 miles north of the City of San Luis Obispo and 20 miles south of the City of Paso Robles.

The Project consists of emergency water system connections from CSA 23 to Garden Farms Community Water District and from CSA 23 to Atascadero Mutual Water Company (Attachment 1). The connection to Atascadero Mutual Water Company will be located at the intersection of Santa Margarita Road and El Camino Real in Atascadero, within County road right-of-way. The connection to Garden Farms Community Water District will be located at the intersection of Linden Avenue and El Camino Real in Atascadero, within County road right-of-way.

Purpose and Need

The communities of Santa Margarita and Garden Farms depend on groundwater as their only source of drinking water. The groundwater supply is sufficient to provide for the existing water needs of the CSA 23 service area, but has been historically affected by drought and is vulnerable in many ways. Without the addition of an alternate, backup water supply, CSA 23's ability to safely and reliably provide and deliver drinking water in the event of emergencies is at risk. Specifically, CSA 23's groundwater supply, when used as a sole water source, is considered potentially unreliable for the following reasons:

1. <u>Lack of Supply Redundancy.</u> CSA 23 completely relies on their two operational groundwater wells, Well #3 and Well #4, to supply drinking water to the community of Santa Margarita. Well #3 is a deep well (780 ft) located in the low yield Santa Margarita formation near the east end of town and is capable of providing 90 acre-feet per year (AFY) at a pumping rate of 144,000 gallons per day (gpd). Well #4 is a shallow well (50 ft) located in the high yield alluvium of Santa Margarita Creek near the west end of town and is capable of providing 120 AFY at a pumping rate of 520,000 gpd. With only these

two wells in service, CSA 23 has little to no operational or emergency flexibility and must:

- Keep both wells in service throughout most of the year in order to supply the community's average water consumption of 175 AFY.
- Keep Well #4 in service during all seasons since it is the only well capable of producing CSA 23's historical maximum day demand (330,000 gpd) on its own. This lack of redundancy puts CSA 23 in violation of California Code of Regulations, Title 22, Section 64554, which requires community water systems to be capable of meeting the maximum day demand with the highest capacity source off line.

2. Vulnerability to Drought Conditions. CSA 23's groundwater is highly impacted by drought and seasonal fluctuations. Well #4, the highest producing well, is especially impacted since it is only 50 feet deep and highly influenced by surface water in Santa Margarita Creek. During the 1987-1992 drought, water levels in CSA 23's wells fell so low that a water emergency was declared and a water conservation ordinance adopted that prohibited all outdoor water usage. Similar conditions are anticipated if the existing drought continues with the community water emergency level currently at ALERT with the next stage being CRITICAL.

   In the late 80's, the system relied solely on two wells that were located in the high yield alluvium of Santa Margarita Creek where Well #4 is now located. Like Well #4, these wells were high producing, but only in non-drought conditions. As a result of this emergency, Well #3 was drilled to provide a deeper groundwater source in a different formation. It was hoped that Well #3 would not be as influenced by drought conditions, but use of the well has shown that it has a much lower production.

3. Vulnerability to Intentional and Unintentional Well Damage. Like all public facilities, CSA 23's two wells are vulnerable to intentional damage or shutdown caused by vandalism or terrorist acts. The wells are also inherently vulnerable to unanticipated, unintentional damage causing well shutdowns, including pump or motor failure, well casing collapse and extended loss of power. In the event that such intentional or unintentional damage causes one or both of the wells to shut down for an extended period of time, CSA 23 would likely not be able to provide an adequate drinking water supply to its customers. This is especially true of damages to Well #4, the highest producing of the two wells.

4. Vulnerability to Intentional and Unintentional Contamination. Although the Well #3 and Well #4 are located within secured facilities, they are vulnerable to intentional contamination by terrorist acts and unintentional contamination by other sources. The CSA 23 Watershed Sanitary Survey Report (2010) identifies the following significant potential sources of contamination within the watershed which could cause a water supply emergency:
   - The entire Santa Margarita community captures its wastewater with septic tank/leach field systems, which are potential sources for viral, microbial and nitrate contamination of groundwater.
   - Trains transporting large volumes of contaminants routinely run through town within 100 yards of Well #4, CSA 23's highest producing and shallowest well (50

feet). A train wreck or spill would undoubtedly impact the shallow groundwater accessed by Well #4.

- The watershed that replenishes the groundwater for both CSA 23 wells is in a very high fire hazard area. After large fires occur, storm water flows transport large loads of suspended solids and organic materials into surface waters, which may lead to contamination of the groundwater.

If either of CSA 23's wells becomes contaminated, intentionally or unintentionally, CSA 23 would not be able to provide adequate drinking water supply to its customers.

Since CSA 23's well production has historically decreased during droughts and other seasonal fluctuations, the system may not always be able to provide its customers with an adequate, dependable water supply. This makes the system more vulnerable to the impacts of intentional and unintentional contamination and damage occurring in times of drought.

Project Description

The Project generally consists of constructing water system improvements that will provide direct and indirect interconnection of CSA 23's water system with the following water systems:

- Atascadero Mutual Water Company (Atascadero MWC)
- Garden Farms Community Water District (Garden Farms CWD)

The water system intertie connections provided by the proposed Project will give CSA 23 physical access to multiple water supply sources that can be used to supplement or supply drinking water to the Santa Margarita community in the event of an emergency. Access to these water sources would provide system redundancy, satisfy Title 22 regulations and would enable CSA 23 to provide a safe and reliable water supply during water emergencies.

The proposed emergency interties may require water use agreements, water exchanges and/or acquisition of temporary water rights in order to provide water to CSA 23 through the interties during an emergency. Details relating to the quantity of water and agreements with the water providers are not discussed or included in the proposed Project. The Project to be funded by the grant is for the physical connections only. Details related to obtaining the water would be developed concurrently should funding be granted.

<u>Atascadero MWC & Garden Farms CWD Emergency Intertie</u>

Atascadero MWC is composed of a widespread water system that delivers water to approximately 8,700 service connections in the Atascadero area. Its water supply sources include Salinas River underflow, Paso Robles Groundwater Basin and Nacimiento Water Project water. The southern extents of Atascadero MWC's service area are located approximately 2.5 miles north of Santa Margarita and the CSA 23 service area.

Garden Farms CWD is a small water company that supplies drinking water to the small community of Garden Farms. The Garden Farms CWD service area is located approximately 2 miles north of Santa Margarita. Its water supply is composed of groundwater from the shallow, high yield alluvium near Santa Margarita Creek and the Paso Robles Groundwater Basin.

The most direct method of connection between the CSA 23, Atascadero MWC and Garden Farms CWD water systems is installation of a new pipeline within El Camino Real road right-of-way. El Camino Real runs through the CSA 23 service area along the border of the Garden Farms CWD service area and into the Atascadero MWC service area. All three water systems have existing 8-inch waterline within the El Camino Real road right-of-way and there is sufficient space to install a new pipeline. Attachment 2 illustrates the conceptual design of these connections. Construction of the Atascadero MWC & Garden Farms CWD Emergency Intertie will generally consist of the following:

- Installation of approximately 13,105 feet of new 8-inch PVC pipe within the El Camino Real right-of-way, including hanging of the new pipe on the existing Nacimiento pipe bridge that crosses Santa Margarita Creek.
- Construction of a connection to CSA 23's existing 8-inch pipe, including one 8-inch gate valve for isolation.
- Construction of a connection to Garden Farms CWD's existing 8-inch pipe, including a concrete vault with a flow meter and two 8-inch gate valves for isolation.
- Construction of a connection to Atascadero MWC's existing 8-inch pipe, including a concrete vault with a pressure reducing valve, flow meter and two 8-inch gate valves for isolation and flow control.
- Installation of seven air/vacuum release valves at high points in the new 8-inch pipeline.
- Installation of seven blow-off valves at low points in the new 8-inch pipeline.

Construction of the Atascadero MWC and Garden Farms Emergency Intertie will provide CSA 23 access to treated water from Atascadero MWC and Garden Farms CWD in the event of a CSA 23 water supply emergency. Atascadero MWC has access to reliable water supply sources that CSA 23 cannot currently access, including Salinas River underflow, Paso Robles Groundwater Basin and Nacimiento Water Project. Garden Farms CWD also has access to the southern tip of the Paso Robles Groundwater Basin, which is not as impacted by drought as CSA 23's groundwater source. Connections to the Atascadero MWC and Garden Farms CWD systems, will ensure CSA 23's ability to reliably deliver water to its customers, provide increased water system security and protect the safety of the Santa Margarita community.

Environmental Review

This Addendum addresses the change from a permanent connection between CSA 23 and the Nacimiento Water Project (addressed in the Nacimiento Water Project FEIR) to an emergency connection between CSA 23 and the Nacimiento Water Project.

CSA 23's connection to the Nacimiento Water Project was evaluated in the December 2003 Final Environmental Impact Report for the Nacimiento Water Project (Nacimiento Water Project FEIR). The Nacimiento Water Project FEIR (Raw Water Option) described and evaluated a connection to the AMWC system at the same location proposed in this intertie project. The Nacimiento Water Project FEIR also evaluated a new pipeline along El Camino Real to Santa Margarita with the line paralleling the Nacimiento Water Project pipeline. Although the Nacimiento Water Project FEIR did not specifically evaluate a connection to the Garden Farms CWD, the area of impact from this approximately five foot-long connection is within the limits of surveys and analysis conducted for the Nacimiento Water Project FEIR.

The Nacimiento Water Project FEIR identified significant impacts, only one of which could be mitigated to a level considered less than significant (Class II). The unavoidable significant (Class I) impact identified for the project was for air quality during construction. The Class II impacts identified in the Nacimiento Water Project FEIR related to:

- Hydrology and water quality, which could be mitigated with appropriate design, operation and maintenance measures.
- Geology and soils, which could be mitigated with site specific geotechnical investigations during design, coupled with appropriate engineering and construction methods.
- Drainage, erosion and sedimentation, mitigated by application of standard construction period erosion control measures, followed by the development of emergency response and repair procedures for an accidental rupture, a regular inspection and maintenance program to detect possible problems with pipeline integrity.
- Air quality, mitigated by the application of standard construction period air quality protection measures.
- Noise, also mitigated by construction period and operational noise mitigation measures.
- Hazards and hazardous materials, mitigated by site specific study of the project corridor to determine presence of such materials, coupled with reporting to and consultation with appropriate agencies, followed by appropriate handling and removal, if required. Measures for dealing with accidental release of hazardous materials are also included.
- Biological resources, mitigated by minimizing the area of disturbance by clearly delineating the construction area on plans and in the field.
- Cultural and paleontological resources, mitigated by observing standard measures to ensure that any unanticipated archaeological or paleontological discoveries are treated and assessed as required by State and Federal law.
- Utilities and public services, mitigated by following standard wild land fire prevention measures.
- Transportation and circulation, mitigated by standard measures to avoid disrupting normal traffic patterns and maintenance of emergency access.
- Visual and aesthetic resources, mitigated by appropriate design of facilities and providing landscape screening, where appropriate.
- Agricultural resources, mitigated by coordinating with agricultural landowners, and returning agricultural lands to pre-construction site conditions.
- Recreational resources, mitigated by minimizing disruption to bicycle routes, and restoring bicycle lanes following construction.

The changes to the project since the 2003 FEIR was approved constitute a minor modification of the project description. That is, the installation of the pipeline and associated physical impacts are the same, and although this would provide an additional water source, it would only be for emergency use. This Addendum addresses whether or not the Project, as modified, has the potential to result in a previously undisclosed significant effect on the environment.

The California Environmental Quality Act (CEQA) defines a "significant effect on the environment" as a "substantial, or potentially substantial, adverse change in the environment." The Project, as proposed, would not result in any impacts to previously undisclosed resources. The proposed Project will occur within the same area of disturbance originally considered for the 2003 proposal.

Effects of the Change in the Project Description

The modification to the project does not add acreage to the original project. The project location will avoid new adverse effects on sensitive species by working entirely within the existing right of way in a road shoulder area. The pipeline appears to intersect with two known prehistoric sites in the vicinity of the community of Santa Margarita. Both sites were fully evaluated for the construction of the Nacimiento Water Project, including pre-construction excavation, artifact identification and curation, and construction monitoring. It is expected that the current proposal will require an extension of the previous work by conducting construction monitoring, as the proposed pipeline parallels the recently installed Nacimiento Water Project pipeline.

Conclusion

The Project, as modified, would not result in any significant impacts on the environment. Further, the approved FEIR originally issued in 2003 is still adequate because the changes to the Project are minor and would not result in any new significant impacts.

Prepared by:

Mark Hutchinson — 06/11/14 Date

Deputy Director, Department of Public Works

Approved by:

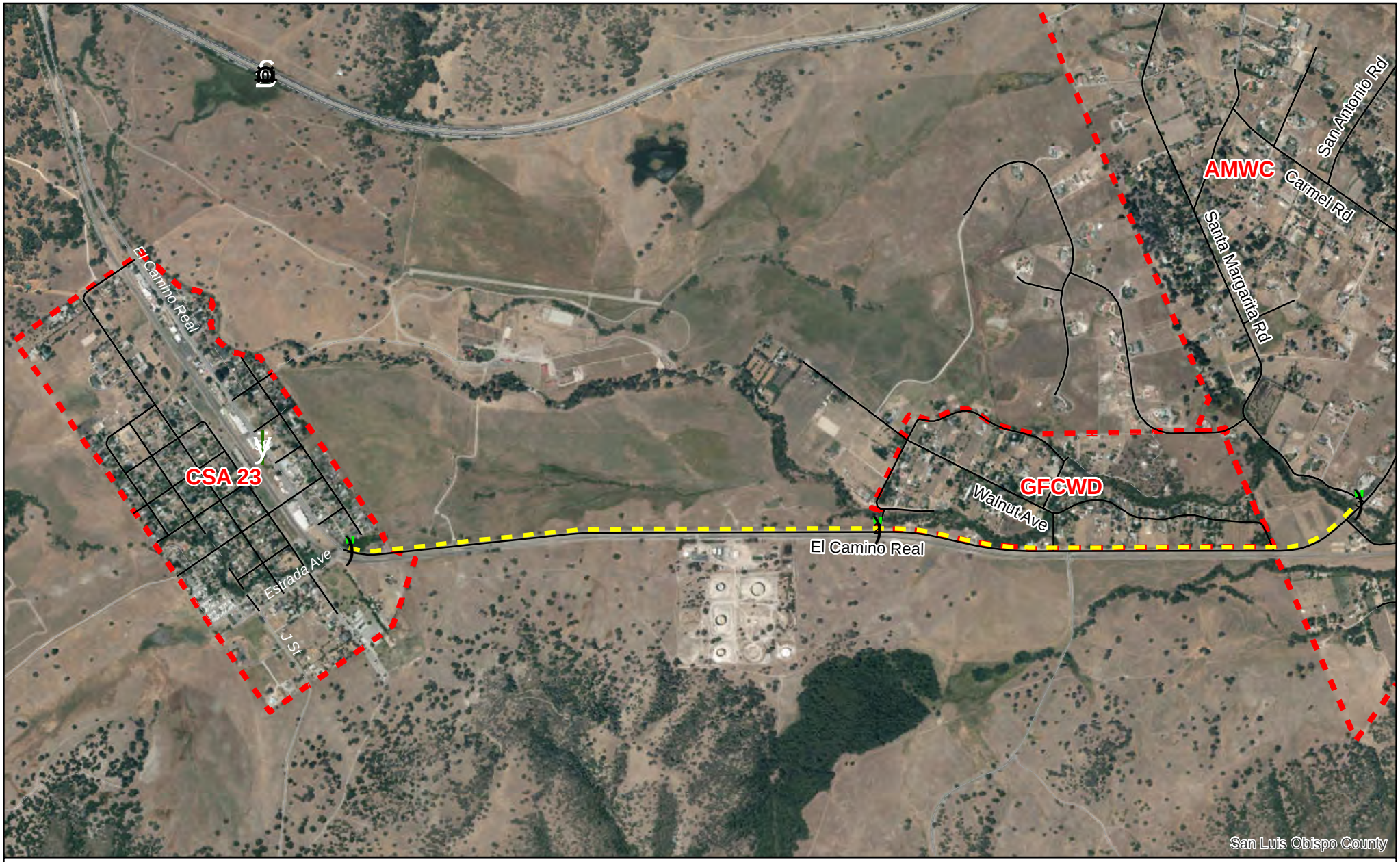
Ellen Carroll — 6-11-2014 Date

Ellen Carroll, Environmental Coordinator

ATTACHMENT 1

CSA 23 / Atascadero MWC / Garden Farms CWD Emergency Intertie

Project Map



Intertie Project Between CSA 23 (Santa Margarita), Atascadero Mutual Water Company, and Garden Farms Community Water District

CSA 23/AMWC/GFCWD Interlie (Proposed)

Service Areas

1 Tie-in with CSA 23

2 Tie-in with GFCWD

3 Tie-in with AMWC

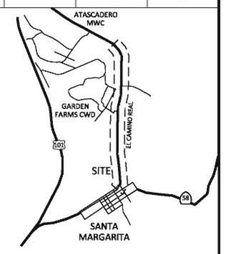
0 0.125 0.25 0.5

Miles

ATTACHMENT 2

CSA 23 / Atascadero MWC / Garden Farms CWD
Emergency Intertie Layout

ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
		1	7



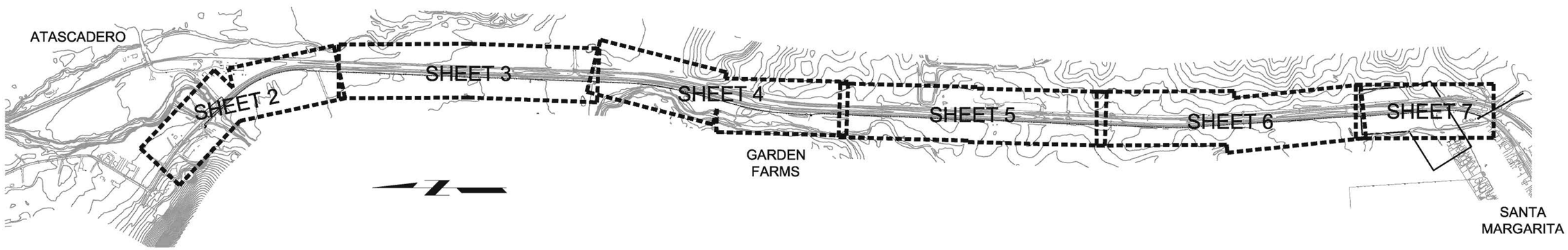
VICINITY MAP
N.T.S.

PRELIMINARY PLANS

SANTA MARGARITA EMERGENCY INTERTIE PROJECT

ATASCADERO MWC / GARDEN FARMS CWD EMERGENCY INTERTIE

COVER SHEET



SCALE 1"=500'

0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

PRELIMINARY

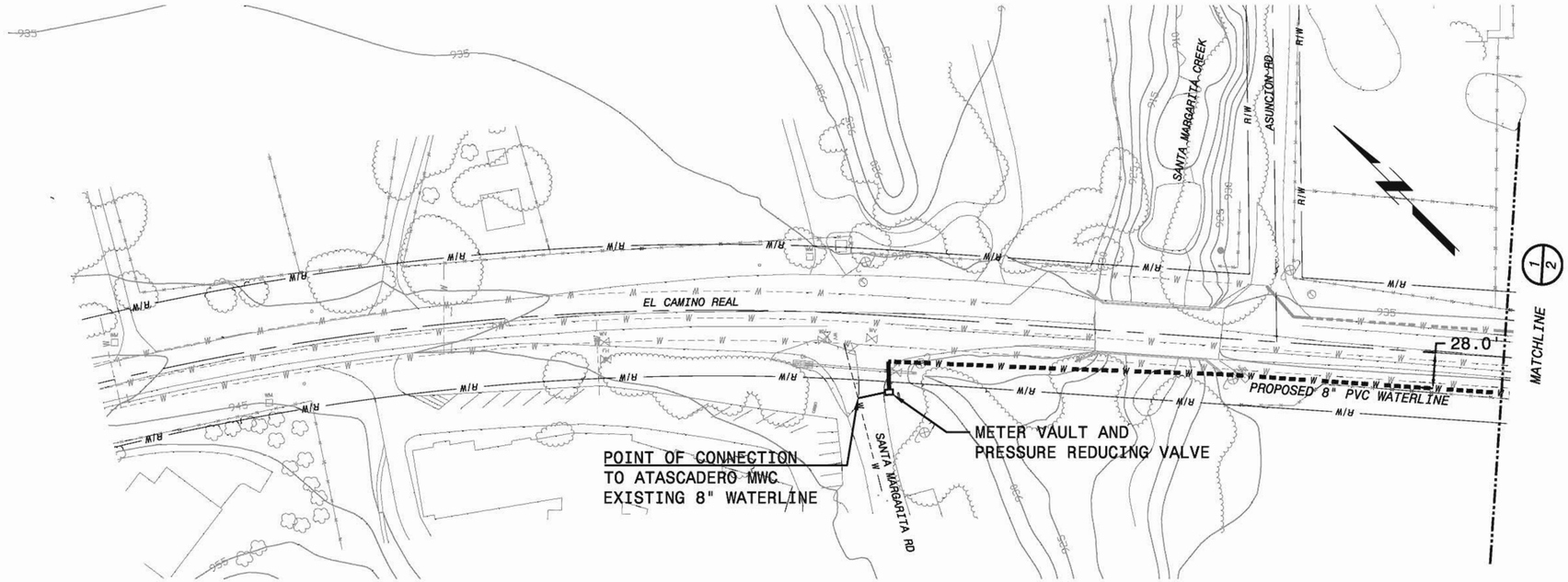
Santa Margarita Emergency Intertie Project

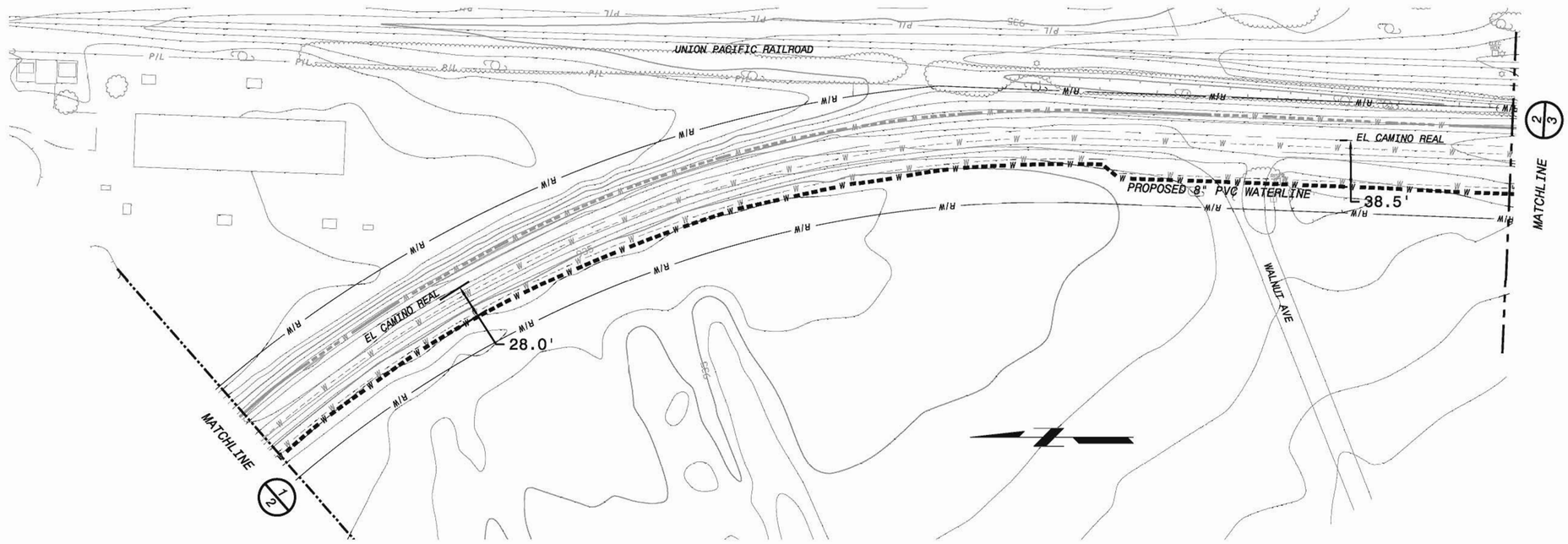
Atascadero MWC / Garden Farms CWD

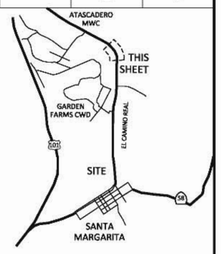
Emergency Intertie

Designer	Date	Drawn By	Date	Design Engineer	Date
			AUG. 2012		

ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
		2	7







VICINITY MAP
N.T.S.

SCALE 1"=50'

0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

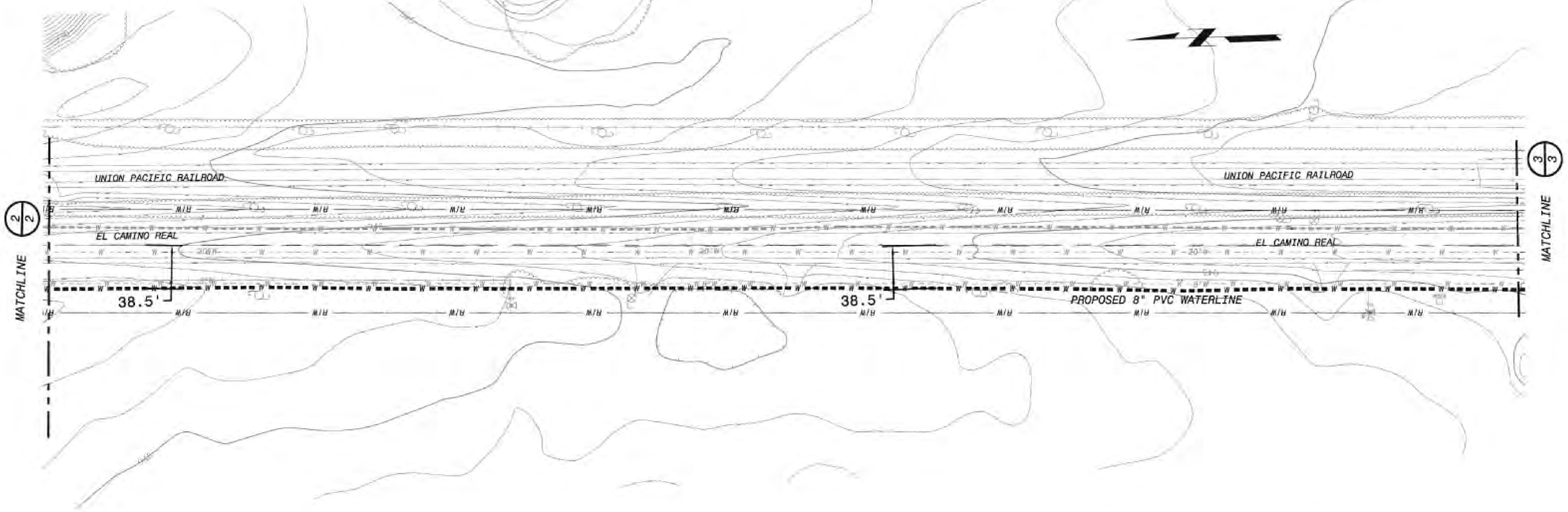
PRELIMINARY

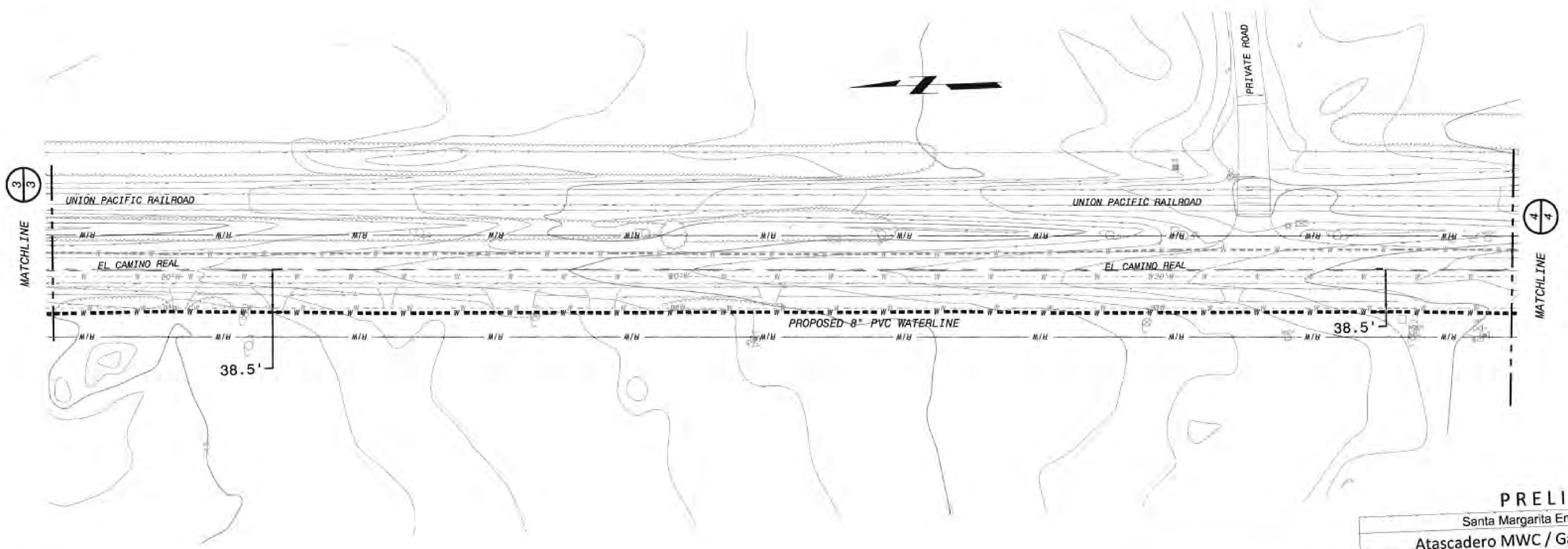
Santa Margarita Emergency Intertie Project

Atascadero MWC / Garden Farms CWD Intertie

Designer	Date	Drawn By	Date	Design Engineer	Date
			AUG. 2012		

ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
		3	7





VICINITY MAP
N.T.S.

PRELIMINARY

Santa Margarita Emergency Intertie Project

Atascadero MWC / Garden Farms CWD Intertie

Designer	Date	Drawn By	Date	Design Engineer	Date
			AUG. 2012		

SCALE 1"=50'

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ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
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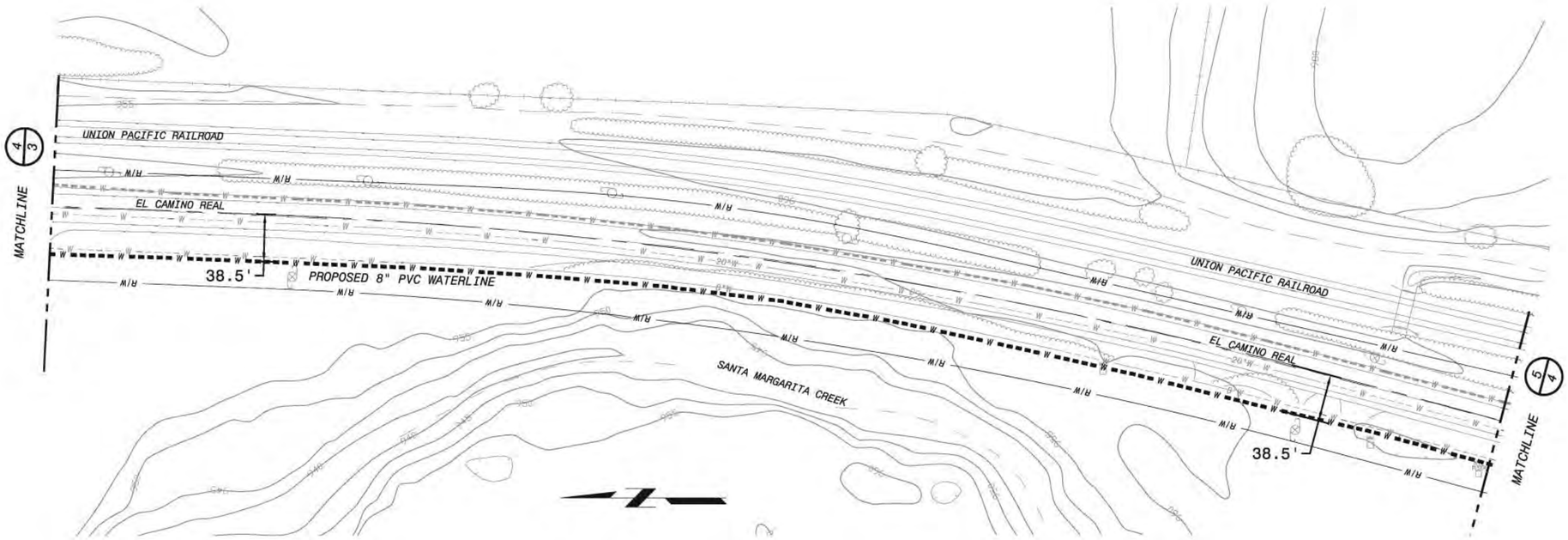

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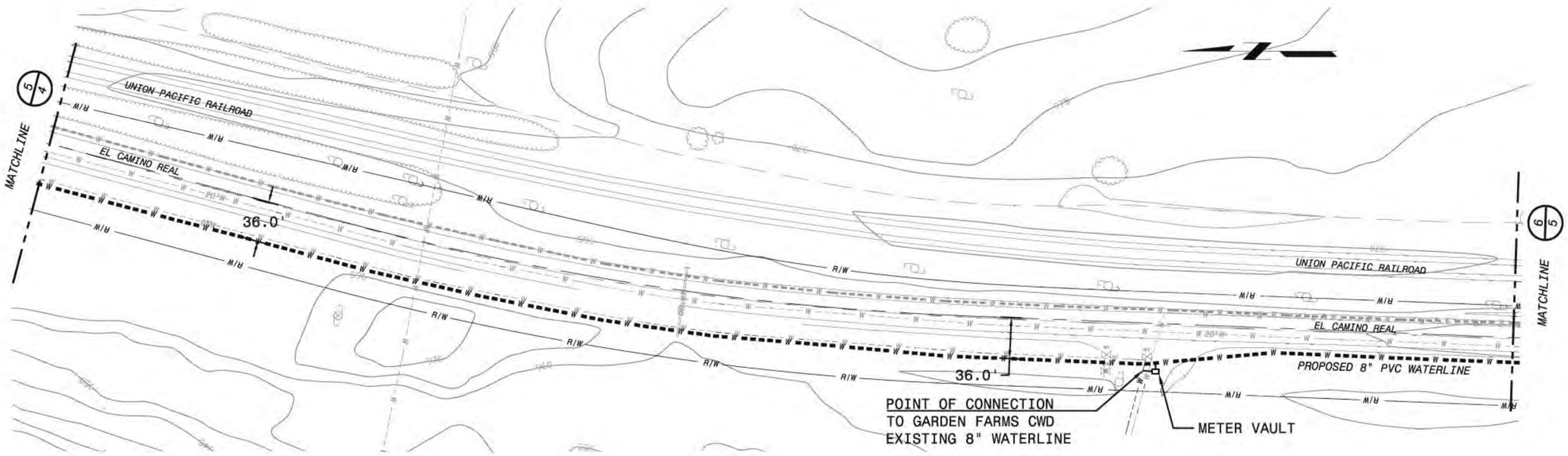

SCALE 1"=50'

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ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

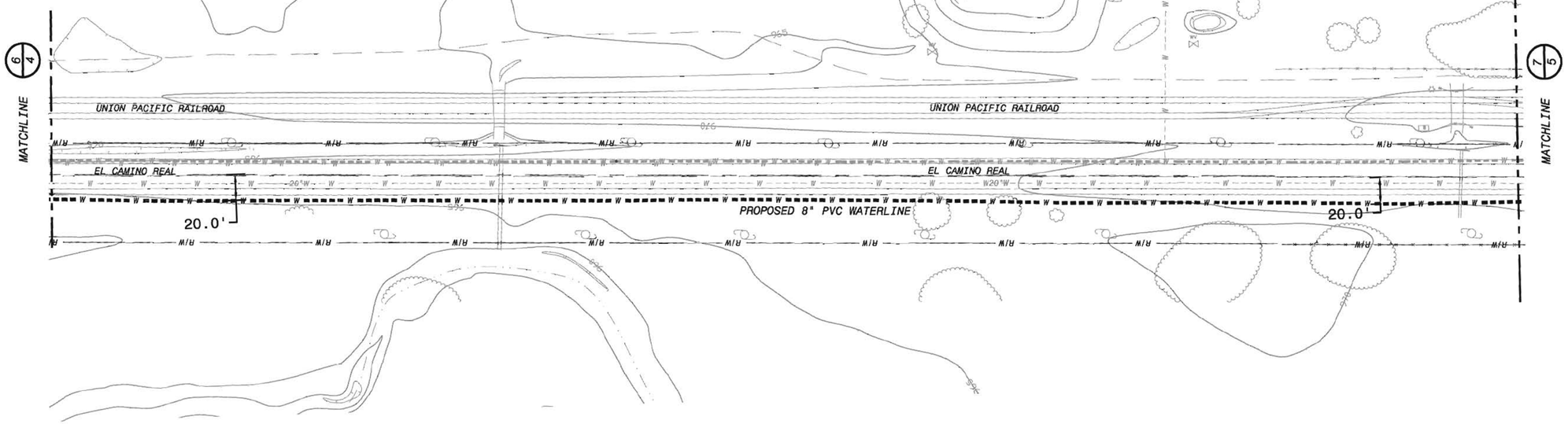
PRELIMINARY

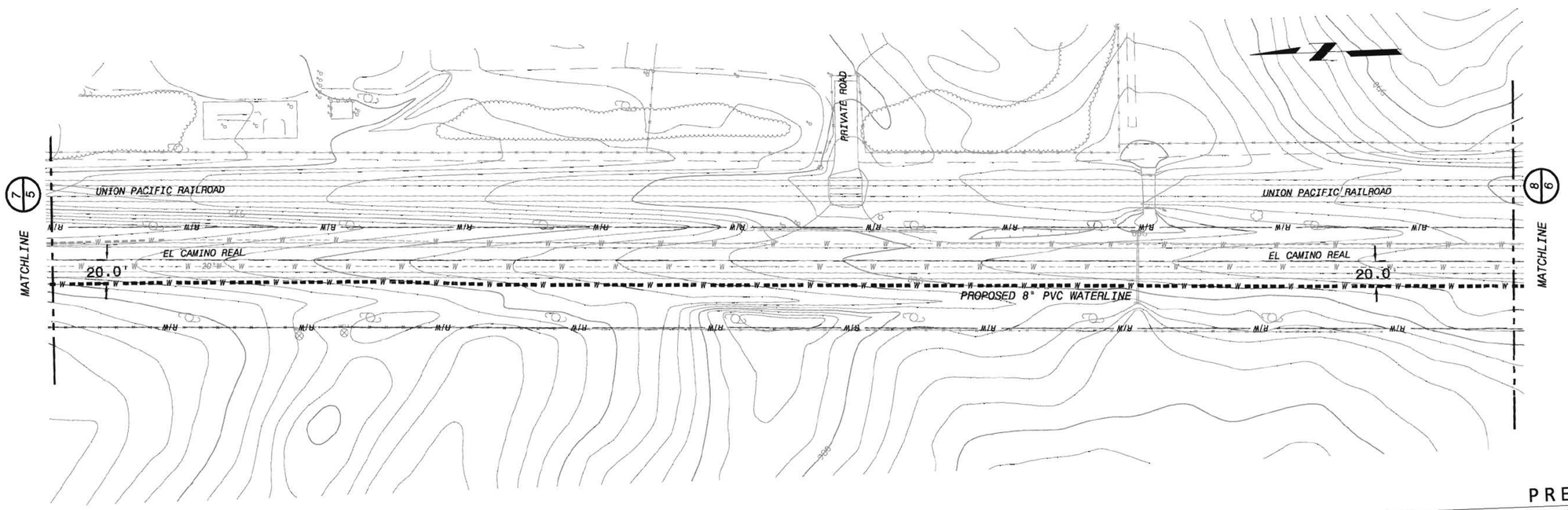
Santa Margarita Emergency Intertie Project

Atascadero MWC / Garden Farms CWD Intertie

Designer	Date	Drawn By	Date	Design Engineer	Date
			AUG. 2012		

ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
		5	7





VICINITY MAP
N.T.S.

PRELIMINARY

Santa Margarita Emergency Intertie Project

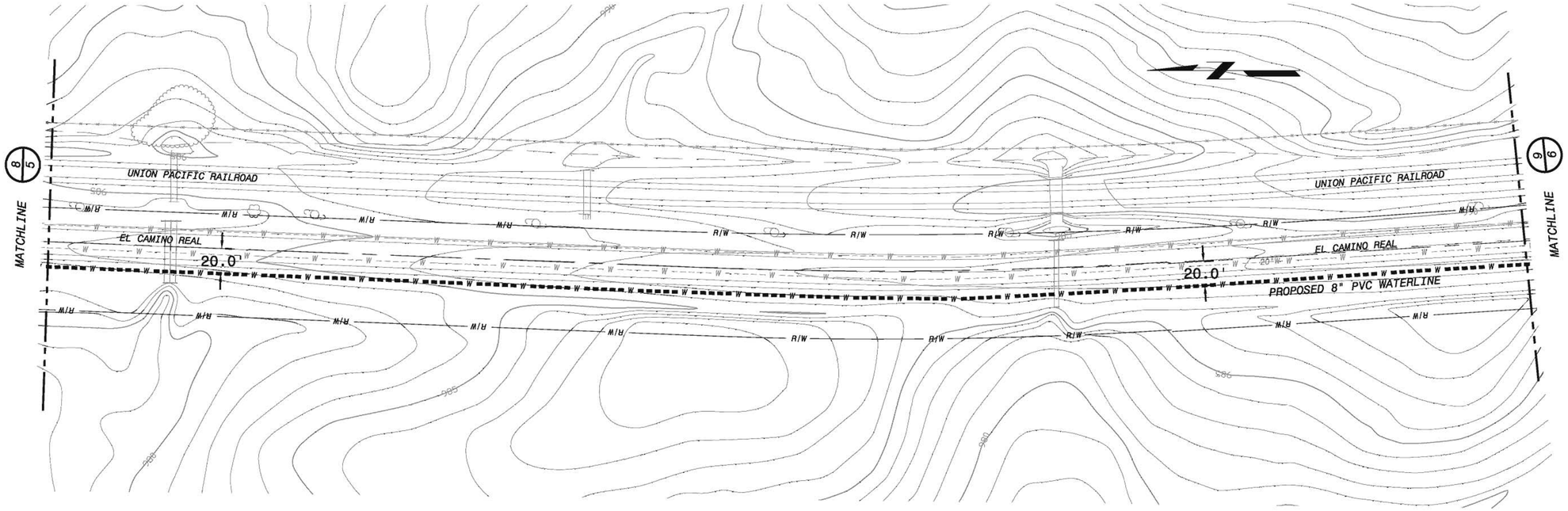
Atascadero MWC / Garden Farms CWD Intertie

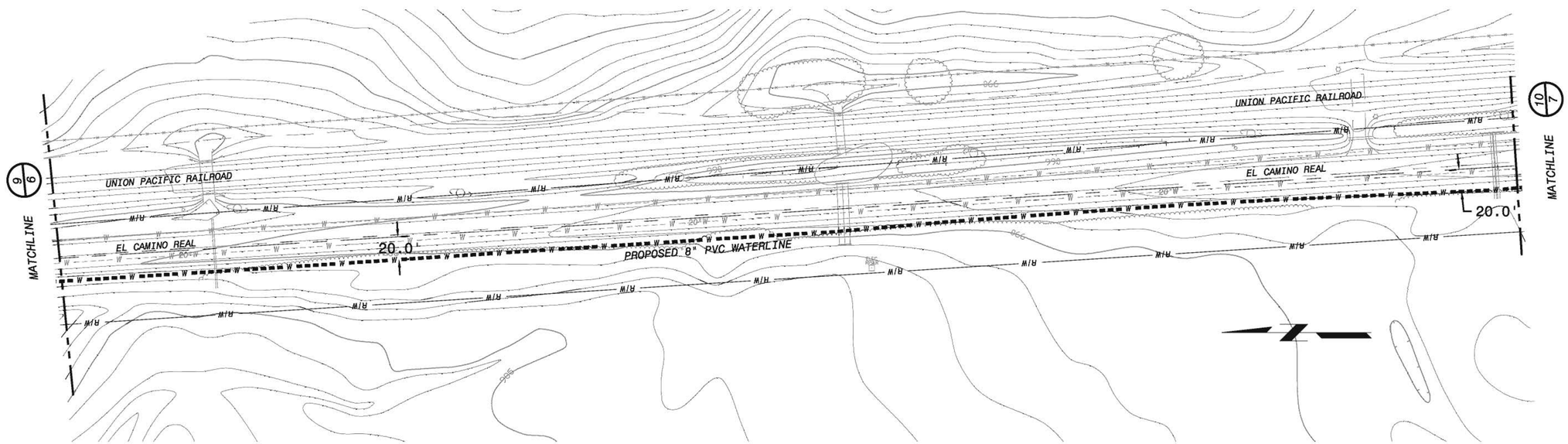
Designer	Date	Drawn By	Date	Design Engineer	Date
			AUG. 2012		

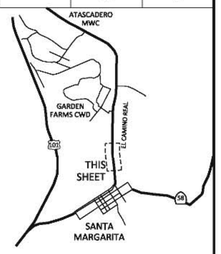
SCALE 1"=50'

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
		6	7







VICINITY MAP

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ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

PRELIMINARY

Santa Margarita Emergency Intertie Project

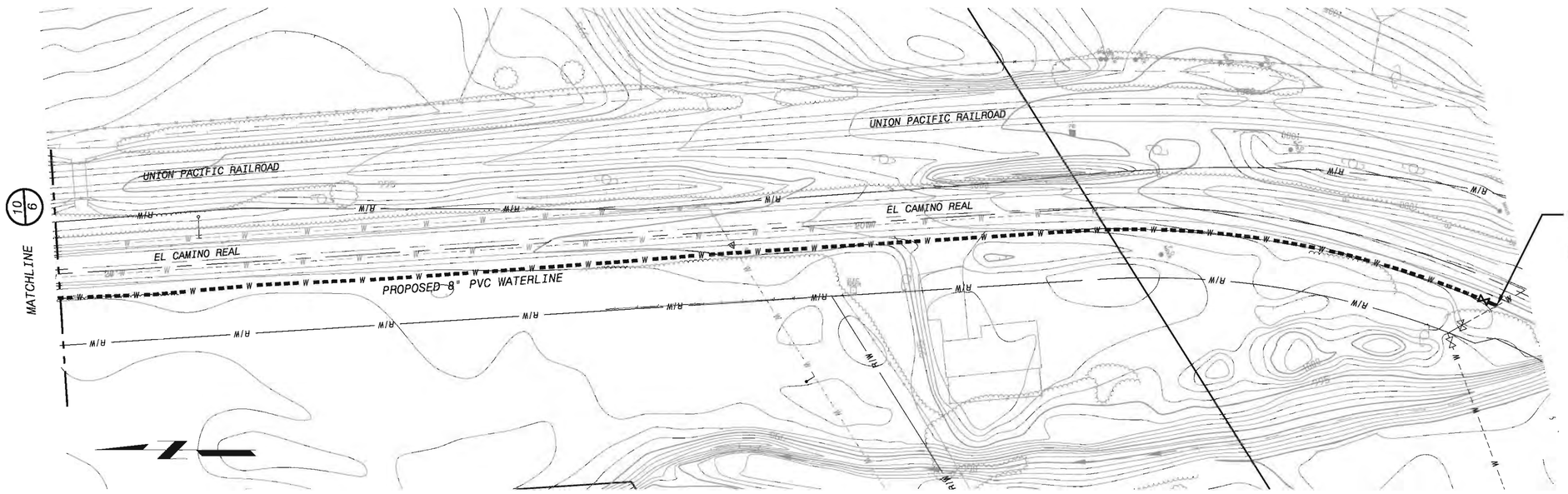
Atascadero MWC / Garden Farms CWD Intertie

Designer	Date	Drawn By	Date	Design Engineer	Date
			AUG. 2012		

ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
		7	7

VICINITY MAP

N.T.S.



SCALE 1"=50'

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ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

PRELIMINARY

Santa Margarita Emergency Intertie Project

Atascadero MWC / Garden Farms CWD Intertie

Designer	Date	Drawn By	Date	Design Engineer	Date
			AUG. 2012		

Santa Margarita
CSA 23

EMERGENCY AND IMMINENT COMMUNITY WATER ASSISTANCE GRANTS PROGRAM
Environmental Report

Overview

USDA Rural Development (RD) is required to assess the impacts of proposed federal actions, such as the provision of financial assistance through the Emergency and Imminent Community Water Assistance Grants Program (ECWAG), to the human environment. ECWAG applicants must complete an Environmental Report (ER) to submit with their applications. The ER provides information to RD so that it can either complete the environmental review process or determine the appropriate level of additional impact analyses needed. RD will notify applicants if additional information or analyses are necessary beyond what was submitted in the ER.

If there is no construction proposed in the application or the proposed action involves replacement-in-kind facilities then no additional environmental documentation is required. The applicant shall, however, provide an appropriate project description and, if necessary, location information in Section A below, and sign and date this document as the ER preparer in the space provided below. Once the RD State Environmental Coordinator concurs the environmental process is concluded.

No construction activities may begin until RD concludes and approves the environmental review process. In accordance with 7 CFR § 1794.15, applicants are prohibited from taking actions that may have adverse environmental impacts until RD has concluded the environmental review process.

Requested Information

A. Project Description and Location: Describe all project-related construction activities, including, but not limited to, the extension of water lines, additions to existing facilities or new facilities. Describe the amount of property to be cleared, excavated, fenced, or otherwise disturbed by the proposed action. Complete descriptions, locations and mapping must be provided for each site affected by project-related construction activities (recommend U.S. Geological Survey 7.5-minute quadrangle or similar maps at a map scale of 1:24,000). USGS maps may be obtained and purchased at the following website. All project elements, if known at the time of the application, must be clearly depicted on any map provided. If appropriate, photographs or aerial photographs of site-specific proposals may be provided.

B. Wetlands: Describe and indicate whether wetlands are present on or near any project sites affected by proposed construction (maps of wetlands may be obtained from the U.S. Fish and Wildlife Service's National Wetland Inventory website or maps of hydric soils from the USDA, Natural Resources Conservation Service's website). If wetlands are identified within the project area, document where the project components will be located in relation to the identified wetland areas.

C. Threatened and Endangered Species: Describe and indicate whether any proposed project sites will directly or indirectly affect any threatened, endangered or candidate species, or are within or near critical habitats. Applicants must provide species lists and appropriate species accounts (i.e. requisite habitat or other life history information useful in determining potential effects) for each county affected by construction. This information can be obtained from the U.S. Fish and Wildlife Service's (USFWS) website. Information about potential critical habitat areas can also be found on the U.S. Fish and Wildlife Service's website. Depending on information provided, RD may need to consult directly with the USFWS prior to concluding the Section 7 consultation process.

Santa Margarita
CSA 29

D. Floodplains: Describe and indicate whether any facilities or sites are located within a 100-year or 500-year floodplain. If any project-related construction activities are within floodplains, a copy of a Flood Insurance Rate Map (FIRM) with construction activities delineated on it must be included. Information related to floodplains and National Flood Insurance Maps may be obtained from the Federal Emergency Management Agency's (FEMA) website.

E. Coastal Areas: Determine whether the project area is within the boundaries of a coastal zone management area (CZMA). For boundary and contact information related to the CZMA, see the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management's website.

F. Section 106 Review

RD will conduct Section 106 review for any extension of water lines, additions to existing facilities or new facilities. The required information to be gathered by the applicant as described below must be included in the ER. Databases and maps to assist in identifying known archeological sites and National Register of Historic Places (NRHP) listed or eligible resources can be obtained from the State Historic Preservation Office (SHPO) in your respective State. The National Conference of State Historic Preservation Officers' website provides a directory of SHPOs.

For all components of a proposed action the following requirements apply:

1. Water Line Extensions or Construction of New Facilities – For water line extensions, applicants must identify and describe, including type and status for listing on the NRHP, known archeological sites located within 50 feet of either side of the water line route and, if any, prior archeological surveys that have been conducted in this study area. For new facilities, applicants must identify and describe, including type and status for listing on the NRHP known archeological sites located in the project area or located within or adjacent to a historic district that is listed on or eligible for listing on the NRHP. Include this information in the ER along with mapping that shows the relationship between these known sites and the project area as well as areas of planned disturbance.
2. Renovation/Rehabilitation of an Existing Building - If the building to be renovated is more than 50 years old, the applicant will determine if the structure is listed on or eligible for listing on the NRHP, or located within or adjacent to a historic district that is listed on or eligible for listing on the NRHP. The results of this study must be presented in the ER.

Kate Bellingham — 2/6/15
Environmental Report Preparer Signature — Date

2/9/15
Rural Development State Environmental Coordinator Concurrence — Date

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SECTION 13. RULES GOVERNING BID PROTESTS AND OTHER CHALLENGES TO AWARDS OF CONSTRUCTION CONTRACTS

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SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Rules Governing Bid Protests And Other Challenges to Awards of Construction Contracts

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The requirements set forth in these "Rules Governing Bid Protests And Other Challenges to Awards of Construction Contracts" ("Rules") are mandatory and are a Bidder's sole and exclusive remedy in the event a Bidder desires to challenge, protest or contest the award of any Construction Contract. A Bidder's failure to comply with these requirements shall constitute a waiver of any right to challenge, protest or contest the award of a Construction Contract in any subsequent proceeding, including but not limited to, the filing of a court action.

A Bidder may not rely upon another Bidder's compliance with the requirements of these Rules. Any Bidder that does not independently comply with the requirements set forth herein shall be deemed to have waived any right to challenge, protest or contest the award of a Construction Contract.

Nothing in these Rules affects the right of the District to reject all bids at any time prior to the award of a Construction Contract.

1.1 <u>Definitions.</u>

1.1.1 Bidder - The contractor submitting a bid in response to a District solicitation for bids on a Construction Contract.

1.1.2 Protestor - A Bidder who files a Protest in accordance with the provisions of these Rules.

1.1.3 Board – Board of Supervisors of the San Luis Obispo County Flood Control and Water Conservation District (hereinafter, also "District").

1.1.4 Construction Contract - Any Construction Contract which is formally or informally advertised for bids in which the District is, or will be, a party.

1.1.5 Protest – Any challenge, objection, or protest to the award of a Construction Contract to any Bidder.

1.1.6 Response – Any response to a Protest that is filed by an Interested Party in accordance with the provisions of these Rules.

1.1.7 Public Works Department - The District department responsible for the preparation of the bid documents for the Construction Contract and the administration of the Construction Contract.

1.1.8 Director - The person appointed to be the head of the Department of Public Works and Transportation, or that person designated by the Director to

assume the powers, duties, and responsibilities conferred upon the Director under the terms of these Rules.

1.1.9 Initial Determination – A written notice by the Director that notifies a Bidder of the reasons why the Director believes that a bid is nonresponsive, or that a Bidder is not a responsible Bidder.

1.1.10 Interested Parties - For the purpose of these Rules, Interested Parties are defined as:

1.1.10.1 The Pubic Works Department and/or its Director.

1.1.10.2 Any Bidder that filed a Protest or whose bid is the subject of an Initial Determination.

1.1.10.3 Any Bidder whose eligibility for having the Construction Contract awarded to it as a responsible Bidder with the lowest responsive bid would be affected by the outcome of a Protest or Initial Determination.

1.2 Director's Independent Authority to Determine Bid Responsiveness and Bidder Responsibility.

1.2.1 Regardless of whether a Protest is submitted under these Rules, the Director is authorized to determine whether any bid is a responsive bid and whether any Bidder is a responsible Bidder. In the event the Director issues an Initial Determination, the Director shall provide the Interested Parties with written notice of the Initial Determination at least five (5) business days before the Director renders a final decision addressing the grounds stated in the Initial Determination. A final decision of the Director under this section 1.2 shall be the final decision of the District with no provision for reconsideration or appeal to the Board.

1.2.2 The Director need not issue an Initial Determination in order to make a final decision on whether a bid is a responsive bid or a Bidder is a responsible Bidder. A final decision can also be issued by the Director through the processing of a Protest pursuant to the procedures set forth in these Rules.

1.2.3 The Diretor reserves the right to amend or withdraw an Initial Determination at any time before the Director renders a final decision addressing the grounds stated in the Initial Determination. When an Initial Determination is withdrawn, it shall have the same effect as if the Initial Determination had never been made.

1.3 Basis for Protest.

1.3.1 Grounds for Protest – The grounds for a Protest may include any grounds a Protestor may have for contesting or challenging the award of a Construction Contract to any Bidder, including but not limited to the following grounds:

1.3.1.1 A Protestor objects to a Construction Contract being awarded to another Bidder on the grounds that the other Bidder's bid is nonresponsive.

1.3.1.2 A Protestor objects to a Construction Contract being awarded to another Bidder on the grounds that the other Bidder is not a responsible Bidder.

1.3.1.3 A Protestor objects to a Construction Contract being awarded to the Protestor on the grounds that the Protestor made a mistake in its bid that entitles the Protestor to be relieved of its bid under Public Contract Code Sections 5100 et seq.

1.3.1.4 A Protestor objects to the Director's Initial Determination issued under section 1.2.1 above.

1.3.2 Required Form of Protest - All Protests shall be made in writing, containing the information listed below, and shall be filed with the Public Works Department as identified in the solicitation package. Protests shall contain the following information:

1.3.2.1 The name, address, telephone, facsimile numbers, and email address of the Protestor.

1.3.2.2 The signature of the Protestor or its representative.

1.3.2.3 The bid, solicitation, and/or contract number.

1.3.2.4 The Protest must contain a complete statement of all grounds for the Protest, and must refer to the specific portion of the bid documents that are the basis of the Protest. The Protest must set forth all supporting facts and documentation. If Protestor believes there are some facts relevant to its Protest that Protestor cannot adequately present in writing, Protestor must describe such facts in its Protest under the heading "Facts Requiring Oral Presentation", and state therein the reasons why the Bid Protestor believes it cannot adequately present those facts through documentation.

1.3.2.5 All information establishing that the Protestor is a Bidder for the purpose of filing a Protest.

1.3.2.6 The form of relief requested.

1.4 <u>Protest Requirements and Procedure.</u>

1.4.1 Standing to Protest - Protests shall be filed only by a Bidder.

1.4.2 Time for Filing a Protest:

1.4.2.1 Except as provided in sections 1.4.2.2 and 1.4.2.3 below, all Protests must be submitted in writing to the Director before 5 p.m. PST of the sixth (6) business day following the date upon which the bids on the Construction Contract were opened.

1.4.2.2 When a Protestor objects to a Construction Contract being awarded to the Protestor on the grounds that the Protestor made a mistake in its bid that entitles the Protestor to be relieved of its bid under Public Contract Code Sections 5100 et seq., the Protest must be submitted in writing to the Director before 5 p.m. PST of the fifth (5) business day following the date upon which the bids on the Construction Contract were opened pursuant to Public Contract Code Section 5103.

1.4.2.3 When the Protestor objects to an Initial Determination made by the Director under section 1.2.1 above, the Protest must be submitted in writing to the Director before 5 p.m. PST of the fifth (5) business day following the date upon which the Initial Determination was first delivered to Protestor (either electronically or otherwise).

1.4.3 Written Responses of Interested Parties - If any Interested Party desires to respond to the Protest, the Response must be submitted in writing to the Director within five (5) business days of the date the Protest was first delivered to the Interested Party (either electronically or otherwise). If an Interested Party believes there are some facts relevant to its Response that the Interested Party cannot adequately present in writing, the Interested Party must describe such facts in its Response under the heading "Facts Requiring Oral Presentation", and state therein the reasons why the Interested Party believes it cannot adequately present those facts through documentation.

1.4.4 Proof of Transmittal - All Protests, Responses, and Replies shall include documentation evidencing that all Interested Parties were concurrently sent a complete copy of the respective Protest, Response or Reply in a manner that would provide all Interested Parties with a complete copy of the respective Protest, Response or Reply no later than one (1) business day after it was sent to the Director. The means of transmission chosen must also provide the sending party a means of verifying the date and time the copy was received by each Interested Party. Transmission by email may be an acceptable means of transmittal.

1.4.5 No Ex Parte or Unilateral Communications on the Merits of a Protest - No Bidder shall have any written communications regarding the merits of a Protest with the Public Works Department or its Director that are not concurrently sent to all of the other Interested Parties. No Bidder shall have any oral communications regarding the merits of a Protest with the Public Works Department or its Director other than during an oral presentation properly noticed by the Director under these Rules.

1.4.6 Suspension of Process for Proposed Rejection of all Bids - At any time during the processing of a Protest, the Director may elect to indefinitely suspend any further processing of the Protest by providing written notice to all Interested Parties that the Director intends to recommend to the Board that all bids be rejected. All time deadlines provided in these Rules shall be tolled during any such suspension period. If the Board decides to not reject all bids, or if the Director otherwise decides to lift the suspension, the requirements of these Rules shall be reactivated upon the Director providing all Interested Parties with written notice thereof.

1.5 <u>Summary Dismissal of Protest.</u>

The Director may summarily dismiss a Protest, or specific Protest allegations, at any time that the Department Head determines that the Protest is untimely, frivolous, or without merit; is not submitted in the required form of Protest, as set forth above in section 1.3.2., "Required Form of Protest;" or is submitted by a non-

Bidder. In such cases, a notice of summary dismissal will be furnished to the Interested Parties. Such a summary dismissal shall be the final decision of the District with no provision for reconsideration or appeal to the District.

1.6 Decision by the Director Based on Written Submissions Only.

In reaching a decision on the merits of a Protest, the Director may consider relevant documentation submitted by the Protestor and any other Interested Party. If the Director wishes to have additional information submitted that was not included in the Protest or in any documentation from other Interested Parties, the Director may make a request specifying the information sought and time for submittal. Submissions of additional information that have not been specifically requested by the Director may not be considered at the Director's sole discretion. If the Director does not provide an opportunity for an oral presentation under section 1.7 below, the Director will issue a written decision without any oral presentation. The Director's decision shall be the final decision of the District with no provision for reconsideration or appeal to the Board.

1.7 Decision by the Director Following Oral Presentation.

1.7.1 The Director may, at his or her discretion, elect to provide an opportunity for the Protestor and other Interested Parties to make an oral presentation to the Director regarding the Protest. In such event. oral presentations shall be conducted in accordance with the following procedure:

1.7.1.1 Notice of Oral Presentation - The Director will set a date, time, and place for an oral presentation. Written notice will be sent to Interested Parties not less than five (5) business days in advance of the oral presentation unless it is agreeable to all parties that an earlier date be established. Continuances may be granted by the Director for good cause.

1.7.1.2 Guidelines for Oral Presentation - Oral presentations are informal in nature and shall be made by the Protestor or its authorized representative. Technical rules of evidence shall not apply. The Director will determine how the oral presentations will be conducted and may set time limits for the presentation. The Director may question Interested Parties or provide an opportunity for Interested Parties to make an oral presentation. The Director may request additional documentation or information prior to, during or after the oral presentation. Unless requested by the Director, additional documentation or information may not be accepted.

1.7.1.3 Record of Oral Presentation - Any Interested Party may request, and in the Director's sole discretion, the Director may allow recording of the presentation. If the Director allows the presentation to be recorded, the Interested Party requesting that the presentation be recorded must pay the cost of recording, including the costs to make and distribute copies of the recording

to the Director and other Interested Parties. There shall be no cost to the District.

1.7.1.4 Decisions - The Director will issue a written decision within 30 calendar days of the oral presentation; however, the time for issuing the written decision may be extended by the Director. A copy of the decision will be furnished to the Interested Parties. The decision shall be the final decision of the District with no provision for reconsideration or appeal to the Board.

1.8 Effect on Contracts.

The failure of a District employee to comply with the provisions stated in these Rules shall in no way affect the validity of any Construction Contract entered into by the District.

1.9 Director Decisions on Protests Seeking Relief from a Bidder's Mistake under Public Contract Code Section 5103.

When a Protestor objects to a Construction Contract being awarded to the Bid Protestor on the grounds that the Protestor made a mistake in its bid that entitles the Protestor to be relieved of its bid under Public Contract Code Sections 5100 et seq., a final decision of the Director that relieves the Protestor of its bid on the grounds of mistake must be approved by the Board before it can become a final decision of the District. Any other final decision of the Director regarding a Protestor's request to be relieved of its bid on the grounds of mistake under Public Contract Code Sections 5100 et seq., shall be the final decision of the District with no provision for reconsideration or appeal to the Board.

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SECTION 14.
SAN LUIS OBISPO COUNTY DEPARTMENT OF PUBLIC WORKS
LABOR COMPLIANCE PROGRAM (FEBRUARY 2015)

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San Luis Obispo County
DEPARTMENT OF PUBLIC WORKS

Labor Compliance Program

For Projects Under
Public Resource Code Section 75075

February 2015

San Luis Obispo County
Department of Public Works
County Government Center Room 206
San Luis Obispo, CA 93408
Phone 805/781-5252
Fax 805/781-1229

Dave Flynn
Deputy Director

SAN LUIS OBISPO COUNTY PUBLIC WORKS (SLOCPW)

LABOR COMPLIANCE PROGRAM MANUAL

SLOCPW

Labor Compliance Program

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Audit Record Worksheets, Public Works Investigative Worksheet, Public Works Audit Worksheet and Prevailing Wage Determination Summary – Addendum C

Review and Enforcement Report Form – Addendum D

Request for Approval of Forfeiture – Suggested Format – Addendum E

Notice of Transmittal and Notice of Opportunity to Review Evidence Pursuant to Labor Code Section 1742 (b) – Addendum F

Notice to Withhold Contract Payments – Addendum G

Notice of Temporary Withholding of Contract Payments Due to Delinquent or Inadequate Payroll Records – Addendum H

DAS FORMS – Addendum I

- DAS-140/ Notification of Contract Award
- DAS-140/ Request for Dispatch of Apprentice
- CAC-2/ Training Fund Contribution

DIR A-1-131 Payroll Reporting Form and Fringe Benefit Statement-PW 26–Addendum J

Suggested Checklist of Labor Law Requirements (CCR 16430) – Addendum K

PART I - REQUIREMENTS

SAN LUIS OBISPO COUNTY PUBLIC WORKS
LABOR COMPLIANCE PROGRAM REQUIREMENTS

I. INTRODUCTION

San Luis Obispo County Public Works (SLOCPW) is establishing this Labor Compliance Program (LCP) pursuant to California Public Resource Code 75075 and California Labor Code Section 1771.5. Pursuant to Public Resource Code 75075, this LCP only applies to public works projects funded under Proposition 84.

The primary function of the Labor Compliance Program is to ensure that public works contractors comply with the prevailing wage requirements found in the Public Works Chapter of the Labor Code. This regulation is intended to establish minimum requirements which all Labor Compliance Programs shall meet or exceed in carrying out that function. Definitions found throughout this regulation are intended to provide Labor Compliance Programs and representatives of the Department of Industrial Relations and the Division of Labor Standards Enforcement with common terminology as they each perform their respective roles in prevailing wage enforcement in furtherance of the Labor Code provisions establishing Labor Compliance Programs. This regulation is also intended to confirm that the proactive investigation methods, as described in detail herein, only comprise the minimum obligations required of Labor Compliance Programs to satisfy their duty to the Director to operate a Labor Compliance Program as specified in sections 16428 and 16434.

II. LABOR COMPLIANCE COMPOSITION AND REQUIREMENTS

a.) Pursuant to Labor Code Section 1771.5, the SLOCPW requires the payment of the general prevailing rate of per diem wages and the general prevailing rate of per diem wages for holiday and overtime work.

b.) The Labor Compliance Program monitors labor standards compliance by conducting interviews with construction workers at the job site and reviewing certified payroll reports and initiates and oversees any enforcement actions that may be required.

California Labor Code Section 1776 requires contractors to keep accurate payroll records of trade workers on all public works projects and to submit copies of certified payroll records upon request.

California Labor Code Section 1777.5 requires contractors to employ registered apprentices on public works projects.

This labor compliance program ("LCP") contains the labor compliance standards required by state statutes, regulations, and directives, which include, but are not limited to, the following:

1. Contractors' payment of applicable general prevailing wage rates.
2. Contractors' employment of properly registered apprentices.
3. Contractors' provide certified payroll records upon request but not less than weekly.
4. Program's monitoring the SLOCPW construction sites for the verification of proper payments of prevailing wage rates and work classification.
5. Programs conducting pre-job conferences with contractors/subcontractors.
6. Program's withholding contract payments and imposing penalties for noncompliance.
7. Program's preparation and submittal of annual reports as required.

The SLOCPW Labor Compliance Program ("LCP") purpose is to implement its policy relative to the labor compliance provisions of state public works contracts and specifically to comply with the provisions of the Public Resources Code Section 75075 sections by use of funds derived from the California Department of Public Health.

The California Labor Code Section 1770, et seq., and Public Resources Code Section 75075 require that contractors on public works projects pay their workers based on the prevailing wage rates which are established and issued by the Department of Industrial Relations, Director's Office of Policy, Research, and Legislation.

Public Resources Code 75075: The body awarding any contract for a public works project financed in any part from funds made available pursuant to this division shall adopt and enforce, or contract with a third party to enforce, a labor compliance program pursuant to subdivision (b) of Labor Code Section 1771.5 for application to that public works project.

In establishing this LCP, the SLOCPW adheres to the statutory requirements as enunciated in Section 1771.5 of the Labor Code. Further, it is the intent of the SLOCPW to actively enforce this LCP by monitoring construction sites for the payment of prevailing wage rates, and by requiring contractors and subcontractors having workers on job sites to submit copies of certified payroll records demonstrating their compliance with the payment of prevailing wage rates.

Should applicable sections of the Labor Code or Title 8 of the California Code of Regulations undergo alteration, amendment, or deletions, the SLOCPW will modify the affected portions of this program accordingly.

III. PUBLIC WORKS CONSTRUCTION PROJECTS

This LCP is subject to the provisions of the State laws and regulations including, but not limited to, California Labor Code Sections 226, 227, 1021, 1021.5, 3093, 3077 and 1720 through and including 1861, together with all applicable regulations (e.g., Title 8 California Code of Regulations Section 16001 et seq.). All pertinent California statutes and regulations, including those referenced above, are hereby incorporated by reference in this document as if set forth in their entirety.

IV. EMPLOYMENT OF MINORS PROHIBITED

The employment of minors, under 16 years of age, is strictly prohibited in all building and construction work of any kind per California Code of Regulations Title 8, Chapter 6, Subsection 1, Article 1 §11701(b).

V. YOUTH EMPLOYMENT PROGRAMS

Youths (ages 18 – 23) employed on Public Works projects are subject to the payment of the prevailing wage.

VI. CASH PAYMENTS PROHIBITED

The SLOCPW requires the Contractor and all subcontractors to make weekly wage payments to all workers employed on the project. Payments shall be made by means of a check, money order or cashier's check. **Cash payments are prohibited.**

VII. WORKERS DEFINED

The SLOCPW defines "worker" as defined in Labor Code Section 1723, and other applicable law, including Corporate Officers, Partners, Sole Owners, Mechanics and Laborers employed or working on the site of the Work who are subject to any applicable provisions of the Labor Code. Such workers will be paid unconditionally and not less than once a week, and without subsequent deduction or rebate on any account the full amounts due at time of payment computed at wage rates not less than those contained in the wage determination decisions of the State of California Director of the Department of Industrial Relations (DIR).

VIII. PREVAILING WAGES

Payments of wages not less than those contained in the wage determination decision of the State of California Director of the Department of Industrial Relations (DIR) are in effect under this LCP. Any classes of laborers or mechanics, including apprentices, which are not listed in the applicable wage determination shall be classified in conformance with the applicable wage determination. If the Contractor fails to request a special determination (CCR 8 §16202) within 45 days after the commencement of advertising of the call for bids, and the classification of laborers and mechanics, including apprentices, is not found in the applicable wage determination, the SLOCPW reserves the right to re-classify the affected class of laborers and/or mechanics, including apprentices, to the most closely related craft as published in the applicable wage determination. If the interested parties cannot agree on the proper classification or re-classification of a particular class of laborers or mechanics, including apprentices, to be used, the question accompanied by the recommendation of the SLOCPW shall be referred to the DIR for final determination.

IX. EFFECTIVE PREVAILING WAGE RATES

The State Prevailing Wage Rates are determined by the Department of Industrial Relations as prescribed in Labor Code Sections 1773 – 1773.1 and are effective 10 days after issuance. The

established Prevailing Wage rates are published in the General Prevailing Wage Determinations which are issued bi-annually (occasionally, the DIR may issue an additional General Prevailing Wage Determination in the same year). The **Bid Advertise Date** determines the applicable General Prevailing Wage Determination. The expiration date indicated for each craft is followed by either a single asterisk (*) or double asterisk (**). The single asterisk (*) indicates that the wage rate will remain constant and effective throughout the duration of the contract. The double asterisk (**) indicates that the wage rate is effective until the expiration date, and the rate to be paid for work performed after that date has already been determined. If work will extend past the expiration date, the new rate must be paid. (CCR 8, §16204).

To obtain the most current prevailing wage rates, contact the Department of Industrial Relations. The rates are also available on the internet at www.dir.ca.gov.

X. PAYMENT OF PREVAILING WAGE FRINGE BENEFITS

Per diem wages shall be deemed to include employer payments for health and welfare, pension, vacation, travel time, training contributions and subsistence pay as provided for in Section 1773.8, for apprenticeship or other training programs, authorized by Section 3093. (Contractors paying per diem wages cannot pay less than the basic hourly rate of pay to the worker working on a covered prevailing wage. (CCR 8, §16000))

A copy of California Public Works Form PW-26, *Fringe Benefits Statement,* (**Addendum J**) must be prepared by the Contractor and submitted to the SLOCPW with the first payroll. Contractors not making payments to a fringe benefit trust account shall include the total fringe benefit package in the Total Hourly Wage Rate paid to the worker.

XI. APPRENTICESHIP REQUIREMENTS

Contractors shall comply with the requirements of the apprenticeship provisions of California Labor Code Section 1777.5 and CCR Title 8 230.1.

APPRENTICES

In accordance with California Labor Code Section 1777.5(d), a contractor (including any subcontractor) who is awarded a Proposition 84 funded contract, and who employs workers in an apprenticeable craft or trade, shall employ apprentices in at least the ratios as stipulated in Labor Code Section 1777.5.

Regulation 230.1

Regarding Employment of Apprentices on Public Works.

CCR Title 8 230.1. Employment of Apprentices on Public Works.

"(a) Contractors, as defined in Section 228 to include general, prime, specialty or subcontractor, shall employ registered apprentice(s), as defined by Labor Code Section 3077, during the

performance of a public work project in accordance with the required one hour of work performed by an apprentice for every five hours of labor performed by a journeyman, unless covered by one of the exemptions enumerated in Labor Code Section 1777.5 or this subchapter. Unless an exemption has been granted, the contractor shall employ apprentices for the number of hours computed above before the end of the contract. Contractors who are not already employing sufficient registered apprentices (as defined by Labor Code Section 3077) to comply with the one-to-five ratio must request the dispatch of required apprentices from the apprenticeship committees providing training in the applicable craft or trade and whose geographic area of operation includes the site of the public work by giving the committee written notice of at least 72 hours (excluding Saturdays, Sundays and holidays) before the date on which one or more apprentices are required. If the apprenticeship committee from which apprentice dispatch(es) are requested does not dispatch apprentices as requested, the contractor must request apprentice dispatch(es) from another committee providing training in the applicable craft or trade in the geographic area of the site of the public work, and must request apprentice dispatch(es) from each such committee, either consecutively or simultaneously, until the contractor has requested apprentice dispatches from each such committee in the geographic area. All requests for dispatch of apprentices shall be in writing, sent by first class mail, facsimile or email. Except for projects with less than 40 hours of journeyman work, each request for apprentice dispatch shall be for not less than an 8 hour day per each apprentice, or 20% of the estimated apprentice hours to be worked for an employer in a particular craft or trade on a project, whichever is greater, unless an employer can provide written evidence, upon request of the committee dispatching the apprentice or the Division of Apprenticeship Standards, that circumstances beyond the employer's control prevent this from occurring. If a non-signatory contractor declines to abide by and comply with the terms of a local committee's standards, the apprenticeship committee shall not be required to dispatch apprentices to such contractor. Conversely, if in response to a written request no apprenticeship committee dispatches, or agrees to dispatch during the period of the public works project any apprentice to a contractor who has agreed to employ and train apprentices in accordance with either the apprenticeship committee's standards or these regulations within 72 hours of such request (excluding Saturdays, Sundays and holidays) the contractor shall not be considered in violation of this section as a result of failure to employ apprentices for the remainder of the project, provided that the contractor made the request in enough time to meet the above-stated ratio. If an apprenticeship committee dispatches fewer apprentices than the contractor requested, the contractor shall be considered in compliance if the contractor employs those apprentices who are dispatched, provided that, where there is more than one apprenticeship committee able and willing to unconditionally dispatch apprentices, the contractor has requested dispatch from all committees providing training in the applicable craft or trade whose geographic area of operation include the site of the public work. Nothing in this section shall affect the right of a Contractor who participates in and employs registered apprentices from programs approved under Labor Code Section 3075 outside the geographic area of the public work from employing said apprentice(s) on the site of the public work in order to meet the ratio requirement of Labor Code Section 1777.5.

(b) Apprentices employed on public works shall be paid the applicable apprentice prevailing per diem wage rate, available from DAS, and derived from the Director's survey of wages paid on public works in the geographic area of the craft or trade. DAS shall refer complaints alleging any

contractor's failure to pay the proper apprentice prevailing wage rate on a public works project to the Division of Labor Standards Enforcement for investigation and appropriate action.

(c) Apprentices employed on public works can only be assigned to perform work of the craft or trade to which the apprentice is registered. Work of the craft or trade consists of job duties normally assigned to journeymen in the apprenticeable occupation. Where an employer employs apprentices under the rules and regulations of the California Apprenticeship Council, as set forth in Labor Code Section 1777.5(c) (2), apprentices employed on public works must at all times work with or under the direct supervision of journeyman/men. The on-the-job training shall be in accordance with the apprenticeship standards and apprenticeship agreement under which the apprentice is training, provided that a contractor shall not be subject to any financial or administrative obligations to a trust fund or employee benefit plan unless the contractor has so agreed."

The wage rates paid to the apprentices shall not be less than the applicable wage determination as determined by the Department of Industrial Relations Division of Apprenticeship Standards (Contact DAS at (415) 703-4920 or at their website: www.dir.ca.gov/DAS).

RATIOS

The ratio of apprentice work to journeyman work shall conform to the requirements as mandated in Section 1777.5 of the California Labor Code. In the event that the Contractor fails to comply with apprenticeship requirements as mandated by California Labor Code Section 1777.5, the Contractor shall be subject to penalties in accordance with California Labor Code Section 1777.7.

If the Contractor fails to comply with the ratios as determined by the DLSE, the SLOCPW will issue a "Notice of Reprimand" and forward the matter to the DLSE.

All apprentices shall work under the direct supervision of a journeyman from the trade in which the apprentice is indentured. A journeyman shall be defined as set forth in the California Code of Regulations, Title 8 [apprenticeship] section 205, which defines a journeyman as a person who has either completed an accredited apprenticeship in his or her craft, or has completed the equivalent of an apprenticeship in length and content of work experience and all other requirements in the craft which has workers classified as journeyman in the apprenticeable occupation.

Contractors may use the following DAS apprenticeship forms (**Addendum I**) or a similar form that contains the required language when notifying the apprenticeship committees of a contract award, the dispatching of an apprentice and payment of the training fund contributions.

- DAS-140/ Notification of Contract Award
- DAS-142/ Request for Dispatch of Apprentice
- CAC-2/ Training Fund Contribution

XII. LIABILITY FOR UNPAID WAGES

a.) As required by Labor Code Section 1775, the Contractor and any Subcontractor shall forfeit to the SLOCPW not more than two hundred dollars ($200) per day for each worker who is paid less than the prevailing wage rate (including fringe benefits) required.

Additionally, Section 1813 of the Labor Code requires the Contractor or subcontractor to forfeit twenty-five dollars ($25) to the SLOCPW for each worker employed in the execution of the Contract for each calendar day a worker is permitted or required to work in excess of 8 hours per day or 40 hours per week at a rate less than 1 ½ times the hourly rate of pay for the worker classification involved. Moreover, the SLOCPW may withhold payment from the Contractor to ensure that the Contractor's obligation to pay prevailing wage rates is met.

b.) California Labor Code Section 1778 makes it a felony for anyone to require any laborer or mechanic employed on a public works project to ***kickback*** any portion of their wages.

XIII. POSTINGS

The Contractor shall post at each job site, in a conspicuous location readily available to the workers, a copy of all applicable wage determinations as well as notification that the project is a public works project as defined in Labor Code Section 1720 et seq.

XIV. LABOR COMPLIANCE MONITORING PROGRAM

The Contractor, and all subcontractors, shall cooperate in allowing approved representatives of the Labor Compliance Program access to the project job site for the purpose of conducting worker interviews to insure compliance with the requirement to pay proper prevailing wages on all projects.

A representative must at all times identify himself or herself while on the job site, and must restrict their actions to interviewing workers employed on the project.

XV. CERTIFIED PAYROLL RECORDS

a.) The Contractor shall adhere to the provisions of Labor Code Section 1776.

b.) The payroll records referred to must include the employee's:

A. name;
B. address;
C. social security number;
D. work classification;
E. straight time hours per day and total per week;
F. overtime hours per day and total per week;
G. gross wages earned this project;

H. gross wages earned on all other projects;
I. itemized deductions;
J. actual per diem wages paid; and
K. payroll check numbers.

In addition, the records must identify apprentices and the ratio of apprentices to journeymen.

c.) It's required that certified payroll records be kept by the Contractor in accordance with Labor Code Section 1776 and furnished to the SLOCPW **weekly** and shall be accompanied by a Certification, **signed in ink** by the Contractor or the contractor's agent attesting that the payrolls are correct and complete and the wage rates contained therein are not less than those set by the applicable wage determinations incorporated into this LCP. Provided all information and certifications required by California law are included therein, the Contractor may use the provided Certified Payroll Report or any form approved by the DIR or use its own payroll form provided it includes the same information and certifications. The SLOCPW reserves the right to **reject incomplete** payroll reports and request re-submittal of complete reports. (These forms are available from the Department of Industrial Relations and suggested forms are included in **Addendum J**)

d.) The Contractor shall be responsible for the submission of copies of payrolls of any and all Subcontractors. In the event that subcontractor payrolls are not submitted, the SLOCPW may withhold contract payments from the Contractor.

e.) Payroll data pertaining to owner-operators must be submitted on Certified Payroll Reports, including a copy of the DMV vehicle registration of the Owner-Operator with the first payroll that this owner-operators name appears on the certified payroll. Listing any individual as "Owner- Operator" **will not** be accepted as the classification is not recognized by the California Department of Industrial Relations, Director's Office of Policy, Research, and Legislation.

All payrolls are to be submitted to:

San Luis Obispo Department of Public Works
County Government Center, Room 206
San Luis Obispo, CA 93408

f.) As required by Labor Code Section 1776 (h), the Contractor shall forfeit to the SLOCPW one hundred dollars ($100) per day, per worker, for failing to comply strictly with requests by the SLOCPW for submittal of payroll documents and all supporting documents which include, but are not limited to, cancelled checks, time sheets, W-4 Forms, W-2 Forms, DE-6 Forms, and any other forms utilized in the course of business that are relevant to the payment of wages. In addition, according to California Labor Code Section 1777.1(c), the Contractor may also be subject to debarment by the Labor Commissioner for failure to furnish certified payroll records within thirty (30) days after receipt of the written notice for such records.

XVI. WORKING HOURS

a.) Generally, the Contractor shall not employ a worker more than eight (8) hours in a calendar day or forty (40) hours in a calendar week except upon compensation of one and one-half (1½) times the basic rate of pay for all hours worked in excess of eight (8) hours per day and forty (40) hours per week. Special rules may apply to specific worker classifications. See applicable wage determinations for overtime definitions. Recognized holidays shall be consistent with area practice in determining the applicability of overtime wage rates.

XVII. WITHHOLDING PAYMENTS FOR LABOR COMPLIANCE VIOLATIONS

In accordance with Labor Code Section 1727, the SLOCPW shall withhold, from any monies payable on account of work performed by the Contractor or Subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of the Contractor or its Subcontractor for unpaid wages and liquidated damages as specified in this Section. In the event of failure to pay any laborer or mechanic, including any apprentice, employed or working on the site of the Work, all or part of wages required by the contract, the SLOCPW may, after written notice to the Contractor (Notice of Withholding Contract Payments), take such action as may be necessary to cause the suspension of further payment, advance or guarantee of funds until such violations have ceased.

In accordance with Labor Code Section 1771.5, the SLOCPW shall withhold contract payments when payroll records are delinquent or inadequate.

XVIII. DISPUTES

The SLOCPW Labor Compliance Program shall adhere to the provisions of Labor Code Section 1771.6 and will provide the Contractor or Subcontractor an opportunity for review of assessed wages and penalties pursuant to the provisions of Labor Code Section 1742.

PART II - ENFORCEMENT

LABOR COMPLIANCE PROGRAM

I. LABOR COMPLIANCE PROGRAM COMPONENTS

Calls for Bids/ Contracts

The SLOCPW will secure the State wage determinations, and make them available to any interested party for each public works contract funded under Proposition 84, thus assuring contractors bidding a project are aware of the requirements of Chapter 1 of Part 7 of Division 2 of the State Labor Code. Additionally, each contractor securing a contract on such a public works project is required to sign an acknowledgment that he or she understands the prevailing wage requirements and that contract payments shall not be made when payroll records are delinquent or inadequate.

Preconstruction Conference

One of the most important aspects of assuring labor compliance on a project is to conduct a thorough pre-construction conference with the general contractor and the subcontractors. The conference sets forth the framework in establishing the labor standards parameters. The SLOCPW conference agenda includes discussion and handouts of the following items:

1. Appropriate State Wage Determination
2. State Labor Standard Provisions (Labor Code Sections 1720, i.e.)
3. Payroll Reporting Forms (A-1-131 Form) and Certification
4. Certification of Applicable Fringe Benefit Payments
5. Contractor's/Subcontractor's Certification Concerning Labor Standards and Prevailing Wages
6. Posting Requirement of Notice to All Employees (General Contractor)
7. Suggested Checklist of Labor Law Requirements (CCR 16430**)** (Addendum K)

Contractor Eligibility Verification

Prior to awarding a contract, the SLOCPW shall verify that the successful bidder and all contractors are not on the state list of ineligible contractors, that they possess a valid state contractor's license and meet other licensing requirements, e.g. workers compensation insurance.

Certified Payroll Records

The SLOCPW reviews all of the certified payroll records (A-1-131 form) on a weekly basis and compares them to the wage decision and/or wage determination in effect.

On-Site Monitoring

A significant step in determining project labor standards compliance is to conduct frequent on-site employee interviews. It is critical to have early detection of potential violations. The results of the interviews are compared to the contractor's certified payroll records to ascertain that the correct classification, hours and wages were paid. The mailing of employee questionnaires may also be utilized when it is cumbersome or employees are reluctant to be interviewed on-site.

Withholding of Penalties, Forfeitures and Underpayments of Wages for Violations of Prevailing Wage Laws

The SLOCPW maintains with awarding bodies in establishing a special account for depositing funds withheld for wage restitution and/or penalties. A contractor is notified in writing specifying the reasons for the withholding or suspension of contract payments.

Willful violations of public work laws pursuant to Labor Code Section 1777.1 (c) shall be reported to the State Labor Commissioner in writing within 30 days from the time the LCP became aware specifying the name and address of the contractor, the public works project, the awarding agency, and the amount of money withheld by the awarding body.

II. FILING OF STATEMENTS OF ECONOMIC INTEREST (EPPC FORM 700 - ADDENDUM A)

The SLOCPW shall determine and designate those employees and consultants of the program who participate in making governmental decisions for the Awarding Body pursuant to Title 2, California Code of Regulations, section 18700-18702.4 and those employees and consultants will be required to file Statements of Economic Interest (FPPC Form 700 and to comply with other applicable requirements of the Political Reform Act in connection with work performed on behalf of the Awarding Body.

III. ANNUAL REPORTS (LCP-ARI - ADDENDUM B)

The SLOCPW shall submit to the Director of the Department of Industrial Relations (DIR) a Labor Compliance Program annual report on its operation by no later than August 31st of each year. The annual report shall cover the twelve month period commencing on July 1 of the preceding calendar year and ending on June 30th of the year in which the report is due.

The annual report shall be made on the LCP-ARI form and the information in the report shall be sufficient detail to afford a basis for evaluating the scope of and level of enforcement activity of the Labor Compliance Program. The annual report shall also include such additional information as the Labor Compliance Program may be required to report as a condition of its approval.

IV. REPORTS AND AUDITS (AUDIT RECORD WORKSHEETS, PUBLIC WORKS INVESTIGATIVE WORKSHEET, PUBLIC WORKS AUDIT WORKSHEET AND PREVAILING WAGE DETERMINATION SUMMARY - ADDENDUM C)

The primary function of the Labor Compliance Program is to ensure that public works contractors comply with the prevailing wage requirements found in the Public Works Chapter of the State Labor Code. Payroll records furnished by contractors and subcontractors in accordance with section 16421 (a) (3) of the California Code of Regulations and Labor Code section 1776 shall be reviewed by the Labor Compliance Program as promptly and as practicable after receipt of the records but in no event more than 30 days after such receipt. Payroll records will be reviewed for proper classifications, wage rates and other consideration in compliance with Labor Code section 1776 (b) and that the correct prevailing wage rates have been reported as paid for each classification of labor listed and with confirmation of payment.

"Confirmation" of payroll records furnished by contractors and subcontractors shall be defined as an independent corroboration of reported prevailing wage payments. Confirmation may be accomplished through worker interviews, examination of paychecks or paycheck stubs, direct confirmation of payments from third party recipients of "Employer Payments" (as defined at section 16000 of Title 8 of the California Code of Regulations), or any other reasonable method of corroboration. For each month in which a contractor or subcontractor reports having workers employed on the public work, confirmation of furnished payroll records shall be undertaken randomly for at least one worker for at least one weekly period within that month. Confirmation shall also be undertaken whenever complaints from workers or other interested persons or other circumstances or information reasonably suggest to the Labor Compliance Program that payroll records furnished by a contractor or subcontractor are inaccurate.

Representatives of the Labor Compliance Program shall conduct in-person inspections at the site or sites at which the contract for public work is being performed ("On-Site Visits"). On-Site Visits may be undertaken randomly or as deemed necessary by the Labor Compliance Program, but shall be undertaken during each week that workers are present at sites at which the contract for public work is being performed. All On-Site Visits shall include visual inspection of (1) the copy of the determination(s) of the Director of Industrial Relations of the prevailing wage rate of per diem wages required to be posted at each job site in compliance with Labor Code Section 1773.2, and (2) the Notice of Labor Compliance Program Approval required to be posted at the job site in accordance with section 16429 above, listing a telephone number to call for inquiries, questions, or assistance with regard to the Labor Compliance Program. On-Site Visits may include other activities deemed necessary by the Labor Compliance Program to independently corroborate prevailing wage payments reported on payroll records furnished by contractors and subcontractors.

An Audit, as defined herein, shall be prepared by the Labor Compliance Program whenever the Labor Compliance Program has determined that there has been a violation of the Public Works Chapter of the Labor Code resulting in the underpayment of wages. An "Audit" for this purpose shall be defined as a written summary reflecting prevailing wage deficiencies for each underpaid worker, and including any penalties to be assessed under Labor Code Sections 1775 and 1813, as determined by the Labor Compliance Program after consideration of the best information available as to actual hours worked, amounts paid, and classifications of workers employed in connection with the public work. Such available information may include, but is not limited to, worker interviews, complaints from workers or other interested persons, all time cards, cancelled checks, cash receipts, trust fund forms, books, documents, schedules, forms, reports, receipts or

other evidences which reflect job assignments, work schedules by days and hours, and the disbursement by way of cash, check, or in whatever form or manner, of funds to a person(s) by job classification and/or skill pursuant to a public works project. An Audit is sufficiently detailed when it enables the Labor Commissioner, if requested to determine the amount of forfeiture under section 16437, to draw reasonable conclusions as to compliance with the requirements of the Public Works Chapter of the Labor Code, and to enable accurate computation of underpayments of wages to workers and of applicable penalties and forfeitures. An Audit using the forms in Addendum C, when accompanied by a brief narrative identifying the Bid Advertisement Date of the contract for public work and summarizing the nature of the violation and the basis upon which the determination of underpayment was made, presumptively demonstrates sufficiency. Records supporting an Audit shall be maintained by the Labor Compliance Program to satisfy its burden of coming forward with evidence in administrative review proceedings under Labor Code Section 1742 and the Prevailing Wage Hearing Regulations found at sections 17201-17270 of Title 8 of the California Code of Regulations.

After the Labor Compliance Program has determined that violations of the prevailing wage laws have resulted in the underpayment of wages and an audit has been prepared, notification shall be provided to the contractor and affected subcontractor of an opportunity to resolve the wage deficiency prior to a determination of the amount of forfeiture by the Labor Commissioner pursuant to these regulations. The contractor and affected subcontractor shall be provided at least 10 days following such notification to submit exculpatory information consistent with the "good faith mistake" factors set forth in Labor Code Section 1775(a)(2)(A)(i) and (ii). If, based upon the contractor's submission, the Labor Compliance Program reasonably concludes that the failure to pay the correct wages was a good faith mistake, and has no knowledge that the contractor and affected subcontractor have a prior record of failing to meet their prevailing wage obligations, the Labor Compliance Program shall not be required to request the Labor Commissioner for a determination of the amount of penalties to be assessed under Labor Code Section 1775 if the underpayment of wages to workers is promptly corrected and proof of such payment is submitted to the Labor Compliance Program. For each instance in which a wage deficiency is resolved in accordance with this regulation, the Labor Compliance Program shall maintain a written record of the failure of the contractor or subcontractor to meet its prevailing wage obligation. The record shall identify the public works project, the contractor or affected subcontractor involved, and the gross amount of wages paid to workers to resolve the prevailing wage deficiency; and the record shall also include a copy of the Audit prepared pursuant to subpart (e) above along with any exculpatory information submitted to the Labor Compliance Program by the affected contractor or subcontractor.

V. DUTIES OF LABOR COMPLIANCE PROGRAM (SUGGESTED SINGLE PROJECT LABOR COMPLIANCE REVIEW AND ENFORCEMENT REPORT FORM - ADDENDUM D)

It is the responsibility of a Labor Compliance Program to enforce prevailing wage requirements, consistent with the policy of the state as expressed in Labor Code Section 90.5(a). A Labor Compliance Program shall take reasonable, vigorous, and prompt action to (1) determine whether violations exist, and (2) enforce compliance, including through imposition of appropriate penalties and formal enforcement action, when violations are found. A Labor

Compliance Program shall neither avoid use of its enforcement authority based on cost considerations nor shall it use that authority in an unreasonable manner to gain leverage over a contractor or subcontractor. Unreasonable use of enforcement authority includes, but is not necessarily limited to, prolonged or excessive withholdings of contract payments without making a determination that a violation has occurred.

The SLOCPW'S Labor Compliance Program shall have a duty to the Director to enforce the requirements of Chapter 1 of Part 7 of Division 2 of the Labor Code and these regulations in a manner consistent with the practice of the Labor Commissioner. It is the practice of the Labor Commissioner to refer to the Director's ongoing advisory service of web-posted public works coverage determinations as a source of information and guidance in making enforcement decisions. It is also the practice of the Labor Commissioner to be represented by an attorney in prevailing wage hearings conducted pursuant to Labor Code Section 1742(b) and sections 17201-17270 of Title 8 of the California Code of Regulations.

Upon receipt of a written complaint alleging that a contractor or subcontractor has failed to pay prevailing wages as required by the Labor Code, the Labor Compliance Program shall do all of the following:

(1) Within 15 days after receipt of the complaint, send a written acknowledgment to the complaining party that the complaint has been received and identifying the name, address, and telephone number of the investigator assigned to the complaint;

(2) Within 15 days after receipt of the complaint, provide the affected contractor with the notice required under Labor Code section 1775(c) if the complaint is against a subcontractor;

(3) Notify the complaining party in writing of the resolution of the complaint within ten days after the complaint has been resolved by the Labor Compliance Program;

(4) Notify the complaining party in writing at least once every 30 days of the status of a complaint that has not been resolved by the Labor Compliance Program; and

(5) Notify the complaining party in writing at least once every 90 days of the status of a complaint that has been resolved by the Labor Compliance Program but remains under review or in litigation before another entity.

(c) The duties of a Labor Compliance Program with respect to apprenticeship standards are as follows:

(1) Either the Awarding Body or the Labor Compliance Program acting on its behalf shall (A) inform contractors and subcontractors bidding public works about apprenticeship requirements, (B) send copies of awards and notices of discrepancies to the Division of Apprenticeship Standards as required under Section 1773.3 of the Labor Code, and (C) refer complaints and promptly report suspected violations of apprenticeship requirements to the Division of Apprenticeship Standards.

(2) The Labor Compliance Program shall be responsible for enforcing prevailing wage pay requirements for apprentices consistent with the practice of the Labor Commissioner, including (A) that any contributions required pursuant to Labor Code Section 1777.5(m) are paid to the appropriate entity, (B) that apprentices are paid no less than the prevailing apprentice rate, (C) that workers listed and paid as apprentices on the certified payroll records are duly registered as apprentices with the Division of Apprenticeship Standards, and (D) requiring that the regular prevailing wage rate be paid (i) to any worker who is not a duly registered apprentice and (ii) for all hours in excess of the maximum ratio permitted under Labor Code Section 1777.5(g), as determined at the conclusion of the employing contractor or subcontractor's work on the public works contract.

(d) For each public work project subject to a Labor Compliance Program's enforcement of prevailing wage requirements, a separate, written summary of labor compliance activities and relevant facts pertaining to that particular project shall be maintained. That summary shall demonstrate that reasonable and sufficient efforts have been made to enforce prevailing wage requirements consistent with the practice of the Labor Commissioner. Appendix C (Addendum D in Manual) following this section provides a suggested format for tracking and monitoring enforcement activities. Compliance records for a project shall be retained until the later of (1) at least one year after the acceptance of the public work or five years after the cessation of all labor on a public work that has not been accepted, or (2) one year after a final decision or judgment in any litigation under Labor Code Section 1742. For purposes of this section, a written summary or report includes information maintained electronically, provided that the summary or report can be printed out in hard copy form or is in an electronic format that (1) can be transmitted by e-mail or compact disk and (2) would be acceptable for the filing of documents in a federal or state court of record within this state.

(e) The Labor Commissioner may provide, sponsor, or endorse training on how to enforce prevailing wage requirements, including but not necessarily limited to the subjects of (1) ascertaining prevailing wage requirements and rates from the Department of Industrial Relations, Director’s Office of Policy, Research, and Legislation, (2) monitoring and investigation under section 16432 above, (3) enforcement responsibilities under this section and sections 16435-16439 below, and (4) procedural requirements and responsibilities as an enforcing agency under Labor Code sections 1741-1743 and 1771.6 and sections 17201-17270 of Title 8 of the California Code of Regulations.

VI. WITHHOLDING CONTRACT PAYMENTS WHEN PAYROLL RECORDS ARE DELINQUENT OR INADEQUATE (ADDENDUM H)

Definitions:

(a) "Withhold" means to cease payments by the Awarding Body, or others who pay on its behalf, or agents, to the general contractor. Where the violation is by a subcontractor, the general contractor shall be notified of the nature of the violation and reference made to its rights under Labor Code Section 1729.

(b) "Contracts." Except as otherwise provided by agreement, only contracts under a single master contract, including a Design-Build contract, or contracts entered into as stages of a single project, may be the subject of withholding.

(c) "Delinquent payroll records" means those not submitted on the date set in the contract.

(d) "Inadequate payroll records" are any one of the following:

(1) A record lacking any of the information required by Labor Code Section 1776;

(2) A record which contains all of the required information but is not certified, or is certified by someone who is not an agent of the contractor or subcontractor;

(3) A record remaining uncorrected for one payroll period, after the Labor Compliance Program has given the contractor or subcontractor notice of inaccuracies detected by audit or record review. However prompt correction will stop any duty to withhold if such inaccuracies do not amount to 1 percent of the entire Certified Weekly Payroll in dollar value and do not affect more than half the persons listed as workers employed on that Certified Weekly Payroll, as defined in Labor Code Section 1776 and section 16401 of Title 8 of the California Code of Regulations.

(e) The withholding of contract payments when payroll records are delinquent or inadequate is required by Labor Code Section 1771.5(b) (5), and it does not require the prior approval of the Labor Commissioner. The Awarding Body shall only withhold those payments due or estimated to be due to the contractor or subcontractor whose payroll records are delinquent or inadequate, plus any additional amount that the Labor Compliance Program has reasonable cause to believe may be needed to cover a back wage and penalty assessment against the contractor or subcontractor whose payroll records are delinquent or inadequate; provided that a contractor shall be required in turn to cease all payments to a subcontractor whose payroll records are delinquent or inadequate until the Labor Compliance Program provides notice that the subcontractor has cured the delinquency or deficiency.

(f) When contract payments are withheld under this section, the Labor Compliance Program shall provide the contractor and subcontractor, if applicable, with immediate written notice that includes all of the following: (1) a statement that payments are being withheld due to delinquent or inadequate payroll records, and that identifies what records are missing or states why records that have been submitted are deemed inadequate; (2) specifies the amount being withheld; and (3) informs the contractor or subcontractor of the right to request an expedited hearing to review the withholding of contract payments under Labor Code Section 1742, limited to the issue of whether the records are delinquent or inadequate or the Labor Compliance Program has exceeded its authority under this section.

(g) No contract payments shall be withheld solely on the basis of delinquent or inadequate payroll records after the required records have been produced.

(h) In addition to withholding contract payments based on delinquent or inadequate payroll records, penalties shall be assessed under Labor Code Section 1776(g) for failure to timely comply with a written request for certified payroll records. The assessment of penalties under Labor Code Section 1776(g) does require the prior approval of the Labor Commissioner under section 16436 of these regulations.

VII. WITHHOLDING CONTRACT PAYMENTS WHEN, AFTER INVESTIGATIONS, IT IS ESTABLISHED THAT UNDERPAYMENTS OR OTHER VIOLATIONS HAS OCCURRED (NOTICE TO WITHHOLD OF CONTRACT PAYMENTS) - ADDENDUM G

(a) "Withhold" and "contracts" have the same meaning set forth in sections 16435(a) and 16435(b) of these regulations.

(b) Where the violation is by a subcontractor, the general contractor shall be notified of the nature of the violation and reference made to its rights under Labor Code Section 1729.

(c) "Amount equal to the underpayment" is the total of the following determined by payroll review, audit, or admission of contractor or subcontractor:

1) The difference between amounts paid workers and the correct General Prevailing Rate of Per Diem Wages, as defined in Labor Code Section 1773, and determined to be the prevailing rate due workers in such craft, classification or trade in which they were employed and the amounts paid;

(2) The difference between amounts paid on behalf of workers and the correct amounts of Employer Payments, as defined in Labor Code Section 1773.1 and determined to be part of the prevailing rate costs of contractors due for employment of workers in such craft, classification or trade in which they were employed and the amounts paid;

(3) Estimated amounts of "illegal taking of wages";

(4) Amounts of apprenticeship training contributions paid to neither the program sponsor's training trust nor the California Apprenticeship Council;

(5) Estimated penalties under Labor Code Sections 1775, 1776, and 1813.

(d) The withholding of contract payments when, after investigation, it is established that underpayment or other violations have occurred requires the prior approval of the Labor Commissioner under sections 16436 and 16437 of these regulations.

VIII. FORFEITURES REQUIRING APPROVAL BY THE LABOR COMMISSIONER (REQUEST FOR APPROVAL OF FORFEITURE - SUGGESTED FORMAT - ADDENDUM E)

(a) For purposes of this section and section 16437 below, "forfeitures" means the amount of wages, penalties, and forfeitures assessed by the Labor Compliance Program and proposed to be withheld pursuant to Labor Code section 1771.6(a), and includes the following: (1) the difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing wage rate by the contractor or subcontractor; and (2) penalties assessed under Labor Code Sections 1775, 1776 and 1813.

(b) If the aggregate amount of forfeitures assessed as to a contractor or subcontractor is less than $1000.00, the forfeitures shall be deemed approved by the Labor Commissioner upon service and the Labor Commissioner's receipt of copies of the following: (1) the Notice of Withholding of Contract Payments authorized by Labor Code Section 1771.6(a); (2) an Audit as defined in section 16432(e) of these regulations, and (3) a brief narrative identifying the Bid Advertisement Date of the contract for public work and summarizing the nature of the violation, the basis of the underpayment, and the factors considered in determining the assessment of penalties, if any, under Labor Code Section 1775.

(c) For all other forfeitures, approval by the Labor Commissioner shall be requested and obtained in accordance with section 16437 below.

IX. DETERMINATION OF AMOUNT OF FORFEITURE BY THE LABOR COMMISSIONER

(a) Where the Labor Compliance Program requests a determination of the amount of forfeiture, the request shall include a file or report to the Labor Commissioner which contains at least the information specified in subparts (1) through (9) below. Appendix D is a suggested format for a Request for Approval of Forfeiture under this section.

(1) Whether the public work has been accepted by the awarding body and whether a valid notice of completion has been filed, the dates if any when those events occurred, and the amount of funds being held in retention by the Awarding Body;

(2) Any other deadline which if missed would impede collection;

(3) Evidence of violation, in narrative form;

(4) Evidence of violation obtained under section 16432 of these regulations and a copy of the Audit prepared in accordance with section 16432(e) setting forth the amounts of unpaid wages and applicable penalties;

(5) Evidence that before the forfeiture was sent to the Labor Commissioner (A) the contractor and subcontractor were given the opportunity to explain why there was no violation, or that

any violation was caused by good faith mistake and promptly corrected when brought to the contractor or subcontractor's attention, and (B) the contractor and subcontractor either did not do so or failed to convince the Labor Compliance Program of its position;

(6) Where the Labor Compliance Program seeks not only wages but also a penalty as part of the forfeiture, and the contractor or subcontractor has unsuccessfully contended that the cause of violation was a good faith mistake that was promptly corrected when brought to the contractor or subcontractor's attention, a short statement should accompany the proposal for a forfeiture, with a recommended penalty amount pursuant to Labor Code Section 1775(a);

(7) Where the Labor Compliance Program seeks only wages or a penalty less than $50 per day as part of the forfeiture because the contractor or subcontractor has successfully contended that the cause of the violation was a good faith mistake that was promptly corrected when brought to the contractor or subcontractor's attention, the file should include the evidence as to the contractor or subcontractor's knowledge of his or her obligation, including the program's communication to the contractor or subcontractor of the obligation in the bid invitations, at the prejob conference agenda and records, and any other notice given as part of the contracting process. With the file should be a statement, similar to that described in (6), and recommended penalty amounts, pursuant to Labor Code Section 1775(a);

(8) The previous record of the contractor and subcontractor in meeting their prevailing wage obligations; and

(9) Whether the Labor Compliance Program has been granted approval on only an interim or temporary basis under sections 16425 or 16426 above or whether it has been granted extended approval under section 16427 above.

(b) The file or report shall be served on the Labor Commissioner as soon as practicable after the violation has been discovered, and not less than 30 days before the final payment, but in no event not less than 30 days before the expiration of the limitations period set forth in Labor Code Section 1741.

(c) A copy of the recommended forfeiture and the file or report shall be served on the contractor and subcontractor at the same time as it is sent to the Labor Commissioner. The Labor Compliance Program may exclude from the documents served on the contractor and subcontractor copies of documents secured from the contractor or subcontractor during an audit, investigation, or meeting if those are clearly referenced in the file or report.

(d) The Labor Commissioner shall affirm, reject, or modify the forfeiture in whole or in part as to the wages and penalties due.

(e) The Labor Commissioner's determination of the forfeiture is effective on one of the two following dates:

(1) For all programs other than those having extended authority under section 16427 of these regulations, on the date the Labor Commissioner serves by first class mail, on the Labor Compliance Program, on the Awarding Body if different, on the contractor and on the subcontractor, if any, an endorsed copy of the proposed forfeiture, or a newly drafted forfeiture statement which sets out the amount of forfeiture approved. Service on the contractor or subcontractor is effective if made on the last address supplied by the contractor or subcontractor in the record. The Labor Commissioner's approval, modification or disapproval of the proposed forfeiture shall be served within 30 days of receipt of the proposed forfeiture.

(2) For programs with extended authority under section 16427 above, approval is effective 20 days after the requested forfeitures are served upon the Labor Commissioner, unless the Labor Commissioner serves a notice upon the parties, within that time period, that this forfeiture request is subject to further review. For such programs, a notice that approval will follow such a procedure will be included in the transmittal of the forfeiture request to the contractor. If the Labor Commissioner notifies the parties of a decision to undertake further review, the Labor Commissioner's final approval, modification or disapproval of the proposed forfeiture shall be served within 30 days of the date of notice of further review.

X. DEPOSITS OF PENALTIES AND FORFEITURES WITHHELD

When the involvement of the Labor Commissioner has been limited to a determination of the actual amount of penalty, forfeiture or underpayment of wages, and the matter has been resolved without litigation by or against the Labor Commissioner, the Labor Compliance Program shall deposit penalties and forfeitures with the Awarding Body.

When collection of fines, penalties or forfeitures results from administrative proceedings or court action to which the Labor Commissioner and Awarding Body or its Labor Compliance Program are both parties, the fines, penalties or forfeitures shall be divided between the general funds of the state and the Awarding Body, as the Hearing Officer or court may decide.

All penalties recovered in administrative proceedings or court action brought by or against the Labor Commissioner and to which the Awarding Body or its Labor Compliance Program is not a party, shall be deposited in the general fund of the state.

All wages and benefits which belong to an employee and are withheld or collected from a contractor or subcontractor, either by withholding or as a result of administrative proceedings or any court action, and which have not been paid to the employee or irrevocably committed on the employee’s behalf to a benefit fund, shall be deposited with the Labor Commissioner who shall handle such wages and benefits in accordance with Labor Code section 96.7.

XI. REQUEST FOR REVIEW OF A LABOR COMPLIANCE PROGRAM ENFORCEMENT ACTION; SETTLEMENT AUTHORITY (NOTICE OF TRANSMITTAL AND NOTICE OF OPPORTUNITY TO REVIEW EVIDENCE PURSUANT TO LABOR CODE 1742 (b) (ADDENDUM F)

(a) A contractor or subcontractor may request a settlement meeting pursuant to Labor Code Section 1742.1(b) and may request review of a Labor Compliance Program enforcement action in accordance with Labor Code Sections 1771.6(b) and 1742 and the regulations found at sections 17201-17270 of Title 8 of the California Code of Regulations. The Labor Compliance Program shall have the rights and responsibilities of the Enforcing Agency (as defined in section 17202(f) of Title 8 of the California Code of Regulations), in responding to such a request for review, including but not limited to the obligations to serve notices, transmit the Request for Review to the hearing office, and provide an opportunity to review evidence in a timely manner, to participate through counsel in all hearing proceedings, and to meet the burden of establishing prima facie support for the Notice of Withholding of Contract Payments.

(b) If a contractor or subcontractor seeks review of a Labor Compliance Program enforcement action, the Labor Commissioner may intervene to represent the Awarding Body, or to enforce relevant provisions of the Labor Code consistent with the practice of the Labor Commissioner, or both.

(c) Except in cases where the Labor Commissioner has intervened pursuant to subpart (b) above, the Labor Compliance Program shall have the authority to prosecute, settle, or seek the dismissal of any Notice of Withholding of Contract Payments issued pursuant to Labor Code Section 1771.6 and any review proceeding under Labor Code Section 1742, without any further need for approval by the Labor Commissioner. Whenever a Labor Compliance Program settles in whole or in part or seeks and obtains the dismissal of a Notice of Withholding of Contract Payments or a review proceeding under Labor Code Section 1742, the Labor Compliance Program shall document the reasons for the settlement or request for dismissal and shall make that documentation available to the Labor Commissioner upon request.

XII. REQUEST FOR PAYROLL RECORDS

(a) Requests may be made by any person for certified copies of payroll records. Requests shall be made to any of the following:

(1) the body awarding the contract, or

(2) any office of the Division of Labor Standards Enforcement, or the Division of Apprenticeship Standards.

(b) Requests for certified copies of payroll records pursuant to Section 1776 of the Labor Code may be made by any person. However, any such request shall be in writing and contain at least the following information:

(1) The body awarding the contract;

(2) The contract number and/or description;

(3) The particular job location if more than one;

(4) The name of the contractor;

(5) The regular business address, if known.

NOTE: Requests for records of more than one contractor of subcontractor must list the information regarding that contractor individually, even if all requests pertain to the same particular public works project. Blanket requests covering an entire public works project will not be accepted; unless contractor and subcontractor responsibilities regarding the project are not clearly defined.

(c) Acknowledgment of Request. The public entity receiving a request for payroll records shall acknowledge receipt of such, and indicate the cost of providing the payroll records based on an estimate by the contractor, subcontractor or public entity. The acknowledgment of the receipt of said request for payroll records may be accomplished by the public entity's furnishing a copy of its written correspondence requesting certified copies of the payroll records sent to the specific contractor pursuant to Section 16400(d) below, to the person who requested said records.

(d) Request to Contractor. The request for copies of payroll records by the requesting public entity shall be in any form and/or method which will assure and evidence receipt thereof. The request shall include the following:

(1) Specify the records to be provided and the form upon which the information is to be provided;

(2) Conspicuous notice of the following:

(A) that the person certifying the copies of the payroll records is, if not the contractor, considered as an agent acting on behalf of the contractor; and

(B) that failure to provide certified copies of the records to the requesting public entity within 10 working days of the receipt of the request will subject the contractor to a penalty of twenty-five ($25.00) dollars per calendar day or portion thereof for each worker until strict compliance is effectuated;

(3) Cost of preparation as provided in Section 16402; and

(4) Provide for inspection.

(e) Inspection of Payroll Records. Inspection of the original payroll records at the office of the contractor(s) pursuant to subdivision (b) of Section 1776 of the Labor Code shall be limited to the public entities upon reasonable written or oral notice.

XIII. REPORTING OF PAYROLL REQUEST

(a) Reporting Format. The format for reporting of payroll records requested pursuant to Labor Code Section 1776 shall be on a form provided by the public entity. Copies of the forms may be

procured at any office of the Division of Labor Standards Enforcement (DLSE) throughout the state and/or:

Department of Industrial Relations, Director's Office of Policy, Research, and Legislation
P.O. Box 420603 San Francisco, CA 94101

ATTENTION: Prevailing Wage Unit

Acceptance of any other format shall be conditioned upon the requirement that the alternate format contain all of the information required pursuant to Labor Code Section 1776. If, however, the contractor does not comply with the provisions of Labor Code Section 1776, the Labor Commissioner may require the use of DIR's suggested format, "Public Works Payroll Reporting Form" (Form A-1-131).

(b) Words of Certification. The form of certification shall be as follows: I, _____ (Name-print) the undersigned, am _____ (position in business) with the authority to act for and on behalf of _____, (name of business and/or contractor) certify under penalty of perjury that the records or copies thereof submitted and consisting of _____ (description, no. of pages) are the originals or true, full and correct copies of the originals which depict the payroll record(s) of the actual disbursements by way of cash, check, or whatever form to the individual or individuals named. Date:_____ Signature:_____

A public entity may require a more strict and/or more extensive form of certification.

XIV. COST OF PREPARATION

The cost of preparation to each contractor, subcontractor, or public entity when the request was made shall be provided in advance by the person seeking the payroll record. Such cost shall be $1 for the first page of the payroll record and 25 cents for each page thereafter, plus $10 to the contractor or subcontractor for handling costs. Payment in the form of cash, check or certified money order shall be made prior to release of the documents to cover the actual costs of preparation.

XV. PRIVACY CONSIDERATION

(a) When notice has been sent as provided in section 16411, above, the awarding body shall proceed to withhold, retain, or forfeit the amount stated in the notice, pursuant to Labor Code § 1727. Such withholding, retention, or forfeiture shall be subject to the right of a contractor or affected subcontractor to request a hearing, as provided in section 16413, below, and further subject to the right of a contractor or a contractor's assignee to bring suit against the awarding body as provided by Labor Code §§ 1731-1733.

(b) Nothing in these regulations shall extend, or affect in any way, the statutory time limits provided by Labor Code §§ 1731-1733.

XVI. USE OF ELECTRONIC REPORTING FORMS

The certified payroll records required by Labor Code Section 1776 may be maintained and submitted electronically subject to all of the following conditions:

(a) The reports must contain all of the information required by Labor Code Section 1776, with the information organized in a manner that is similar or identical to how the information is reported on the Department of Industrial Relations' suggested "Public Works Payroll Reporting Form" (Form A-1-131);

(b) The reports shall be in a format and use software that is readily accessible and available to contractors, awarding bodies, Labor Compliance Programs, and the Department of Industrial Relations;

(c) Reports submitted to an awarding body, a Labor Compliance Program, the Division of Labor Standards Enforcement, or other entity within the Department of Industrial Relations must be either (1) in the form of a non-modifiable image or record that bears an electronic signature or includes a copy of any original certification made on paper, or alternatively (2) printed out and submitted on paper with an original signature;

(d) The requirements for redacting certain information shall be followed when certified payroll records are disclosed to the public pursuant to Labor Code Section 1776(e), whether the records are provided electronically or as hard copies; and

(e) No contractor or subcontractor shall be mandated to submit or receive electronic reports when it otherwise lacks the resources or capacity to do so, nor shall any contractor or subcontractor be required to purchase or use proprietary software that is not generally available to the public.

XVII. INQUIRIES

All questions regarding this manual and all matters concerning the payment of prevailing wages should be referred to:

Dave O'Halloran
San Luis Obispo County Public Works
County Government Center, Room 206
San Luis Obispo, CA 93408
(805) 781-5252

For more information, log on to:
http://www.dir.ca.gov

FPPC FORM 700-ADDENDUM A

CALIFORNIA FORM 700
FAIR POLITICAL PRACTICES COMMISSION
A PUBLIC DOCUMENT

STATEMENT OF ECONOMIC INTERESTS

COVER PAGE

Date Received
Official Use Only

Please type or print in ink.

NAME OF FILER (LAST) (FIRST) (MIDDLE)

1. Office, Agency, or Court

Agency Name

Division, Board, Department, District, if applicable

Your Position

▶ If filing for multiple positions, list below or on an attachment.

Agency: _____ Position: _____

2. Jurisdiction of Office *(Check at least one box)*

☐ State

☐ Multi-County _____

☐ City of _____

☐ Judge (Statewide Jurisdiction)

☐ County of _____

☐ Other _____

3. Type of Statement *(Check at least one box)*

☐ **Annual:** The period covered is January 1, 2010, through December 31, 2010.

-or-

The period covered is ____/____/____, through December 31, 2010.

☐ **Assuming Office:** Date ____/____/____

☐ **Candidate:** Election Year _____ Office sought, if different than Part 1: _____

☐ **Leaving Office:** Date Left ____/____/____
(Check one)

○ The period covered is January 1, 2010, through the date of leaving office.

○ The period covered is ____/____/____, through the date of leaving office.

4. Schedule Summary

Check applicable schedules or "None."

▶ **Total number of pages including this cover page:** _____

☐ **Schedule A-1** - *Investments* – schedule attached

☐ **Schedule A-2** - *Investments* – schedule attached

☐ **Schedule B** - *Real Property* – schedule attached

☐ **Schedule C** - *Income, Loans, & Business Positions* – schedule attached

☐ **Schedule D** - *Income – Gifts* – schedule attached

☐ **Schedule E** - *Income – Gifts – Travel Payments* – schedule attached

-or-

☐ **None** - *No reportable interests on any schedule*

5. Verification

MAILING ADDRESS (STREET) CITY STATE ZIP CODE
(Business or Agency Address Recommended - Public Document)

DAYTIME TELEPHONE NUMBER
( )

E-MAIL ADDRESS

I have used all reasonable diligence in preparing this statement. I have reviewed this statement and to the best of my knowledge the information contained herein and in any attached schedules is true and complete. I acknowledge this is a public document.

I certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Date Signed _____ *(month, day, year)*

Signature _____ *(File the originally signed statement with your filing officer.)*

LCP-ARI-ADDENDUM B

LCP-AR1

LABOR COMPLIANCE PROGRAM ANNUAL REPORT

Format for Awarding Body that enforces its own Labor Compliance Program for some but not all projects

Report for the reporting period _____ (mm/dd/yyyy) to _____ (mm/dd/yyyy)

1. Name of Labor Compliance Program (LCP) :	
2. LCP I.D. Number (assigned by DIR):	3. Date of Initial Approval:
4. Contact person (include name, title, address, telephone, fax, and e-mail, if available):	

5. Did LCP perform any LC § 1771.5 enforcement activities during the 12 months in the reporting period?

Please check one: ☐ Yes If Yes, proceed to item 6 on the next page

☐ No If No, complete the information below, sign the form and submit to DIR, Office of the Director, Attn: LCP Special Assistant, 455 Golden Gate Avenue, 10th Floor, San Francisco CA 94102

What suggestions do you have for the Department of Industrial Relations to better assist you with your program in the coming year? (attach additional sheets if necessary)

SUBMITTED BY:

Signature	Name and Title	Date

6. LC § 1771.5 enforcement activities (provide all information requested, attaching as many sheets as necessary).

A. List projects handled by LCP within the past 12 months.

Project Name	Bid Advertisement Date	Prime Contractor	Contract Amount
Total			

B. Summary of all wages and penalties assessed and/or recovered.

Project Name	Affected Contractor (who directly employed the worker)	Amount Assessed	Amount Recovered	Approval of Forfeiture Requested from Labor Commissioner?	Description of Violation
				☐ Yes ☐ No	
				☐ Yes ☐ No	
				☐ Yes ☐ No	
				☐ Yes ☐ No	
				☐ Yes ☐ No	
				☐ Yes ☐ No	
				☐ Yes ☐ No	
				☐ Yes ☐ No	
Total					

C. For any amount identified in item B for which approval of forfeiture not requested from the Labor Commissioner, please explain below.

Project Name	Amount Assessed	Amount Recovered	Explanation
Total			

D. For any amount identified in item B for which approval of forfeiture was requested from the Labor Commissioner, please provide the following:

Project Name	Amount Assessed					Amount Recovered				
	LC §1776(g)	LC § 1775	LC § 1813	Wages	Total	LC § 1776(g)	LC § 1775	LC § 1813	Wages	Total
Total										

E. Identify cases that are or were the subject of LC § 1742 proceedings.

Project Name	Contractor	Nature of Violation	ODL Case #	Current Status

F. Did you refer any contractor to the Labor Commissioner for debarment per LC § 1777.1?

Please check one: ☐ Yes ☐ No

If yes, identify affected contractor(s) or subcontractor(s) and date(s) of referral: _____

G. Did you refer any apprenticeship violation to the Division of Apprenticeship Standards (DAS)?

Please check one: ☐ Yes ☐ No

If yes, identify affected contractor(s) or subcontractor(s) and date(s) of referral: _____

AUDIT RECORD WORKSHEETS, PUBLIC WORKS INVESTIGATIVE WORKSHEET, PUBLIC WORKS AUDIT WORKSHEET AND PREVAILING WAGE DETERMINATION SUMMARY-

ADDENDUM C

DEPT. OF INDUSTRIAL RELATIONS - DIVISION OF LABOR STANDARDS ENFORCEMENT

PUBLIC WORKS INVESTIGATION WORKSHEET

EMPLOYEE'S NAME	SOCIAL SECURITY NUMBER	DEPUTY	OFFICE	DATE	Employer	Case Number

Classification Code	PERIOD ENDING YEAR wk end		HOURS OF WORK -Thu DATE	-Wed DATE	-Tue DATE	-Mon DATE	-Sun DATE	-Sat DATE	Fri DATE	TOTAL DAYS WORKED	TOTAL HOURS WORKED ST,OT,DT	ACTUAL RATE ST OT DT	OTHER COMPEN-SATION	TOTAL WAGES PAID	Required Wage Rates ST,OT,DT	OTHER COMPEN-SATION	TOTAL WAGES REQUIRED	AMOUNT DUE AND OWING	No. of Violations	PENAL-TIES 1775___	No. of Violations	PENAL-TIES 1813___	TOTAL TRAINING FUND	Amount Due and Owing
		ST																					Rate	
		OT																						
		DT																						
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		OT																						
		DT																						

ST hours worked

OT hours worked

DT hours worked

TOTALS

Page No. ___

PUBLIC WORKS AUDIT WORKSHEET

EMPLOYER / FIRM	DEPUTY	OFFICE	TOTAL AMOUNT DUE/OWING
ADDRESS / CITY	TRANSCRIBER		WAGES DUE AND OWING
PROJECT / AWARDING BODY / PRIME	AUDIT NUMBER/CASE NUMBER		PENALTIES DUE AND OWING
			TRAINING FUND DUE/OWING

EMPLOYEE	CLASSIFICATION	PERIOD WORKED	HOURS WORKED ST.	OT.	D.T.	OTHER WAGES PAID	TOTAL WAGES PAID	PREVAILING WAGE REQUIREMENTS *OTHER	TOTAL WAGES	AMOUNT OWING AND UNPAID	PENALTIES NO.1	PENALTIES NO. 2	TRNG. FUND	TOTAL AMOUNT DUE

The following entries represent the amounts relied upon for calculating Labor Code 1775 and 1813 penalties.

1775 ______ Per Day
1813 ______ Per Day

PREVAILING WAGE DETERMINATION SUMMARY

CODE NO.	CLASSIFICATION	Effective Date	HOURLY RATE	Contributions	TRAINING	TIME 1/2	HOLIDAY / SUNDAY	TRAVEL & SUBSISTENCE	Other hourly Requirements
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

WAGE DETERMINATION INFORMATION

CODE NO.	CLASSIFICATION	WAGE DETERMINATION NO.
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

REVIEW AND ENFORCEMENT REPORT FORM-ADDENDUM D

Suggested Single Project Labor Compliance Review and Enforcement Report Form

[Appendix C following 8 CCR §16434]

Awarding Body: _____

Project Name: _____

Name of Approved Labor Compliance Program: _____

Bid Advertisement Date: _____

Acceptance Date: _____

Notice of Completion Recordation Date: _____

Summary of Labor Compliance Activities

1. Contract Documents Containing Prevailing Wage Requirements (Identify)

_____

_____

_____

2. Prejob Conference(s) -- Attach list(s) of attendees and dates

3. Notification to Project Workers of Labor Compliance Program's Contact Person. (Explain Manner of Notification for each project work site.)

_____

_____

_____

4. Certified Payroll Record Review

a. CPRs Received From:

Contractor/Subcontractor	For weeks ending ("w/e") through w/e

b. Classifications identified in CPRs and applicable Prevailing Wage Determinations

Classification	Determination No.

5. Further investigation or audit due to CPR review, information or complaint from worker or other interested person, or other reason:

a. Independent Confirmation of CPR Data

Contractor/Subcontractor	Worker Interviews (Yes/No)	Reconciled CPRs with Pay-checks or Stubs (Yes/No)

b. Employer Payments (Health & Welfare, Pension, Vacation/Holiday) Confirmation

Contractor/Subcontractor	Recipients of Employer Payments	Written confirmation Obtained (Yes/No)

c. Contributions to California Apprenticeship Council or Other Approved Apprenticeship Program

Contractor/Subcontractor	Recipients of Contributions	Written confirmation Obtained (Yes/No)

d. Additional Wage Payments or Training Fund Contributions Resulting from Review of CPRs

Contractor/Subcontractor	Additional amounts Paid to Workers	Additional Training Fund	Explanation
			*
			*
			*
			*

* Use separate page(s) for explanation

6. Complaints Received Alleging Noncompliance with Prevailing Wage Requirements.

Name of Complainant	Date Received	Resolution or Current Status
		*
		*
		*
		*

*Use separate page(s) to explain resolution or current status

7. Requests for Approval of Forfeiture to Labor Commissioner

Contractor/Subcontractor	Date of Request	Approved/Modified/Denied

8. Litigation Pending Under Labor Code Section 1742

Contractor/Subcontractor	DIR Case Number

9. (Check one): _____ Final report this project _____ Annual report this project

_____

Authorized Representative for Labor Compliance Program

REQUEST FOR APPROVAL OF FORFEITURE –SUGGESTED FORMAT

ADDENDUM E

REQUEST FOR APPROVAL OF FORFEITURE -- Suggested format

1. AWARDING BODY / THIRD PARTY LCP:

Name and Contact Information:	**Date of Request:**
Name and Contact Information for Awarding Body if different from LCP:	LCP Approval Status (specify if either interim or temporary or if LCP has extended authority):

2. PROJECT INFORMATION:

Project Name:	Contract Number:
Project Location:	
Bid Advertisement Dates:	Estimated Date Project is to be completed:
Acceptance Date of Project by the Awarding Body:	Notice of Completion/Date Recorded with County Recorder:
Other Relevant Deadline (specify):	Amount being held in Retention:

3. CONTRACTOR INFORMATION:

Name and address of Affected Contractor:	Name and address of Affected Subcontractor:
General Description of Scope of Work of the Entire Project:	
General Description of Scope of Work covered in the proposed Forfeiture (describe and attach relevant portions of contract or subcontract):	

4. LABOR COMPLIANCE PROGRAM INVESTIGATION AND FINDINGS:

Total Amount of Request for Notice of Withholding of Contract Payments:			
Wages Due:	Training Funds Due:	Total Penalties Due:	Potential Liquidated Damages [Wages + Training Funds]:
LC 1775 Penalties Due:	LC 1813 Penalties Due:	LC 1776 Penalties Due:	Other:

[Provide narrative summaries covering the following]:

A. Statement of Issues.

B. Investigative Report (detailed narrative including but not limited to how the investigation was conducted including worker declarations, reviewing certified payroll records, verification of employer payment contributions, etc.).

C. Audit Report (detailed explanation of how audit was completed addressing each of the issues above).

D. Affected contractor and subcontractor information (how affected contractor and subcontractor were informed of potential violations; summary of their response with respect to violations and penalty issues; and any other information considered in determining recommended penalties).

E. Recommended penalties under Labor Code Section 1775(a) and basis for recommendation, including how factors in subsection (a)(2) of Section 1775 were applied to arrive at the recommended amount(s).

ATTACHMENTS

1. Audit Summary (Appendix B)
2. 1st Bid Advertisement Publication
3. Notice of Completion
4. Scope of Work
5. Complaint form(s) and Declarations, if any

Send the Request and all Attachments to:

Division of Labor Standards Enforcement
Bureau of Field Enforcement
Attn.: Regional Manager
300 Oceangate Blvd., No. 850
Long Beach, CA 90802

COPIES OF THIS REQUEST, INCLUDING ALL ATTACHMENTS, SHALL BE SERVED ON THE AFFECTED CONTRACTOR AND AFFECTED SUBCONTRACTOR AT THE SAME TIME THAT IT IS SENT TO THE DIVISION OF LABOR STANDARDS ENFORCEMENT.

NOTICE OF TRANSMITTAL AND NOTICE OF OPPORTUNITY TO REVIEW EVIDENCE PURSUANT TO LABOR CODE SECTION 1742 (b) – ADDENDUM F

LABOR COMPLIANCE PROGRAM _____ Review Office - Notice of Withholding of Contract Payments _____ _____ _____ Phone: Fax:	(SEAL)
Date:	In Reply Refer to Case No.:

Notice of Transmittal

To: Department of Industrial Relations
Office of the Director-Legal Unit
Attention: Lead Hearing Officer
P. O. Box 420603
San Francisco, CA 94142-0603

Enclosed herewith please find a Request for Review, dated _____, postmarked _____, and received by this office on _____.

Also enclosed please find the following:

_____ Copy of Notice of Withholding of Contract Payments
_____ Copy of Audit Summary

LABOR COMPLIANCE PROGRAM

_____

By:_____

cc: Prime Contractor
Subcontractor
Bonding Company

Please be advised that the Request for Review identified above has been received and transmitted to the address indicated. Please be further advised that the governing procedures applicable to these hearings are set forth at Title 8, California Code of Regulations sections 17201-17270. These hearings are **not** governed by Chapter 5 of the Government Code, commencing with section 11500.

LABOR COMPLIANCE PROGRAM _____ Review Office - Notice of Withholding of Contract Payments _____ _____ _____ Phone: Fax:	(SEAL)
Date:	In Reply Refer to Case No.:

Notice of Opportunity to Review Evidence Pursuant to Labor Code Section 1742(b)

To: Prime Contractor

_____

_____

_____

Subcontractor

_____

_____

_____

Please be advised that this office has received your **Request for Review**, dated _____, and pertaining to the Notice of Withholding of Contract Payments issued by the Labor Compliance Program in Case No. _____.

In accordance with Labor Code section 1742(b), this notice provides you with an opportunity to review evidence to be utilized by the Labor Compliance Program at the hearing on the Request for Review, and the procedures for reviewing such evidence.

Rule 17224 of the Prevailing Wage Hearing Regulations provides as follows:

> A(a) Within ten (10) days following its receipt of a Request for Review, the Enforcing Agency shall also notify the affected contractor or subcontractor of its opportunity and the procedures for reviewing evidence to be utilized by the Enforcing Agency at the hearing of the Request for Review.
>
> (b) An Enforcing Agency shall be deemed to have provided the opportunity to review evidence required by this Rule if it (1) gives the affected contractor or subcontractor the option at said party's own expense to either (i) obtain copies of all such evidence through a commercial copying service or (ii) inspect and copy such evidence at the office of the Enforcing Agency during normal business

hours; or if (2) the Enforcing Agency at its own expense forwards copies of all such evidence to the affected contractor or subcontractor.
(c) The evidence required to be provided under this Rule shall include the identity of witnesses whose testimony the Enforcing Agency intends to present, either in person at the hearing or by declaration or affidavit. This provision shall not be construed as requiring the Enforcing Agency to prepare or provide any separate listing of witnesses whose identities are disclosed within the written materials made available under subpart (a).

(d) The Enforcing Agency shall make evidence available for review as specified in subparts (a) through (c) within 20 days of its receipt of the Request for Review; *provided that*, this deadline may be extended by written request or agreement of the affected contractor or subcontractor. The Enforcing Agency's failure to make evidence available for review as required by Labor Code section 1742(b) and this Rule, shall preclude the enforcing agency from introducing such evidence in proceedings before the Hearing officer or the Director.

(e) This Rule shall not preclude the Enforcing Agency from relying upon or presenting any evidence first obtained after the initial disclosure of evidence under subparts (a) through (d), *provided that*, such evidence is promptly disclosed to the affected contractor or subcontractor. This Rule also shall not preclude the Enforcing Agency from presenting previously undisclosed evidence to rebut new or collateral claims raised by another party in the proceeding.@

In accordance with the above Rule, please be advised that the Labor Compliance Program's procedure for you to exercise your opportunity to review evidence is as follows:

Within five calendar days of the date of this notice, please transmit the attached Request to Review Evidence to the following address:

_____
_____
_____
_____
_____
Attention:_____

Request to Review Evidence

To: _____
_____
_____
_____

From: _____
_____
_____
_____

Regarding Notice of Withholding of Contract Payments Dated _____

Our Case No.: _____

The undersigned hereby requests an opportunity to review evidence to be utilized by the Labor Compliance Program at the hearing on the Request for Review.

_____
Phone No.: _____
Fax No.: _____

NOTICE TO WITHHOLD CONTRACT PAYMENTS - ADDENDUM G

Labor Compliance Program _____ _____ _____ _____ Phone: Fax:	(SEAL)
Date:	In Reply Refer to Case No.:

Notice of Withholding of Contract Payments

Awarding Body	Work Performed in County of
Project Name	Project No.
Prime Contractor	
Subcontractor	

After an investigation concerning the payment of wages to workers employed in the execution of the contract for the above-named public works project, the Labor Compliance Program for _____ _____ (Awarding Body) has determined that violations of the California Labor Code have been committed by the contractor and/or subcontractor identified above. In accordance with Labor Code sections 1771.5 and 1771.6, the Labor Compliance Program hereby issues this Notice of Withholding of Contract Payments.

The nature of the violations of the Labor Code and the basis for the assessment are as follows:

_____

_____

_____

_____

The Labor Compliance Program has determined that the total amount of wages due is: $_____

The Labor Compliance Program has determined that the total amount of penalties assessed under Labor Code sections 1775 and 1813 is: $_____

The Labor Compliance Program has determined that the amount of penalties assessed under Labor Code section 1776 is: $_____

LABOR COMPLIANCE PROGRAM

_____

By:_____

Notice of Right to Obtain Review - Formal Hearing

In accordance with Labor Code sections 1742 and 1771.6, an affected contractor or subcontractor may obtain review of this Notice of Withholding of Contract Payments (NWCP) by transmitting a written request to the office of the Labor Compliance Program that appears below within 60 days after service of the notice. **To obtain a hearing, a written Request for Review must be transmitted to the following address:**

Labor Compliance Program

_____

Review Office-Notice of Withholding of Contract Payments

_____

_____

A **Request for Review** either shall clearly identify the Notice of Withholding of Contract Payments from which review is sought, including the date of the notice, or it shall include a copy of the notice as an attachment, and shall also set forth the basis upon which the notice is being contested. In accordance with Labor Code section 1742, the contractor or subcontractor shall be provided an opportunity to review evidence to be utilized by the Labor Compliance Program at the hearing within 20 days of the Labor Compliance Program's receipt of the written **Request for Review**.

> **Failure by a contractor or subcontractor to submit a timely Request for Review will result in a final order which shall be binding on the contractor and subcontractor, and which shall also be binding, with respect to the amount due, on a bonding company issuing a bond that secures the payment of wages and a surety on a bond. Labor Code section 1743.**

In accordance with Labor Code section 1742(d), a certified copy of a final order may be filed by the Labor Commissioner in the office of the clerk of the superior court in any county in which the affected contractor or subcontractor has property or has or had a place of business. The clerk, immediately upon the filing, shall enter judgment for the State against the person assessed in the amount shown on the certified order.

(continued on next page)

Opportunity for Settlement Meeting

In accordance with Labor Code Section 1742.1 (c), the Labor Compliance Program shall, upon receipt of a request from the affected contractor or subcontractor within 30 days following the service of this Notice of Withholding of Contract Payments, afford the contractor or subcontractor the opportunity to meet with the Labor Compliance Program's designee **to attempt to settle a dispute regarding this Notice**. The settlement meeting may be held in person or by telephone and shall take place before the expiration of the 60-day period for seeking a hearing as set forth above under the heading Notice of Right to Obtain Review. No evidence of anything said or any admission made for the purpose of, in the course of, or pursuant to, the settlement meeting is admissible or subject to discovery in any administrative or civil proceeding. No writing prepared for the purpose of, in the course of, or pursuant to, the settlement meeting, other than a final settlement agreement, is admissible or subject to discovery in any administrative or civil proceeding. This opportunity to timely request an informal settlement meeting is **in addition** to the right to obtain a formal hearing, and a settlement meeting may be requested even if a written **Request for Review** has already been made. Requesting a settlement meeting, however, does not extend the 60-day period during which a formal hearing may be requested.

A written request to meet with the Labor Compliance Program's designee to attempt to settle a dispute regarding this notice must be transmitted to _____ at the following address:

_____

_____

_____

Liquidated Damages

In accordance with Labor Code section 1742.1 (a), after 60 days following the service of this Notice of Withholding of Contract Payments, the affected contractor, subcontractor, and surety on a bond or bonds issued to secure the payment of wages covered by the notice shall be liable for liquidated damages in an amount equal to the wages, or portion thereof that still remain unpaid. If this Notice subsequently is overturned or modified after administrative or judicial review, liquidated damages shall be payable only on the wages found to be due and unpaid. If the contractor or subcontractor demonstrates to the satisfaction of the Director of the Department of Industrial Relations that he or she had substantial grounds for believing this Notice to be an error, the Director shall waive payment of the liquidated damages.

Notwithstanding the above, in accordance with Labor Code 1742.1 (b), there shall be no liability for liquidated damages if the full amount found due in this Notice, including penalties, has been deposited with the Department of Industrial Relations, within 60 days following service of this Notice, for the Department to hold in escrow pending administrative and judicial review. The Department shall release such funds, plus any interest earned, at the conclusion of all administrative and judicial review to the persons and entities who are found to be entitled to such funds.

In lieu of a cash deposit, the contractor may post an undertaking with the Department in full amount of the Notice of Withholding of Contract Payments. The undertaking shall be on the condition that, if any decision is issued by the Director upholding this Notice in any respect, the contractor shall pay the amount owed pursuant to a decision that is final under Labor Code Section 1742, unless the parties have executed a settlement agreement for the payment of some other amount, in which case the contractor shall pay the

amount that the contractor is obligated to pay under the terms of the settlement agreement. The undertaking must provide that if the contractor fails to pay the amount owed within 10 days of the date the decision is final or the execution of the settlement agreement, a portion of the undertaking equal to the amount owed, or the entire undertaking if the amount exceeds the undertaking is forfeited to the Labor Commissioner for the State of California for the purpose of satisfying the amounts owed under this Notice. A payment bond obtained by a contractor for the public works project which is the subject to this Notice shall not be accepted as an undertaking unless the following two conditions are completely satisfied: (1) the payment bond provides the payment of the full amount of this Notice, including but not limited to, all wages, training, trust contributions, and penalties, and (2) the conditions of payment set forth above are expressly agreed to by the affected contractor(s) and the surety which issued the payment bond. The undertaking should be forwarded to the Department as directed below. The Department's Accounting Office will hold the undertaking until the administrative and judicial review is completed. The disbursement of the bond funds will follow the same process as described above for a cash deposit.

Deposits must be made by check or money order payable to the Department of Industrial Relations with a letter and a copy of the Notice of Withhold Contract Payments and mailed to:

Department of Industrial Relations
Attention Cashiering Unit
P.O. Box 420603
San Francisco, CA 94142

The Amount of Liquidated Damages Available Under this Notice is $_____.

Distribution:

Prime Contractor
Subcontractor
Surety(s) on Bond

Attach:

Audit Summary
Proof of Service

NOTICE OF TEMPORARY WITHHOLDING OF CONTRACT PAMENTS DUE TO DELINQUENT OR INADEQUATE PAYROLL RECORDS - ADDENDUM H

[Name and Contact Information for person issuing Notice]	
Date:	Case or Contract No.:

NOTICE OF TEMPORARY WITHHOLDING OF CONTRACT PAYMENTS DUE TO DELINQUENT OR INADEQUATE PAYROLL RECORDS (8 CCR §16435)

Awarding Body:	Work performed in County of:
Project Name and Number (if any):	
Prime Contractor:	
Subcontractor:	

Pursuant to Labor Code §1771.5(b)(5) and 8 CCR §16435, contract payments are being withheld due to delinquent or inadequate payroll records.

Contractor or subcontractor whose payroll records are delinquent or inadequate:

_____

☐ The following payroll records are delinquent (specify weeks and due dates):

_____

_____

_____

☐ The following payroll records are inadequate (specify weeks and ways in which records are deemed inadequate under 8 CCR §16435(d)):

_____

_____

_____

Estimated amount of contract payments due to contractor or subcontractor that are being withheld pursuant to this Notice: _____

See page 2 for additional information, including appeal rights.

_____

Labor Compliance Officer

Prime Contractor Obligations: If contract payments are being withheld due to the delinquency or inadequacy of your subcontractor's payroll records, you are required to cease all payments to that subcontractor until the Labor Compliance Program provides notice that the subcontractor has cured the delinquency or deficiency.

Notice of Right to Obtain Review – Expedited Hearing

An affected contractor or subcontractor may request review an expedited hearing to review this Notice of Withholding of Contract Payments under Labor Code §1742. *The only issue in any such review proceeding is whether the specified payroll records are in fact delinquent or inadequate within the meaning of 8 CCR §16435 or whether the Labor Compliance Program has exceeded its authority under 8 CCR §16435.* **To obtain an expedited hearing, a written request must be transmitted to the both the Labor Compliance Program and to the Lead Hearing Officer for the Director of the Department of Industrial Relations, as follows:**

[Name of Labor Compliance Officer,
address, and fax number]

Office of the Director – Legal Unit
Attention: Lead Hearing Officer
Expedited Hearing Request
Fax to: (415) 703-4277

The request for expedited hearing should specify the basis for challenging this Notice and include a copy of this Notice as an attachment. The request should also identify and provide contact information for the person who will represent the contractor or subcontractor at the hearing.

Important Additional Information: This is a Notice of Temporary Withholding of Contract Payments for Delinquent or Inadequate Payroll Records *only*. This is *not* a determination of liability for wages or penalties under Labor Code §§1775 and 1776 or any other statute. *Contract payments cannot continue to be withheld pursuant to this notice, once the required records have been produced.* However, the contractor and subcontractor may still be subject to the assessment of back wages and penalties and the withholding of contract payments if, upon investigation, a determination is made that the contractor or subcontractor violated the public works requirements of the Labor Code.

This Notice only addresses rights and responsibilities under state law. Awarding bodies, labor compliance programs, and contractors may have other rights or responsibilities under federal or local law, where applicable, and may also have additional rights or remedies under the public works contract.

- -

Enclosure – text of 8 CCR §16435

§16435. Withholding Contract Payments When Payroll Records are Delinquent or Inadequate.

(a) "Withhold" means to cease payments by the Awarding Body, or others who pay on its behalf, or agents, to the general contractor. Where the violation is by a subcontractor, the general contractor shall be notified of the nature of the violation and reference made to its rights under Labor Code Section 1729.

(b) "Contracts." Except as otherwise provided by agreement, only contracts under a single master contract, including a Design-Build contract, or contracts entered into as stages of a single project, may be the subject of withholding.

(c) "Delinquent payroll records" means those not submitted on the date set in the contract.

(d) "Inadequate payroll records" are any one of the following:

(1) A record lacking any of the information required by Labor Code Section 1776;

(2) A record which contains all of the required information but is not certified, or is certified by someone who is not an agent of the contractor or subcontractor;

(3) A record remaining uncorrected for one payroll period after the Labor Compliance Program has given the contractor or subcontractor notice of inaccuracies detected by audit or record review. However, prompt correction will stop any duty to withhold if such inaccuracies do not amount to one (1) percent of the entire Certified Weekly Payroll in dollar value and do not affect more than half the persons listed as workers employed on that Certified Weekly Payroll, as defined in Labor Code Section 1776 and section 16401 of Title 8 of the California Code of Regulations.

(e) The withholding of contract payments when payroll records are delinquent or inadequate is required by Labor Code Section 1771.5(b)(5), and it does not require the prior approval of the Labor Commissioner. The Awarding Body shall only withhold those payments due or estimated to be due to the contractor or subcontractor whose payroll records are delinquent or inadequate, plus any additional amount that the Labor Compliance Program has reasonable cause to believe may be needed to cover a back wage and penalty assessment against the contractor or subcontractor whose payroll records are delinquent or inadequate; *provided that* a contractor shall be required in turn to cease all payments to a subcontractor whose payroll records are delinquent or inadequate until the Labor Compliance Program provides notice that the subcontractor has cured the delinquency or deficiency.

(f) When contract payments are withheld under this section, the Labor Compliance Program shall provide the contractor and subcontractor, if applicable, with immediate written notice that includes all of the following: (1) a statement that payments are being withheld due to delinquent or inadequate payroll records, and that identifies what records are missing or states why records that have been submitted are deemed inadequate; (2) specifies the amount being withheld; and (3) informs the contractor or subcontractor of the right to request an expedited hearing to review the withholding of contract payments under Labor Code Section 1742, limited to the issue of whether the records are delinquent or inadequate or the Labor Compliance Program has exceeded its authority under this section.

(g) No contract payments shall be withheld solely on the basis of delinquent or inadequate payroll records after the required records have been produced.

(h) In addition to withholding contract payments based on delinquent or inadequate payroll records, penalties shall be assessed under Labor Code Section 1776(g) for failure to timely comply with a written request for certified payroll records. The assessment of penalties under Labor Code Section 1776(g) does require the prior approval of the Labor Commissioner under section 16436 of these regulations.

DAS FORMS - ADDENDUM I

PUBLIC WORKS CONTRACT AWARD INFORMATION

Contract award information must be sent to your Apprenticeship Committee if you are approved to train. If you are not approved to train, you must send the information (which may be this form) to ALL applicable Apprenticeship Committees in your craft or trade in the area of the site of the public work. Go to: http://www.dir.ca.gov/das/PublicWorksForms.htm for information about programs in your area and trade. You may also consult your local Division of Apprenticeship Standards (DAS) office whose telephone number may be found in your local directory under California, State of, Industrial Relations, Division of Apprenticeship Standards.

Do not send this form to the Division of Apprenticeship Standards.

NAME OF YOUR COMPANY	CONTRACTOR'S STATE LICENSE NO
MAILING ADDRESS- NUMBER & STREET, CITY, ZIP CODE	AREA CODE & TELEPHONE NO.
NAME & ADDRESS OF PUBLIC WORKS PROJECT	DATE YOUR CONTRACT EXECUTED
	DATE OF EXPECTED OR ACTUAL START OF PROJECT
NAME & ADDRESS OF PUBLIC AGENCY AWARDING CONTRACT	ESTIMATED NUMBER OF JOURNEYMEN HOURS
	OCCUPATION OF APPRENTICE
THIS FORM IS BEING SENT TO: (NAME & ADDRESS OF APPRENTICESHIP PROGRAM(S))	ESTIMATED NUMBER OF APPRENTICE HOURS
	APPROXIMATE DATES TO BE EMPLOYED

This is not a request for dispatch of apprentices.

Contractors must make a separate request for actual dispatch, in accordance with Section 230.1(a) California Code of Regulations

Check One Of The Boxes Below

1. ☐ We are already approved to train apprentices by the _____ Apprenticeship Committee. We will employ and train under their Standards. Enter name of the Committee

2. ☐ We will comply with the standards of _____ Apprenticeship Committee for the duration of this job only. Enter name of the Committee

3. ☐ We will employ and train apprentices in accordance with the California Apprenticeship Council regulations, including § 230.1 (c) which requires that apprentices employed on public projects can only be assigned to perform work of the craft or trade to which the apprentice is registered and that the apprentices must at all times work with or under the direct supervision of journeyman/men.

Signature _____ *Date* _____

Typed Name _____

Title _____

State of California - Department of Industrial Relations DIVISION OF APPRENTICESHIP STANDARDS

DAS 140 (REV. 1/04)

REQUEST FOR DISPATCH OF AN APPRENTICE – DAS 142 FORM

DO NOT SEND THIS FORM TO DAS

You may use this form to request dispatch of an apprentice from the Apprenticeship Committee in the craft or trade in the area of the public work. Go to: http://www.dir.ca.gov/DAS/PublicWorksForms.htm for information about programs in your area and trade. You may also consult your local Division Apprenticeship Standards (DAS) office whose telephone number may be found in your local directory under California, State of, Industrial Relations, Division of Apprenticeship Standards. **Except for projects with less than 40 hours of journeyman work, you must request and employ apprentices in no less than 8 hour increments.**

Date:

To Applicable Apprenticeship Committee:

Name: _____

Address: _____

_____

Tel. No. _____ Fax No. _____

Contractor Requesting Dispatch:

Name: _____

Address: _____

_____

License No. _____

Tel. No. _____ Fax No. _____

Project Information:

Contract No. _____

Name of the Project: _____

Address: _____

Dispatch Request Information:

Number of Apprentice(s) Needed: _____ Craft or Trade: _____

Date Apprentice(s) to Report: _____ (72 hrs. notice required) Time to Report: _____

Name of Person to Report to: _____

Address to Report to: _____

_____

You may use this form to make your written request for the dispatch of an apprentice. Requests for dispatch must be in writing and submitted at least 72 hours in advance (excluding weekends and holidays) via first class mail, fax or email. ***Proof of submission may be required.*** *Please take note of California Code of Regulations, Title 8, § 230.1 (a) for all applicable requirements regarding apprenticeship requests and/or visit http://www.dir.ca.gov/DAS/DASApprenticesOnPublicWorksSummaryOfRequirements.htm*

DAS 142 (Revised 12/11)

State of California
Department of Industrial Relations
California Apprenticeship Council
P.O. Box 420603
San Francisco, CA 94142

TRAINING FUND CONTRIBUTIONS

Please use a separate form for each jobsite, listing the occupations for the jobsite. One check payable to the California Apprenticeship Council may be submitted for all jobsites and/or occupations. Training fund contributions are not accepted by the California Apprenticeship Council for federal public works projects, unless the project is administered by a public agency or for non- apprenticeable occupations such as utility technicians, lead abatement worker, etc.

California Apprenticeship Council

****Training Fund Contributions are due on the 15th of each month****

PLEASE TYPE OR PRINT IN BLACK OR BLUE INK. ALL FIELDS MUST BE FILLED IN TO ENSURE SUCCESSFUL SUBMISSION AND PROCESS OF PAYMENT.

NAME AND ADDRESS OF CONTRACTOR/SUB CONTRACTOR MAKING CONTRIBUTION	CONTRACTOR'S LICENSE NUMBER
	CONTRACT OR PROJECT NUMBER
NAME AND ADDRESS OF PUBLIC AGENCY AWARDING CONTRACT	JOBSITE LOCATION (INCLUDE COUNTY) IF APPLICABLE - GIVE NAME OF SCHOOL, HOSPITAL, BUILDING, etc.
	PERIOD COVERED BY CONTRIBUTION (FROM - TO)

CLASSIFICATIONS OF WORKERS (CARPENTER, PLUMBER, ELECTRICIAN, ETC).	COUNTY WORK PERFORMED IN	ALL HOURS	CONTRIBUTION RATE PER HOUR	AMOUNT
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
				$ 0.00
			TOTAL	$ 0.00

IF APPRENTICES WERE EMPLOYED, PLEASE LIST THE APPRENTICESHIP PROGRAM AND NUMBER OF APPRENTICE HOURS WORKED

TYPE OR PRINT YOUR NAME AND TITLE	DATE
EMAIL	AREA CODE & TELEPHONE NUMBER

DIR A-1-131 PAYROLL REPORTING FORM AND FRINGE BENEFIT STATEMENT - ADDENDUM J

California Department of Industrial Relations

PUBLIC WORKS PAYROLL REPORTING FORM

Page _____ of _____

NAME OF CONTRACTOR: OR SUBCONTRACTOR:

CONTRACTOR'S LICENSE NO.:
SPECIALITY LICENSE NO.:

ADDRESS:

PAYROLL NO.:

FOR WEEK ENDING:

SELF-INSURED CERTIFICATE NO.:
WORKERS' COMPENSATION POLICY NO.:

PROJECT OR CONTRACT NO.:
PROJECT AND LOCATION:

(3) WORK CLASSIFICATION	(4) DAY	M	T	W	TH	F	S	S	(5) TOTAL HOURS	(6) HOURLY RATE OF PAY	(7) GROSS AMOUNT EARNED	(8) DEDUCTIONS, CONTRIBUTIONS AND PAYMENTS								(9) NET WGS PAID FOR WEEK	CHECK NO.
		DATE																			
		HOURS WORKED EACH DAY																			
	S										THIS PROJECT	ALL PROJECTS	FED. TAX	FICA (SOC. SEC.)	STATE TAX	SDI	VAC/ HOLIDAY	HEALTH & WELF.	PENSION		
	O												TRAING.	FUND ADMIN	DUES	TRAV/ SUBS.	SAVINGS	OTHER*	TOTAL DEDUC-TIONS		
	S										THIS PROJECT	ALL PROJECTS	FED. TAX	FICA (SOC. SEC.)	STATE TAX	SDI	VAC/ HOLIDAY	HEALTH & WELF.	PENSION		
	O												TRAING.	FUND ADMIN	DUES	TRAV/ SUBS.	SAVINGS	OTHER*	TOTAL DEDUC-TIONS		
	S										THIS PROJECT	ALL PROJECTS	FED. TAX	FICA (SOC. SEC.)	STATE TAX	SDI	VAC/ HOLIDAY	HEALTH & WELF.	PENSION		
	O												TRAING.	FUND ADMIN	DUES	TRAV/ SUBS.	SAVINGS	OTHER*	TOTAL DEDUC-TIONS		
	S										THIS PROJECT	ALL PROJECTS	FED. TAX	FICA (SOC. SEC.)	STATE TAX	SDI	VAC/ HOLIDAY	HEALTH & WELF.	PENSION		
	O												TRAING.	FUND ADMIN	DUES	TRAV/ SUBS.	SAVINGS	OTHER*	TOTAL DEDUC-TIONS		

S = STRAIGHT TIME
O = OVERTIME
SDI = STATE DISABILITY INSURANCE

*OTHER - Any other deductions, contributions and/or payments whether or not included or required by prevailing wage determinations must be separately listed. Use extra sheet(s) if necessary

CERTIFICATION MUST be completed
(See reverse side)

NOTICE TO PUBLIC ENTITY

For Privacy Considerations

Fold back along dotted line prior to copying for release to general public (private persons).

(Paper Size then 8-1/2 x 11 inches)

I, _____, the undersigned, am the
(Name – print)

_____ with the authority to act for and on behalf of
(Position in business)

_____, certify under penalty of perjury
(Name of business and/or contractor)

that the records or copies thereof submitted and consisting of _____
(Description, number of pages)

are the originals or true, full, and correct copies of the originals which depict the payroll record(s) of the actual disbursements by way of cash, check, or whatever form to the individual or individuals named.

Date: _____ Signature: _____

A public entity may require a stricter and/or more extensive form of certification.

Statement of Employer Payments

Date:		In Reply, Refer to Case No:	
Prime:			
Subcontractor:			
PROJECT NAME:			
PROJECT CONTRACT NO.:		County/location:	

HEALTH AND WELFARE

NAME OF PLAN _____ Address, City and Zip _____

ADMINISTRATOR _____ Address, City and Zip _____

CLASSIFICATION(S) USED _____ CONTRIBUTION PER CLASSIFICATION PER HOUR _____

CONTRIBUTIONS: WEEKLY ____ MONTHLY ____ QUARTERLY ____ ANNUALLY ____

PENSION

NAME OF PLAN _____ Address, City and Zip _____

ADMINISTRATOR _____ Address, City and Zip _____

CLASSIFICATION(S) USED _____ CONTRIBUTION PER CLASSIFICATION PER HOUR _____

CONTRIBUTIONS: WEEKLY ____ MONTHLY ____ QUARTERLY ____ ANNUALLY ____

VACATION/HOLIDAY

NAME OF PLAN _____ Address, City and Zip _____

ADMINISTRATOR _____ Address, City and Zip _____

CLASSIFICATION(S) USED _____ CONTRIBUTION PER CLASSIFICATION PER HOUR _____

CONTRIBUTIONS: WEEKLY ____ MONTHLY ____ QUARTERLY ____ ANNUALLY ____

TRAINING

NAME OF PLAN _____ Address, City and Zip _____

ADMINISTRATOR _____ Address, City and Zip _____

CLASSIFICATION(S) USED _____ CONTRIBUTION PER CLASSIFICATION PER HOUR _____

CONTRIBUTIONS: WEEKLY ____ MONTHLY ____ QUARTERLY ____ ANNUALLY ____

IF YOU USE OTHER PLANS NOT LISTED ABOVE, YOU MAY USE THE BACK OF THIS FORM TO PROVIDE THIS ADDITIONAL INFORMATION

SUGGESTED CHECKLIST OF LABOR LAW REQUIREMENTS (CCR 16430) - ADDENDUM K

CHECKLIST OF LABOR LAW REQUIREMENTS FOR REVIEW AT JOB START MEETINGS (In accordance with Section 16421 of Title 8 of the California Code of Regulations)

The federal and state labor law requirements applicable to the contract are composed of, but not limited to, the following:

1. Payment of Prevailing Wage Rates

The award of a public works contract requires that all workers employed on the project be paid not less than the specified general prevailing wage rates by the contractor and its subcontractors pursuant to Labor Code Section 1770 et seq.

The contractor is responsible for obtaining and complying with all applicable general prevailing wage rates for trades workers and any rate changes, which may occur during the term of the contract. Prevailing wage rates and rate changes are to be posted at the job site for workers to view.

2. Apprentices

It is the duty of the contractor and subcontractors to employ registered apprentices on public works projects pursuant to Labor Code Section 1777.5.

3. Penalties

Penalties, including forfeitures and debarment, shall be imposed for contractor/subcontractor failure to pay prevailing wages, failure to maintain and submit accurate certified payroll records upon request, failure to employ apprentices, and for failure to pay employees for all hours worked at the correct prevailing wage rate, in accordance with Labor Code Sections 1775, 1776, 1777.7, and 1813.

4. Certified Payroll Records

Pursuant to Labor Code Section 1776, contractors and subcontractors are required to keep accurate payroll records which reflect the name, address, social security number, and work classification of each employee; the straight time and overtime hours worked each day and each week; the fringe benefits; and the actual per diem wages paid to each journeyperson, apprentice, worker, or other employee hired in connection with a public works project.

Employee payroll records shall be certified and shall be made available for inspection at all reasonable hours at the principal office of the contractor/subcontractor, or shall be furnished to any employee, or to his or her authorized representative on request.

Contractors and subcontractors shall maintain their certified payrolls on a weekly basis and shall submit said payrolls weekly to the LCO. In the event that there has been no work performed during a given week, the certified payroll record shall be annotated "No Work" for that week.

5. Nondiscrimination in Employment

Prohibitions against employment discrimination are contained in Labor Code Sections 1735 and 1777.6; the Government Code; the Public Contracts Code; and Title VII of the Civil Rights Act of 1964, as amended.

6. Kickback Prohibited

Pursuant to Labor Code Section 1778, contractors and subcontractors are prohibited from accepting, taking wages illegally, or extracting "kickback" from employee wages.

7. Acceptance of Fees Prohibited

Contractors and subcontractors are prohibited from exacting any type of fee for registering individuals for public work (Labor Code Section 1779); or for filling work orders on public works contracts (Labor Code Section 1780).

8. Listing of Subcontractors

Contractors are required to list all subcontractors hired to perform work on a public works project when that work is equivalent to more than one-half of one percent of the total effort (Public Contract Code Section 4104.).

9. Proper Licensing

Contractors and subcontractors are required to be properly licensed. Penalties will be imposed for employing workers while unlicensed (Labor Code Section 1021 and Business and Professions Code Section 7000, et seq. under California Contractors License Law).

10. Unfair Competition Prohibited

Contractors and subcontractors are prohibited from engaging in unfair competition (Business and Professions Code Sections 17200-17208).

11. Workers' Compensation Insurance

All contractors and subcontractors are required to be insured against liability for workers' compensation, or to undertake self-insurance in accordance with the provisions of Labor Code Sections 3700 and 1861.

12. OSHA

Contractors and subcontractors are required to comply with the Occupational Safety and Health laws and regulations applicable to the particular public works project.

13. Prohibition against hiring undocumented workers

Federal law prohibits contractors and subcontractors from hiring undocumented workers and requires all contractors and subcontractors to secure proof of eligibility/citizenship from all workers.

14. Itemized wage statements

Contractors and subcontractors are required to provide itemized wage statements to employees pursuant to Labor Code Section 226.

The undersigned contractor hereby acknowledges that the County Department of Public Works has provided the contractor with information regarding each item listed above. In accordance with federal and state laws, and with County Department of Public Works' policy and contract documents, the undersigned contractor herein certifies that it will comply with the foregoing labor law requirements; and fully understands that failure to comply with these requirements will subject it to the penalties cited herein.

For the Contractor:		For the County Department of Public Works:	
_____		_____	
Signature	Date	Signature	Date

ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	1	20

SAN LUIS OBISPO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

UTILITIES DIVISION

PLANS FOR THE CSA 23/AMWC/GARDEN FARMS CWD EMERGENCY INTERTIE PROJECT SANTA MARGARITA, CA CONTRACT NO. 300536

To Be Supplemented By State Standard Plans Dated May, 2006.

APPROVED: 13 APR ,20 15

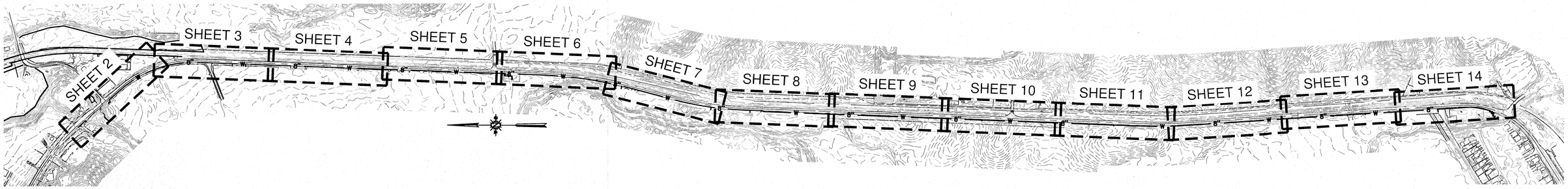
WADE HORTON, DIRECTOR OF PUBLIC WORKS
RCE 64,745

APPROVED: 4/8/2014

DEAN BENEDIX, UTILITIES DIVISION MANAGER
RCE 37,892

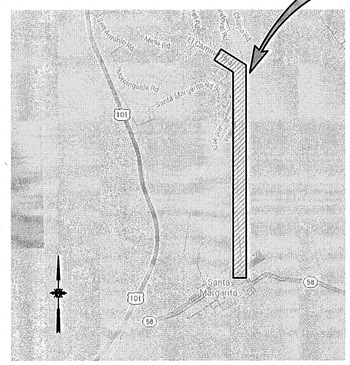
INDEX OF SHEETS

Sheet Number	Sheet Title	
1	TITLE SHEET	
2	PLAN & PROFILE	STA 9+50.86 TO STA 15+00
3	PLAN & PROFILE	STA 15+00 TO STA 25+00
4	PLAN & PROFILE	STA 25+00 TO STA 35+00
5	PLAN & PROFILE	STA 35+00 TO STA 46+00
6	PLAN & PROFILE	STA 46+00 TO STA 56+50
7	PLAN & PROFILE	STA 56+50 TO STA 66+50
8	PLAN & PROFILE	STA 66+50 TO STA 77+50
9	PLAN & PROFILE	STA 77+50 TO STA 86+50
10	PLAN & PROFILE	STA 86+50 TO STA 97+50
11	PLAN & PROFILE	STA 97+50 TO STA 107+50
12	PLAN & PROFILE	STA 107+50 TO STA 118+00
13	PLAN & PROFILE	STA 118+00 TO STA 128+50
14	PLAN & PROFILE	STA 128+50 TO STA 137+50.54
15	DETAIL SHEET	
16	DETAIL SHEET	
17	DETAIL SHEET	
18	DETAIL SHEET	
19	DETAIL SHEET	
20	CONSTRUCTION AREA SIGNS	



LOCATION MAP

SCALE HORIZ 1"=300'



VICINITY MAP

NTS

LEGEND

	EXISTING	PROPOSED
PROPERTY LINE	P/L	
RIGHT-OF-WAY	ROW	
FENCE	X	
EASEMENT		
FLOWLINE		
CONTOURS		
WATER MAIN	W	W
SANITARY SEWER LINE	SS	
STORM DRAIN LINE	SD	
GAS LINE	G	
ELECTRIC LINE	E	
OVERHEAD WIRES	OH	
COMMUNICATION	COMM	
DCDA		DCDA
WATER VALVE	WV	WV
WATER METER	WM	
GAS METER	GM	
FIRE HYDRANT		
PG&E BOX	PG&E	
TRANSFORMER	TF	
MONUMENT	MON	
STORM DRAIN INLET	SDI	
CURB INLET	CI	
FIRE DEPARTMENT CONNECTION	FDC	
POWER POLE	PP	
FOUR-WAY SIGN		
TWO-WAY SIGN		
SDMH	SDMH	
SSMH	SSMH	

AIR RELEASE VALVE	ARV
ASPHALT CONCRETE	AC
BEGIN CURVE	BC
CENTERLINE	CL
DOUBLE CHECK DETECTOR ASSEMBLY	DCDA
DUCTILE IRON	D.I.
DUCTILE IRON PIPE	D.I.P.
END CURVE	EC
EDGE OF PAVEMENT	EP
EDGE OF TRAVELED WAY	ETW
FINISHED GRADE	FG
FINISHED SURFACE	FS
FLANGE	FLG
FIRE DEPARTMENT CONNECTION	FDC
FLOW LINE	FL
GRADE BREAK	GB
HIGH POINT	HP
INVERT	INV
LEFT	LT
MECHANICAL JOINT	MJ
PLAIN END	PE
POINT OF CONNECTION	POC
PROPERTY LINE	PL
PUBLIC UTILITY EASEMENT	PUE
RIGHT-OF-WAY	ROW
RIGHT	RT
STA	STA
CONCRETE	
DECOMPOSED GRANITE	

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS PROJECT IS THE BEARING BETWEEN THE FOUND AERIAL PANEL AP-9 (#5290) AND THE FOUND AERIAL PANEL DESIGNATED AP-11 (#529), ESTABLISHED BY CANNON CORPORATION FOR THE COUNTY OF SAN LUIS OBISPO'S NACIMIENTO WATER PROJECT, ACCORDING TO THE SURVEY CONTROL MAP DATED 4/30/07 AND HAVING A BEARING OF N 6°12'49" W.

BENCHMARK

THE BENCHMARKS HELD FOR THIS PROJECT ARE:

1. AP-9 (#5290) ELEVATION = 1004.78' FOR POINTS AT #5234 AND LYING SOUTHERLY THEREOF.
2. BRASS CAP AT POINT #5233, STAMPED"A 1095 1968" PID FV0176 AND HAVING A NAVD 88 ELEVATION OF 983.47' PER THE NGS DATA SHEET, FOR POINTS AT #5174 AND NORTHERLY THEREOF.
3. WATER VALVE LID (#4881) HAVING AN ELEVATION OF 937.06' AS SHOWN ON THE SHEET "C-TOPO34" FOR THE NACIMIENTO WATER PROJECT, FOR POINTS AT #5139 AND NORTHERLY THEREOF.

LICENSE REQUIREMENTS

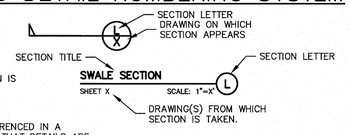
The successful bidder shall possess a Class A general engineering contractor's license at the time this contract is awarded. In the alternative, the successful bidder shall possess a specialty contractor's license at the time this contract is awarded that permits the successful bidder to perform with his or her own organization contract work amounting to not less than 30% of the original total contract price and to subcontract the remaining work in accordance with Section 8-1.01, "Subcontracting," of the Standard Specifications.

SECTION AND DETAIL NUMBERING SYSTEM

(1) SECTION CUT ON DRAWING SHEET X.

(2) ON SHEET X, THIS SECTION IS IDENTIFIED AS

(3) DETAILS ARE CROSS-REFERENCED IN A SIMILAR MANNER; EXCEPT THAT DETAILS ARE IDENTIFIED BY NUMBER RATHER THAN LETTER.



SURVEY NOTES:

1. TOPOGRAPHIC MAPPING PREPARED BY GOLDEN STATE AERIAL SURVEYS, INC. BETWEEN JULY 2005 AND APRIL 2006. SUPPLEMENTAL FIELD TOPO PERFORMED BY COUNTY OF SAN LUIS OBISPO IN 2014.
2. THE RIGHT-OF-WAY SHOWN ON THESE PLANS ARE APPROXIMATE AND DO NOT REPRESENT A BOUNDARY SURVEY.

REGISTERED PROFESSIONAL ENGINEER CHARLES A. GRAY NO. 81321 EXP. 9/30/15 CIVIL STATE OF CALIFORNIA

CSA23 INTERTIE IMPROVEMENTS					
TITLE SHEET					
SAN LUIS OBISPO COUNTY, CA.					
Check By	Designer	Date	Drawn By	Date	Design Engineer	Date
	JT	2/17/15	JT	2/17/15	CG	2/17/15

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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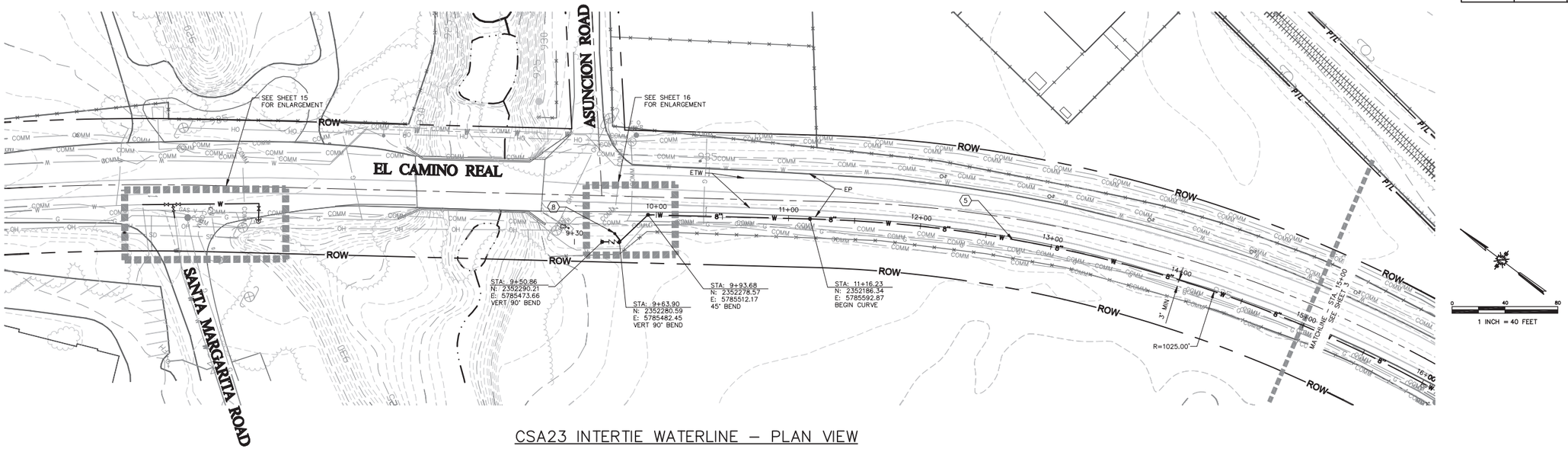
ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	2	20



CSA23 INTERTIE WATERLINE – PLAN VIEW

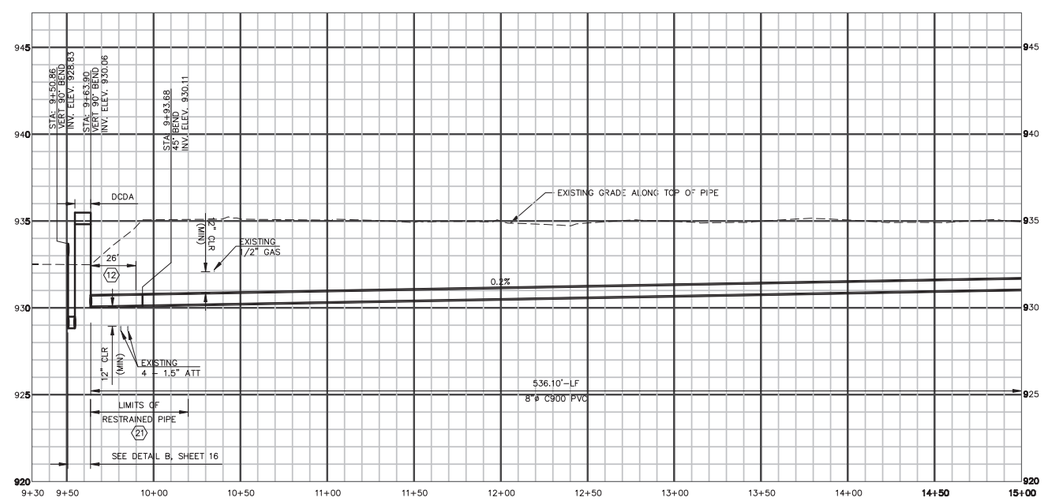
SCALE HORIZ 1"=40'

GENERAL NOTES

1. LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE AND BASED ON AVAILABLE INFORMATION PROVIDED BY UTILITY COMPANIES. IN INSTANCES WHERE NO VERTICAL UTILITY INFORMATION COULD BE FOUND, THE DEPTH OF THESE UTILITIES ARE SHOWN THREE FEET BELOW GROUND SURFACE.
2. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL POTHOLE AND VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES. CONTRACTOR SHALL USE POSITIVE LOCATION METHODS PER CALTRANS PUBLICATION – "POLICY ON HIGH AND LOW RISK UNDERGROUND FACILITIES WITHIN HIGHWAY RIGHTS OF WAY"
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF THE DISCOVERY OF ANY UTILITY THAT WAS OMITTED FROM THE PLANS, INCORRECTLY SHOWN OR NOT PROPERLY MARKED. IF THE UTILITY COMPANY DOES NOT PROVIDE LOCATION INFORMATION OR MARKING SERVICES IN THE FIELD, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.
4. OVERHEAD UTILITIES ARE NOT SHOWN IN ALL INSTANCES. CONTRACTOR SHALL USE DUE CARE WHEN WORKING NEAR OR UNDER SAID UTILITIES AND SHALL PROTECT THEM IN PLACE.
5. THE CONTRACTOR SHALL NOT INTERRUPT THE UTILITY SERVICE FUNCTION, DISTURB THE SUPPORT BASE, OR MODIFY ANY FACILITY WITHOUT AUTHORITY FROM THE UTILITY OWNER.
6. EXISTING PIPELINES/UTILITIES THAT CROSS NEW SYSTEM PIPING OR SIMILAR EXCAVATIONS REQUIRED TO CONSTRUCT THE PIPING, SHALL BE PROTECTED IN PLACE, UNLESS OTHERWISE NOTED. ALL EXISTING PIPELINES/UTILITIES SHALL BE SUPPORTED ACROSS THE EXCAVATION DURING CONSTRUCTION.
7. INTERFERING PORTIONS OF ABANDONED UTILITIES SHALL BE REMOVED AND DISPOSED OF AS UNSUITABLE MATERIAL BY THE CONTRACTOR. THE CUT ENDS SHALL BE PLUGGED WITH BRICK AND MORTAR OR CONCRETE. THE CONTRACTOR SHALL VERIFY THAT THE UTILITY IS TRULY ABANDONED PRIOR TO REMOVAL.
8. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY OWNER IF ANY UTILITY IS DISTURBED OR DAMAGED DURING THE COURSE OF THE WORK. THE CONTRACTOR SHALL BEAR THE COSTS OF REPAIR OR REPLACEMENT OF ANY MARKED UTILITY WHERE DAMAGE WAS CAUSED BY THE CONTRACTOR'S ACTIVITIES.
9. WATERLINE SHALL MAINTAIN 3-FT MINIMUM HORIZONTAL CLEARANCE FROM ALL EXISTING UTILITIES. WATERLINE AND LATERALS SHALL ALSO MAINTAIN A MINIMUM 0.5 FT VERTICAL CLEARANCE WHEN CROSSING EXISTING UTILITIES. ADDITIONAL CLEARANCE IS REQUIRED WHEN SHOWN ON PLANS.
10. CONTRACTOR MAY BEND PIPE AND/OR DEFLECT JOINTS WITHIN MANUFACTURER'S RECOMMENDATIONS TO FOLLOW PROPOSED ALIGNMENT.
11. WATER MAIN MUST MAINTAIN A MINIMUM OF 36-IN OF COVER OR BE BACKFILLED WITH 2-SACK CONCRETE SLURRY PER SLO COUNTY STD U-4b.
12. ALL THRUST BLOCKS AND ANCHOR BLOCKS MUST BE CONSTRUCTED AGAINST UNDISTURBED NATIVE EARTH.
13. REPAIR PAVEMENT DISTURBED BY TRENCHING PER SLO COUNTY STD. DETAIL R-1 AND R-3a. ROAD REPAIR SECTION SHALL BE MINIMUM OF 5" HMA OVER 12" CLASS II AGG. BASE OR MATCH EXISTING STRUCTURAL SECTION IF DIRECTED BY ENGINEER. ROAD REPAIR SECTION IS BASED ON PRELIMINARY SOIL ANALYSIS AND MAY BE MODIFIED BASED ON SUBGRADE R-VALUE DETERMINED DURING CONSTRUCTION.
14. ALL GATE VALVES SHALL BE INSTALLED PER SLO COUNTY STD. DETAIL W-3.
15. ALL PIPE TO DI FITTING CONNECTIONS SHALL BE EQUIPPED WITH RESTRAINTS (EBAA SERIES 2000 PV FOR PVC/SERIES 1100 FOR DI, OR APPROVED EQUAL).
16. EXISTING STRIPING AND SIGNS ARE NOT SHOWN IN ALL INSTANCES. CONTRACTOR SHALL REPLACE IN-KIND ALL DISTURBED SIGNS AND STRIPING, AS DIRECTED BY THE ENGINEER.
17. EXPECTED LIMITS OF ROAD REPAIR, INCLUDING GRIND & OVERLAY PER TABLE 1, SLO COUNTY STD DETAIL R-3A, HAVE BEEN SUMMARIZED IN THE "EXPECTED AC REPLACEMENT" TABLE ON SHEET 2. TABLE IS AN ESTIMATE ONLY. CONTRACTOR TO VERIFY ALL VALUES FOR PURPOSES OF BIDDING.

CONSTRUCTION NOTES

1. INSTALL 2" AIR AND VACUUM RELIEF ASSEMBLY PER SLO COUNTY STANDARD DETAIL W-6. USE COMBINATION AIR VALVE APCO 140C OR APPROVED EQUAL.
2. INSTALL 2" BLOW-OFF ASSEMBLY PER SLO COUNTY STANDARD DETAIL W-5a
3. INSTALL ¾" WATER SERVICE CONNECTION PER SLO COUNTY STANDARD DETAIL W-4
4. INSTALL CONCRETE THRUST BLOCK PER SLO COUNTY STANDARD DETAIL W-1. CONTRACTOR TO SUBMIT CALCULATIONS.
5. INSTALL 8" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER SLO COUNTY STANDARD DETAIL U-4 & U-4a. SEE GENERAL NOTE #11.
6. INSTALL 4" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER SLO COUNTY STANDARD DETAIL U-4 & U-4a. SEE GENERAL NOTE #11.
7. INSTALL 18"ø, ⅜" MIN THICK STEEL CASING, LENGTH PER PLAN/PROFILE, CENTERED UNDER CROSSING STRUCTURES. SEE DETAIL 7, SHEET 19 FOR CASING AND SPACER DETAIL.
8. INSTALL PUMPOUT PER DETAIL 3, SHEET 19
9. INSTALL PUMPOUT PER DETAIL 4, SHEET 19
10. FULLY RESTRAINED MECHANICAL JOINT (EBAA SERIES 2000PV FOR PVC, SERIES 1100 FOR DI, OR APPROVED EQUAL)
11. SPECIAL PIPE REQUIRED PER WATER SEPARATION GUIDELINES. INSTALL 20' LONG STICK OF 8"ø AWWA C900, DR14 PVC PIPE, CENTERED UNDER/OVER CROSSING UTILITY.
12. INSTALL 8" C900 PVC WATER MAIN IN OPEN TRENCH W/ 2 SACK SLURRY BACKFILL PER SLO COUNTY STANDARD DETAIL U-4b.
13. INSTALL 8" TEE AND GATE VALVE ASSEMBLY PER DETAIL 1, SHEET 17.
14. GROOVED COUPLING (VICTAULIC STYLE 31 OR APPROVED EQUAL)
15. RESTRAINED FLANGE ADAPTER (EBAA SERIES 2100 OR APPROVED EQUAL)
16. D.I. SPOOL WITH GROOVE (FLG x PE)
17. INSTALL 6" THICK DECOMPOSED GRANITE.
18. CONNECT TO EXISTING 8"ø WATER MAIN PER CONNECTION DETAIL 4, SHEET 18.
19. INSTALL DOUBLE STRAP SERVICE SADDLE WITH ½" NPT OUTLET, SIZE PER PLAN. ENGINEER TO CONFIRM LOCATION AND ROTATION. CONTRACTOR TO DRILL & CAP FOR LATERAL SERVICE BY OTHERS
20. INSTALL 10" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER AMWC STANDARD DETAIL 201. SEE GENERAL NOTE #11.
21. FULLY RESTRAIN PVC PIPE TO LIMITS SHOWN USING BELL RESTRAINT HARNESS (EBAA IRON SERIES 1600, OR APPROVED EQUAL).



PROFILE

SCALE: HORIZ. 1" = 40'; VERT. 1" = 4'

EXPECTED AC REPLACEMENT

STATION RANGE	LEFT EXTENTS	RIGHT EXTENTS
AMWC CONNECTION	ETW	EDGE OF TRENCH + 1-FT
STA 9+50 TO STA 9+90	NO AC REPLACEMENT EXPECTED	
STA 9+90 TO STA 63+50	ETW	EP
STA 63+50 TO STA 66+25	CENTER OF TRAVEL LANE	EP
STA 66+25 TO STA 70+60	ETW	EP
STA 70+60 TO STA 134+60	NO AC REPLACEMENT EXPECTED	
STA 134+60 TO STA 136+95	ETW	EP
STA 136+95 TO STA 137+50	NO AC REPLACEMENT EXPECTED	

NOTE:
1. EXACT WIDTH OF ACTUAL TRENCH, SOIL CONDITIONS, & CONSTRUCTION METHODS ARE UNKNOWN. REQUIRED TRENCH REPAIR AND ASPHALT REPLACEMENT SHALL BE PER SLO COUNTY STD DETAIL R-1 & R-3A. VALUES IN THIS TABLE ARE ESTIMATES ONLY. CONTRACTOR TO VERIFY ALL VALUES FOR PURPOSES OF BIDDING.

REGISTERED PROFESSIONAL ENGINEER CHARLES A. GRAY NO. 81321 EXP. 9/30/15 CIVIL STATE OF CALIFORNIA

CALL BEFORE YOU DIG USA 800-642-2444

CSA23 INTERTIE IMPROVEMENTS						
PLAN & PROFILE – STA 9+50.86 TO STA 15+00						
SAN LUIS OBISPO COUNTY, CA.						
Check By	Designer	Date	Drawn By	Date	Design Engineer	Date
	JT	2/17/15	JT	2/17/15	CG	2/17/15

0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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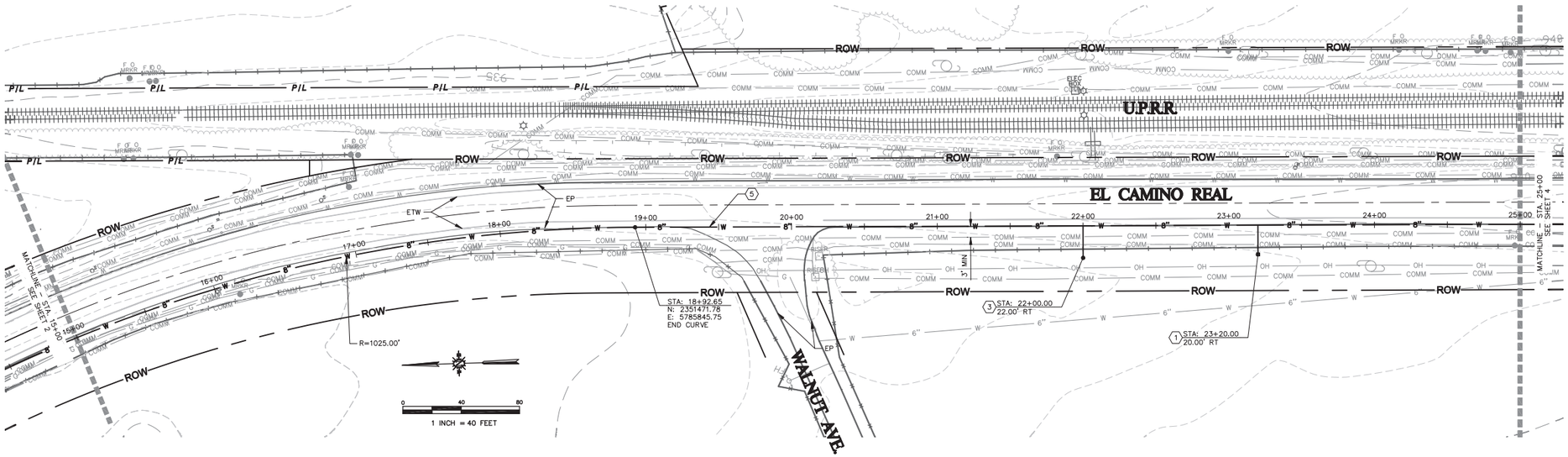
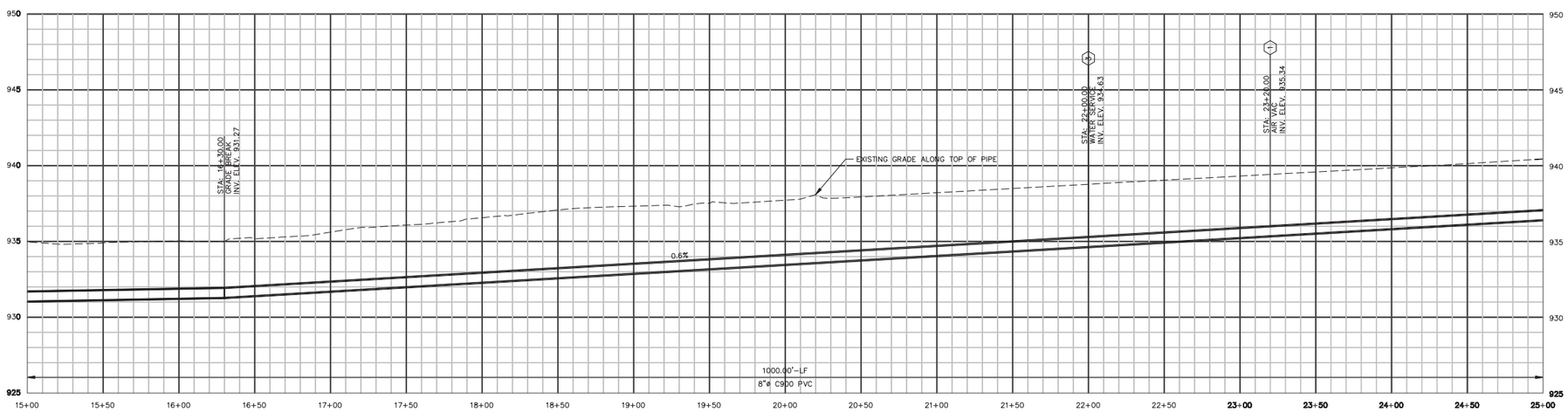
ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	3	20



CSA23 INTERTIE WATERLINE – PLAN VIEW

SCALE HORIZ 1"=40'



PROFILE

SCALE: HORIZ. 1" = 40'; VERT. 1" = 4'

GENERAL NOTES

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10. CONTRACTOR MAY BEND PIPE AND/OR DEFLECT JOINTS WITHIN MANUFACTURER'S RECOMMENDATIONS TO FOLLOW PROPOSED ALIGNMENT.
11. WATER MAIN MUST MAINTAIN A MINIMUM OF 36–IN OF COVER OR BE BACKFILLED WITH 2–SACK CONCRETE SLURRY PER SLO COUNTY STD U–4b.
12. ALL THRUST BLOCKS AND ANCHOR BLOCKS MUST BE CONSTRUCTED AGAINST UNDISTURBED NATIVE EARTH.
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14. ALL GATE VALVES SHALL BE INSTALLED PER SLO COUNTY STD. DETAIL W–3.
15. ALL PIPE TO DI FITTING CONNECTIONS SHALL BE EQUIPPED WITH RESTRAINTS (EBAA SERIES 2000 PV FOR PVC/SERIES 1100 FOR DI, OR APPROVED EQUAL).
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STATE OF CALIFORNIA

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ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

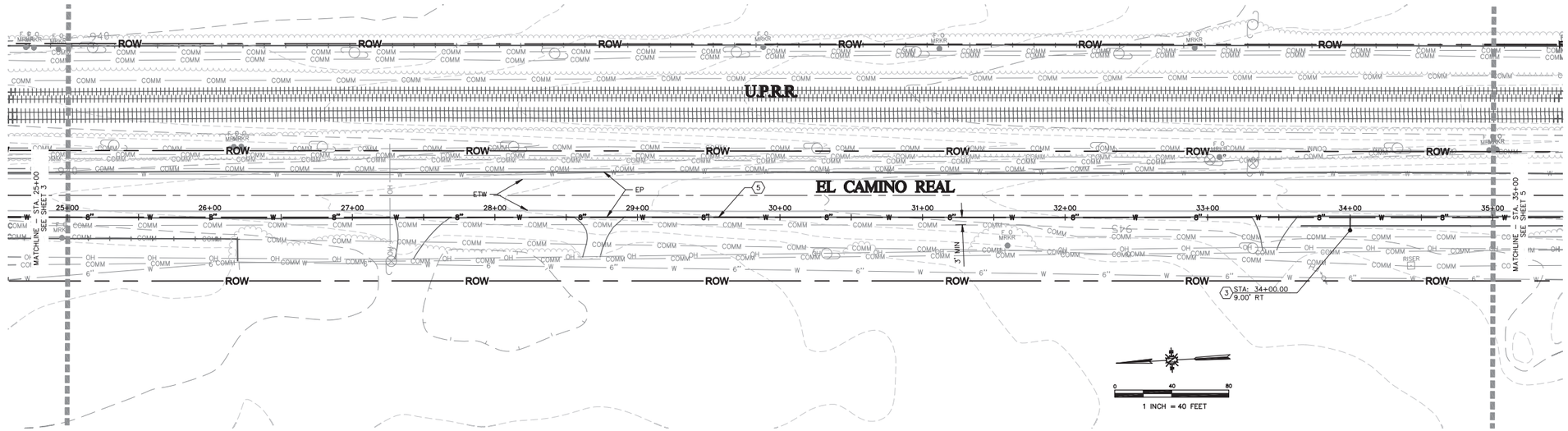
CSA23 INTERTIE IMPROVEMENTS

PLAN & PROFILE – STA 15+00 TO STA 25+00

SAN LUIS OBISPO COUNTY, CA.

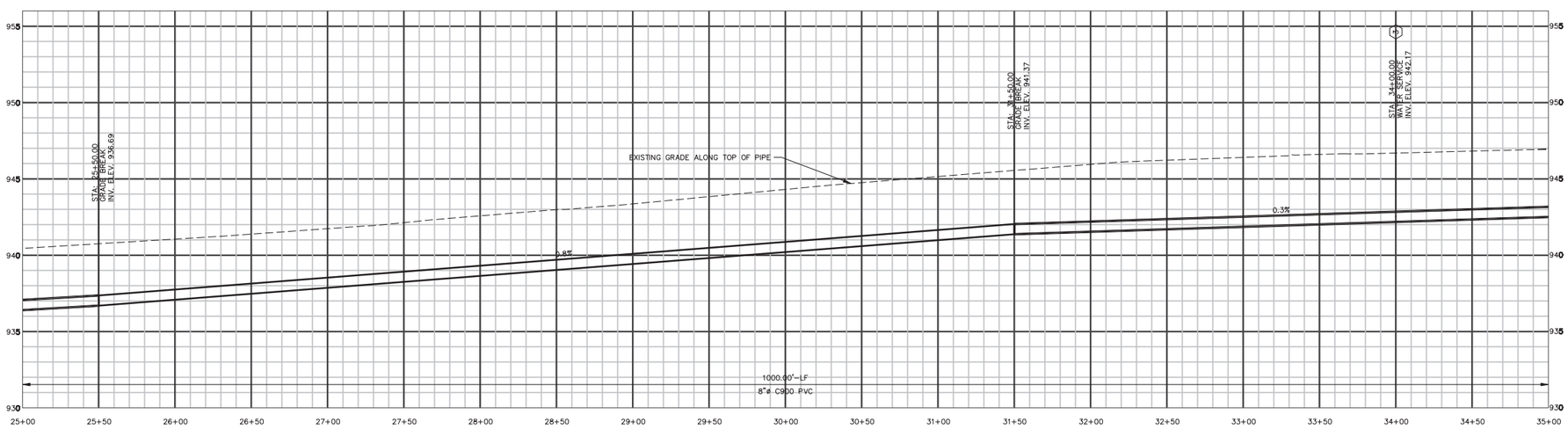
Check By	Designer	Date	Drawn By	Date	Design Engineer	Date
	JT	2/17/15	JT	2/17/15	CG	2/17/15

ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	4	20



CSA23 INTERTIE WATERLINE – PLAN VIEW

SCALE HORIZ 1"=40'



PROFILE

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NO. 81321
EXP. 9/30/15
CIVIL
STATE OF CALIFORNIA

CSA23 INTERTIE IMPROVEMENTS

PLAN & PROFILE – STA 25+00 TO STA 35+00

SAN LUIS OBISPO COUNTY, CA.

Check By	Designer	Date	Drawn By	Date	Design Engineer	Date
	JT	2/17/15	JT	2/17/15	CG	2/17/15

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ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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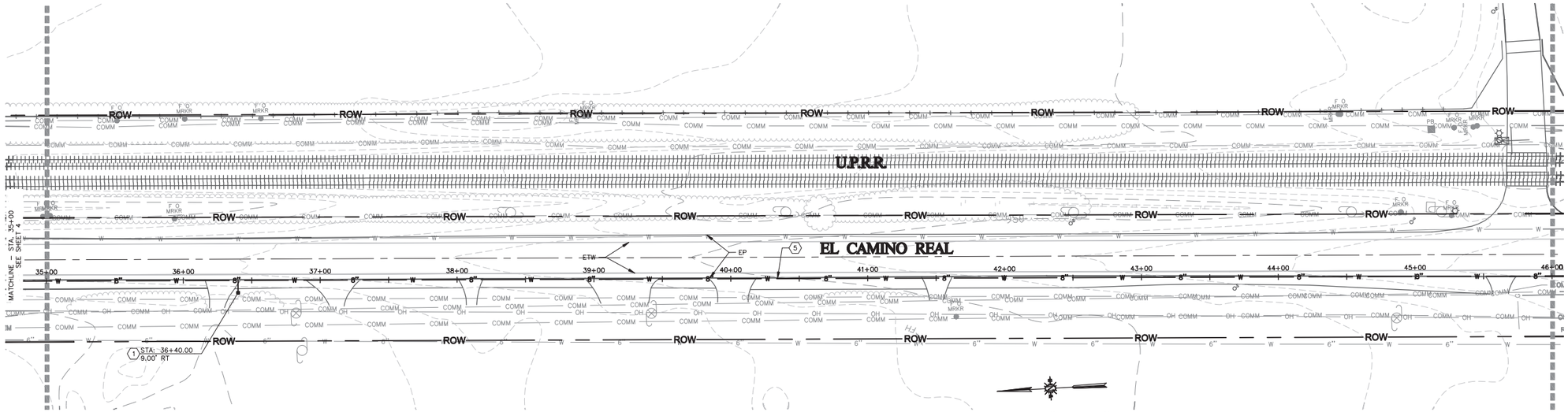
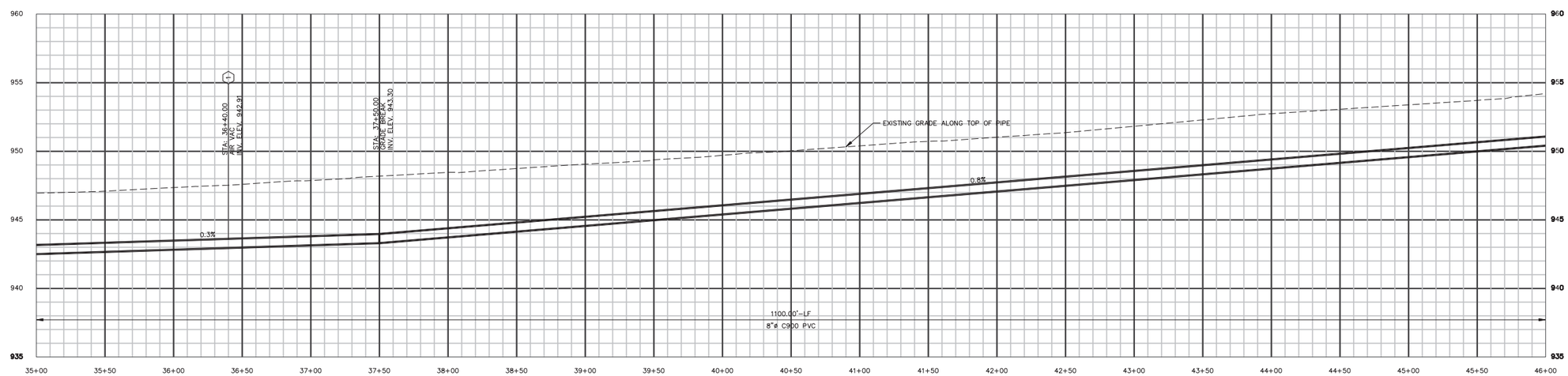
ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	5	20



CSA23 INTERTIE WATERLINE – PLAN VIEW

SCALE HORIZ 1"=40'



PROFILE

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Check By	Designer	Date	Drawn By	Date	Design Engineer	Date
	JT	2/17/15	JT	2/17/15	CG	2/17/15

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ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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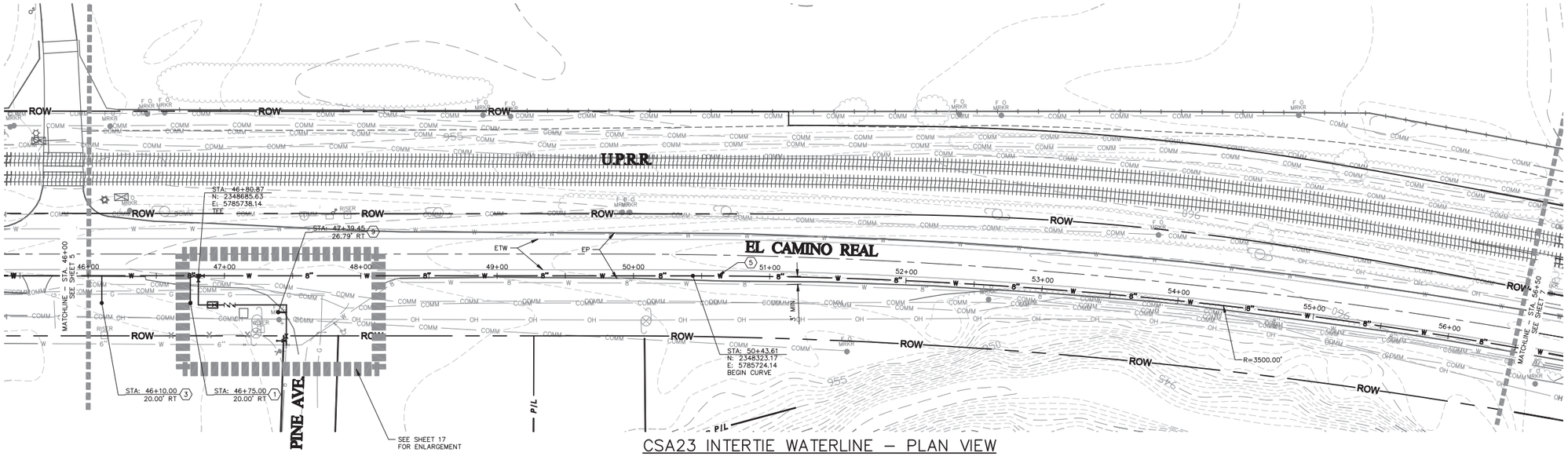
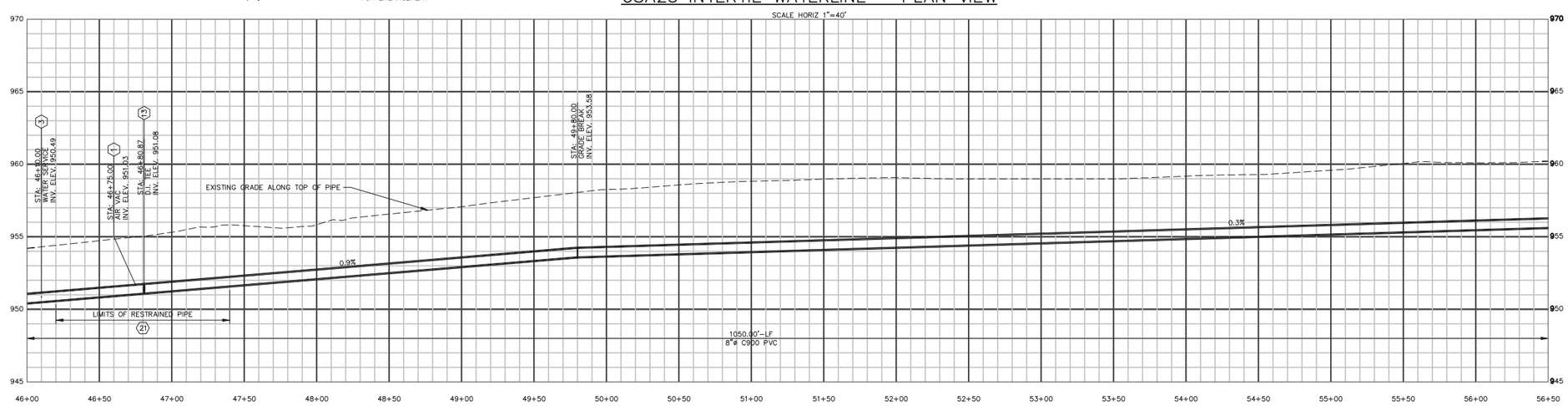
ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	6	20



CSA23 INTERTIE WATERLINE – PLAN VIEW



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11. WATER MAIN MUST MAINTAIN A MINIMUM OF 36-IN OF COVER OR BE BACKFILLED WITH 2-SACK CONCRETE SLURRY PER SLO COUNTY STD U-4b.
12. ALL THRUST BLOCKS AND ANCHOR BLOCKS MUST BE CONSTRUCTED AGAINST UNDISTURBED NATIVE EARTH.
13. REPAIR PAVEMENT DISTURBED BY TRENCHING PER SLO COUNTY STD. DETAIL R-1 AND R-3a. ROAD REPAIR SECTION SHALL BE MINIMUM OF 5" HMA OVER 12" CLASS II AGG. BASE OR MATCH EXISTING STRUCTURAL SECTION IF DIRECTED BY ENGINEER. ROAD REPAIR SECTION IS BASED ON PRELIMINARY SOIL ANALYSIS AND MAY BE MODIFIED BASED ON SUBGRADE R-VALUE DETERMINED DURING CONSTRUCTION.
14. ALL GATE VALVES SHALL BE INSTALLED PER SLO COUNTY STD. DETAIL W-3.
15. ALL PIPE TO DI FITTING CONNECTIONS SHALL BE EQUIPPED WITH RESTRAINTS (EBAA SERIES 2000 PV FOR PVC/SERIES 1100 FOR DI, OR APPROVED EQUAL).
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CONSTRUCTION NOTES

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3. INSTALL ¾" WATER SERVICE CONNECTION PER SLO COUNTY STANDARD DETAIL W-4
4. INSTALL CONCRETE THRUST BLOCK PER SLO COUNTY STANDARD DETAIL W-1. CONTRACTOR TO SUBMIT CALCULATIONS.
5. INSTALL 8" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER SLO COUNTY STANDARD DETAIL U-4 & U-4a. SEE GENERAL NOTE #11.
6. INSTALL 4" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER SLO COUNTY STANDARD DETAIL U-4 & U-4a. SEE GENERAL NOTE #11.
7. INSTALL 18"ø, ⅜" MIN THICK STEEL CASING, LENGTH PER PLAN/PROFILE, CENTERED UNDER CROSSING STRUCTURES. SEE DETAIL 7, SHEET 19 FOR CASING AND SPACER DETAIL.
8. INSTALL PUMPOUT PER DETAIL 3, SHEET 19
9. INSTALL PUMPOUT PER DETAIL 4, SHEET 19
10. FULLY RESTRAINED MECHANICAL JOINT (EBAA SERIES 2000PV FOR PVC, SERIES 1100 FOR DI, OR APPROVED EQUAL)
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13. INSTALL 8" TEE AND GATE VALVE ASSEMBLY PER DETAIL 1, SHEET 17.
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15. RESTRAINED FLANGE ADAPTER (EBAA SERIES 2100 OR APPROVED EQUAL)
16. D.I. SPOOL WITH GROOVE (FLG x PE)
17. INSTALL 6" THICK DECOMPOSED GRANITE.
18. CONNECT TO EXISTING 8"ø WATER MAIN PER CONNECTION DETAIL 4, SHEET 18.
19. INSTALL DOUBLE STRAP SERVICE SADDLE WITH ½" NPT OUTLET, SIZE PER PLAN. ENGINEER TO CONFIRM LOCATION AND ROTATION. CONTRACTOR TO DRILL & CAP FOR LATERAL SERVICE BY OTHERS
20. INSTALL 10" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER AMWC STANDARD DETAIL 201. SEE GENERAL NOTE #11.
21. FULLY RESTRAIN PVC PIPE TO LIMITS SHOWN USING BELL RESTRAINT HARN (EBAA IRON SERIES 1600, OR APPROVED EQUAL).

REGISTERED PROFESSIONAL ENGINEER CHARLES A. GRAY NO. 81321 EXP. 9/30/15 CIVIL STATE OF CALIFORNIA

CALL BEFORE YOU DIG 800-642-2444

Check By	Designer	Date	Drawn By	Date	Design Engineer	Date
	JT	2/17/15	JT	2/17/15	CG	2/17/15

CSA23 INTERTIE IMPROVEMENTS

PLAN & PROFILE – STA 46+00 TO STA 56+50

SAN LUIS OBISPO COUNTY, CA.

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
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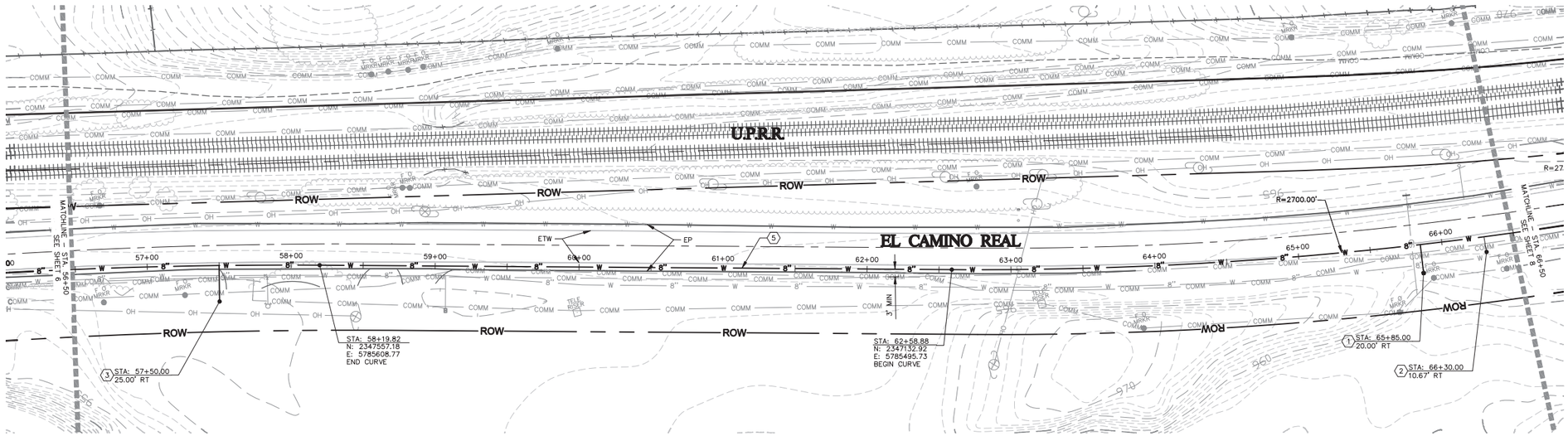
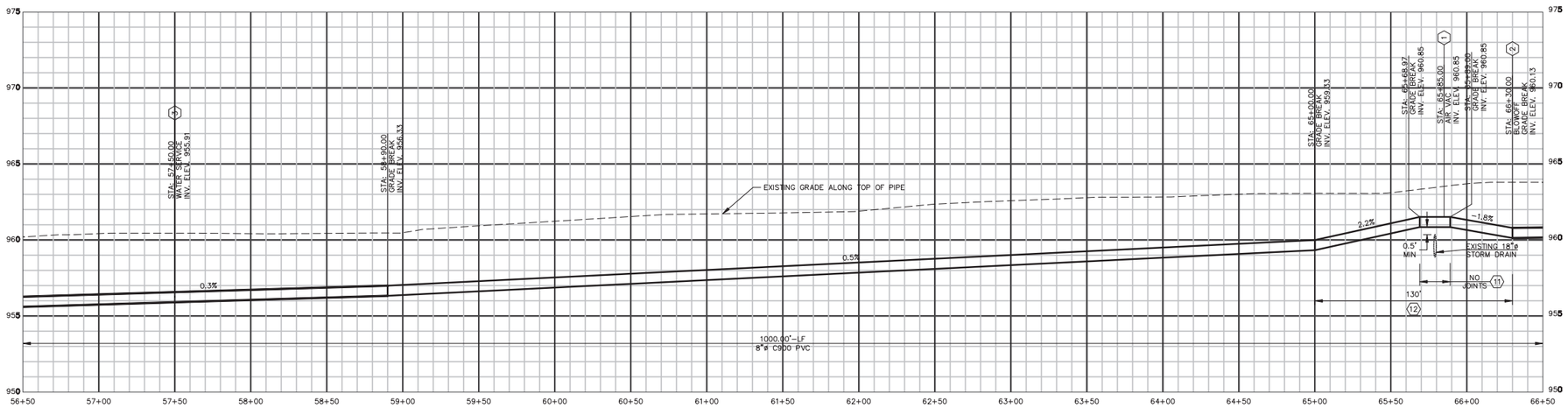


CSA23 INTERTIE WATERLINE – PLAN VIEW

SCALE HORIZ 1"=40'



PROFILE

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CHARLES A. GRAY
NO. 81321
EXP. 9/30/15
CIVIL
STATE OF CALIFORNIA

CSA23 INTERTIE IMPROVEMENTS					
PLAN & PROFILE – STA 56+50 TO STA 66+50					
SAN LUIS OBISPO COUNTY, CA.					
Check By	Designer	Date	Drawn By	Date	Design Engineer	Date
	JT	2/17/15	JT	2/17/15	CG	2/17/15

0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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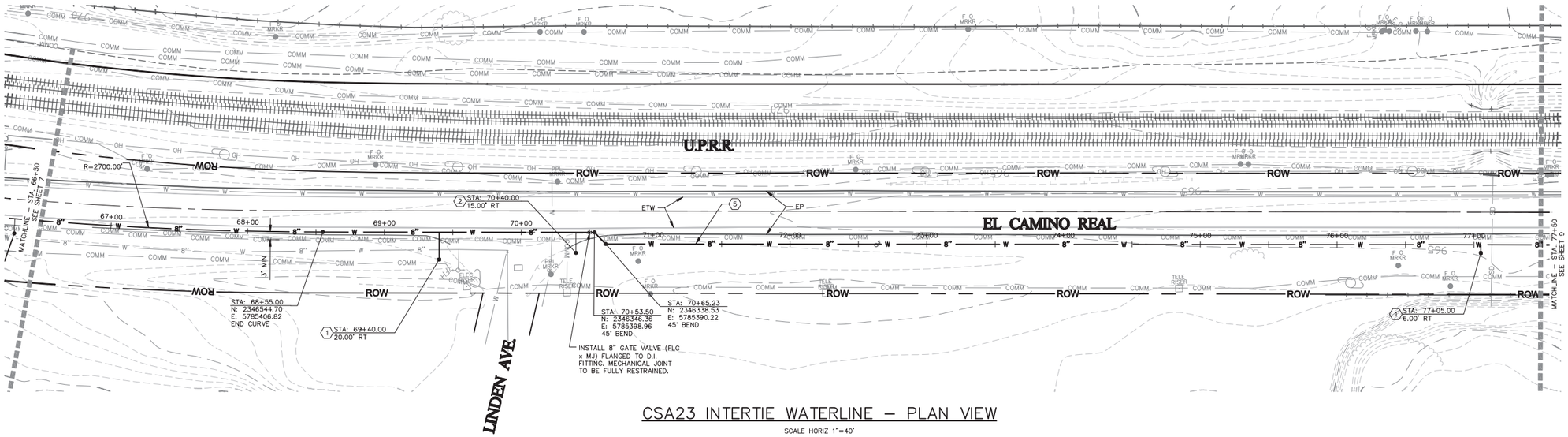
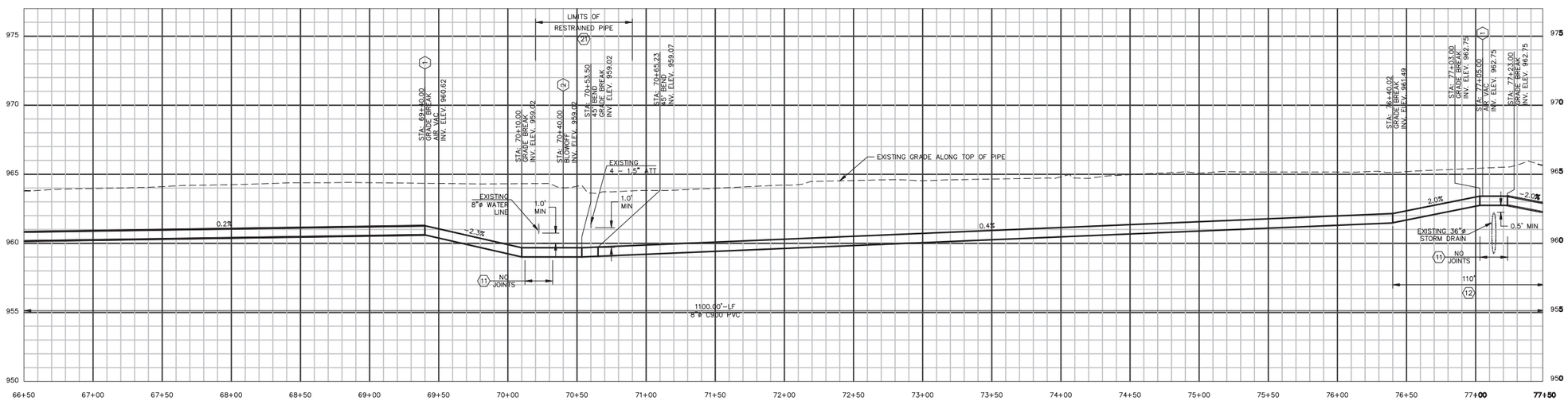
ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	8	20



CSA23 INTERTIE WATERLINE – PLAN VIEW

SCALE HORIZ 1"=40'



PROFILE

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CSA23 INTERTIE IMPROVEMENTS					
PLAN & PROFILE – STA 66+50 TO STA 77+50					
SAN LUIS OBISPO COUNTY, CA.					
Check By	Designer	Date	Drawn By	Date	Design Engineer	Date
	JT	2/17/15	JT	2/17/15	CG	2/17/15

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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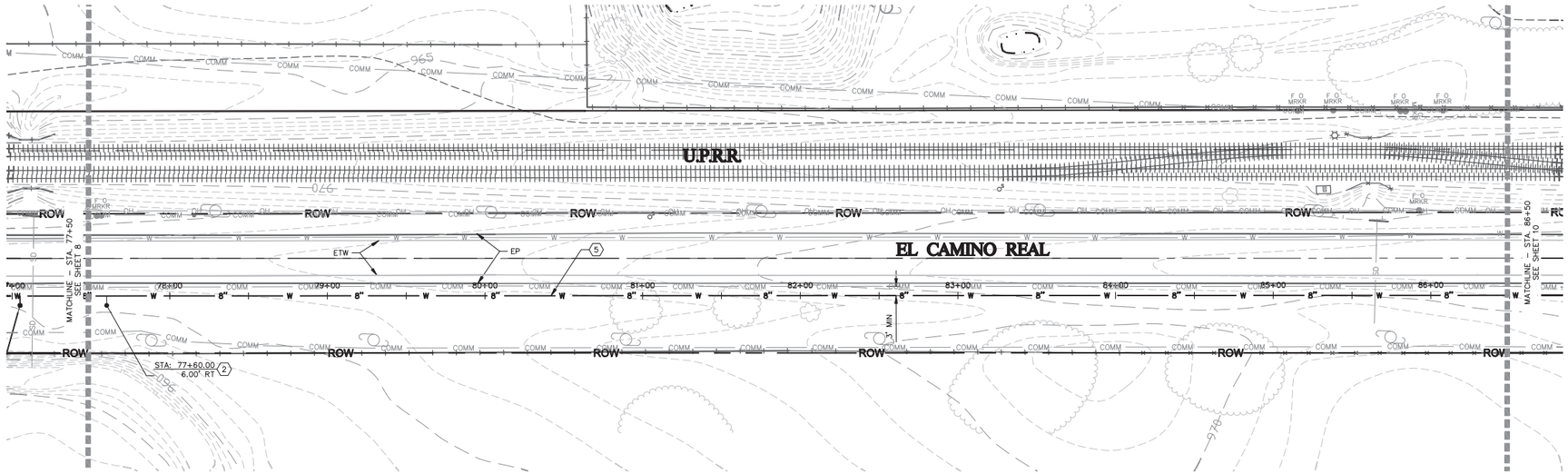
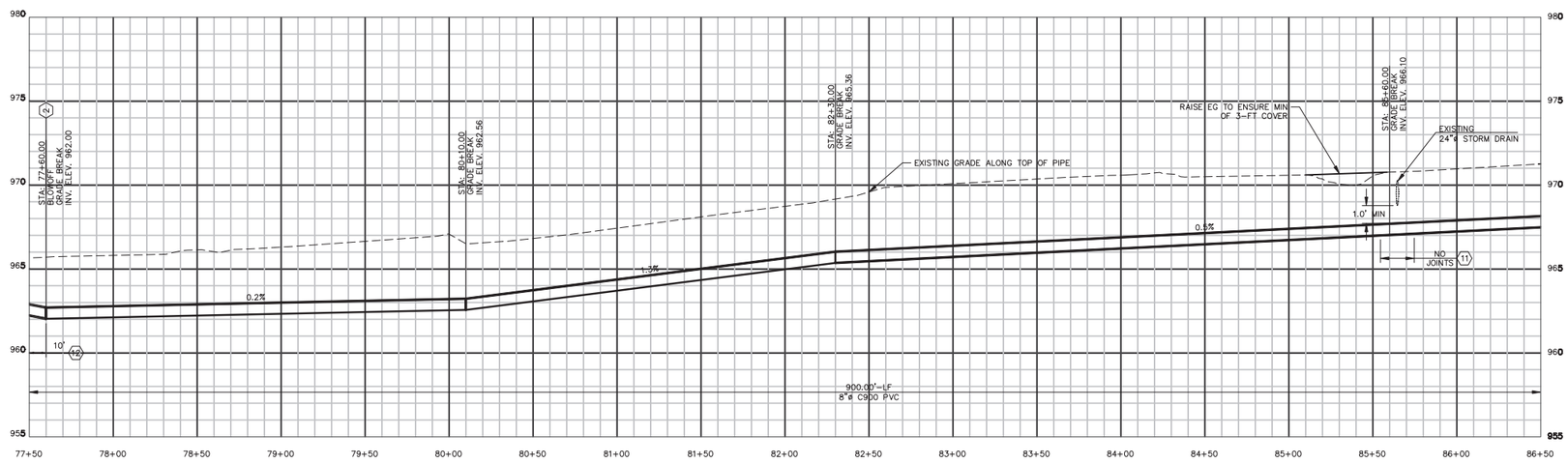
ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	9	20



CSA23 INTERTIE WATERLINE – PLAN VIEW

SCALE HORIZ 1"=40'



PROFILE

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0 40 80

1 INCH = 40 FEET

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10. CONTRACTOR MAY BEND PIPE AND/OR DEFLECT JOINTS WITHIN MANUFACTURER'S RECOMMENDATIONS TO FOLLOW PROPOSED ALIGNMENT.
11. WATER MAIN MUST MAINTAIN A MINIMUM OF 36-IN OF COVER OR BE BACKFILLED WITH 2-SACK CONCRETE SLURRY PER SLO COUNTY STD U-4b.
12. ALL THRUST BLOCKS AND ANCHOR BLOCKS MUST BE CONSTRUCTED AGAINST UNDISTURBED NATIVE EARTH.
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14. ALL GATE VALVES SHALL BE INSTALLED PER SLO COUNTY STD. DETAIL W-3.
15. ALL PIPE TO DI FITTING CONNECTIONS SHALL BE EQUIPPED WITH RESTRAINTS (EBAA SERIES 2000 PV FOR PVC/SERIES 1100 FOR DI, OR APPROVED EQUAL).
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CONSTRUCTION NOTES

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2. INSTALL 2" BLOW-OFF ASSEMBLY PER SLO COUNTY STANDARD DETAIL W-5a
3. INSTALL ¾" WATER SERVICE CONNECTION PER SLO COUNTY STANDARD DETAIL W-4
4. INSTALL CONCRETE THRUST BLOCK PER SLO COUNTY STANDARD DETAIL W-1. CONTRACTOR TO SUBMIT CALCULATIONS.
5. INSTALL 8" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER SLO COUNTY STANDARD DETAIL U-4 & U-4a. SEE GENERAL NOTE #11.
6. INSTALL 4" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER SLO COUNTY STANDARD DETAIL U-4 & U-4a. SEE GENERAL NOTE #11.
7. INSTALL 18"ø, ⅜" MIN THICK STEEL CASING, LENGTH PER PLAN/PROFILE, CENTERED UNDER CROSSING STRUCTURES. SEE DETAIL 7, SHEET 19 FOR CASING AND SPACER DETAIL.
8. INSTALL PUMPOUT PER DETAIL 3, SHEET 19
9. INSTALL PUMPOUT PER DETAIL 4, SHEET 19
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12. INSTALL 8" C900 PVC WATER MAIN IN OPEN TRENCH W/ 2 SACK SLURRY BACKFILL PER SLO COUNTY STANDARD DETAIL U-4b.
13. INSTALL 8" TEE AND GATE VALVE ASSEMBLY PER DETAIL 1, SHEET 17.
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15. RESTRAINED FLANGE ADAPTER (EBAA SERIES 2100 OR APPROVED EQUAL)
16. D.I. SPOOL WITH GROOVE (FLG x PE)
17. INSTALL 6" THICK DECOMPOSED GRANITE.
18. CONNECT TO EXISTING 8"ø WATER MAIN PER CONNECTION DETAIL 4, SHEET 18.
19. INSTALL DOUBLE STRAP SERVICE SADDLE WITH ½" NPT OUTLET, SIZE PER PLAN. ENGINEER TO CONFIRM LOCATION AND ROTATION. CONTRACTOR TO DRILL & CAP FOR LATERAL SERVICE BY OTHERS
20. INSTALL 10" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER AMWC STANDARD DETAIL 201. SEE GENERAL NOTE #11.
21. FULLY RESTRAIN PVC PIPE TO LIMITS SHOWN USING BELL RESTRAINT HARNESS (EBAA IRON SERIES 1600, OR APPROVED EQUAL).

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REGISTERED PROFESSIONAL ENGINEER CHARLES A. GRAY NO. 81321 EXP. 9/30/15 CIVIL STATE OF CALIFORNIA

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0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

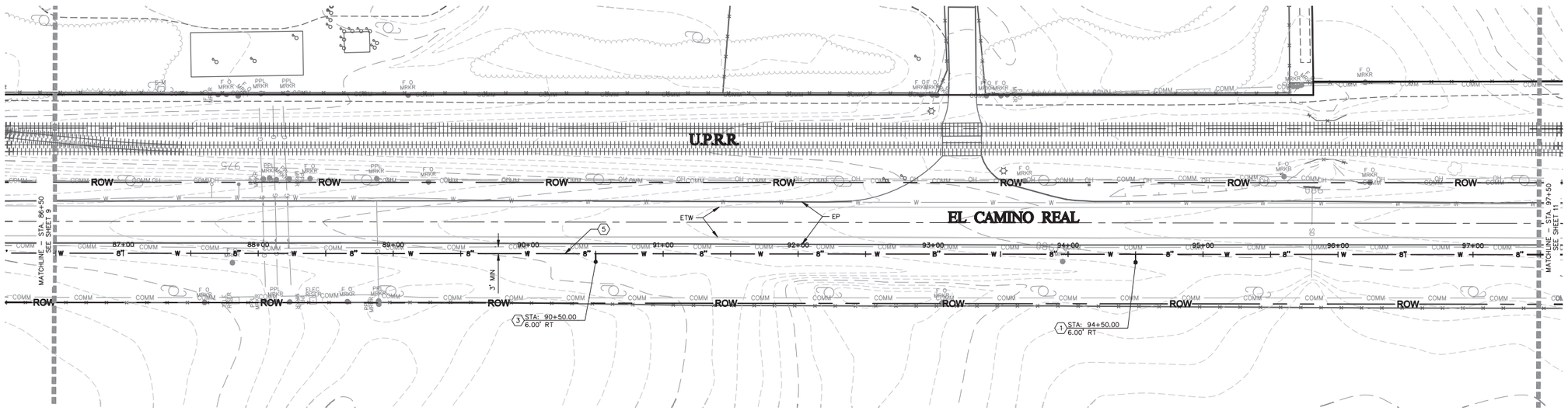
Check By	Designer	Date	Drawn By	Date	Design Engineer	Date
	JT	2/17/15	JT	2/17/15	CG	2/17/15

CSA23 INTERTIE IMPROVEMENTS

PLAN & PROFILE – STA 77+50 TO STA 86+50

SAN LUIS OBISPO COUNTY, CA.

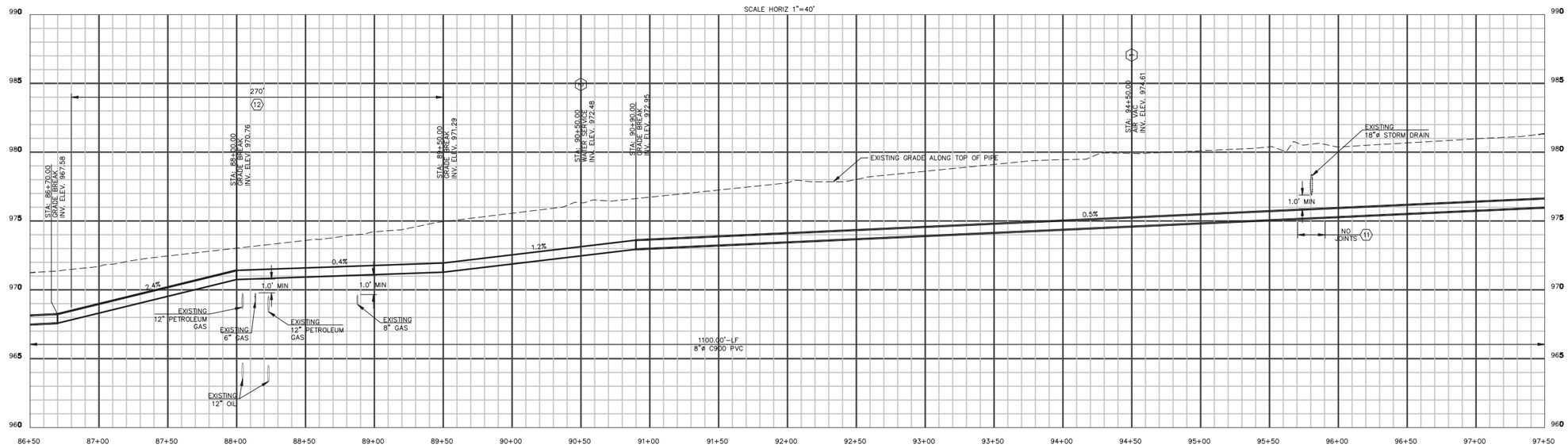
ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	10	20



0 40 80
1 INCH = 40 FEET

CSA23 INTERTIE WATERLINE – PLAN VIEW

SCALE HORIZ 1"=40'



GENERAL NOTES

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PROFILE

SCALE: HORIZ. 1" = 40'; VERT. 1" = 4'

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REGISTERED PROFESSIONAL ENGINEER CHARLES A. GRAY NO. 81321 EXP. 9/30/15 CIVIL STATE OF CALIFORNIA

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Check By	Designer	Date	Drawn By	Date	Design Engineer	Date
	JT	2/17/15	JT	2/17/15	CG	2/17/15

CSA23 INTERTIE IMPROVEMENTS

PLAN & PROFILE – STA 86+50 TO STA 97+50

SAN LUIS OBISPO COUNTY, CA.

0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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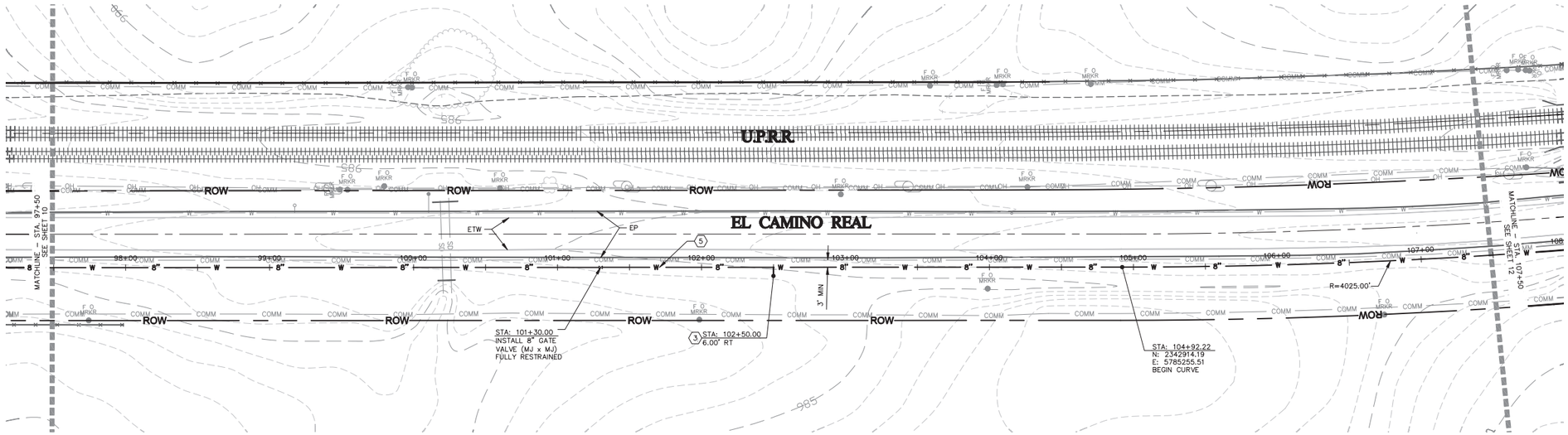
ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	11	20

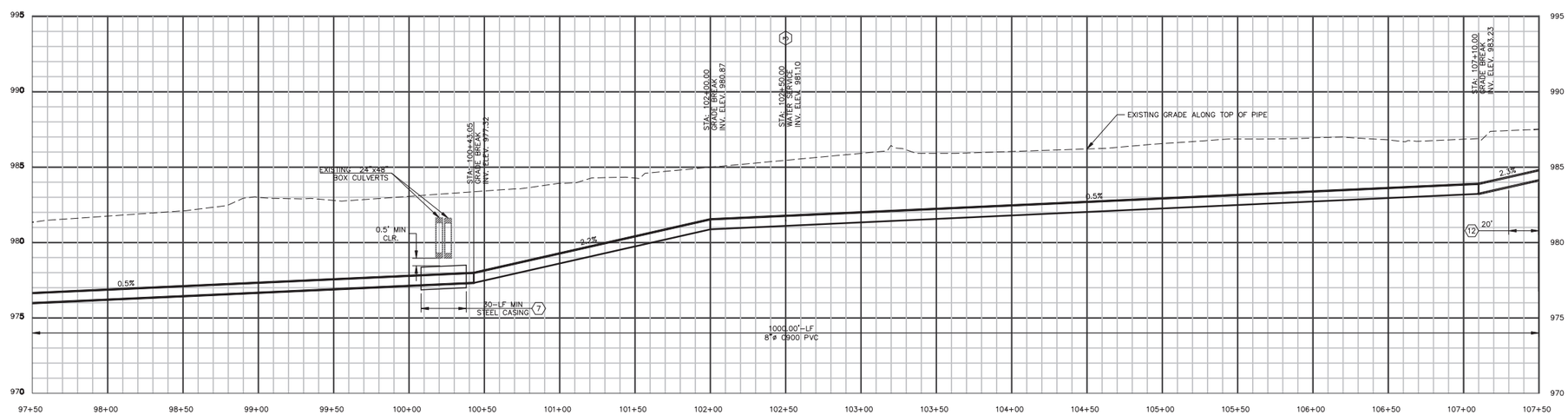


CSA23 INTERTIE WATERLINE – PLAN VIEW

SCALE HORIZ 1"=40'

0 40 80

1 INCH = 40 FEET



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NO. 81321
EXP. 9/30/15
CIVIL
STATE OF CALIFORNIA

CSA23 INTERTIE IMPROVEMENTS

PLAN & PROFILE – STA 97+50 TO STA 107+50

SAN LUIS OBISPO COUNTY, CA.

Check By	Designer	Date	Drawn By	Date	Design Engineer	Date
	JT	2/17/15	JT	2/17/15	CG	2/17/15

0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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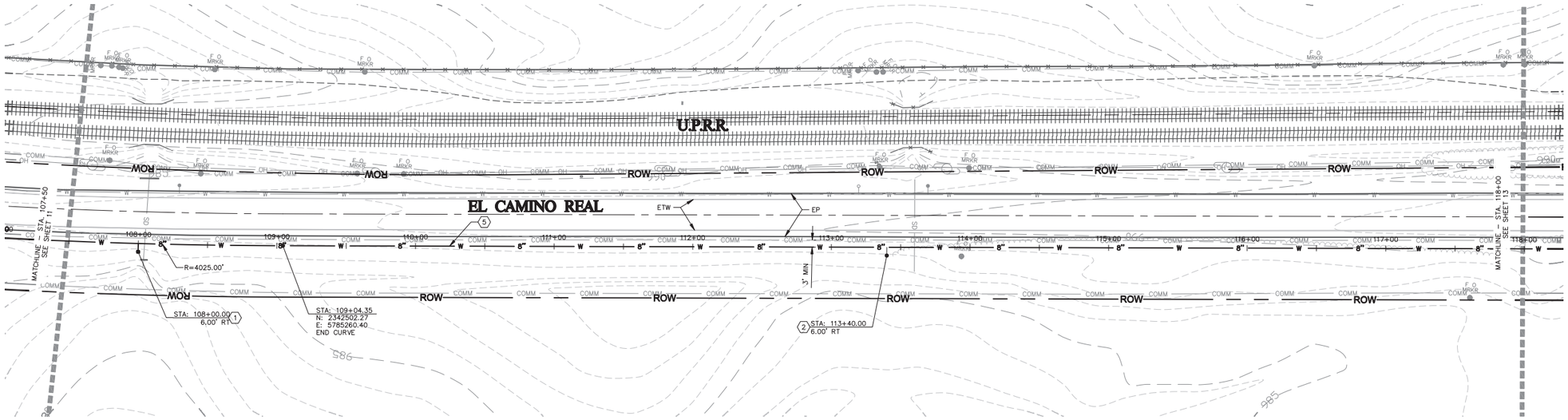
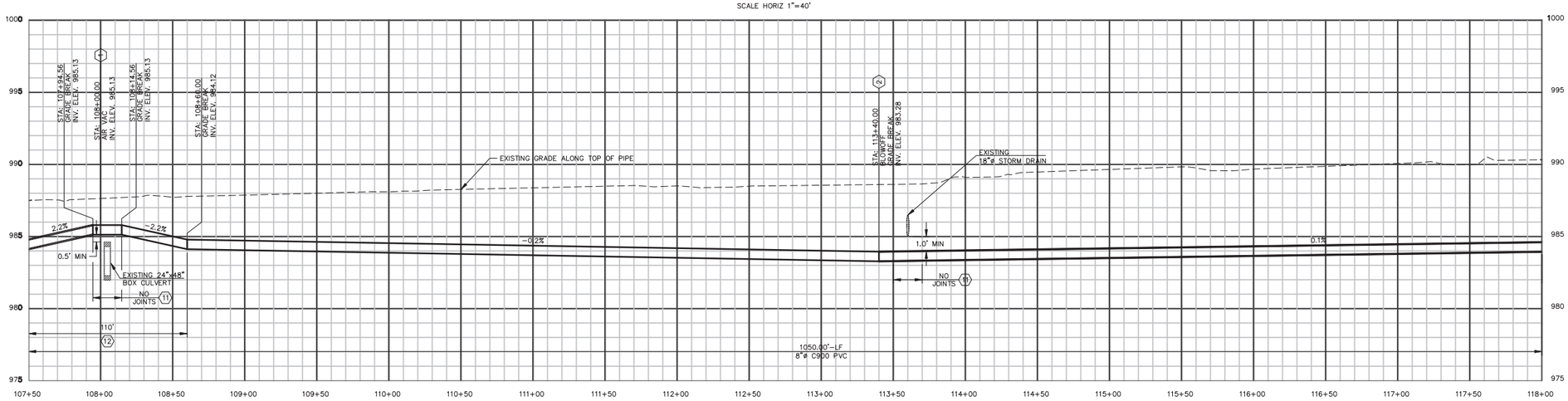
ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	12	20



CSA23 INTERTIE WATERLINE – PLAN VIEW

SCALE HORIZ 1"=40'



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12. ALL THRUST BLOCKS AND ANCHOR BLOCKS MUST BE CONSTRUCTED AGAINST UNDISTURBED NATIVE EARTH.
13. REPAIR PAVEMENT DISTURBED BY TRENCHING PER SLO COUNTY STD. DETAIL R-1 AND R-3a. ROAD REPAIR SECTION SHALL BE MINIMUM OF 5" HMA OVER 12" CLASS II AGG. BASE OR MATCH EXISTING STRUCTURAL SECTION IF DIRECTED BY ENGINEER. ROAD REPAIR SECTION IS BASED ON PRELIMINARY SOIL ANALYSIS AND MAY BE MODIFIED BASED ON SUBGRADE R-VALUE DETERMINED DURING CONSTRUCTION.
14. ALL GATE VALVES SHALL BE INSTALLED PER SLO COUNTY STD. DETAIL W-3.
15. ALL PIPE TO DI FITTING CONNECTIONS SHALL BE EQUIPPED WITH RESTRAINTS (EBAA SERIES 2000 PV FOR PVC/SERIES 1100 FOR DI, OR APPROVED EQUAL).
16. EXISTING STRIPING AND SIGNS ARE NOT SHOWN IN ALL INSTANCES. CONTRACTOR SHALL REPLACE IN-KIND ALL DISTURBED SIGNS AND STRIPING, AS DIRECTED BY THE ENGINEER.
17. EXPECTED LIMITS OF ROAD REPAIR, INCLUDING GRIND & OVERLAY PER TABLE 1, SLO COUNTY STD DETAIL R-3A, HAVE BEEN SUMMARIZED IN THE "EXPECTED AC REPLACEMENT" TABLE ON SHEET 2. TABLE IS AN ESTIMATE ONLY. CONTRACTOR TO VERIFY ALL VALUES FOR PURPOSES OF BIDDING.

CONSTRUCTION NOTES

1. INSTALL 2" AIR AND VACUUM RELIEF ASSEMBLY PER SLO COUNTY STANDARD DETAIL W-6. USE COMBINATION AIR VALVE APCO 140C OR APPROVED EQUAL.
2. INSTALL 2" BLOW-OFF ASSEMBLY PER SLO COUNTY STANDARD DETAIL W-5a
3. INSTALL ¾" WATER SERVICE CONNECTION PER SLO COUNTY STANDARD DETAIL W-4
4. INSTALL CONCRETE THRUST BLOCK PER SLO COUNTY STANDARD DETAIL W-1. CONTRACTOR TO SUBMIT CALCULATIONS.
5. INSTALL 8" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER SLO COUNTY STANDARD DETAIL U-4 & U-4a. SEE GENERAL NOTE #11.
6. INSTALL 4" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER SLO COUNTY STANDARD DETAIL U-4 & U-4a. SEE GENERAL NOTE #11.
7. INSTALL 18"ø, ⅜" MIN THICK STEEL CASING, LENGTH PER PLAN/PROFILE, CENTERED UNDER CROSSING STRUCTURES. SEE DETAIL 7, SHEET 19 FOR CASING AND SPACER DETAIL.
8. INSTALL PUMPOUT PER DETAIL 3, SHEET 19
9. INSTALL PUMPOUT PER DETAIL 4, SHEET 19
10. FULLY RESTRAINED MECHANICAL JOINT (EBAA SERIES 2000PV FOR PVC, SERIES 1100 FOR DI, OR APPROVED EQUAL)
11. SPECIAL PIPE REQUIRED PER WATER SEPARATION GUIDELINES. INSTALL 20' LONG STICK OF 8"ø AWWA C900, DR14 PVC PIPE, CENTERED UNDER/OVER CROSSING UTILITY.
12. INSTALL 8" C900 PVC WATER MAIN IN OPEN TRENCH W/ 2 SACK SLURRY BACKFILL PER SLO COUNTY STANDARD DETAIL U-4b.
13. INSTALL 8" TEE AND GATE VALVE ASSEMBLY PER DETAIL 1, SHEET 17.
14. GROOVED COUPLING (VICTAULIC STYLE 31 OR APPROVED EQUAL)
15. RESTRAINED FLANGE ADAPTER (EBAA SERIES 2100 OR APPROVED EQUAL)
16. D.I. SPOOL WITH GROOVE (FLG x PE)
17. INSTALL 6" THICK DECOMPOSED GRANITE.
18. CONNECT TO EXISTING 8"ø WATER MAIN PER CONNECTION DETAIL 4, SHEET 18.
19. INSTALL DOUBLE STRAP SERVICE SADDLE WITH ½" NPT OUTLET, SIZE PER PLAN. ENGINEER TO CONFIRM LOCATION AND ROTATION. CONTRACTOR TO DRILL & CAP FOR LATERAL SERVICE BY OTHERS.
20. INSTALL 10" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER AMWC STANDARD DETAIL 201. SEE GENERAL NOTE #11.
21. FULLY RESTRAIN PVC PIPE TO LIMITS SHOWN USING BELL RESTRAINT HARNESS (EBAA IRON SERIES 1600, OR APPROVED EQUAL).

REGISTERED PROFESSIONAL ENGINEER
CHARLES A. GRAY
NO. 81321
EXP. 9/30/15
CIVIL
STATE OF CALIFORNIA

CALL BEFORE YOU DIG
USA
800-642-2444

CSA23 INTERTIE IMPROVEMENTS

PLAN & PROFILE – STA 107+50 TO STA 118+00

SAN LUIS OBISPO COUNTY, CA.

Check By	Designer	Date	Drawn By	Date	Design Engineer	Date
	JT	2/17/15	JT	2/17/15	CG	2/17/15

0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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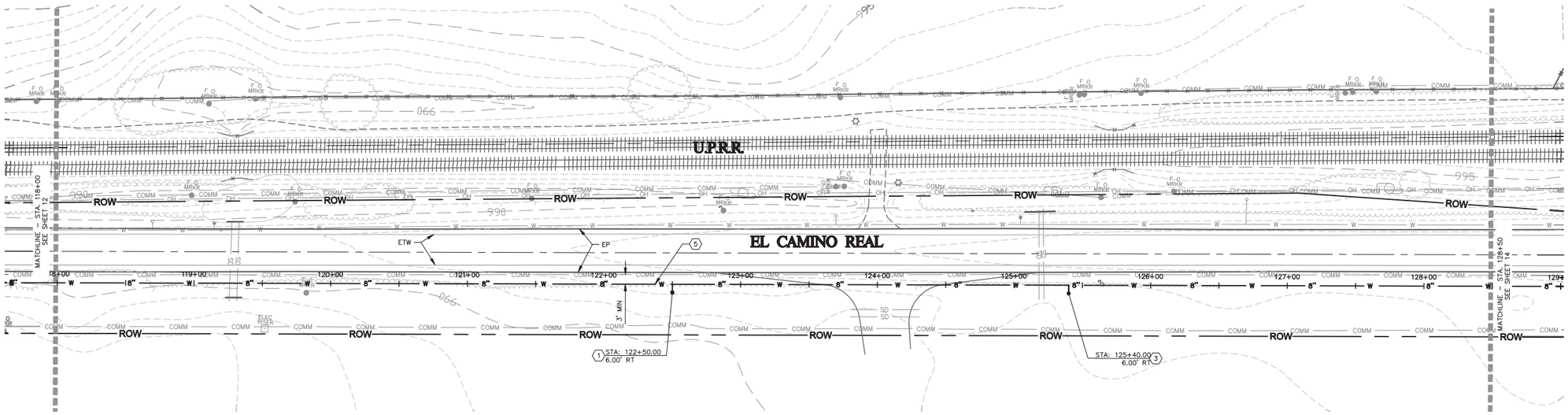
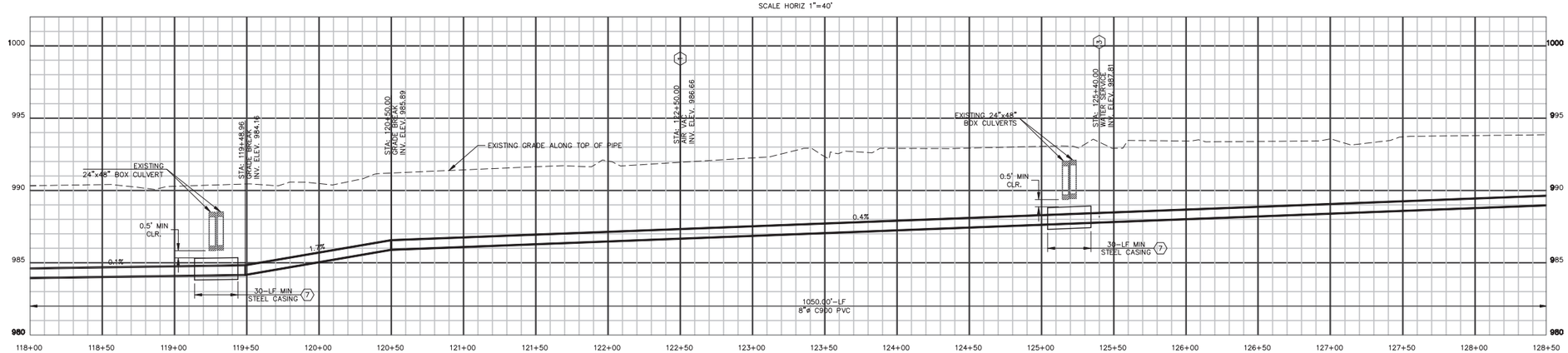
ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	13	20



CSA23 INTERTIE WATERLINE – PLAN VIEW

SCALE HORIZ 1"=40'



PROFILE

SCALE: HORIZ. 1" = 40'; VERT. 1" = 4'

GENERAL NOTES

1. LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE AND BASED ON AVAILABLE INFORMATION PROVIDED BY UTILITY COMPANIES. IN INSTANCES WHERE NO VERTICAL UTILITY INFORMATION COULD BE FOUND, THE DEPTH OF THESE UTILITIES ARE SHOWN THREE FEET BELOW GROUND SURFACE.
2. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL POTHOLE AND VERIFY LOCATION AND DEPTH OF EXISTING UTILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES. CONTRACTOR SHALL USE POSITIVE LOCATION METHODS PER CALTRANS PUBLICATION – "POLICY ON HIGH AND LOW RISK UNDERGROUND FACILITIES WITHIN HIGHWAY RIGHTS OF WAY"
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6. EXISTING PIPELINES/UTILITIES THAT CROSS NEW SYSTEM PIPING OR SIMILAR EXCAVATIONS REQUIRED TO CONSTRUCT THE PIPING, SHALL BE PROTECTED IN PLACE, UNLESS OTHERWISE NOTED. ALL EXISTING PIPELINES/UTILITIES SHALL BE SUPPORTED ACROSS THE EXCAVATION DURING CONSTRUCTION.
7. INTERFERING PORTIONS OF ABANDONED UTILITIES SHALL BE REMOVED AND DISPOSED OF AS UNSUITABLE MATERIAL BY THE CONTRACTOR. THE CUT ENDS SHALL BE PLUGGED WITH BRICK AND MORTAR OR CONCRETE. THE CONTRACTOR SHALL VERIFY THAT THE UTILITY IS TRULY ABANDONED PRIOR TO REMOVAL.
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9. WATERLINE SHALL MAINTAIN 3–FT MINIMUM HORIZONTAL CLEARANCE FROM ALL EXISTING UTILITIES. WATERLINE AND LATERALS SHALL ALSO MAINTAIN A MINIMUM 0.5 FT VERTICAL CLEARANCE WHEN CROSSING EXISTING UTILITIES. ADDITIONAL CLEARANCE IS REQUIRED WHEN SHOWN ON PLANS.
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REGISTERED PROFESSIONAL ENGINEER CHARLES A. GRAY NO. 81321 EXP. 9/30/15 CIVIL STATE OF CALIFORNIA

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CSA23 INTERTIE IMPROVEMENTS					
PLAN & PROFILE – STA 118+00 TO STA 128+50					
SAN LUIS OBISPO COUNTY, CA.					
Check By	Designer	Date	Drawn By	Date	Design Engineer	Date
	JT	2/17/15	JT	2/17/15	CG	2/17/15

0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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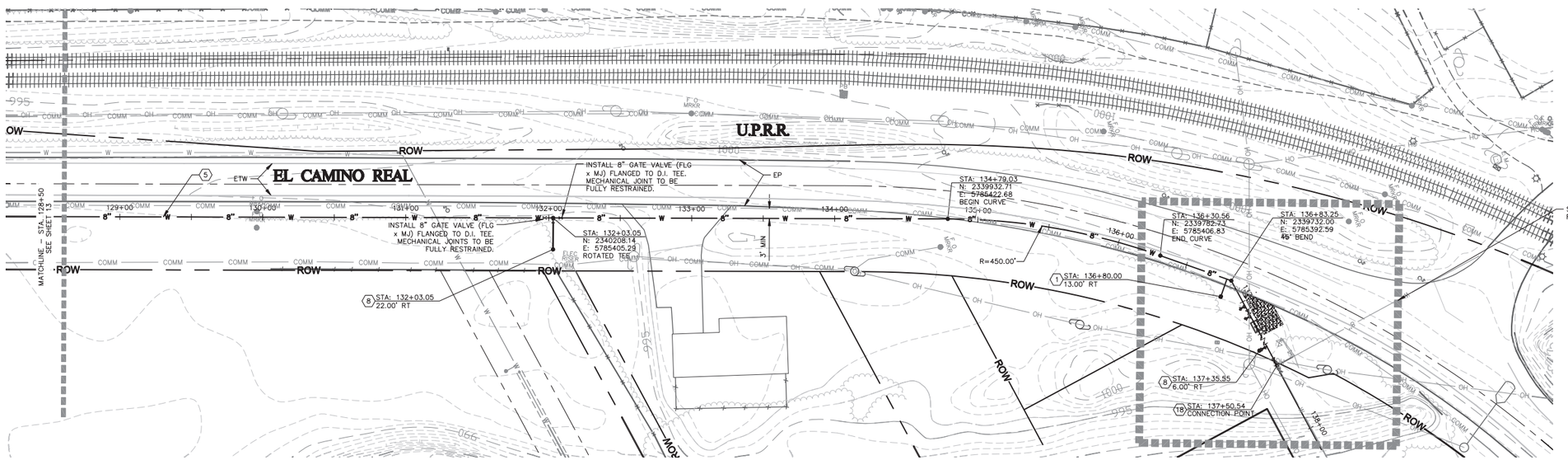
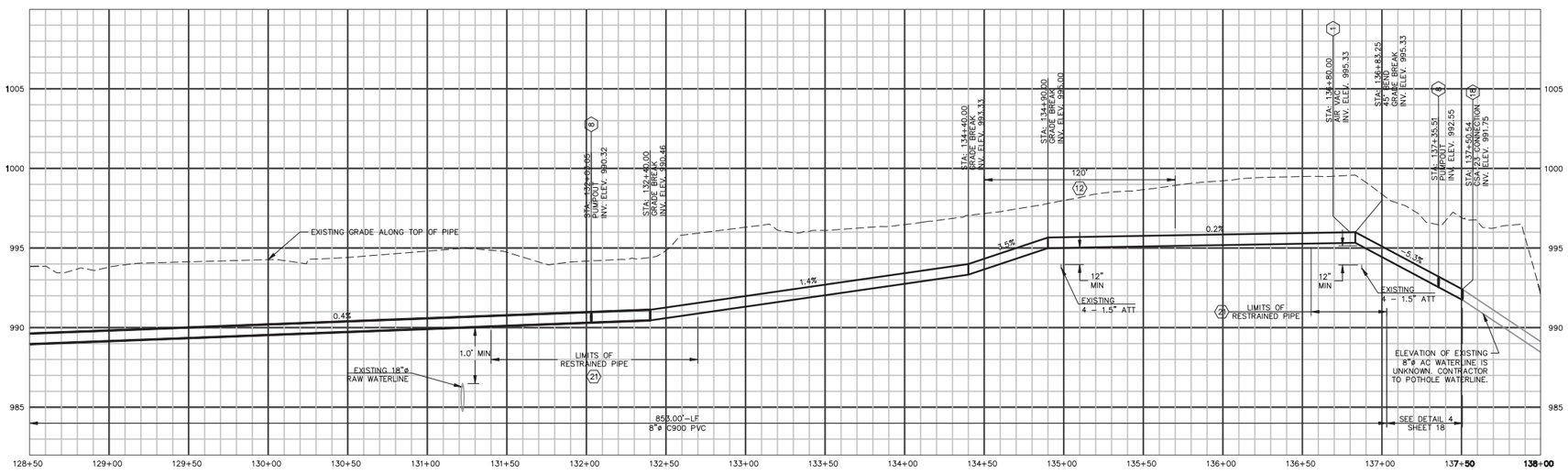
ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	14	20



CSA23 INTERTIE WATERLINE – PLAN VIEW

SCALE HORIZ 1"=40'



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REGISTERED PROFESSIONAL ENGINEER CHARLES A. GRAY NO. 81321 EXP. 9/30/15 CIVIL STATE OF CALIFORNIA

CALL BEFORE YOU DIG 800-642-2444

Check By	Designer	Date	Drawn By	Date	Design Engineer	Date
	JT	2/17/15	JT	2/17/15	CG	2/17/15

CSA23 INTERTIE IMPROVEMENTS

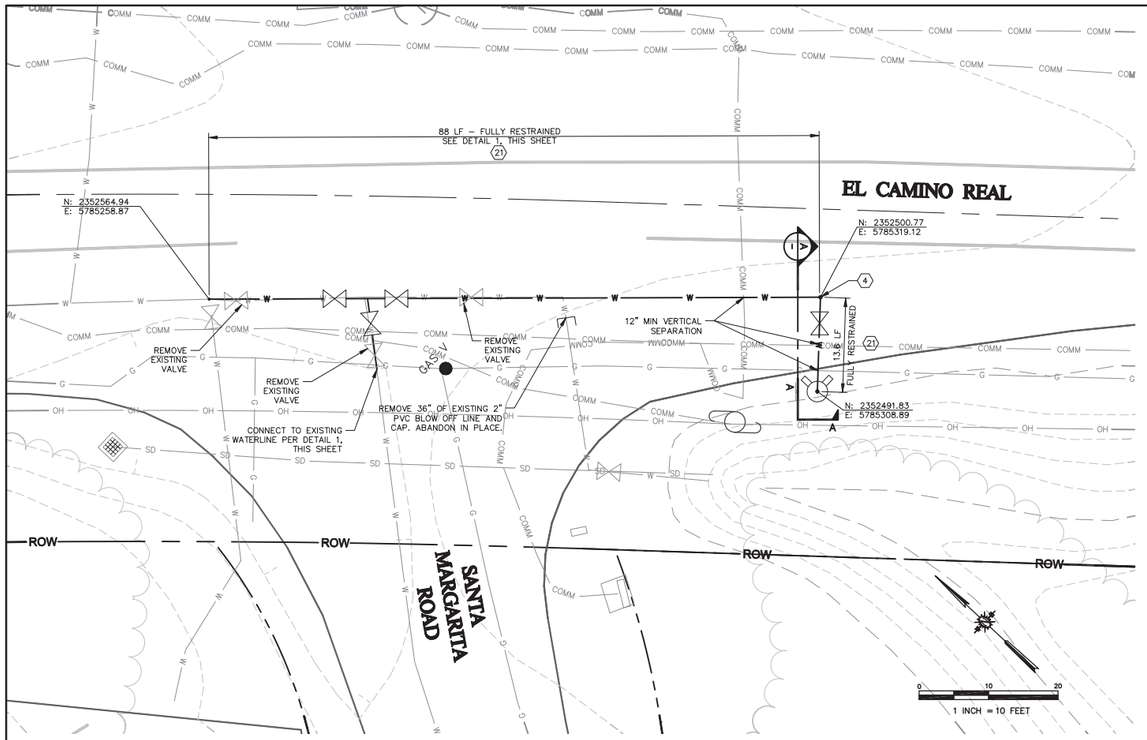
PLAN & PROFILE–STA 128+50 TO STA 137+50.54

SAN LUIS OBISPO COUNTY, CA.

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

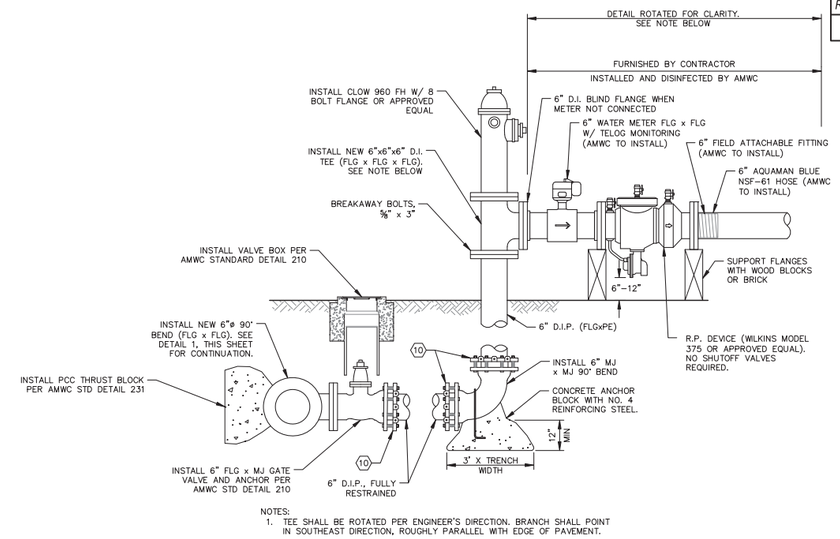
F:\pro\2014\140520\3 Project Design\Civil\Construction Drawings\CE140520PP0013.dwg 2-17-15 12:24:59 PM jimmyt

ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	15	20



AMWC WATERLINE EXTENSION – ENLARGEMENT VIEW

SCALE HORIZ 1"=10'



NOTES:
1. TEE SHALL BE ROTATED PER ENGINEER'S DIRECTION. BRANCH SHALL POINT IN SOUTHEAST DIRECTION, ROUGHLY PARALLEL WITH EDGE OF PAVEMENT.

AMWC HYDRANT LATERAL SECTION (A)

SCALE: N.T.S.

CONSTRUCTION NOTES

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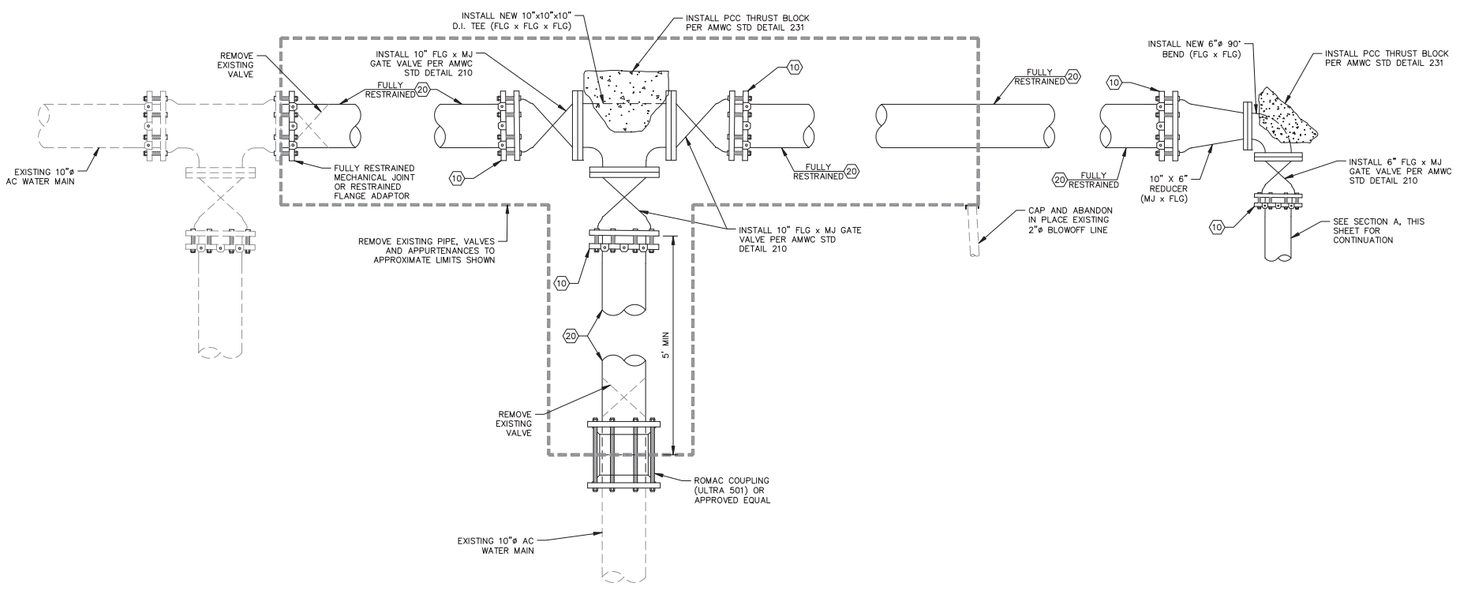

AMWC WATERLINE EXTENSION DETAIL (1)

SCALE: N.T.S.

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	JT	2/17/15	JT	2/17/15	CG	2/17/15

CSA23 INTERTIE IMPROVEMENTS

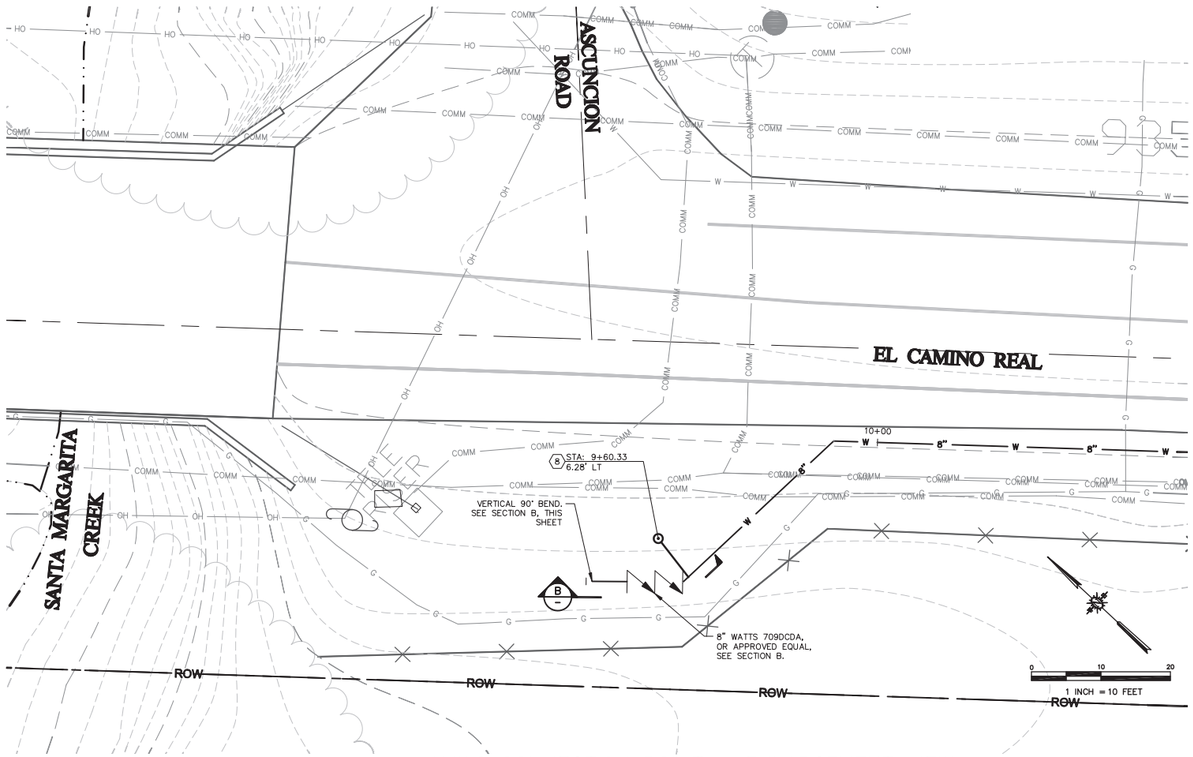
DETAIL SHEET

SAN LUIS OBISPO COUNTY, CA.

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

F:\pro\2014\140520\3 Project Design\Civil\Construction Drawings\CE140520DS0001.dwg 2-17-15 12:26:10 PM jimmyt

ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	16	20

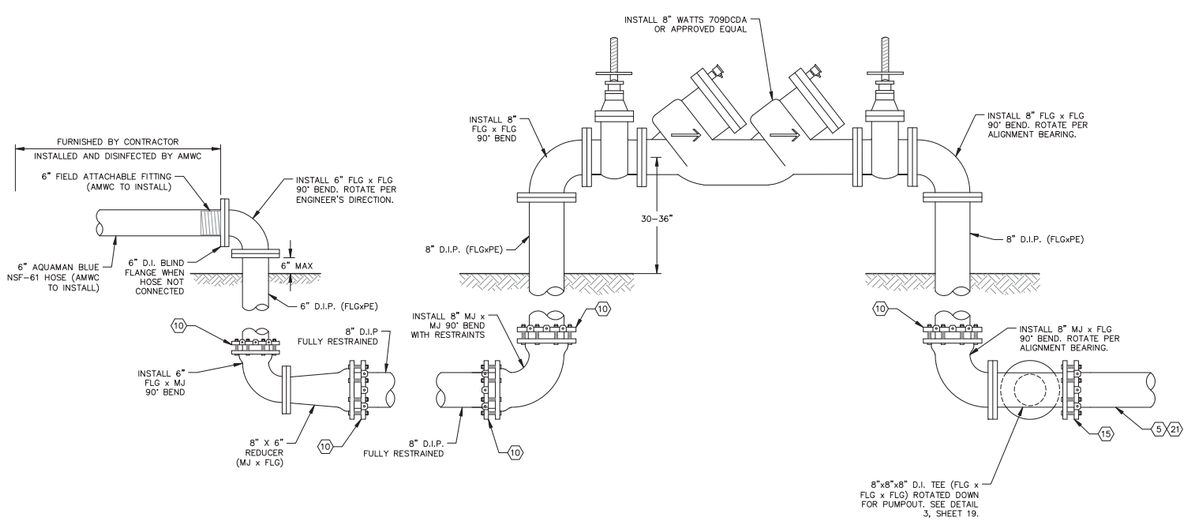


AMWC CONNECTION POINT – ENLARGEMENT VIEW

SCALE HORIZ 1"=10'

CONSTRUCTION NOTES

1. INSTALL 2" AIR AND VACUUM RELIEF ASSEMBLY PER SLO COUNTY STANDARD DETAIL W-6. USE COMBINATION AIR VALVE APCO 140C OR APPROVED EQUAL.
2. INSTALL 2" BLOW-OFF ASSEMBLY PER SLO COUNTY STANDARD DETAIL W-5a
3. INSTALL ¾" WATER SERVICE CONNECTION PER SLO COUNTY STANDARD DETAIL W-4
4. INSTALL CONCRETE THRUST BLOCK PER SLO COUNTY STANDARD DETAIL W-1. CONTRACTOR TO SUBMIT CALCULATIONS.
5. INSTALL 8" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER SLO COUNTY STANDARD DETAIL U-4 & U-4a. SEE GENERAL NOTE #11.
6. INSTALL 4" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER SLO COUNTY STANDARD DETAIL U-4 & U-4a. SEE GENERAL NOTE #11.
7. INSTALL 18"ø, ⅜" MIN THICK STEEL CASING, LENGTH PER PLAN/PROFILE, CENTERED UNDER CROSSING STRUCTURES. SEE DETAIL 7, SHEET 19 FOR CASING AND SPACER DETAIL.
8. INSTALL PUMPOUT PER DETAIL 3, SHEET 19
9. INSTALL PUMPOUT PER DETAIL 4, SHEET 19
10. FULLY RESTRAINED MECHANICAL JOINT (EBAA SERIES 2000PV FOR PVC, SERIES 1100 FOR DI, OR APPROVED EQUAL)
11. SPECIAL PIPE REQUIRED PER WATER SEPARATION GUIDELINES. INSTALL 20' LONG STICK OF 8"ø AWWA C900, DR14 PVC PIPE, CENTERED UNDER/OVER CROSSING UTILITY.
12. INSTALL 8" C900 PVC WATER MAIN IN OPEN TRENCH W/ 2 SACK SLURRY BACKFILL PER SLO COUNTY STANDARD DETAIL U-4b.
13. INSTALL 8" TEE AND GATE VALVE ASSEMBLY PER DETAIL 1, SHEET 17.
14. GROOVED COUPLING (VICTAULIC STYLE 31 OR APPROVED EQUAL)
15. RESTRAINED FLANGE ADAPTER (EBAA SERIES 2100 OR APPROVED EQUAL)
16. D.I. SPOOL WITH GROOVE (FLG x PE)
17. INSTALL 6" THICK DECOMPOSED GRANITE.
18. CONNECT TO EXISTING 8"ø WATER MAIN PER CONNECTION DETAIL 4, SHEET 18.
19. INSTALL DOUBLE STRAP SERVICE SADDLE WITH ½" NPT OUTLET, SIZE PER PLAN. ENGINEER TO CONFIRM LOCATION AND ROTATION. CONTRACTOR TO DRILL & CAP FOR LATERAL SERVICE BY OTHERS
20. INSTALL 10" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER AMWC STANDARD DETAIL 201. SEE GENERAL NOTE #11.
21. FULLY RESTRAIN PVC PIPE TO LIMITS SHOWN USING BELL RESTRAINT HARNESS (EBAA IRON SERIES 1600, OR APPROVED EQUAL).



AMWC CONNECTION SECTION (B)

SCALE: N.T.S.

REGISTERED PROFESSIONAL ENGINEER CHARLES A. GRAY NO. 81321 EXP. 9/30/15 CIVIL STATE OF CALIFORNIA

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CSA23 INTERTIE IMPROVEMENTS					
DETAIL SHEET					
SAN LUIS OBISPO COUNTY, CA.					
Check By	Designer	Date	Drawn By	Date	Design Engineer	Date
	JT	2/17/15	JT	2/17/15	CG	2/17/15

0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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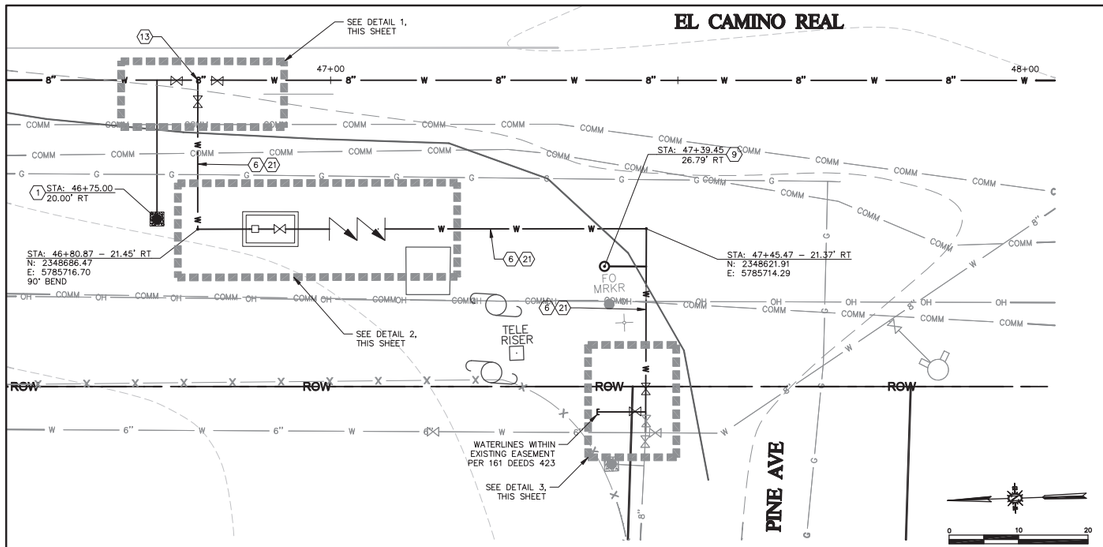
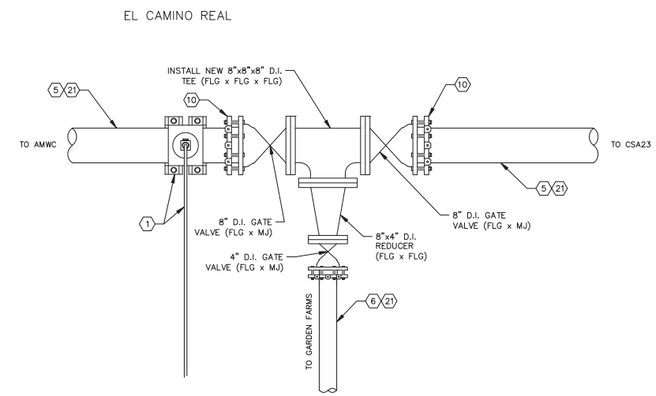
ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
3120	300536	17	20



GARDEN FARMS CONNECTION – ENLARGEMENT

SCALE HORIZ 1"=10'



TEE AND GATE VALVE ASSEMBLY DETAIL – STA. 46+80.87 (1)

SCALE: N.T.S.

CONSTRUCTION NOTES

1. INSTALL 2" AIR AND VACUUM RELIEF ASSEMBLY PER SLO COUNTY STANDARD DETAIL W-6. USE COMBINATION AIR VALVE APCO 140C OR APPROVED EQUAL.
2. INSTALL 2" BLOW-OFF ASSEMBLY PER SLO COUNTY STANDARD DETAIL W-5a
3. INSTALL ¾" WATER SERVICE CONNECTION PER SLO COUNTY STANDARD DETAIL W-4
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5. INSTALL 8" C900, DR18 PVC WATER MAIN IN OPEN TRENCH PER SLO COUNTY STANDARD DETAIL U-4 & U-4a. SEE GENERAL NOTE #11.
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17. INSTALL 6" THICK DECOMPOSED GRANITE.
18. CONNECT TO EXISTING 8"ø WATER MAIN PER CONNECTION DETAIL 4, SHEET 18.
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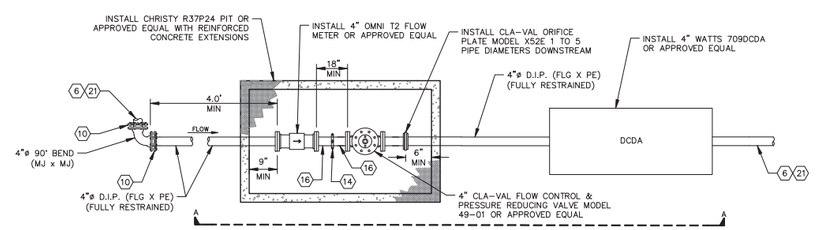
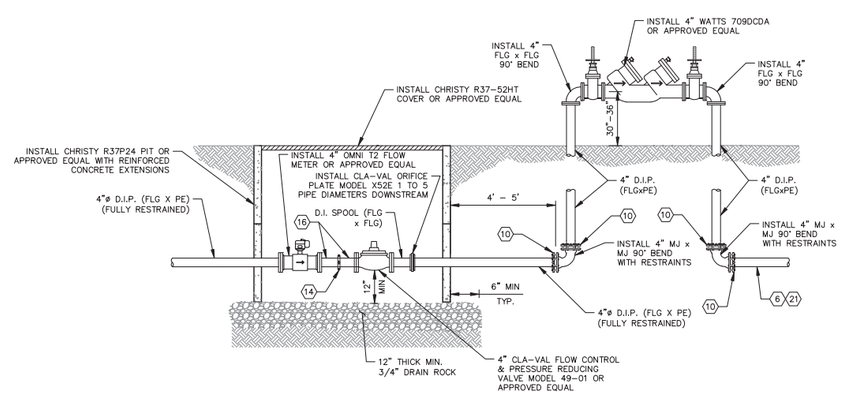
21. FULLY RESTRAIN PVC PIPE TO LIMITS SHOWN USING BELL RESTRAINT HARNESS (EBAA IRON SERIES 1600, OR APPROVED EQUAL).



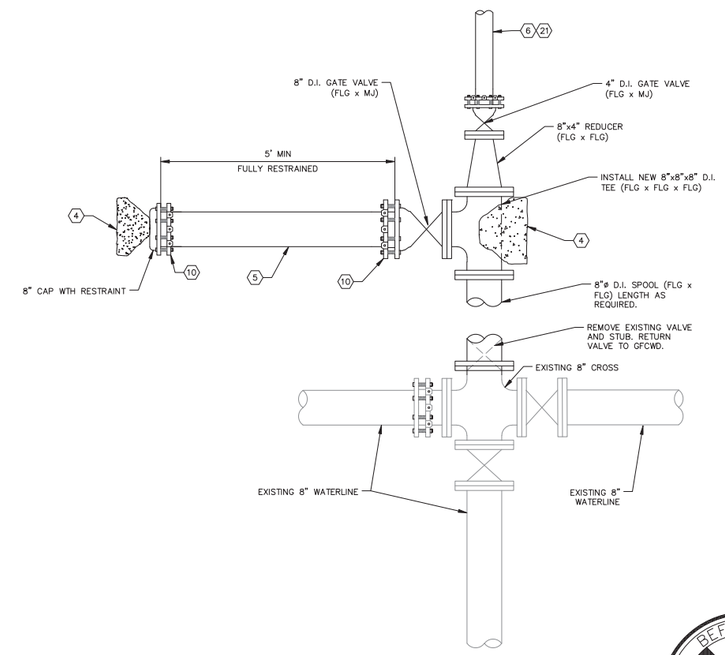
PLAN



SECTION A–A

GARDEN FARMS CONNECTION DETAIL (2)

N.T.S.



GARDEN FARMS POINT OF CONNECTION DETAIL (3)

SCALE: N.T.S.

REGISTERED PROFESSIONAL ENGINEER CHARLES A. GRAY NO. 81321 EXP. 9/30/15 CIVIL STATE OF CALIFORNIA

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CSA23 INTERTIE IMPROVEMENTS						
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0 1 2 3 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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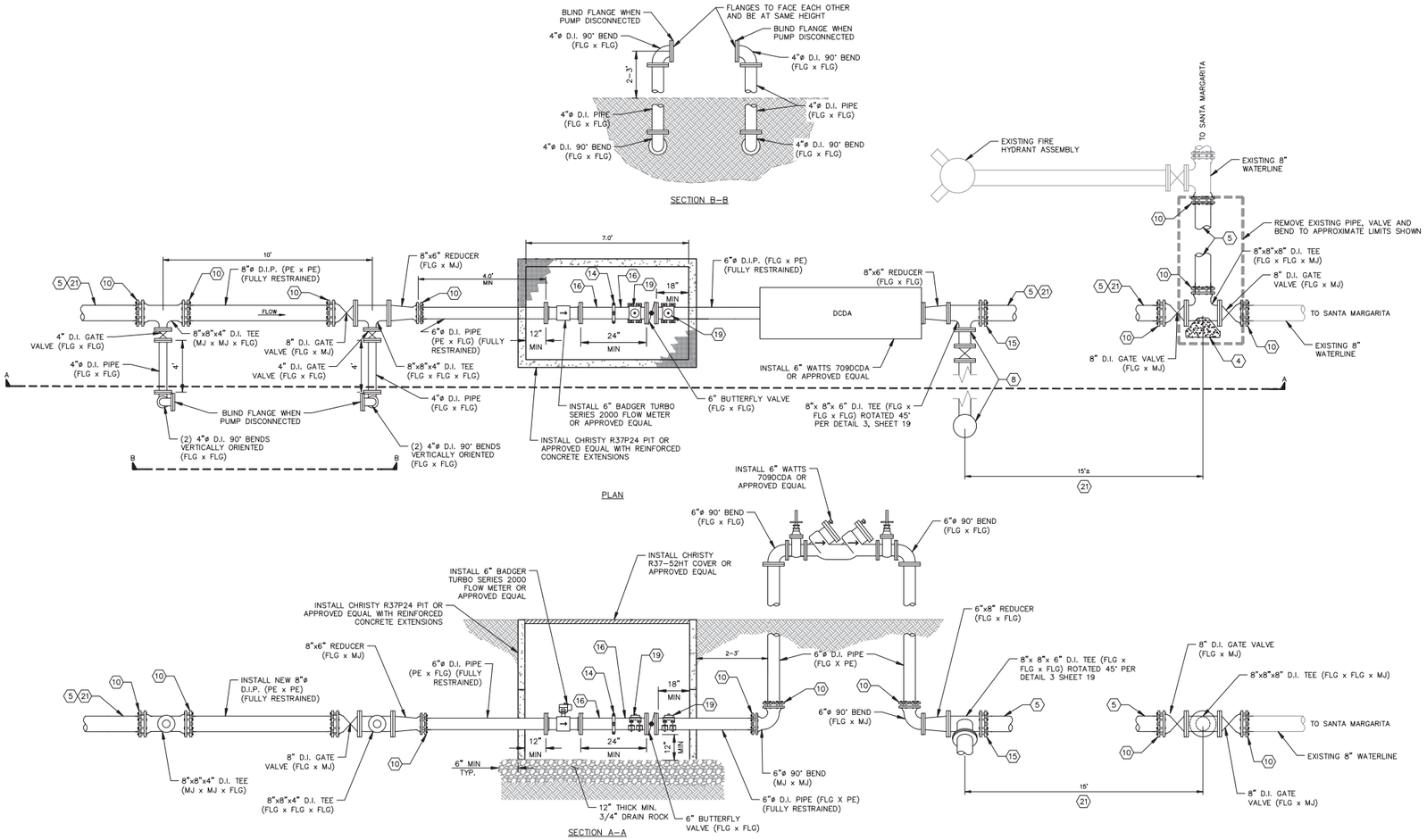
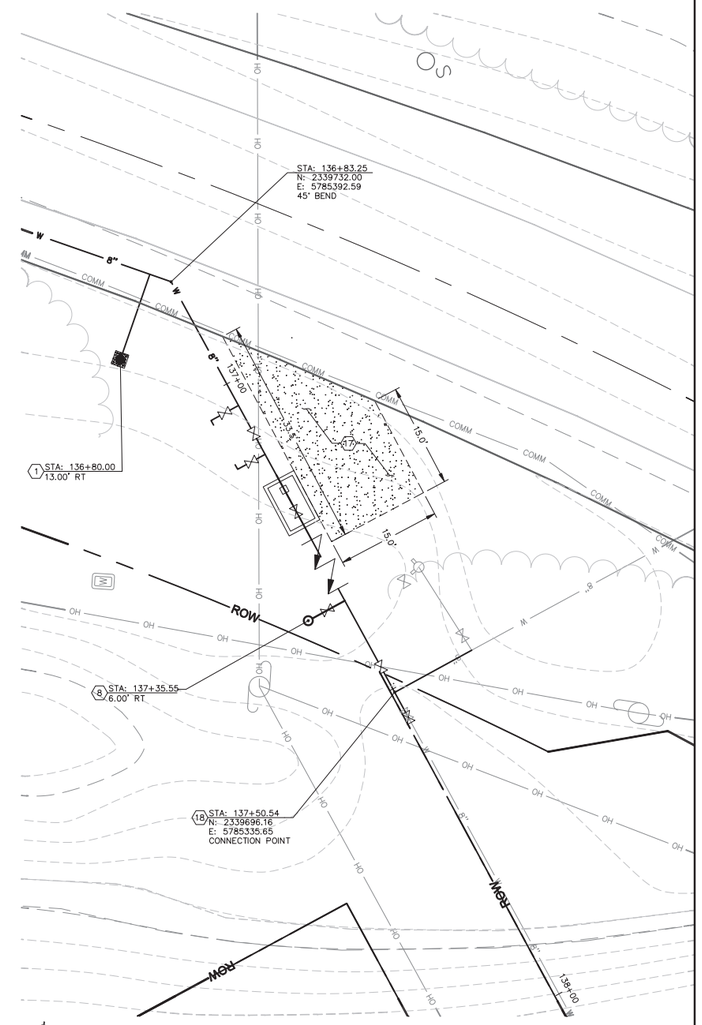


CSA 23 CONNECTION DETAIL

N.T.S.

4



CSA 23 CONNECTION – ENLARGEMENT

SCALE HORIZ 1"=10'

0 10 20

1 INCH = 10 FEET

CONSTRUCTION NOTES

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0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

REGISTERED PROFESSIONAL ENGINEER CHARLES A. GRAY NO. 81321 EXP. 9/30/15 CIVIL STATE OF CALIFORNIA 2/17/15

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DETAIL SHEET

SAN LUIS OBISPO COUNTY, CA.

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	JT	2/17/15	JT	2/17/15	CG	2/17/15

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ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
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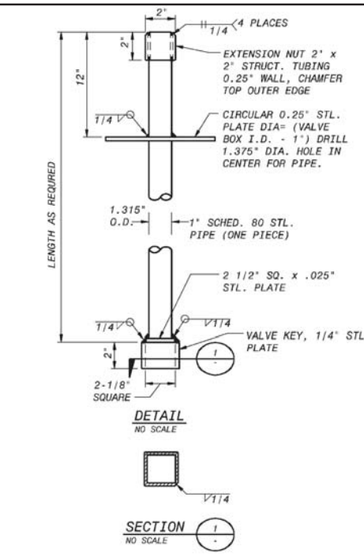
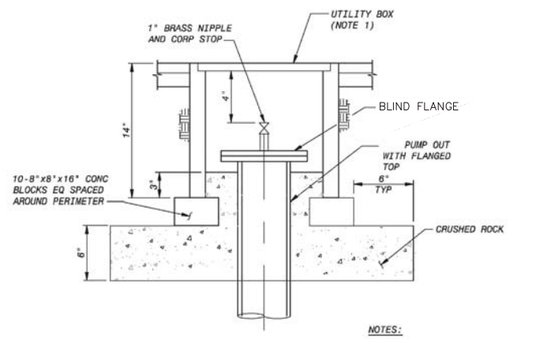


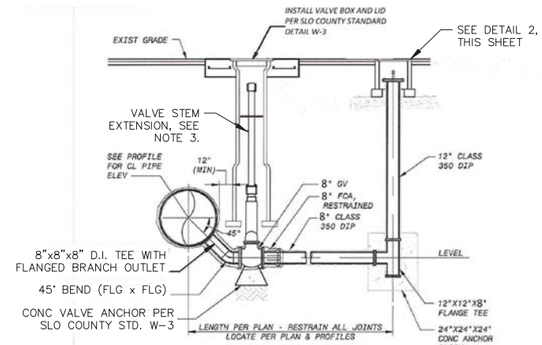
NOTES:
1. LENGTH OF EXTENSION IN INCHES SHALL BE INSCRIBED WITH AN ARC WELD BEAD (MIN. OF 2" IN HEIGHT) ON TOP FACE OF CIRCULAR PLATE.
2. VALVE KEY SHALL FIT OVER STANDARD 2" VALVE OPERATING NUT.
3. EXTENSION NUT AND VALVE KEY TO BE IN ALIGNMENT WITH EACH OTHER.

VALVE STEM EXTENSION (1)
N.T.S.



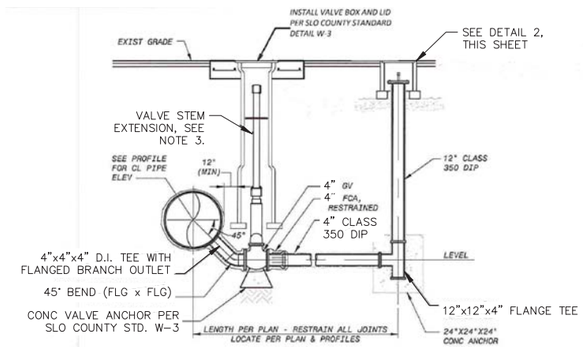
NOTES:
1. UTILITY BOX SHALL BE 24"x36" PRECAST CONCRETE BOX CHRISTY OR EQUAL.

PUMP OUT DISCHARGE PIPE (2)
N.T.S.



NOTES:
1. WAX TAPE COAT ALL FLANGES, NUTS, AND BOLTS. APPLY POLYETHYLENE SHEET ENCASEMENT
2. WRAP ALL DUCTILE IRON PIPE WITH POLYETHYLENE ENCASEMENT PER SPECIFICATIONS.
3. PROVIDE VALVE STEM EXTENSION WHEN DEPTH TO OPERATING NUT EXCEEDS 48". FABRICATE EXTENSION TO FIELD MEASUREMENT AND PER DETAIL 1, THIS SHEET.

PUMP OUT (3)
N.T.S.

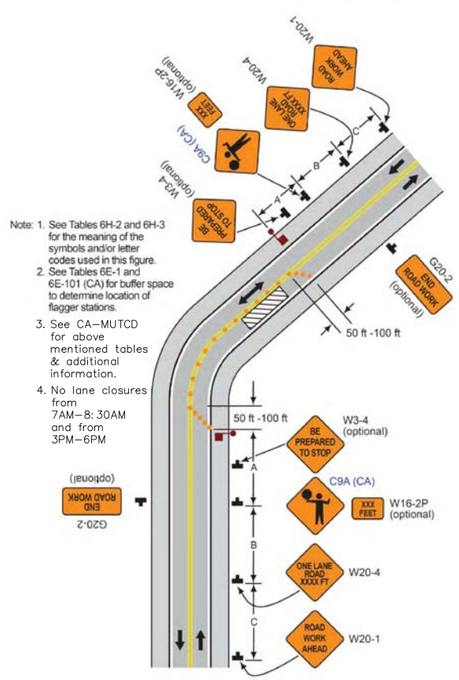


NOTES:
1. WAX TAPE COAT ALL FLANGES, NUTS, AND BOLTS. APPLY POLYETHYLENE SHEET ENCASEMENT
2. WRAP ALL DUCTILE IRON PIPE WITH POLYETHYLENE ENCASEMENT PER SPECIFICATIONS.
3. PROVIDE VALVE STEM EXTENSION WHEN DEPTH TO OPERATING NUT EXCEEDS 48". FABRICATE EXTENSION TO FIELD MEASUREMENT AND PER DETAIL 1, THIS SHEET.

PUMP OUT (4)
N.T.S.

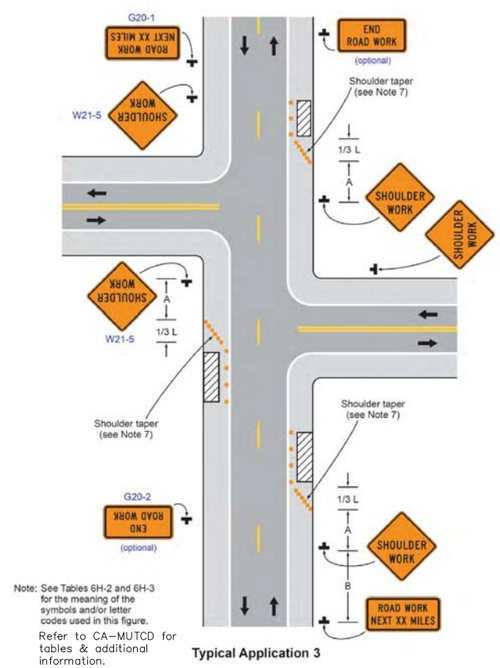
Figure 6H-10 (CA). Lane Closure on Two-Lane Road Using Flaggers (TA-10)

Figure 6H-3. Work on the Shoulders (TA-3)



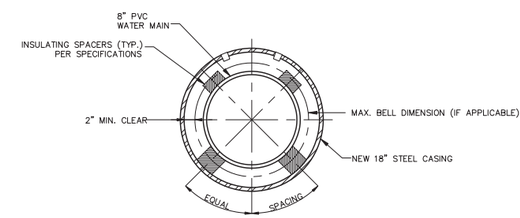
Typical Application 10

LANE CLOSURE – TRAFFIC CONTROL (5)
N.T.S.



Typical Application 3

SHOULDER WORK – TRAFFIC CONTROL (6)
N.T.S.



1. PLACE WARNING TAPE (SEE SPECIFICATIONS) ON PIPE PRIOR TO ATTACHING INSULATING SPACERS.
2. SPACERS SHALL BE 12 INCHES IN WIDTH AND OF SUFFICIENT HEIGHT TO PROVIDE A MINIMUM OF 2 INCH CLEARANCE AT THE BELL AND A MAXIMUM OF 2" CLEARANCE BETWEEN SPACER AND INSIDE TOP OF CASING. ALL SPACERS SHALL BE EQUAL DIMENSIONS AND POSITIONED UNIFORMLY.
3. SPACERS SHALL BE ATTACHED IN PLACE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
4. MINIMUM NUMBER OF SPACERS PER SPACER ASSEMBLY AND MINIMUM NUMBER OF SPACER ASSEMBLIES PER JOINT OF PIPE.

CARRIER PIPE SIZE (INCHES)	NUMBER OF SPACERS PER SPACER ASSEMBLY	WIDTH OF SPACER ASSEMBLY (MIN.)	NUMBER OF SPACER ASSEMBLIES PER LENGTH OF PIPE
12"	4	12–INCHES	3

5. END SEALS SHALL BE PLACED AT THE ENDS OF EACH CASING SECTION.
6. CASING SHALL BE INSTALLED SUCH THAT THE WATER MAIN SHALL MAINTAIN THE SLOPE AND GRADES AS SHOWN ON THE PROFILE (WITH THE CASING SPACERS INSTALLED).
7. ALL STEEL CASING PIPE FIELD JOINTS SHALL BE WELDED FULL CIRCUMFERENCE.
8. MINIMUM WALL THICKNESS OF STEEL CASING SHALL BE 3/8–INCH. CONTRACTOR SHALL BE RESPONSIBLE FOR CALCULATION OF ACTUAL CASING WALL THICKNESSES AND STRENGTH NEEDED TO MATCH EQUIPMENT TO BE USED BY CONTRACTOR.

PIPE CASING DETAIL (7)
SHEET 11, 13 N.T.S.

REGISTERED PROFESSIONAL ENGINEER CHARLES A. GRAY NO. 81321 EXP. 9/30/15 CIVIL STATE OF CALIFORNIA

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ROAD NO.	JOB NO.	SHEET NO.	TOTAL SHEETS
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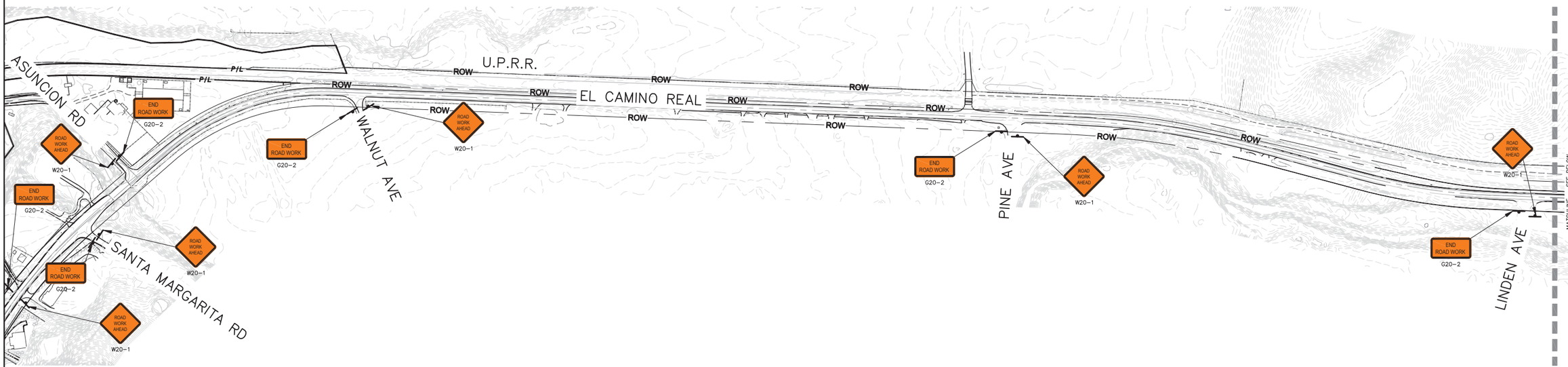
STATIONARY MOUNTED CONSTRUCTION AREA SIGNS

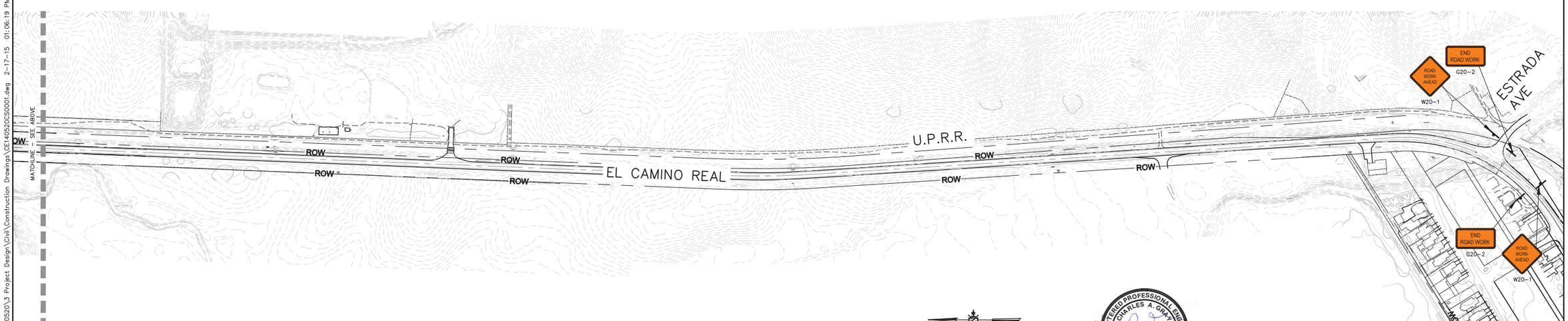
SIGN	PANEL SIZE (in x in)	SIGN MESSAGE	No. OF POST AND SIZE	No. OF SIGNS (EA)
ROAD WORK AHEAD W20-1	36 x 36	ROAD WORK AHEAD	1 – 4 x 4	8
END ROAD WORK G20-2	36 x 18	END ROAD WORK	1 – 4 x 4	8

NOTES:

1. EXACT LOCATION OF SIGNS TO BE DETERMINED BY THE ENGINEER IN ACCORDANCE WITH PART 6 OF THE 2014 CALIFORNIA MUTCD.
2. ALL SIGNS SHALL BE STATIONARY MOUNTED.
3. ALL SIGNS SHOWN SHALL REMAIN IN PLACE THROUGHOUT CONSTRUCTION OR AS DETERMINED BY THE ENGINEER.

0 200 400
1 INCH = 200 FEET





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1 INCH = 200 FEET

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CSA23 INTERTIE IMPROVEMENTS
CONSTRUCTION AREA SIGNS
SAN LUIS OBISPO COUNTY, CA.

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0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

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