

**COUNTY OF SAN LUIS OBISPO  
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION**

## **SPECIAL PROVISIONS**

**FOR**

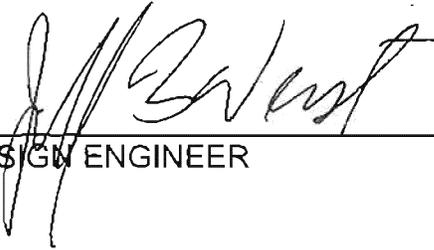
**WILLOW ROAD EXTENSION PHASE 2 &  
US HIGHWAY 101 INTERCHANGE PROJECT  
NIPOMO, CA  
CONTRACT NO. 300129 / 300142  
FEDERAL PROJECT NO. FHWA Q101(189)**

COUNTY CONTRACT NO. 300129 / 300142  
FEDERAL PROJECT NO. FHWA Q101(189)

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

**PREPARED BY:**

For Sections 1 through 7 -

  
DESIGN ENGINEER



9/27/10  
DATE

**RECOMMENDED FOR APPROVAL AND ADVERTISING BY:**

  
DEPUTY PUBLIC WORKS DIRECTOR

9/27/10  
DATE

**APPROVED BY:**

  
PUBLIC WORKS DIRECTOR

9/27/2010  
DATE

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

**PREPARED BY:**

*Jeffrey J. Spannbaue*  
PROJECT ENGINEER  
(For Sections 9-2 and 10-4 only)

Sept 21, 2010  
DATE



**NCSD WATERLINE IMPROVEMENTS  
RECOMMENDED FOR APPROVAL AND ADVERTISING BY:**

*Peter U. Lewis*  
NIPOMO COMMUNITY SERVICES DISTRICT  
DISTRICT ENGINEER

9/23/2010  
DATE

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

**PREPARED BY:**



Sept. 21, 2010

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PROJECT ENGINEER, CIVIL  
(For Sections 9-1 and 10-1 only)

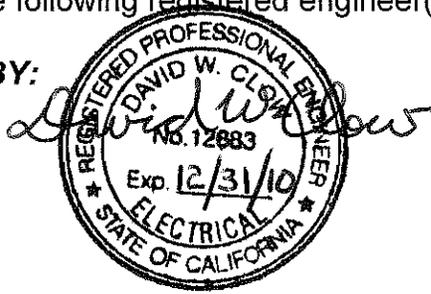
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DATE



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

PREPARED BY:



PROJECT ENGINEER, ELECTRICAL  
(For Sections 10-3)

SEPT 21/10  
DATE

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

**PREPARED BY:**



\_\_\_\_\_  
LANDSCAPE ARCHITECT  
(For Section 10-2)

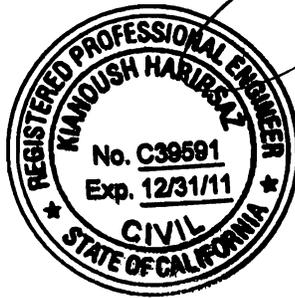
9.21.10  
DATE

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

**PREPARED BY:**

*K. Hain*  
\_\_\_\_\_  
PROJECT ENGINEER, STRUCTURAL

*9/21/2010*  
\_\_\_\_\_  
DATE



## SECTION 1. 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 County 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 County would lack the authority to implement the applicable provisions of the Standard Specifications or Standard Plans absent the County's election to have the County'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.

## **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.

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.

In conformance with Public Contract Code Section 7106, a Noncollusion Affidavit is included in the section titled "Bid Proposal and Forms" of the Contract Documents. Signing the Bid Proposal shall also constitute signature of the Noncollusion Affidavit.

The Contractor, sub-recipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of Title 49 Code of Federal Regulations Part 26 (49 CFR 26) in the award and administration of contracts financed in whole or in part with Federal funds. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the County deems appropriate. Each subcontract signed by the bidder must include this assurance.

Failure of the bidder to fulfill the requirements of the Contract Documents for submittals required to be furnished after bid opening will be grounds for finding the bid nonresponsive.

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 4th 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 County of San Luis Obispo" 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 County of San Luis Obispo" 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 County of San Luis Obispo after the date and time specified in the Notice to Bidders shall not 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 Required Listing of Proposed Subcontractors: 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" forms for the designation of subcontractors, as required herein, are 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. **The bidder shall complete and submit three “DESIGNATION OF SUBCONTRACTORS” forms with bidder’s bid proposal in order to be considered responsive, one form for each of the following: Base Bid, Additive Bid Item 1, and Additive Bid Item 2.**

The Contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of contracts financed in whole or in part with Federal funds. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the County deems appropriate. Each subcontract signed by the bidder must include this assurance.

2-1.03 Federal Lobbying Restrictions: Section 1352, Title 31, United States Code prohibits Federal funds from being expended by the recipient or any lower tier subrecipient of a Federal-aid contract to pay for any person for influencing or attempting to influence a Federal agency or Congress in connection with the awarding of any Federal-aid contract, the making of any Federal grant or loan, or the entering into of any cooperative agreement.

If any funds other than Federal funds have been paid for the same purposes in connection with this Federal-aid contract, the recipient shall submit an executed certification and, if required, submit a completed disclosure form as part of the bid documents.

A certification for Federal-aid contracts regarding payment of funds to lobby Congress or a Federal agency is included in the Contract Documents. Standard Form - LLL, “Disclosure of Lobbying Activities,” with instructions for completion of the Standard Form is also included. Signing the Proposal shall constitute signature of the Certification.

The above-referenced certification and disclosure of lobbying activities shall be included in each subcontract and any lower-tier contracts exceeding \$100,000. All disclosure forms, but not certifications, shall be forwarded from tier to tier until received by the Engineer.

The Contractor, subcontractors, and any lower-tier contractors shall file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by the Contractor, subcontractors, and any lower-tier contractors. An event that materially affects the accuracy of the information reported includes:

1. A cumulative increase of \$25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or

2. A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or
3. A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

2-1.04 Disadvantaged Business Enterprise (DBE): This contract is subject to Title 49 Code of Federal Regulations Part 26 (49 CFR 26) entitled "Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs." The Regulations in their entirety are incorporated herein by this reference.

Consistent with 49 Code of Federal Regulations (CFR) Part 26.11, data provided by the bidders on the "BIDDER'S LIST OF SUBCONTRACTORS (DBE AND NON-DBE)" will provide the County as accurate data as possible about the DBE and non-DBE firms actively seeking work on its public works contracts, for use in setting overall DBE goals. Bidders shall submit the "BIDDER'S LIST OF SUBCONTRACTORS (DBE AND NON-DBE)" forms with their bid.

Bidders shall take necessary and reasonable steps to ensure that DBEs have an opportunity to participate in this contract.

To ensure there is equal participation of the DBE groups specified in 49 CFR 26.5, the County specifies a goal for Underutilized Disadvantaged Business Enterprises (UDBEs). UDBE is a firm meeting the definition of a DBE as specified in 49 CFR 26 and is a member of one the following groups:

1. Black American
2. Asian-Pacific American
3. Native American
4. Women

Reference to DBEs includes all UDBEs, but reference to UDBEs does not include all DBEs.

It is the bidder's responsibility to make enough work available to UDBEs and to select those portions of the work or material needs consistent with the available UDBEs.

**Bidders shall meet the UDBE Goal shown in the Notice to Bidders or demonstrate that, prior to bidding, Good Faith Efforts were made to meet the goal.**

It is the bidder's responsibility to verify the UDBE firm is certified as DBE at the date of bid opening. Listings of DBEs certified by the California Unified Certification Program (CUCP) are available at:

[http://www.dot.ca.gov/hq/beq/find\\_certified.htm](http://www.dot.ca.gov/hq/beq/find_certified.htm)

Only UDBE participation will count towards the UDBE goal. DBE participation will count towards the County's Annual Anticipated DBE Participation Level and the California statewide goal.

Credit for materials or supplies purchased from UDBEs will count towards the UDBE goal in the following manner:

1. If the materials or supplies are obtained from a UDBE manufacturer, 100 percent of the cost of the materials or supplies will count toward the UDBE goal.
2. If the materials or supplies are purchased from a UDBE regular dealer, 60 percent of the cost of the materials or supplies will count toward the UDBE goal.
3. If the UDBE is neither a manufacturer nor a regular dealer, only the entire amount of fees, commissions, and charges for assistance in the procurement and delivery of the materials or supplies will count toward the UDBE goal. 49 CFR 26.55 defines "manufacturer" and "regular dealer".

Credit for employing a UDBE trucking company will count towards the UDBE goal if the UDBE trucking company performs a commercially useful function as defined in 49 CFR 26.55.

2-1.04A UDBE Commitment Submittal: Bidders shall submit UDBE information on the "UDBE COMMITMENT" forms included in the section titled "Bid Proposal and Forms" of the Contract Documents with the bid proposal. These forms shall be completely filled out, signed by the bidder, and submitted with the bid proposal. **The bidder shall submit a "UDBE COMMITMENT" form for each of the following scenarios with bidder's bid proposal for each of the following scenarios:**

**Base Bid**

**Base Bid plus Additive Item 1**

**Base Bid plus Additive Item 2**

**Base Bid plus Additive Items 1 and 2**

Bidders are encouraged to submit written confirmation for each UDBE listed on said form that is participating in the contract work with the bid proposal. A copy of a UDBE's quote will serve as written confirmation that the UDBE is participating in the contract. If said written confirmation is not submitted with the bid, the apparent low bidder, second low bidder, and the third low bidder, must complete and submit this confirmation to the office of the County Clerk, 1055 Monterey Street, Room D-120, San Luis Obispo, CA 93408, no later than 4:00 p.m. on the second business day after bid opening. Failure to submit said confirmation within said time period shall be grounds for forfeiture of the bidder's

security. A copy of a UDBE's quote will serve as written confirmation that the UDBE is participating in the contract.

Other bidders do not need to submit the written confirmation unless the County requests it. If the County requests a bidder to submit this confirmation, the bidder shall submit said confirmations no later than 4:00 p.m. on the third business day following the request.

A UDBE subcontractor listed on the "UDBE COMMITMENT" shall also be listed on the "DESIGNATION OF SUBCONTRACTORS" form when 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.

2-1.04B UDBE Good Faith Effort Submittal: Bidders are encouraged to submit the "UDBE INFORMATION – GOOD FAITH EFFORTS" form and supporting documentation (hereafter, collectively "GFE documentation") with the bid proposal to establish that, before the bid, the bidder made adequate Good Faith Efforts (GFE) to meet the goal. Only Good Faith Efforts directed towards obtaining participation by UDBEs will be considered.

**If the GFE documentation is not submitted with the bid, the apparent low bidder, second low bidder, and the third low bidder, must complete and submit this documentation to the County. The GFE documentation must be received by the County no later than 4:00 p.m. on the second business day after bid opening.** Failure to submit said form and the relevant supporting documentation within said time period shall be grounds for forfeiture of the bidder's security. GFE documentation shall be submitted to the office of the County Clerk, 1055 Monterey Street, Room D-120, San Luis Obispo, California 93408.

Other bidders do not need to submit the GFE documentation unless the County requests it. If the County requests a bidder to submit their GFE documentation, the bidder shall submit said documentation no later than 4:00 p.m. on the third business day following the request.

Bidders are cautioned that even though their "UDBE COMMITMENT" form indicates they will meet the UDBE goal, they are required to submit their GFE documentation, within the time specified herein, to be considered a responsive bidder in the event the County finds the UDBE goal has not been met.

The GFE documentation must include the following information and supporting documents, as necessary:

1. Items of work the bidder has made available to UDBE firms. Identify those items of work the bidder might otherwise perform with its own forces and those items that have been broken down into economically feasible units to facilitate UDBE participation. For each item listed, show the dollar value and percentage of the total contract. It is the bidder's responsibility to demonstrate that sufficient work to meet the goal was made available to UDBE firms.
2. The names of certified UDBEs and the dates on which they were solicited to bid on the project. Include the items of work offered. Describe the methods used for following up initial solicitations to determine with certainty if the UDBEs were interested, and the dates of the follow up. Attach supporting documents such as copies of letters, memos, facsimiles sent, telephone logs, telephone billing statements, and other evidence of solicitation. Bidders are reminded to solicit certified UDBEs through all reasonable and available means and provide sufficient time to allow UDBEs to respond.
3. For each item of work made available, the UDBEs that provided quotes, the selected firm and its status as a UDBE, the price quote for each firm, and the name, address, and telephone number for each firm. If the firm selected for the item is not a UDBE, provide the reasons for the selection.
4. The names and dates of each publication in which a request for UDBE participation for the project was placed by the bidder. Attach copies of the published advertisements.
5. The names of agencies and the dates on which they were contacted to provide assistance in contacting, recruiting, and using UDBE firms. If the agencies were contacted in writing, provide copies of supporting documents.
6. Descriptions of the efforts made to provide interested UDBEs with adequate information about the plans, specifications, and requirements of the contract to assist them in responding to a solicitation. If the bidder has provided information, identify the name of the UDBE assisted, the nature of the information provided, and date of contact. Provide copies of supporting documents, as appropriate.
7. Descriptions of efforts made to assist interested UDBEs in obtaining bonding, lines of credit, insurance, necessary equipment, supplies, and materials (excluding supplies and equipment which the UDBE subcontractor purchases or leases from the prime contractor or its affiliate). If such assistance was provided by the bidder, identify the name of the UDBE assisted, nature of the assistance offered, and date. Provide copies of supporting documents, as appropriate.
8. Any additional data to support a demonstration of GFE.

### 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.

The award of the contract, if it be awarded, will be made within 45 calendar days after the opening of proposals, and bidder agrees to be bound by its bid, including all of its bid prices, for the entire 45 day period.

The award of the contract, if it be awarded, will be to the responsible bidder with the lowest responsive bid price on the Base Bid plus Additive Bid Item 1, provided that the sum of the Base Bid and Additive Bid Item 1 is less than, or equal to, the funding amount of \$18,000,000 (18 Million Dollars). If the lowest responsive bid price on the Base Bid plus Additive Bid Item 1 is not less than, or equal to, \$18,000,000 (18 Million Dollars), the award of the contract, if it be awarded, will be to the responsible bidder with the lowest responsive bid price on the Base Bid that is less than, or equal to, \$18,000,000 (18 Million Dollars). If the contract is so awarded to the bidder with the lowest Base Bid, the County shall have the option of adding Additive Bid Item 1 after the lowest responsible bidder has been determined, and the bidder is bound by its bid amount for said additive item. Under any scenario, the County has the option of adding the Additive Bid Item 2 after the lowest responsible bidder has been determined, and the bidder is bound by its bid amount for said additive item.

A "DBE INFORMATION" form is included in the section titled "Agreement" of the Contract Documents to be executed by the successful bidder. The purpose of the form is to collect data required under 49 CFR 26. Even if no DBE participation will be reported, the successful bidder must execute and return the form.

The successful bidder's "DBE INFORMATION" form should include the names, addresses, and phone numbers of DBE firms that will participate, with a complete description of work or supplies to be provided by each, and the dollar value of each DBE transaction. When 100 percent of a contract item of work is not to be performed or furnished by a DBE, a description of the exact portion of that work to be performed or furnished by that DBE shall be included in the DBE information, including the planned location of that work. A successful bidder certified as a DBE shall describe the work it has committed to performing with its own forces as well as any other work that it has committed to be performed by DBE subcontractors, suppliers, and trucking companies.

The successful bidder is required to provide written confirmation from each DBE that the DBE is participating in the contract. A copy of a DBE's quote will serve as written confirmation that the DBE is participating in the contract. If a DBE is participating as a joint venture partner, the successful bidder is required to submit a copy of the joint venture agreement.

If the lowest responsible bidder refuses or fails to complete and return the "DBE INFORMATION" form in a timely manner, the Board of Supervisors of the County of San Luis Obispo may award the contract to the second lowest responsible bidder. Such award, if made, will be made within 90 calendar days after the opening of proposals. If the second lowest responsible bidder refuses or fails to complete and return the "DBE INFORMATION" form in a timely manner, the Board of Supervisors of the County of San Luis Obispo may award the contract to the third lowest responsible bidder, and so on. Such award, if made, will be made within 135 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 County of San Luis Obispo 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 base bid plus the additive bid items, if added by the County.
2. The Performance bond to guarantee the faithful performance of the contract. This bond shall be equal to one hundred percent (100%) of the base bid plus the additive bid items, if added by the County.

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

If the County elects to award Additive Bid Item 2 the successful bidder shall furnish a Maintenance bond to guarantee that the construction of Additive Bid Item 2 will be free from faulty materials and improper workmanship for a period of one year. This bond shall be equal to ten percent (10%) of Additive Bid Item 2. The form for this bond is 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, "DBE INFORMATION" form, copy of insurance policies, and Certificates of Insurance, with documents to verify any

self insurance coverage within ten (10) 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 County 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 10 working days from the date of receipt of the County's "Notice to Proceed."

This work shall be diligently prosecuted to completion before the expiration of 500 WORKING DAYS from the date of receipt of the County's "Notice to Proceed." The Contractor shall not begin work in advance of receiving the County's "Notice to Proceed."

- 4-1.02 Liquidated Damages: 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 County of San Luis Obispo, and that it is and will be impractical and extremely difficult to ascertain and determine the actual damage which the County will sustain in the event of and by reason of such delay; and it is therefore agreed that the Contractor will pay to the County of San Luis Obispo the sum of FOUR THOUSAND SEVEN HUNDRED DOLLARS (\$4,700.00) 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 County 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 Submittals: The Contractor shall submit the following to the Engineer within 10 calendar days, not including Saturdays, Sundays, and legal holidays, of the Contractor's receipt of the fully executed contract:

- Storm Water Pollution Prevention Plan – 3 copies
- Recycling Plan
- Proposed Progress Schedule
- Identity of Project Safety Officer

The Contractor shall allow 10 days, not including Saturdays, Sundays, and legal holidays, for the Engineer's review. The Contractor shall revise and resubmit the submittal within 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: 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 County 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.

## 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 County of San Luis Obispo acting by and through its Department of Public Works and Transportation.”

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.”

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 Department of Public Works and Transportation 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 of the Special Provisions pursuant to Government Code Section 53069.85 to be paid to the County, 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 County of San Luis Obispo.”

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.”

District: Nipomo Community Services District (NCSD) or (“District”)

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: 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 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 and available at the California Department of Industrial Relations' web site at:

[www.dir.ca.gov/DLSR/PWD](http://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](http://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](http://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 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 13<sup>th</sup> paragraph of Section 9-1.01, “Measurement of Quantities,” of the Standard Specifications shall be amended to read as follow: “Whenever pay quantities of materials are determined by weighting, 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 County and shall be delivered to the Engineer at the end of each day. Contractor shall provide the County sufficient advance notice so as to enable a representative of the County 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 County that pertain to the potential claim, the Contractor shall make its records of the project, as deemed by the County to be pertinent to the potential claim, available to the County 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 modifying the third paragraph to read, “In the event the County is withholding retainage for incremental portions of work pursuant to Section 5-1.14 “Prompt Payment of Funds Withheld to Subcontractors,” of these Special Provisions, or for acceptable materials pursuant to the first paragraph of said Section 9-1.06: (1) The County shall retain 10 percent of the estimated value of the work done and/or 10 percent of the estimated value of materials eligible for partial payment that has been furnished and delivered and unused or furnished and stored in accordance with the provisions in the first paragraph of Section 9-1.06 as part security for the fulfillment of the contract by the Contractor from each progress payment made; and (2) the County shall pay respective retained amount(s) with subsequent payments upon acceptance of portions of the work, as determined by the Engineer.”

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.

Upon the Contractor’s request, the County will make payment to the Contractor of funds withheld to ensure performance of this contract if the Contractor, in accordance with Public Contract Code Section 22300, deposits in escrow with the County, or with a state or federally chartered bank in California securities equivalent to the amount withheld. Securities eligible for investment under this section shall include bank or savings and loan certificates of deposit, the securities enumerated in Government Code Section 16430, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by the Contractor and the County. Upon satisfactory completion of the contract, the securities shall be returned to the Contractor. Alternatively, the Contractor may request that the County make payment of retention earned directly to the escrow agent as provided in subdivision (b) of Section 22300 of the Public Contract Code.

Each of the following conditions shall apply to the deposit of securities into escrow:

- (a) The Contractor shall bear the expense of the County and the escrow agent (either the County or the bank) in connection with the escrow deposit made.
- (b) Securities or certificates of deposit to be placed in escrow shall be of a value at least equivalent to the amounts of retention to be paid to the Contractor pursuant to this section.
- (c) The value of any securities placed in escrow shall be based upon the market value of such securities as of the date the securities are deposited in escrow, and not upon the face value of the securities. Such securities shall be valued by the County, whose decision on valuation of the securities shall be final.
- (d) The escrow agreement shall provide that the escrow agent must convert the securities deposited therein for cash, in whole or in part, to meet the defaults by the Contractor upon a unilateral demand for such conversion by the Public Works Director, and further that any amount so demanded shall be paid to the County upon said unilateral demand for payment.
- (e) The Contractor shall be the beneficial owner of any securities substituted for moneys withheld and shall receive any interest thereon.
- (f) The Contractor shall enter into an escrow agreement satisfactory to the County, which agreement shall be substantially similar to the form set forth in Public Contract Code Section 22300. The Contractor shall obtain the written consent of the surety to such agreement. The Public Works Director is authorized to sign such escrow agreements on behalf of the County.

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,"

5-1.07 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 County.

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 claims 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.

20104.4. 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.

5-1.08 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, County, 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).

5-1.09 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.

- 5-1.10 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.

- 5-1.11 Subcontractor and DBE Records: The Contractor shall maintain records showing the name and business address of each first-tier subcontractor. The records shall also show the name and business address of every DBE subcontractor, DBE vendor of materials, and DBE trucking company, regardless of tier. The records shall show the date of payment and the total dollar figure paid to all of these firms. DBE prime contractors shall also show the date of work performed by their own forces along with the corresponding dollar value of the work.

Upon completion of the contract, a summary of these records shall be prepared on "Final Report – Utilization of Disadvantaged Business Enterprises – DBE), First-Tier Subcontractors" Form CEM-2402 and certified correct by the Contractor or the Contractor's authorized representative, and shall be furnished to the Engineer. The form shall be furnished to the Engineer within 90 days from the date of contract acceptance. The amount of \$10,000 will be withheld from payment until a satisfactory form is submitted.

Prior to the fifteenth of each month, the Contractor shall submit documentation to the Engineer showing the amount paid to DBE trucking companies. The Contractor shall also obtain and submit documentation to the Engineer showing the amount paid by DBE trucking companies to all firms, including owner-operators, for the leasing of trucks. If the DBE leases trucks from a non-DBE, the Contractor is entitled to credit only for the fee or commission the DBE receives as a result of the lease arrangement.

The Contractor shall also obtain and submit documentation to the Engineer showing the truck number, owner's name, California Highway Patrol CA number, and if applicable, the DBE certification number of the owner of the truck for all

trucks used during that month. This documentation shall be submitted on “Monthly DBE Trucking Verifications” Form CEM-2404 (F).

The following is a copy of the “Final Report – Utilization of Disadvantaged Business Enterprises – DBE), First-Tier Subcontractors” Form CEM-2402.



5-1.12 DBE Certification Status: If a DBE subcontractor is decertified during the life of the project, the decertified subcontractor shall notify the Contractor in writing with the date of decertification. If a subcontractor becomes a certified DBE during the life of the project, the subcontractor shall notify the Contractor in writing with the date of certification. The Contractor shall furnish the written documentation to the Engineer.

Upon completion of the contract, "Disadvantaged Business Enterprises (DBE) Certification Status Change" Form CEM-2403(F) indicating the DBE's existing certification status shall be signed and certified correct by the Contractor. The certified form shall be furnished to the Engineer within 90 days from the date of contract acceptance.

The following is a copy of the "Disadvantaged Business Enterprises (DBE) Certification Status Change" Form CEM-2403(F).

STATE OF CALIFORNIA – DEPARTMENT OF TRANSPORTATION  
**DISADVANTAGED BUSINESS ENTERPRISES (DBE) CERTIFICATION STATUS CHANGE**  
 CP-CEM-2403(F) (New, 10/99)

CONTACT NUMBER		COUNTY	ROUTE	POST MILES	ADMINISTERING AGENCY	CONTRACT COMPLETION DATE
PRIME CONTRACTOR		BUSINESS ADDRESS			ESTIMATED CONTRACT AMOUNT	
<i>Prime Contractor: List all DBEs with changes in certification status (certified/decertified) while in your employ, whether or not firms were originally listed for good credit. Attach DBE certification/Decertification letter in accordance with the Special Provisions</i>						
CONTRACT ITEM NO.	SUBCONTRACT NAME AND BUSINESS ADDRESS	BUSINESS PHONE	CERTIFICATION NUMBER	AMOUNT PAID WHILE CERTIFIED	CERTIFICATION/DECERTIFICATION DATE	Letter attached
				\$		
				\$		
				\$		
				\$		
				\$		
				\$		
				\$		
				\$		
Comments:						
<b>I CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND CORRECT</b>						
CONTRACTOR REPRESENTATIVE SIGNATURE			TITLE	BUSINESS PHONE NUMBER	DATE	
RESIDENT ENGINEER				BUSINESS PHONE NUMBER	DATE	
<b>TO THE BEST OF MY KNOWLEDGE, THE ABOVE INFORMATION IS COMPLETE AND CORRECT</b>						

**Distribution** Original copy -DLAE  
 Copy -1) Business Enterprise Program 2) Prime Contractor 3) Local Agency 4) Resident Engineer

5-1.13 Performance of Subcontractors: The subcontractors listed by the Contractor in conformance with Section 2-1.02, "Required Listing of Proposed Subcontractors," of the Standard Specifications, shall perform the work for which they are listed, unless the Contractor has received prior written authorization to perform the work with other forces.

UDBEs shall be listed by the Contractor in the "UDBE COMMITMENT" form specified under Section 2, "Proposed Requirements and Conditions," of these Special Provisions. The Contractor shall not terminate a UDBE listed subcontractor, reduce its work or obtain materials from other sources without prior written authorization from the County.

Authorization to use other forces or sources of materials may be requested for the following reasons:

1. The listed UDBE, after having had a reasonable opportunity to do so, fails or refuses to execute a written contract, when such written contract, based upon the general terms, conditions, plans, and specifications for the project, or on the terms of such subcontractor's or supplier's written bid, is presented by the Contractor.
2. The Contractor stipulated that a bond was a condition of executing a subcontract and the listed UDBE fails or refuses to meet the bond requirements of the Contractor.
3. The work performed requires a contractor's license and the listed UDBE does not have a valid contractor's license under Contractor's License Law.
4. The listed UDBE fails or refuses to perform the subcontract or furnish the listed materials.
5. The work performed by the listed UDBE is substantially unsatisfactory and is not in substantial conformance with the plans and specifications.
6. The listed UDBE substantially delays or disrupts the progress of the work.
7. The listed UDBE becomes bankrupt or insolvent.

In conformance with the Federal DBE regulations Sections 26.53(f)(1) and 26.53(f)(2) Part 26, Title 49 CFR:

- A. The Contractor shall not terminate for convenience a UDBE subcontractor listed in response to Section 2-1.04A, "UDBE Commitment Submittal," of these Special Provisions and then perform that work with its own forces, or those of an affiliate without the prior written consent of the Engineer.

- B. If a UDBE subcontractor is terminated or fails to complete its work for any reason, the Contractor will be required to make good faith efforts to substitute another UDBE subcontractor for the original UDBE subcontractor, to the extent needed to meet the contract goal. Good faith efforts must adhere to Section 2-1.04B, "UDBE Good Faith Effort Submittal" of these Special Provisions.

If a listed UDBE subcontractor is terminated, the Contractor shall make good faith efforts to find another UDBE subcontractor to substitute for the original UDBE. The substitute UDBE must perform at least the amount of work as the original UDBE under the contract to the extent needed to meet the UDBE goal.

The substitute UDBE must be certified as a DBE at the time the Contractor requests substitution.

The Contractor shall not be entitled to any payment for such work or material unless it is performed or supplied by the listed UDBE, unless the UDBE is terminated in accordance with this section.

- 5-1.14 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 County may exercise the remedies provided under violates Public Contract Code §4100. The County 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>.

Pursuant to the provisions in 44 CFR 17 the Contractor shall not use a subcontractor which is debarred or suspended or otherwise excluded from or ineligible for participation in Federal assistance programs under "Executive Order 12549, "Debarment and Suspension." A list of excluded contractors is available from the Excluded Parties List System web site at: <https://www.epls.gov/>

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

Each subcontract and any lower tier subcontract that may in turn be made shall include Section 7, "Federal Requirements for Federal-Aid Construction Projects," of these Special Provisions. Noncompliance shall be corrected. Payment for subcontracted work involved will be withheld from progress payments due, or to become due, until correction is made. Failure to comply may result in termination of the contract.

5-1.15 Prompt Progress Payment to Subcontractors: A prime contractor or subcontractor shall pay any subcontractor not later than 10 days of receipt of each progress payment in accordance with the provision in Section 7108.5 of the California Business and Professions Code concerning prompt payment to subcontractors. The 10 days is applicable unless a longer period is agreed to in writing. Any delay or postponement of payment over 30 days may take place only for good cause and with the County's prior written approval. Any violation of Section 7108.5 shall subject the violating contractor or subcontractor to the penalties, sanctions, and other remedies of that section. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the prime contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the prime contractor, deficient subcontract performance, or noncompliance by a subcontractor. This provision applies to both DBE and non-DBE prime contractors and subcontractors.

5-1.16 Prompt Payment of Funds Withheld to Subcontractors: The County shall hold retainage from the prime contractor and shall make prompt and regular incremental acceptances of portions, as determined by the County, of the contract work, and pay retainage to the prime contractor based on these acceptances. The prime contractor or subcontractor shall return all monies withheld in retention from a subcontractor within 30 days after receiving payment for work satisfactorily completed and accepted including incremental

acceptances of portions of the contract work by the County. Federal law (49CFR26.29) requires that any delay or postponement of payment over 30 days may take place only for good cause and with the County's prior written approval. Any violation of this provision shall subject the violating prime contractor or subcontractor to the penalties, sanctions, and other remedies specified in Section 7108.5 of the California Business and Professions Code. These requirements shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the prime contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the prime contractor, deficient subcontract performance, or noncompliance by a subcontractor. This provision applies to both DBE and non-DBE prime contractors and subcontractors.

- 5-1.17 Buy America Requirements: Attention is directed to the "Buy America" requirements of the Surface Transportation Assistance Act of 1982 (Section 165) and the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) Sections 1041(a) and 1048(a), and the regulations adopted pursuant thereto. In conformance with said law and regulations, all manufacturing processes for steel and iron materials furnished for incorporation into the work on this project shall occur in the United States; with the exception that pig iron and processed, pelletized and reduced iron ore manufactured outside of the United States may be used in the domestic manufacturing process for such steel and iron materials. The application of coatings, such as epoxy coating, galvanizing, painting, and other coatings that protect or enhance the value of steel or iron materials shall be considered a manufacturing process subject to the "Buy America" requirements.

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications shall be furnished for steel and iron materials. The certificates, in addition to certifying that the materials comply with the specifications, shall specifically certify that all manufacturing processes for the materials occurred in the United States, except for the above exceptions.

The requirements imposed by the law and regulations do not prevent a minimal use of foreign steel and iron materials if the total combined cost of the materials used does not exceed one-tenth of one percent (0.1 percent) of the total contract cost or \$2,500, whichever is greater. The Contractor shall furnish the Engineer acceptable documentation of the quantity and value of the foreign steel and iron prior to incorporating the materials into the work.

- 5-1.18 Submittals: Submittals and shop drawings shall be supplied for all material and equipment items. 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. Neither fabrication nor onsite preparation shall be started before receipt of written review from the County.

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 County's review. The County will require 10 days for submittal review for the Base and Additive Item 1 work and 15 days for submittal review for the work associated with Additive Item 2. 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.

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.

5-1.19 Means and Methods: 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.

5-1.20 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.

5-1.21 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.

5-1.22 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. Nothing contained in these 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.)

- 5-1.23 Relations with California Regional Water Quality Control Board: This project lies within the boundaries of the Central Coast Regional Water Quality Control Board (RWQCB).

The State Water Resources Control Board (SWRCB) has issued a National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ Construction General Permit, NPDES No. CAS000002.

Copies of the permits are available for review from the SWRCB, Storm Water Permit Unit, 1001 "I" Street, P.O. Box 1977, Sacramento, California 95812-1977, Telephone: (916) 341-5254 and may also be obtained at:

[http://www.waterboards.ca.gov/water\\_issues/programs/stormwater/](http://www.waterboards.ca.gov/water_issues/programs/stormwater/)

The Central Coast RWQCB has issued a 401 water quality certification which governs storm water and non-storm water discharges resulting from construction activities in the project area. A copy of the RWQCB 401 water quality certification is included in Section 12 of these Special Provisions.

The NPDES permits that regulate this project, as referenced above, are collectively referred to in this section as the "permits."

This project shall conform to the permits and modifications thereto. The Contractor shall maintain copies of the permits at the project site and shall make them available during construction.

The Contractor shall know and comply with provisions of Federal, State, and local regulations and requirements that govern the Contractor's operations and storm water and non-storm water discharges from the project site and areas of disturbance outside the project limits during construction. Attention is directed to Sections 7-1.01, "Laws to be Observed," 7-1.11, "Preservation of Property," 7-1.12, "Indemnification and Insurance," and 9-1.055, "Penalty Withholds," of the Standard Specifications.

The Contractor shall notify the Engineer immediately upon request from the regulatory agencies to enter, inspect, sample, monitor, or otherwise access the project site or the Contractor's records pertaining to water pollution control work. The Contractor and the Department shall provide copies of correspondence, notices of violation, enforcement actions, or proposed fines by regulatory agencies to the requesting regulatory agency.

- 5-1.24 Training: For the Federal training program, the number of trainees or apprentices is eleven (11).

5-1.25 Solid Waste Management: For the purpose of complying with San Luis Obispo County Code, Title 8, Health and Sanitation, Chapter 8.12, "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, "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 County 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 COUNTY PROJECTS

### SECTION 1. PROJECT INFORMATION

Contract Title		Contractor Name	
Contract Number		Contractor Phone	Contractor Fax
Total Contract Amount		Street Address	
Print Name and Title		City, State, Zip	Signature
			Date

### SECTION 2. RECYCLING PLAN

Materials	Before Construction (estimated tons)		
	Landfill (Tons)	Recycling Facility (Tons)	Reuse (Tons)
Cleared Vegetation		Location	Location
Asphalt Concrete			
Concrete			
Metals (including spent equipment)			
Lumber			
Drywall			
Mixed Recyclables			
Trash			
<b>Totals</b>			
<b>% Diversion</b>			

### Official Use Only

Recycling Plan Approved <input type="checkbox"/>	Recycling Plan Denied <input type="checkbox"/>
Information Required:	
Print Name and Title	Signature
	Date

# DISPOSAL REPORT FOR COUNTY PROJECTS

## SECTION 1. PROJECT INFORMATION

Contract Title	Contractor Name	
Contract Number	Contractor Phone	Contractor Fax
Total Contract Amount	Street Address	
	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
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## SECTION 2. DISPOSAL REPORT

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

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

Resident Engineer's Name:	Signature:	Date:
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### Official Use Only

Disposal Report Approved <input type="checkbox"/>	Disposal Report Denied <input type="checkbox"/>
Information Required	
Print Name and Title	Signature
	Date

- 5-1.26 Environmentally Sensitive Area: The entire project is within an Environmentally Sensitive Area (ESA).

Before start of work protect the ESA by installing the temporary fence type (ESA).

- 5-1.27 Supplemental Project Information

The Contractor's attention is directed to supplemental project information that 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](http://www.slocounty.ca.gov/PW/Design_Division/Projects_Out_To_Bid.htm)

The following documents are available for review:

- A. "Foundation Report – Willow Road Undercrossing - (BR. NO. 49-0252 L/R) – County of San Luis Obispo, CA - 05-SLO-101 EA 474501" dated April 30, 2010, by Parikh Consultants, Inc., Job No. 203125.WIL
- B. "Foundation Report – Retaining Walls - Willow Road / Route 101 Interchange - County of San Luis Obispo, CA - 05-SLO-101 EA 474501" dated April 30, 2010, by Parikh Consultants, Inc., Job No. 203125.WIL
- C. "Geotechnical Engineering Investigation – Nipomo Creek Bridge at Willow Road - County of San Luis Obispo, CA" dated July 1, 2009, by Parikh Consultants, Inc., Job No. 203125.NPO
- D. "Geotechnical Design & Materials Report - Willow Road / Route 101 Interchange and Willow Road Extension - County of San Luis Obispo, CA - 05-SLO-101 5.8/6.9 EA 474503" dated April 30, 2010, by Parikh Consultants, Inc., Job No. 203125.GDI
- E. "Final Supplemental Environmental Impact Report" (EIR), dated April 2006.
- F. NEPA Review: EA dated March 2009
- G. "Limited Site Investigation Report – US 101 Willow Road Interchange Project - Nipomo, California" dated March 2010, by Geocon Consultants, Inc., Project No. E8506-06-01

## **SECTION 6. FEDERAL MINIMUM WAGES**

Attention is directed to Section 7, "Federal Requirements for Federal-Aid Construction Projects", of these Special Provisions, to the Notice to Bidders for this contract; and Decision No. CA20100019 of the Secretary of Labor, included herein.

### **GENERAL WAGE DETERMINATIONS ISSUE UNDER THE DAVIS-BACON AND RELATED ACTS**

GENERAL DECISION: CA20100019 09/10/2010 CA19

Date: September 10, 2010

General Decision Number: CA20100019 09/10/2010

Superseded General Decision Number: CA20080019

State: California

Construction Types: Building, Heavy (Heavy and Dredging) and Highway

County: San Luis Obispo County in California.

BUILDING, DREDGING (does not include hopper dredge work), HEAVY (does not include water well drilling, AND HIGHWAY CONSTRUCTION PROJECTS

Modification Number	Publication Date
0	03/12/2010
1	03/26/2010
2	04/02/2010
3	04/16/2010
4	06/04/2010
5	06/11/2010
6	07/02/2010
7	07/23/2010
8	08/13/2010
9	08/27/2010
10	09/03/2010
11	09/10/2010

ASBE0005-002 01/01/2010

	Rates	Fringes
Asbestos Workers/Insulator (Includes the application of all insulating materials, protective coverings, coatings, and finishes to all types of mechanical systems).....	\$ 32.93	15.32
Fire Stop Technician (Application of Firestopping Materials for wall openings and penetrations in walls, floors, ceilings and curtain walls).....	\$ 24.21	13.76

ASBE0005-004 01/01/2010

	Rates	Fringes
Asbestos Removal worker/hazardous material handler (Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials from mechanical systems, whether they contain asbestos or not)....	\$ 18.85	8.03

BOIL0092-004 10/01/2009

## Area within a 25 mile radius of City of Santa Maria

	Rates	Fringes
BOILERMAKER.....	\$ 40.22	22.26
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BOIL0549-007 01/01/2009		

## Remainder of County outside a 25 mile radius of City of Santa Maria

	Rates	Fringes
BOILERMAKER.....	\$ 37.01	22.25
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BRCA0004-006 05/01/2010		

	Rates	Fringes
BRICKLAYER; MARBLE SETTER.....	\$ 34.85	10.95
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BRCA0018-008 06/01/2008		

	Rates	Fringes
MARBLE FINISHER.....	\$ 25.52	9.08
TILE FINISHER.....	\$ 21.07	7.88
-----		
BRCA0018-011 08/01/2009		

	Rates	Fringes
TILE LAYER.....	\$ 30.04	10.84
-----		
CARP0409-001 07/01/2010		

	Rates	Fringes
CARPENTER		
(1) Carpenter, Cabinet Installer, Insulation Installer, Hardwood Floor Worker and acoustical installer.....	\$ 37.35	11.08
(2) Millwright.....	\$ 37.85	11.08
(3) Piledriver/Derrick Bargeman, Bridge or Dock Carpenter, Heavy Framer, Rock Bargeman or Scowman, Rockslinger, Shingler (Commercial).....	\$ 37.48	11.08
(4) Pneumatic Nailer, Power Stapler.....	\$ 37.60	11.08
(5) Sawfiler.....	\$ 37.44	11.08
(6) Scaffold Builder.....	\$ 28.55	11.08
(7) Table Power Saw Operator.....	\$ 37.45	11.08

FOOTNOTE: Work of forming in the construction of open cut sewers or storm drains, on operations in which horizontal lagging is used in conjunction with steel H-Beams driven or placed in pre- drilled holes, for that portion of a lagged trench against which concrete is poured, namely, as a substitute for back forms (which work is performed by piledrivers): \$0.13 per hour additional. Certified Welder

- \$1.00 per hour premium.

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 CARP0409-005 07/01/2010

	Rates	Fringes
Drywall		
DRYWALL INSTALLER/LATHER....\$	37.35	11.08
STOCKER/SCRAPPER.....\$	10.00	6.67

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 CARP0409-008 07/01/2008

	Rates	Fringes
Modular Furniture Installer.....\$	19.00	7.41

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 ELEC0011-002 02/01/2010

COMMUNICATIONS AND SYSTEMS WORK

	Rates	Fringes
Communications System		
Installer.....\$	26.99	3%+8.64
Technician.....\$	28.79	3%+8.64

SCOPE OF WORK:

Installation, testing, service and maintenance of systems utilizing the transmission and/or transference of voice, sound, vision and digital for commercial, educational, security and entertainment purposes for the following: TV monitoring and surveillance, background-foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, nurse call systems, radio page, school intercom and sound, burglar alarms, fire alarm (see last paragraph below) and low voltage master clock systems in commercial buildings. Communication Systems that transmit or receive information and/or control systems that are intrinsic to the above listed systems; inclusion or exclusion of terminations and testings of conductors determined by their function; excluding all other data systems or multiple systems which include control function or power supply; excluding installation of raceway systems, conduit systems, line voltage work, and energy management systems. Does not cover work performed at China Lake Naval Ordnance Test Station. Fire alarm work shall be performed at the current inside wireman total cost package.

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 ELEC0639-001 06/01/2010

	Rates	Fringes
Electricians		
Wireman/Technician.....\$	32.70	3%+15.50

FOOTNOTES:

CABLE SPLICER: 10% additional per hour above Wireman/Technician basic hourly rate.

Work from trusses, swinging scaffolds, open ladders, scaffolds, bosun chairs, stacks or towers, where subject to a direct fall from the ground floor or support structure from a distance of fifty (50) feet to ninety (90) feet: to be paid time and one-half. Work from trusses, swinging

scaffolds, open ladders, scaffolds, bosun chairs, stacks or towers, where subject to a direct fall from the ground floor or support structure from a distance over ninety (90) feet: to be paid double the regular straight time rate of pay. Where workers are required to work under compressed air or in areas where injurious gases, dust or fumes are present in amounts necessitating the use of gas masks or self-contained breathing apparatus (particle masks are not considered self-contained breathing apparatus) or where workers work on poles at a distance of seventy-five (75) feet or more from the ground: to be paid a bonus of straight time pay. This shall be at a minimum of one hour, and thereafter, each succeeding hour or fraction thereof shall constitute an hour at the bonus rate. Tunnel work: to be paid at the time and one-quarter hourly rate.

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 ELEC1245-001 06/01/2010

	Rates	Fringes
LINE CONSTRUCTION		
(1) Lineman; Cable splicer..	\$ 46.14	13.41
(2) Equipment specialist (operates crawler tractors, commercial motor vehicles, backhoes, trenchers, cranes (50 tons and below), overhead & underground distribution line equipment).....	\$ 36.85	12.36
(3) Groundman.....	\$ 28.19	12.10
(4) Powderman.....	\$ 41.20	12.53

HOLIDAYS: New Year's Day, M.L. King Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and day after Thanksgiving, Christmas Day

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 ELEV0008-003 01/01/2010

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 54.89	20.035

FOOTNOTE:

PAID VACATION: Employer contributes 8% of regular hourly rate as vacation pay credit for employees with more than 5 years of service, and 6% for 6 months to 5 years of service.  
 PAID HOLIDAYS: New Years Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Friday after Thanksgiving, and Christmas Day.

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 ENGI0012-003 07/01/2009

	Rates	Fringes
OPERATOR: Power Equipment (All Other Work)		
GROUP 1.....	\$ 36.83	17.22
GROUP 2.....	\$ 37.61	17.22
GROUP 3.....	\$ 37.90	17.22
GROUP 4.....	\$ 39.39	17.22
GROUP 5.....	\$ 40.49	17.22
GROUP 6.....	\$ 39.61	17.22
GROUP 7.....	\$ 40.71	17.22
GROUP 8.....	\$ 39.72	17.22
GROUP 9.....	\$ 40.82	17.22

GROUP 10.....	\$ 39.84	17.22
GROUP 11.....	\$ 40.94	17.22
GROUP 12.....	\$ 40.01	17.22
GROUP 13.....	\$ 40.11	17.22
GROUP 14.....	\$ 40.14	17.22
GROUP 15.....	\$ 40.22	17.22
GROUP 16.....	\$ 40.34	17.22
GROUP 17.....	\$ 40.51	17.22
GROUP 18.....	\$ 40.61	17.22
GROUP 19.....	\$ 40.72	17.22
GROUP 20.....	\$ 40.84	17.22
GROUP 21.....	\$ 41.01	17.22
GROUP 22.....	\$ 41.11	17.22
GROUP 23.....	\$ 41.22	17.22
GROUP 24.....	\$ 41.34	17.22
GROUP 25.....	\$ 41.51	17.22

OPERATOR: Power Equipment  
(Cranes, Piledriving &  
Hoisting)

GROUP 1.....	\$ 38.18	17.22
GROUP 2.....	\$ 38.96	17.22
GROUP 3.....	\$ 39.25	17.22
GROUP 4.....	\$ 39.39	17.22
GROUP 5.....	\$ 39.61	17.22
GROUP 6.....	\$ 39.72	17.22
GROUP 7.....	\$ 39.84	17.22
GROUP 8.....	\$ 40.01	17.22
GROUP 9.....	\$ 40.18	17.22
GROUP 10.....	\$ 41.18	17.22
GROUP 11.....	\$ 42.18	17.22
GROUP 12.....	\$ 43.18	17.22
GROUP 13.....	\$ 44.18	17.22

OPERATOR: Power Equipment  
(Tunnel Work)

GROUP 1.....	\$ 38.68	17.22
GROUP 2.....	\$ 39.46	17.22
GROUP 3.....	\$ 39.75	17.22
GROUP 4.....	\$ 39.89	17.22
GROUP 5.....	\$ 40.11	17.22
GROUP 6.....	\$ 40.22	17.22
GROUP 7.....	\$ 40.34	17.22

PREMIUM PAY:

\$3.75 per hour shall be paid on all Power Equipment Operator work on the following Military Bases: China Lake Naval Reserve, Vandenberg AFB, Point Arguello, Seely Naval Base, Fort Irwin, Nebo Annex Marine Base, Marine Corp Logistics Base Yermo, Edwards AFB, 29 Palms Marine Base and Camp Pendleton

Workers required to suit up and work in a hazardous material environment: \$2.00 per hour additional. Combination mixer and compressor operator on gunite work shall be classified as a concrete mobile mixer operator.

SEE ZONE DEFINITIONS AFTER CLASSIFICATIONS

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Bargeman; Brakeman; Compressor operator; Ditch Witch, with seat or similar type equipment; Elevator operator-inside; Engineer Oiler; Forklift operator (includes loed, lull or similar types under 5 tons; Generator operator; Generator, pump or compressor plant operator; Pump operator; Signalman; Switchman

GROUP 2: Asphalt-rubber plant operator (nurse tank operator); Concrete mixer operator-skip type; Conveyor operator; Fireman; Forklift operator (includes loed, lull or similar types over 5 tons; Hydrostatic pump operator; oiler crusher (asphalt or concrete plant); Petromat laydown machine; PJU side dum jack; Screening and conveyor machine operator (or similar types); Skiploader (wheel type up to 3/4 yd. without attachment); Tar pot fireman; Temporary heating plant operator; Trenching machine oiler

GROUP 3: Asphalt-rubber blend operator; Bobcat or similar type (Skid steer); Equipment greaser (rack); Ford Ferguson (with dragtype attachments); Helicopter radioman (ground); Stationary pipe wrapping and cleaning machine operator

GROUP 4: Asphalt plant fireman; Backhoe operator (mini-max or similar type); Boring machine operator; Boxman or mixerman (asphalt or concrete); Chip spreading machine operator; Concrete cleaning decontamination machine operator; Concrete Pump Operator (small portable); Drilling machine operator, small auger types (Texoma super economatic or similar types - Hughes 100 or 200 or similar types - drilling depth of 30' maximum); Equipment greaser (grease truck); Guard rail post driver operator; Highline cableway signalman; Horizontal Directional Drilling Machine; Hydra-hammer-aero stomper; Micro Tunneling (above ground tunnel); Power concrete curing machine operator; Power concrete saw operator; Power-driven jumbo form setter operator; Power sweeper operator; Rock Wheel Saw/Trencher; Roller operator (compacting); Screed operator (asphalt or concrete); Trenching machine operator (up to 6 ft.); Vacuum or much truck

GROUP 5: Equipment Greaser (Grease Truck/Multi Shift).

GROUP 6: Articulating material hauler; Asphalt plant engineer; Batch plant operator; Bit sharpener; Concrete joint machine operator (canal and similar type); Concrete planer operator; Dandy digger; Deck engine operator; Derrickman (oilfield type); Drilling machine operator, bucket or auger types (Calweld 100 bucket or similar types - Watson 1000 auger or similar types - Texoma 330, 500 or 600 auger or similar types - drilling depth of 45' maximum); Drilling machine operator; Hydrographic seeder machine operator (straw, pulp or seed), Jackson track maintainer, or similar type; Kalamazoo Switch tamper, or similar type; Machine tool operator; Maginnis internal full slab vibrator, Mechanical berm, curb or gutter (concrete or asphalt); Mechanical finisher operator (concrete, Clary-Johnson-Bidwell or similar); Micro tunnel system (below ground); Pavement breaker operator (truck mounted); Road oil mixing machine operator; Roller operator (asphalt or finish), rubber-tired earth moving equipment (single engine, up to and including 25 yds. struck); Self-propelled tar pipelining machine operator; Skiploader operator (crawler and wheel type, over 3/4 yd. and up to and including 1-1/2 yds.); Slip form pump operator (power driven hydraulic lifting device for concrete forms); Tractor operator-bulldozer, tamper-scraper (single engine, up to 100 h.p. flywheel and similar types, up to and including D-5 and similar types); Tugger hoist operator (1 drum); Ultra high pressure waterjet cutting tool system operator; Vacuum blasting machine operator

GROUP 7: Welder - General

GROUP 8: Asphalt or concrete spreading operator (tamping or finishing); Asphalt paving machine operator (Barber Greene or similar type); Asphalt-rubber distribution operator; Backhoe operator (up to and including 3/4 yd.), small ford, Case or similar; Cast-in-place pipe laying machine operator; Combination mixer and compressor operator (gunite work); Compactor operator (self-propelled); Concrete mixer operator (paving); Crushing plant operator; Drill Doctor; Drilling machine operator, Bucket or auger types (Calweld 150 bucket or similar types - Watson 1500, 2000 2500 auger or similar types - Texoma 700, 800 auger or similar types - drilling depth of 60' maximum); Elevating grader operator; Grade checker; Gradall operator; Grouting machine operator; Heavy-duty repairman; Heavy equipment robotics operator; Kalamazoo balliste regulator or similar type; Kolman belt loader and similar type; Le Tourneau blob compactor or similar type; Loader operator (Athey, Euclid, Sierra and similar types); Mobark Chipper or similar; Ozzie padder or similar types; P.C. slot saw; Pneumatic concrete placing machine operator (Hackley-Presswell or similar type); Pumpcrete gun operator; Rock Drill or similar types; Rotary drill operator (excluding caisson type); Rubber-tired earth-moving equipment operator (single engine, caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. up to and including 50 cu. yds. struck); Rubber-tired earth-moving equipment operator (multiple engine up to and including 25 yds. struck); Rubber-tired scraper operator (self-loading paddle wheel type-John Deere, 1040 and similar single unit); Self-propelled curb and gutter machine operator; Shuttle buggy; Skiploader operator (crawler and wheel type over 1-1/2 yds. up to and including 6-1/2 yds.); Soil remediation plant operator; Surface heaters and planer operator; Tractor compressor drill combination operator; Tractor operator (any type larger than D-5 - 100 flywheel h.p. and over, or similar-bulldozer, tamper, scraper and push tractor single engine); Tractor operator (boom attachments), Traveling pipe wrapping, cleaning and bending machine operator; Trenching machine operator (over 6 ft. depth capacity, manufacturer's rating); trenching Machine with Road Miner attachment (over 6 ft depth capacity): Ultra high pressure waterjet cutting tool system mechanic; Water pull (compaction) operator

GROUP 9: Heavy Duty Repairman

GROUP 10: Drilling machine operator, Bucket or auger types (Calweld 200 B bucket or similar types-Watson 3000 or 5000 auger or similar types-Texoma 900 auger or similar types-drilling depth of 105' maximum); Dual drum mixer, dynamic compactor LDC350 (or similar types); Monorail locomotive operator (diesel, gas or electric); Motor patrol-blade operator (single engine); Multiple engine tractor operator (Euclid and similar type-except Quad 9 cat.); Rubber-tired earth-moving equipment operator (single engine, over 50 yds. struck); Pneumatic pipe ramming tool and similar types; Prestressed wrapping machine operator; Rubber-tired earth-moving equipment operator (single engine, over 50 yds. struck); Rubber tired earth moving equipment operator (multiple engine, Euclid, caterpillar and similar over 25 yds. and up to 50 yds. struck), Tower crane repairman; Tractor loader operator (crawler and wheel type over 6-1/2 yds.); Woods mixer operator (and similar Pugmill equipment)

GROUP 11: Heavy Duty Repairman - Welder Combination, Welder -

Certified.

GROUP 12: Auto grader operator; Automatic slip form operator; Drilling machine operator, bucket or auger types (Calweld, auger 200 CA or similar types - Watson, auger 6000 or similar types - Hughes Super Duty, auger 200 or similar types - drilling depth of 175' maximum); Hoe ram or similar with compressor; Mass excavator operator less than 750 cu. yards; Mechanical finishing machine operator; Mobile form traveler operator; Motor patrol operator (multi-engine); Pipe mobile machine operator; Rubber-tired earth-moving equipment operator (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck); Rubber-tired self-loading scraper operator (paddle-wheel-auger type self-loading - two (2) or more units)

GROUP 13: Rubber-tired earth-moving equipment operator operating equipment with push-pull system (single engine, up to and including 25 yds. struck)

GROUP 14: Canal liner operator; Canal trimmer operator; Remote-control earth-moving equipment operator (operating a second piece of equipment: \$1.00 per hour additional); Wheel excavator operator (over 750 cu. yds.)

GROUP 15: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine-up to and including 25 yds. struck)

GROUP 16: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 17: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 50 cu. yds. struck); Tandem tractor operator (operating crawler type tractors in tandem - Quad 9 and similar type)

GROUP 18: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, up to and including 25 yds. struck)

GROUP 19: Rotex concrete belt operator (or similar types); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 cu. yds. struck); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, up to and including 25 yds. struck)

GROUP 20: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, over 50 yds. struck); Rubber-tired

earth-moving equipment operator, operating in tandem (scrapers, belly dumps, and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 21: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck)

GROUP 22: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, up to and including 25 yds. struck)

GROUP 23: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 yds. struck); Rubber-tired earth-moving equipment operator, operating with the tandem push-pull system (multiple engine, up to and including 25 yds. struck)

GROUP 24: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 25: Concrete pump operator-truck mounted; Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck)

#### CRANES, PILEDRIVING AND HOISTING EQUIPMENT CLASSIFICATIONS

GROUP 1: Engineer oiler; Fork lift operator (includes loed, lull or similar types)

GROUP 2: Truck crane oiler

GROUP 3: A-frame or winch truck operator; Ross carrier operator (jobsite)

GROUP 4: Bridge-type unloader and turntable operator; Helicopter hoist operator

GROUP 5: Hydraulic boom truck; Stinger crane (Austin-Western or similar type); Tugger hoist operator (1 drum)

GROUP 6: Bridge crane operator; Cretor crane operator; Hoist operator (Chicago boom and similar type); Lift mobile operator; Lift slab machine operator (Vagtborg and similar types); Material hoist and/or manlift operator; Polar gantry crane operator; Self Climbing scaffold (or similar type); Shovel, backhoe, dragline, clamshell operator (over 3/4 yd. and up to 5 cu. yds. mrc); Tugger hoist operator

GROUP 7: Pedestal crane operator; Shovel, backhoe, dragline, clamshell operator (over 5 cu. yds. mrc); Tower crane repair; Tugger hoist operator (3 drum)

GROUP 8: Crane operator (up to and including 25 ton capacity); Crawler transporter operator; Derrick barge operator (up to and including 25 ton capacity); Hoist operator, stiff legs, Guy derrick or similar type (up to and including 25 ton capacity); Shovel, backhoe, dragline, clamshell operator (over 7 cu. yds., M.R.C.)

GROUP 9: Crane operator (over 25 tons and up to and including 50 tons mrc); Derrick barge operator (over 25 tons up to and including 50 tons mrc); Highline cableway operator; Hoist operator, stiff legs, Guy derrick or similar type (over 25 tons up to and including 50 tons mrc); K-crane operator; Polar crane operator; Self erecting tower crane operator maximum lifting capacity ten tons

GROUP 10: Crane operator (over 50 tons and up to and including 100 tons mrc); Derrick barge operator (over 50 tons up to and including 100 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 50 tons up to and including 100 tons mrc), Mobile tower crane operator (over 50 tons, up to and including 100 tons M.R.C.); Tower crane operator and tower gantry

GROUP 11: Crane operator (over 100 tons and up to and including 200 tons mrc); Derrick barge operator (over 100 tons up to and including 200 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 100 tons up to and including 200 tons mrc); Mobile tower crane operator (over 100 tons up to and including 200 tons mrc)

GROUP 12: Crane operator (over 200 tons up to and including 300 tons mrc); Derrick barge operator (over 200 tons up to and including 300 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 200 tons, up to and including 300 tons mrc); Mobile tower crane operator (over 200 tons, up to and including 300 tons mrc)

GROUP 13: Crane operator (over 300 tons); Derrick barge operator (over 300 tons); Helicopter pilot; Hoist operator, stiff legs, Guy derrick or similar type (over 300 tons); Mobile tower crane operator (over 300 tons)

#### TUNNEL CLASSIFICATIONS

GROUP 1: Skiploader (wheel type up to 3/4 yd. without attachment)

GROUP 2: Power-driven jumbo form setter operator

GROUP 3: Dinkey locomotive or motorperson (up to and including 10 tons)

GROUP 4: Bit sharpener; Equipment greaser (grease truck); Slip form pump operator (power-driven hydraulic lifting device for concrete forms); Tugger hoist operator (1 drum); Tunnel locomotive operator (over 10 and up to and including 30 tons)

GROUP 5: Backhoe operator (up to and including 3/4 yd.); Small Ford, Case or similar; Drill doctor; Grouting machine operator; Heading shield operator; Heavy-duty repairperson; Loader operator (Athey, Euclid, Sierra and similar types); Mucking machine operator (1/4 yd., rubber-tired, rail or track type); Pneumatic concrete placing machine operator (Hackley-Presswell or similar type); Pneumatic heading shield (tunnel); Pumpcrete gun operator; Tractor compressor

drill combination operator; Tugger hoist operator (2 drum);  
Tunnel locomotive operator (over 30 tons)

GROUP 6: Heavy Duty Repairman

GROUP 7: Tunnel mole boring machine operator

#### ENGINEERS ZONES

\$1.00 additional per hour for all of IMPERIAL County and the portions of KERN, RIVERSIDE & SAN BERNARDINO Counties as defined below:

That area within the following Boundary: Begin in San Bernardino County, approximately 3 miles NE of the intersection of I-15 and the California State line at that point which is the NW corner of Section 1, T17N,m R14E, San Bernardino Meridian. Continue W in a straight line to that point which is the SW corner of the northwest quarter of Section 6, T27S, R42E, Mt. Diablo Meridian. Continue North to the intersection with the Inyo County Boundary at that point which is the NE corner of the western half of the northern quarter of Section 6, T25S, R42E, MDM. Continue W along the Inyo and San Bernardino County boundary until the intersection with Kern County, as that point which is the SE corner of Section 34, T24S, R40E, MDM. Continue W along the Inyo and Kern County boundary until the intersection with Tulare County, at that point which is the SW corner of the SE quarter of Section 32, T24S, R37E, MDM. Continue W along the Kern and Tulare County boundary, until that point which is the NW corner of T25S, R32E, MDM. Continue S following R32E lines to the NW corner of T31S, R32E, MDM. Continue W to the NW corner of T31S, R31E, MDM. Continue S to the SW corner of T32S, R31E, MDM. Continue W to SW corner of SE quarter of Section 34, T32S, R30E, MDM. Continue S to SW corner of T11N, R17W, SBM. Continue E along south boundary of T11N, SBM to SW corner of T11N, R7W, SBM. Continue S to SW corner of T9N, R7W, SBM. Continue E along south boundary of T9N, SBM to SW corner of T9N, R1E, SBM. Continue S along west boundary of R1E, SMB to Riverside County line at the SW corner of T1S, R1E, SBM. Continue E along south boundary of T1s, SBM (Riverside County Line) to SW corner of T1S, R10E, SBM. Continue S along west boundary of R10E, SBM to Imperial County line at the SW corner of T8S, R10E, SBM. Continue W along Imperial and Riverside county line to NW corner of T9S, R9E, SBM. Continue S along the boundary between Imperial and San Diego Counties, along the west edge of R9E, SBM to the south boundary of Imperial County/California state line. Follow the California state line west to Arizona state line, then north to Nevada state line, then continuing NW back to start at the point which is the NW corner of Section 1, T17N, R14E, SBM

\$1.00 additional per hour for portions of SAN LUIS OBISPO, KERN, SANTA BARBARA & VENTURA as defined below:

That area within the following Boundary: Begin approximately 5 miles north of the community of Cholame, on the Monterey County and San Luis Obispo County boundary at the NW corner of T25S, R16E, Mt. Diablo Meridian. Continue south along the west side of R16E to the SW corner of T30S, R16E, MDM. Continue E to SW corner of T30S, R17E, MDM. Continue S to SW corner of T31S, R17E, MDM. Continue E to SW corner of T31S, R18E, MDM. Continue S along West side of R18E, MDM as it crosses into San Bernardino Meridian numbering area and becomes R30W. Follow the west side of R30W, SBM to the SW corner of T9N, R30W, SBM. Continue E along the south edge of T9N, SBM to the Santa

Barbara County and Ventura County boundary at that point which is the SW corner of Section 34.T9N, R24W, SBM, continue S along the Ventura County line to that point which is the SW corner of the SE quarter of Section 32, T7N, R24W, SBM. Continue E along the south edge of T7N, SBM to the SE corner to T7N, R21W, SBM. Continue N along East side of R21W, SBM to Ventura County and Kern County boundary at the NE corner of T8N, R21W. Continue W along the Ventura County and Kern County boundary to the SE corner of T9N, R21W. Continue North along the East edge of R21W, SBM to the NE corner of T12N, R21W, SBM. Continue West along the north edge of T12N, SBM to the SE corner of T32S, R21E, MDM. [T12N SBM is a think strip between T11N SBM and T32S MDM]. Continue North along the East side of R21E, MDM to the Kings County and Kern County border at the NE corner of T25S, R21E, MDM, continue West along the Kings County and Kern County Boundary until the intersection of San Luis Obispo County. Continue west along the Kings County and San Luis Obispo County boundary until the intersection with Monterey County. Continue West along the Monterey County and San Luis Obispo County boundary to the beginning point at the NW corner of T25S, R16E, MDM.

\$2.00 additional per hour for INYO and MONO Counties and the Northern portion of SAN BERNARDINO County as defined below:

That area within the following Boundary: Begin at the intersection of the northern boundary of Mono County and the California state line at the point which is the center of Section 17, T10N, R22E, Mt. Diablo Meridian. Continue S then SE along the entire western boundary of Mono County, until it reaches Inyo County at the point which is the NE corner of the Western half of the NW quarter of Section 2, T8S, R29E, MDM. Continue SSE along the entire western boundary of Inyo County, until the intersection with Kern County at the point which is the SW corner of the SE  $\frac{1}{4}$  of Section 32, T24S, R37E, MDM. Continue E along the Inyo and Kern County boundary until the intersection with San Bernardino County at that point which is the SE corner of section 34, T24S, R40E, MDM. Continue E along the Inyo and San Bernardino County boundary until the point which is the NE corner of the Western half of the NW quarter of Section 6, T25S, R42E, MDM. Continue S to that point which is the SW corner of the NW quarter of Section 6, T27S, R42E, MDM. Continue E in a straight line to the California and Nevada state border at the point which is the NW corner of Section 1, T17N, R14E, San Bernardino Meridian. Then continue NW along the state line to the starting point, which is the center of Section 18, T10N, R22E, MDM.

REMAINING AREA NOT DEFINED ABOVE RECIEVES BASE RATE

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 ENGI0012-004 08/01/2009

	Rates	Fringes
OPERATOR: Power Equipment (DREDGING)		
(1) Leverman.....	\$ 44.83	17.22
(2) Dredge dozer.....	\$ 40.36	17.22
(3) Deckmate.....	\$ 40.25	17.22
(4) Winch operator (stern winch on dredge).....	\$ 39.70	17.22
(5) Fireman-Oiler, Deckhand, Bargeman, Leveehand.....	\$ 39.16	17.22

(6) Barge Mate.....\$ 39.77 17.22

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IRON0002-004 07/01/2010

	Rates	Fringes
Ironworkers:		
Fence Erector.....	\$ 26.58	15.26
Ornamental, Reinforcing and Structural.....	\$ 33.00	23.73

PREMIUM PAY:

\$6.00 additional per hour at the following locations:

China Lake Naval Test Station, Chocolate Mountains Naval Reserve-Niland, Edwards AFB, Fort Irwin Military Station, Fort Irwin Training Center-Goldstone, San Clemente Island, San Nicholas Island, Susanville Federal Prison, 29 Palms - Marine Corps, U.S. Marine Base - Barstow, U.S. Naval Air Facility - Sealey, Vandenberg AFB

\$4.00 additional per hour at the following locations:

Army Defense Language Institute - Monterey, Fallon Air Base, Naval Post Graduate School - Monterey, Yermo Marine Corps Logistics Center

\$2.00 additional per hour at the following locations:

Port Hueneme, Port Mugu, U.S. Coast Guard Station - Two Rock

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\* LABO0300-001 09/01/2010

	Rates	Fringes
Brick Tender.....	\$ 27.17	14.72

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\* LABO0300-003 07/01/2010

	Rates	Fringes
LABORER (GUNITE)		
GROUP 1.....	\$ 30.04	17.37
GROUP 2.....	\$ 29.09	17.37
GROUP 3.....	\$ 25.55	17.37
LABORER (TUNNEL)		
GROUP 1.....	\$ 31.24	14.98
GROUP 2.....	\$ 31.56	14.98
GROUP 3.....	\$ 32.02	14.98
GROUP 4.....	\$ 32.71	14.98
LABORER		
GROUP 1.....	\$ 26.33	14.75
GROUP 2.....	\$ 26.88	14.75
GROUP 3.....	\$ 27.43	14.75
GROUP 4.....	\$ 28.98	14.75
GROUP 5.....	\$ 29.33	14.75

FOOTNOTE: GUNITE PREMIUM PAY: Workers working from a Bosn'n's Chair or suspended from a rope or cable shall receive 40 cents per hour above the foregoing applicable classification rates. Workers doing gunite and/or shotcrete work in a tunnel shall receive 35 cents per hour above the foregoing applicable classification rates, paid on a portal-to-portal basis. Any work performed on, in or

above any smoke stack, silo, storage elevator or similar type of structure, when such structure is in excess of 75'-0" above base level and which work must be performed in whole or in part more than 75'-0" above base level, that work performed above the 75'-0" level shall be compensated for at 35 cents per hour above the applicable classification wage rate.

#### LABORER CLASSIFICATIONS

GROUP 1: Cleaning and handling of panel forms; Concrete screeding for rough strike-off; Concrete, water curing; Demolition laborer, the cleaning of brick if performed by a worker performing any other phase of demolition work, and the cleaning of lumber; Fire watcher, limber, brush loader, piler and debris handler; Flag person; Gas, oil and/or water pipeline laborer; Laborer, asphalt-rubber material loader; Laborer, general or construction; Laborer, general clean-up; Laborer, landscaping; Laborer, jetting; Laborer, temporary water and air lines; Material hose operator (walls, slabs, floors and decks); Plugging, filling of shee bolt holes; Dry packing of concrete; Railroad maintenance, repair track person and road beds; Streetcar and railroad construction track laborers; Rigging and signaling; Scaler; Slip form raiser; Tar and mortar; Tool crib or tool house laborer; Traffic control by any method; Window cleaner; Wire mesh pulling - all concrete pouring operations

GROUP 2: Asphalt shoveler; Cement dumper (on 1 yd. or larger mixer and handling bulk cement); Cesspool digger and installer; Chucktender; Chute handler, pouring concrete, the handling of the chute from readymix trucks, such as walls, slabs, decks, floors, foundation, footings, curbs, gutters and sidewalks; Concrete curer, impervious membrane and form oiler; Cutting torch operator (demolition); Fine grader, highways and street paving, airport, runways and similar type heavy construction; Gas, oil and/or water pipeline wrapper - pot tender and form person; Guinea chaser; Headerboard person - asphalt; Laborer, packing rod steel and pans; Membrane vapor barrier installer; Power broom sweeper (small); Riprap stonepaver, placing stone or wet sacked concrete; Roto scraper and tiller; Sandblaster (pot tender); Septic tank digger and installer(lead); Tank scaler and cleaner; Tree climber, faller, chain saw operator, Pittsburgh chipper and similar type brush shredder; Underground laborer, including caisson bellower

GROUP 3: Buggymobile person; Concrete cutting torch; Concrete pile cutter; Driller, jackhammer, 2-1/2 ft. drill steel or longer; Dri-pak-it machine; Gas, oil and/or water pipeline wrapper, 6-in. pipe and over, by any method, inside and out; High scaler (including drilling of same); Hydro seeder and similar type; Impact wrench multi-plate; Kettle person, pot person and workers applying asphalt, lay-kold, creosote, lime caustic and similar type materials ("applying" means applying, dipping, brushing or handling of such materials for pipe wrapping and waterproofing); Operator of pneumatic, gas, electric tools, vibrating machine, pavement breaker, air blasting, come-alongs, and similar mechanical tools not separately classified herein; Pipelayer's backup person, coating, grouting, making of joints, sealing, caulking, diapering and including rubber gasket joints, pointing and any and all other services; Rock slinger; Rotary scarifier or multiple head concrete chipping scarifier; Steel headerboard and guideline setter; Tamper, Barko, Wacker and similar type; Trenching machine,

hand-propelled

GROUP 4: Asphalt raker, lute person, ironer, asphalt dump person, and asphalt spreader boxes (all types); Concrete core cutter (walls, floors or ceilings), grinder or sander; Concrete saw person, cutting walls or flat work, scoring old or new concrete; Cribber, shorer, lagging, sheeting and trench bracing, hand-guided lagging hammer; Head rock slinger; Laborer, asphalt- rubber distributor boot person; Laser beam in connection with laborers' work; Oversize concrete vibrator operator, 70 lbs. and over; Pipelayer performing all services in the laying and installation of pipe from the point of receiving pipe in the ditch until completion of operation, including any and all forms of tubular material, whether pipe, metallic or non-metallic, conduit and any other stationary type of tubular device used for the conveying of any substance or element, whether water, sewage, solid gas, air, or other product whatsoever and without regard to the nature of material from which the tubular material is fabricated; No-joint pipe and stripping of same; Prefabricated manhole installer; Sandblaster (nozzle person), water blasting, Porta Shot-Blast

GROUP 5: Blaster powder, all work of loading holes, placing and blasting of all powder and explosives of whatever type, regardless of method used for such loading and placing; Driller: All power drills, excluding jackhammer, whether core, diamond, wagon, track, multiple unit, and any and all other types of mechanical drills without regard to the form of motive power; Toxic waste removal

#### TUNNEL LABORER CLASSIFICATIONS

GROUP 1: Batch plant laborer; Bull gang mucker, track person; Changehouse person; Concrete crew, including rodder and spreader; Dump person; Dump person (outside); Swamper (brake person and switch person on tunnel work); Tunnel materials handling person

GROUP 2: Chucktender, cabletender; Loading and unloading agitator cars; Nipper; Pot tender, using mastic or other materials (for example, but not by way of limitation, shotcrete, etc.); Vibrator person, jack hammer, pneumatic tools (except driller)

GROUP 3: Blaster, driller, powder person; Chemical grout jet person; Cherry picker person; Grout gun person; Grout mixer person; Grout pump person; Jackleg miner; Jumbo person; Kemper and other pneumatic concrete placer operator; Miner, tunnel (hand or machine); Nozzle person; Operating of troweling and/or grouting machines; Powder person (primer house); Primer person; Sandblaster; Shotcrete person; Steel form raiser and setter; Timber person, retimber person, wood or steel; Tunnel Concrete finisher

GROUP 4: Diamond driller; Sandblaster; Shaft and raise work

#### GUNITE LABORER CLASSIFICATIONS

GROUP 1: Rodmen, Nozzlemen

GROUP 2: Gunmen

GROUP 3: Reboundmen

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LABO0300-005 08/05/2009

	Rates	Fringes
LABORER		
PLASTER CLEAN-UP LABORER....\$	26.65	14.70
PLASTER TENDER.....\$	29.20	14.70

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LABO0882-002 01/01/2010

	Rates	Fringes
Asbestos Removal Laborer.....\$	26.15	14.25

SCOPE OF WORK: Includes site mobilization, initial site cleanup, site preparation, removal of asbestos-containing material and toxic waste, encapsulation, enclosure and disposal of asbestos- containing materials and toxic waste by hand or with equipment or machinery; scaffolding, fabrication of temporary wooden barriers and assembly of decontamination stations.

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LABO1184-001 07/01/2010

	Rates	Fringes
Laborers: (HORIZONTAL DIRECTIONAL DRILLING)		
(1) Drilling Crew Laborer...\$	27.05	11.65
(2) Vehicle Operator/Hauler.\$	27.22	11.65
(3) Horizontal Directional Drill Operator.....\$	29.07	11.65
(4) Electronic Tracking Locator.....\$	31.07	11.65
Laborers: (STRIPING/SLURRY SEAL)		
GROUP 1.....\$	28.50	14.56
GROUP 2.....\$	29.80	14.56
GROUP 3.....\$	31.81	14.56
GROUP 4.....\$	33.55	14.56

## LABORERS - STRIPING CLASSIFICATIONS

GROUP 1: Protective coating, pavement sealing, including repair and filling of cracks by any method on any surface in parking lots, game courts and playgrounds; carstops; operation of all related machinery and equipment; equipment repair technician

GROUP 2: Traffic surface abrasive blaster; pot tender - removal of all traffic lines and markings by any method (sandblasting, waterblasting, grinding, etc.) and preparation of surface for coatings. Traffic control person: controlling and directing traffic through both conventional and moving lane closures; operation of all related machinery and equipment

GROUP 3: Traffic delineating device applicator: Layout and application of pavement markers, delineating signs, rumble and traffic bars, adhesives, guide markers, other traffic delineating devices including traffic control. This category includes all traffic related surface preparation (sandblasting, waterblasting, grinding) as part of the application process. Traffic protective delineatingsystem installer: removes, relocates, installs, permanently affixed roadside and parking delineation barricades,

fencing, cable anchor, guard rail, reference signs, monument markers; operation of all related machinery and equipment; power broom sweeper

GROUP 4: Striper: layout and application of traffic stripes and markings; hot thermo plastic; tape traffic stripes and markings, including traffic control; operation of all related machinery and equipment

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 PAIN0036-007 08/01/2010

	Rates	Fringes
Painters:		
(1) Repaint Including Lead Abatement.....	\$ 23.10	9.68
(2) High Iron & Steel.....	\$ 29.39	9.68
(3) Journeyman Painter including Lead Abatement....	\$ 27.39	9.68

REPAINT of any previously painted structure. Exceptions: work involving the aerospace industry, breweries, commercial recreational facilities, hotels which operate commercial establishments as part of hotel service, and sports facilities.

HIGH IRON & STEEL:

Aerial towers, towers, radio towers, smoke stacks, flag poles (any flag poles that can be finished from the ground with a ladder excluded), elevated water towers, steeples and domes in their entirety and any other extremely high and hazardous work, cooning steel, bos'n chair, or other similar devices, painting in other high hazardous work shall be classified as high iron & steel

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 PAIN0036-008 01/06/2010

	Rates	Fringes
DRYWALL FINISHER/TAPER.....	\$ 33.22	12.19

-----  
 PAIN0169-002 01/01/2010

	Rates	Fringes
GLAZIER.....	\$ 31.18	14.15

-----  
 PAIN1247-002 01/01/2010

	Rates	Fringes
SOFT FLOOR LAYER.....	\$ 30.85	10.54

-----  
 PLAS0200-001 08/04/2010

	Rates	Fringes
PLASTERER.....	\$ 31.21	14.23

-----  
 PLAS0500-002 07/01/2010

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER....	\$ 29.50	19.85

-----  
 PLUM0016-001 07/01/2009

	Rates	Fringes
PLUMBER/PIPEFITTER		
(1) Work on strip malls, light commercial, tenant improvement and remodel work.....	\$ 28.84	14.47
(2) Work on new additions and remodeling of bars, restaurant, stores and commercial buildings not to exceed 5,000 sq. ft. of floor space.....	\$ 35.97	15.86
(3) All other work.....	\$ 37.10	16.84

-----  
PLUM0345-001 07/01/2009

	Rates	Fringes
PLUMBER		
Landscape/Irrigation Fitter..	\$ 26.70	13.84
Sewer & Storm Drain Work....	\$ 25.18	15.67

-----  
ROOF0036-002 08/01/2010

	Rates	Fringes
ROOFER.....	\$ 34.65	9.07

FOOTNOTE: Pitch premium: Work on which employees are exposed to pitch fumes or required to handle pitch, pitch base or pitch impregnated products, or any material containing coal tar pitch, the entire roofing crew shall receive \$1.75 per hour "pitch premium" pay.

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SFCA0669-007 04/01/2010

	Rates	Fringes
SPRINKLER FITTER.....	\$ 33.35	17.60

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SHEE0273-002 08/01/2010

	Rates	Fringes
SHEET METAL WORKER.....	\$ 39.00	16.47

HOLIDAYS: New Year's Day, Martin Luther King Day, President's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day & Friday after, Christmas Day

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TEAM0011-002 07/01/2008

	Rates	Fringes
TRUCK DRIVER		
GROUP 1.....	\$ 26.44	18.24
GROUP 2.....	\$ 26.59	18.24
GROUP 3.....	\$ 26.72	18.24
GROUP 4.....	\$ 26.91	18.24
GROUP 5.....	\$ 26.94	18.24
GROUP 6.....	\$ 26.97	18.24
GROUP 7.....	\$ 27.22	18.24
GROUP 8.....	\$ 27.47	18.24

GROUP 9.....	\$ 27.67	18.24
GROUP 10.....	\$ 27.97	18.24
GROUP 11.....	\$ 28.47	18.24
GROUP 12.....	\$ 28.90	18.24

## WORK ON ALL MILITARY BASES:

PREMIUM PAY: \$3.00 per hour additional.

[29 palms Marine Base, Camp Roberts, China Lake, Edwards AFB, El Centro Naval Facility, Fort Irwin, Marine Corps Logistics Base at Nebo & Yermo, Mountain Warfare Training Center, Bridgeport, Point Arguello, Point Conception, Vandenberg AFB]

## TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: Truck driver

GROUP 2: Driver of vehicle or combination of vehicles - 2 axles; Traffic control pilot car excluding moving heavy equipment permit load; Truck mounted broom

GROUP 3: Driver of vehicle or combination of vehicles - 3 axles; Boot person; Cement mason distribution truck; Fuel truck driver; Water truck - 2 axle; Dump truck, less than 16 yds. water level; Erosion control driver

GROUP 4: Driver of transit mix truck, under 3 yds.; Dumpcrete truck, less than 6-1/2 yds. water level

GROUP 5: Water truck, 3 or more axles; Truck greaser and tire person (\$0.50 additional for tire person); Pipeline and utility working truck driver, including winch truck and plastic fusion, limited to pipeline and utility work; Slurry truck driver

GROUP 6: Transit mix truck, 3 yds. or more; Dumpcrete truck, 6-1/2 yds. water level and over; Vehicle or combination of vehicles - 4 or more axles; Oil spreader truck; Dump truck, 16 yds. to 25 yds. water level

GROUP 7: A Frame, Swedish crane or similar; Forklift driver; Ross carrier driver

GROUP 8: Dump truck, 25 yds. to 49 yds. water level; Truck repair person; Water pull - single engine; Welder

GROUP 9: Truck repair person/welder; Low bed driver, 9 axles or over

GROUP 10: Dump truck - 50 yds. or more water level; Water pull - single engine with attachment

GROUP 11: Water pull - twin engine; Water pull - twin engine with attachments; Winch truck driver - \$1.25 additional when operating winch or similar special attachments

GROUP 12: Boom Truck 17K and above

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.  
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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses

(29CFR 5.5 (a) (1) (ii)).

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In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

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#### WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

## SECTION 7. FEDERAL REQUIREMENTS FOR FEDERAL-AID CONSTRUCTION PROJECTS

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**GENERAL.**—The work herein proposed will be financed in whole or in part with Federal funds, and therefore all of the statutes, rules and regulations promulgated by the Federal Government and applicable to work financed in whole or in part with Federal funds will apply to such work. The "Required Contract Provisions, Federal-Aid Construction Contracts, "Form FHWA 1273, are included in this Section 7. Whenever in said required contract provisions references are made to "SHA contracting officer", "SHA resident engineer", or "authorized representative of the SHA", such references shall be construed to mean "Engineer" as defined in Section 1-1.18 of the Standard Specifications.

**PERFORMANCE OF PREVIOUS CONTRACT.**—In addition to the provisions in Section II, "Nondiscrimination," and Section VII, "Subletting or Assigning the Contract," of the required contract provisions, the Contractor shall comply with the following:

The bidder shall execute the CERTIFICATION WITH REGARD TO THE PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS located in the proposal. No request for subletting or assigning any portion of the contract in excess of \$10,000 will be considered under the provisions of Section VII of the required contract provisions unless such request is accompanied by the CERTIFICATION referred to above, executed by the proposed subcontractor.

**NON-COLLUSION PROVISION.**—The provisions in this section are applicable to all contracts except contracts for Federal Aid Secondary projects.

Title 23, United States Code, Section 112, requires as a condition precedent to approval by the Federal Highway Administrator of the contract for this work that each bidder file a sworn statement executed by, or on behalf of, the person, firm, association, or corporation to whom such contract is to be awarded, certifying that such person, firm, association, or corporation has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the submitted bid. A form to make the non-collusion affidavit statement required by Section 112 as a certification under penalty of perjury rather than as a sworn statement as permitted by 28, USC, Sec. 1746, is included in the proposal.

**PARTICIPATION BY MINORITY BUSINESS ENTERPRISES IN SUBCONTRACTING.**—Part 26, Title 49, Code of Federal Regulations applies to this Federal-aid project. Pertinent sections of said Code are incorporated in part or in its entirety within other sections of these special provisions.

Schedule B—Information for Determining Joint Venture Eligibility

(This form need not be filled in if all joint venture firms are minority owned.)

1. Name of joint venture \_\_\_\_\_  
\_\_\_\_\_

2. Address of joint venture \_\_\_\_\_  
\_\_\_\_\_

3. Phone number of joint venture \_\_\_\_\_  
\_\_\_\_\_

4. Identify the firms, which comprise the joint venture. (The MBE partner must complete Schedule A.) \_\_\_\_\_  
\_\_\_\_\_

a. Describe the role of the MBE firm in the joint venture.

\_\_\_\_\_

b. Describe very briefly the experience and business qualifications of each non-MBE joint venturer: \_\_\_\_\_

\_\_\_\_\_

5. Nature of the joint venture's business \_\_\_\_\_  
\_\_\_\_\_

6. Provide a copy of the joint venture agreement.

7. What is the claimed percentage of MBE ownership? \_\_\_\_\_  
\_\_\_\_\_

8. Ownership of joint venture: (This need not be filled in if described in the joint venture agreement, provided by question

6.).

- a. Profit and loss sharing.
- b. Capital contributions, including equipment.
- c. Other applicable ownership interests.

9. Control of and participation in this contract. Identify by name, race, sex, and "firm" those individuals (and their titles) who are responsible for day-to-day management and policy decision-making, including, but not limited to, those with prime responsibility for:

a. Financial decisions \_\_\_\_\_  
\_\_\_\_\_

b. Management decisions, such as:

1. Estimating \_\_\_\_\_  
\_\_\_\_\_

2. Marketing and sales \_\_\_\_\_  
\_\_\_\_\_

3. Hiring and firing of management personnel \_\_\_\_\_  
\_\_\_\_\_

4. Purchasing of major items or supplies \_\_\_\_\_  
\_\_\_\_\_

c. Supervision of field operations \_\_\_\_\_  
\_\_\_\_\_

Note.—If, after filing this Schedule B and before the completion of the joint venture's work on the contract covered by this regulation, there is any significant change in the information submitted, the joint venture must inform the grantee, either directly or through the prime contractor if the joint venture is a subcontractor.

**Affidavit**

"The undersigned swear that the foregoing statements are correct and include all material information necessary to identify and explain the terms and operation of our joint venture and the intended participation by each joint venturer in the undertaking. Further, the undersigned covenant and agree to provide to grantee current, complete and accurate information regarding actual joint venture work and the payment therefore and any proposed changes in any of the joint venture arrangements and to permit the audit and examination of the books, records and files of the joint venture, or those of each joint venturer relevant to the joint venture, by authorized representatives of the grantee or the Federal funding agency. Any material misrepresentation will be grounds for terminating any contract which may be awarded and for initiating action under Federal or State laws concerning false statements."

Revised 3-95  
08-07-95

Name of Firm	Name of Firm
Signature	Signature
Name	Name
Title	Title
Date	Date

Date \_\_\_\_\_  
State of \_\_\_\_\_  
County of \_\_\_\_\_

On this \_\_\_ day of \_\_\_\_\_, 19 \_\_, before me appeared (Name) \_\_\_\_\_, to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of firm) \_\_\_\_\_ to execute the affidavit and did so as his or her free act and deed.

Notary Public \_\_\_\_\_  
Commission expires \_\_\_\_\_

[Seal]  
Date \_\_\_\_\_  
State of \_\_\_\_\_  
County of \_\_\_\_\_

On this \_\_\_ day of \_\_\_\_\_, 19 \_\_, before me appeared (Name) \_\_\_\_\_ to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of firm) \_\_\_\_\_ to execute the affidavit and did so as his or her free act and deed.

Notary Public \_\_\_\_\_  
Commission expires \_\_\_\_\_

[Seal]

**REQUIRED CONTRACT PROVISIONS  
FEDERAL-AID CONSTRUCTION CONTRACTS**

(Exclusive of Appalachian Contracts)

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**ATTACHMENTS**

A. Employment Preference for Appalachian Contracts (included in Appalachian contracts only)

**I. GENERAL**

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.

4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

- Section I, paragraph 2;
- Section IV, paragraphs 1, 2, 3, 4, and 7;
- Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL)

as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.

**6. Selection of Labor:** During the performance of this contract, the contractor shall not:

- a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or
- b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

**II. NONDISCRIMINATION**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

**1. Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.

b. The contractor will accept as his operating policy the following statement:

*"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training."*

**2. EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively

administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

**3. Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

**4. Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)

c. The contractor will encourage his present employees to

refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

**5. Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

## **6. Training and Promotion:**

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

**7. Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.

**8. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 26, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.

c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

**9. Records and Reports:** The contractor shall keep such

records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and

(4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.

b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

### III NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, 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, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of \$10,000 or more and that it will retain such certifications in its files.

#### **IV. PAYMENT OF PREDETERMINED MINIMUM WAGE**

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

##### **1. General:**

a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3)] issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c) the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

#### **2. Classification:**

a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

(1) the work to be performed by the additional classification requested is not performed by a classification in the wage determination;

(2) the additional classification is utilized in the area by the construction industry;

(3) the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) with respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

#### **3. Payment of Fringe Benefits:**

a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit

as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

#### **4. Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:**

##### **a. Apprentices:**

(1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

(2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

(3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

(4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

##### **b. Trainees:**

(1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.

(2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.

(4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

##### **c. Helpers:**

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under an approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

## **5. Apprentices and Trainees (Programs of the U.S. DOT):**

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

## **6. Withholding:**

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

## **7. Overtime Requirements:**

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

## **8. Violation:**

**Liability for Unpaid Wages; Liquidated Damages:** In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

## **9. Withholding for Unpaid Wages and Liquidated Damages:**

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

## **V. STATEMENTS AND PAYROLLS**

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

### **1. Compliance with Copeland Regulations (29 CFR 3):**

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

### **2. Payrolls and Payroll Records:**

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.

c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;

(2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;

(3) that each laborer or mechanic has been paid not less than the applicable wage rate and fringe benefits or cash equivalent for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

## **VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR**

(As of May 22, 2007, Form FHWA-47 is no longer required)

## **VII. SUBLETTING OR ASSIGNING THE CONTRACT**

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).

a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products, which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

### **VIII. SAFETY: ACCIDENT PREVENTION**

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

### **IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS**

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding re-

garding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

### **NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS**

18 U.S.C. 1020 reads as follows:

*"Whoever being an officer, agent, or employee of the United States, or any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or*

*Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or*

*Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;*

*Shall be fined not more than \$10,000 or imprisoned not more than 5 years or both."*

### **X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub. L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub. L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized

for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

## **XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION**

### **1. Instructions for Certification - Primary Covered Transactions:**

(Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "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 department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective primary participant further agrees by

submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

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

j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

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### **Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion—Primary Covered Transactions**

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and

d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

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## **2. Instructions for Certification - Lower Tier Covered Transactions:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions of \$25,000 or more - 49 CFR 29)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "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.

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

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

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

required to, check the Nonprocurement List.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

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### **Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions**

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.

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## **XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract,

grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

*The following sections “Female and Minority Goals” and “Training” were updated to match Sections 7-1.50C and 7-1.50D, respectively of the CT Amendments to the Standard Specifications.*

**Female and Minority Goals**

To comply with Section II, "Nondiscrimination," of "Required Contract Provisions Federal-Aid Construction Contracts," the following are goals for female and minority utilization goals for Federal-aid construction contracts and subcontracts that exceed \$10,000:

The nationwide goal for female utilization is 6.9 percent.

The goals for minority utilization [45 Fed Reg 65984 (10/3/1980)] are as follows:

**Minority Utilization Goals**

Economic Area		Goal (Percent)
174	Redding CA: Non-SMSA Counties: CA Lassen; CA Modoc; CA Plumas; CA Shasta; CA Siskiyou; CA Tehama	6.8
175	Eureka, CA Non-SMSA Counties: CA Del Norte; CA Humboldt; CA Trinity	6.6
176	San Francisco-Oakland-San Jose, CA: SMSA Counties: 7120 Salinas-Seaside-Monterey, CA CA Monterey 7360 San Francisco-Oakland CA Alameda; CA Contra Costa; CA Marin; CA San Francisco; CA San Mateo 7400 San Jose, CA CA Santa Clara, CA 7485 Santa Cruz, CA CA Santa Cruz 7500 Santa Rosa CA Sonoma 8720 Vallejo-Fairfield-Napa, CA CA Napa; CA Solano Non-SMSA Counties: CA Lake; CA Mendocino; CA San Benito	28.9  25.6   19.6  14.9  9.1  17.1  23.2
177	Sacramento, CA: SMSA Counties: 6920 Sacramento, CA CA Placer; CA Sacramento; CA Yolo Non-SMSA Counties CA Butte; CA Colusa; CA El Dorado; CA Glenn; CA Nevada; CA Sierra; CA Sutter; CA Yuba	16.1  14.3
178	Stockton-Modesto, CA: SMSA Counties: 5170 Modesto, CA CA Stanislaus 8120 Stockton, CA CA San Joaquin Non-SMSA Counties CA Alpine; CA Amador; CA Calaveras; CA Mariposa; CA Merced; CA Toulumne	12.3  24.3  19.8
179	Fresno-Bakersfield, CA SMSA Counties: 0680 Bakersfield, CA CA Kern 2840 Fresno, CA CA Fresno Non-SMSA Counties: CA Kings; CA Madera; CA Tulare	19.1  26.1  23.6

180	Los Angeles, CA:	
	SMSA Counties:	
	0360 Anaheim-Santa Ana-Garden Grove, CA	11.9
	CA Orange	
	4480 Los Angeles-Long Beach, CA	28.3
	CA Los Angeles	
	6000 Oxnard-Simi Valley-Ventura, CA	21.5
CA Ventura		
6780 Riverside-San Bernardino-Ontario, CA	19.0	
CA Riverside; CA San Bernardino		
7480 Santa Barbara-Santa Maria-Lompoc, CA	19.7	
CA Santa Barbara		
Non-SMSA Counties	24.6	
CA Inyo; CA Mono; CA San Luis Obispo		
181	San Diego, CA:	
	SMSA Counties	
	7320 San Diego, CA	16.9
	CA San Diego	
Non-SMSA Counties	18.2	
CA Imperial		

For each July during which work is performed under the contract, you and each non-material-supplier subcontractor with a subcontract of \$10,000 or more must complete Form FHWA PR-1391 (Appendix C to 23 CFR 230). Submit the forms by August 15.

## Training

This section applies if a number of trainees or apprentices is specified in the special provisions.

As part of your equal opportunity affirmative action program, provide on-the-job training to develop full journeymen in the types of trades or job classifications involved.

You have primary responsibility for meeting this training requirement.

If you subcontract a contract part, determine how many trainees or apprentices are to be trained by the subcontractor.

Include these training requirements in your subcontract.

Where feasible, 25 percent of apprentices or trainees in each occupation must be in their 1st year of apprenticeship or training.

Distribute the number of apprentices or trainees among the work classifications on the basis of your needs and the availability of journeymen in the various classifications within a reasonable recruitment area.

Before starting work, submit to the County of San Luis Obispo:

1. Number of apprentices or trainees to be trained for each classification
2. Training program to be used
3. Training starting date for each classification

Obtain the County's approval for this submitted information before you start work. The County credits you for each apprentice or trainee you employ on the work who is currently enrolled or becomes enrolled in an approved program.

The primary objective of this section is to train and upgrade minorities and women toward journeymen status. Make every effort to enroll minority and women apprentices or trainees, such as conducting systematic and direct recruitment through public and private sources likely to yield minority and women apprentices or trainees, to the extent they are available within a reasonable recruitment area. Show that you have made the efforts. In making these efforts, do not discriminate against any applicant for training.

Do not employ as an apprentice or trainee an employee:

1. In any classification in which the employee has successfully completed a training course leading to journeyman status or in which the employee has been employed as a journeyman

2. Who is not registered in a program approved by the US Department of Labor, Bureau of Apprenticeship and Training

Ask the employee if the employee has successfully completed a training course leading to journeyman status or has been employed as a journeyman. Your records must show the employee's answers to the questions.

In your training program, establish the minimum length and training type for each classification. The County of San Luis Obispo and FHWA approves a program if one of the following is met:

1. It is calculated to:

1.1. Meet the your equal employment opportunity responsibilities

1.2. Qualify the average apprentice or trainee for journeyman status in the classification involved by the end of the training period

2. It is registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training and it is administered in a way consistent with the equal employment responsibilities of federal-aid highway construction contracts

Obtain the State's approval for your training program before you start work involving the classification covered by the program.

Provide training in the construction crafts, not in clerk-typist or secretarial-type positions. Training is allowed in lower level management positions such as office engineers, estimators, and timekeepers if the training is oriented toward construction applications. Training is allowed in the laborer classification if significant and meaningful training is provided and approved by the division office. Off-site training is allowed if the training is an integral part of an approved training program and does not make up a significant part of the overall training.

The County of San Luis Obispo reimburses you 80 cents per hour of training given an employee on this contract under an approved training program:

1. For on-site training

2. For off-site training if the apprentice or trainee is currently employed on a federal-aid project and you do at least one of the following:

2.1. Contribute to the cost of the training

2.2. Provide the instruction to the apprentice or trainee

2.3. Pay the apprentice's or trainee's wages during the off-site training period

3. If you comply this section.

Each apprentice or trainee must:

1. Begin training on the project as soon as feasible after the start of work involving the apprentice's or trainee's skill

2. Remain on the project as long as training opportunities exist in the apprentice's or trainee's work classification or until the apprentice or trainee has completed the training program

Furnish the apprentice or trainee:

1. Copy of the program you will comply with in providing the training

2. Certification showing the type and length of training satisfactorily completed

Maintain records and submit reports documenting your performance under this section.

## **SECTION 8. MATERIALS**

### **SECTION 8-1. MISCELLANEOUS**

#### **8-1.01 PREQUALIFIED AND TESTED SIGNING AND DELINEATION MATERIALS**

Caltrans maintains the following list of Prequalified and Tested Signing and Delineation Materials. The Engineer shall not be precluded from sampling and testing products on the list of Prequalified and Tested Signing and Delineation Materials.

The manufacturer of products on the list of Prequalified and Tested Signing and Delineation Materials shall furnish the Engineer a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for each type of traffic product supplied.

For those categories of materials included on the list of Prequalified and Tested Signing and Delineation Materials, only those products shown within the listing may be used in the work. Other categories of products, not included on the list of Prequalified and Tested Signing and Delineation Materials, may be used in the work provided they conform to the requirements of the Standard Specifications.

Materials and products may be added to the list of Prequalified and Tested Signing and Delineation Materials if the manufacturer submits a New Product Information Form to the New Product Coordinator at the Transportation Laboratory. Upon a Departmental request for samples, sufficient samples shall be submitted to permit performance of required tests. Approval of materials or products will depend upon compliance with the specifications and tests the Department may elect to perform.

#### **PAVEMENT MARKERS, PERMANENT TYPE**

##### **Retroreflective With Abrasion Resistant Surface (ARS)**

1. Apex, Model 921AR (4" x 4")
2. Ennis Paint, Models C88 (4" x 4"), 911 (4" x 4") and C80FH
3. Ray-O-Lite, Models "AA" ARC II (4" x 4") and ARC Round Shoulder (4" x 4")
4. 3M Series 290 (3.5" x 4")
5. 3M Series 290 PSA
6. Glowlite, Inc Model 988AR (4" x 4")

##### **Retroreflective With Abrasion Resistant Surface (ARS)**

(for recessed applications only)

1. Ennis Paint, Model 948 (2.3" x 4.7")
2. Ennis Paint, Model 944SB (2" x 4")\*
3. Ray-O-Lite, Model 2002 (2" x 4.6")
4. Ray-O-Lite, Model 2004 (2" x 4")\*

\*For use only in 4.5 inch wide (older) recessed slots

##### **Non-Reflective, 4-inch Round**

1. Apex Universal (Ceramic)
2. Apex Universal, Models 929 (ABS) and 929PP (Polypropylene)

3. Glowlite, Inc. (Ceramic) and PP (Polypropylene)
4. Hi-Way Safety, Inc., Models P20-2000W and 2001Y (ABS)
5. Interstate Sales, "Diamond Back" (Polypropylene)
6. Novabrite Models Cdot (White) Cdot-y (Yellow), Ceramic
7. Novabrite Models Pdot-w (White) Pdot-y (Yellow), Polypropylene
8. Three D Traffic Works TD10000 (ABS), TD10500 (Polypropylene)
9. Ray-O-Lite, Ray-O-Dot (Polypropylene)

#### **PAVEMENT MARKERS, TEMPORARY TYPE**

##### **Temporary Markers For Long Term Day/Night Use (180 days or less)**

1. Vega Molded Products "Temporary Road Marker" (3" x 4")
2. Pexco LLC, Halftrack model 25, 26 and 35

##### **Temporary Markers For Short Term Day/Night Use (14 days or less)**

(For seal coat or chip seal applications, clear protective covers are required)

1. Apex Universal, Model 932
2. Pexco LLC, Models T.O.M., T.R.P.M., and "HH" (High Heat)
3. Hi-Way Safety, Inc., Model 1280/1281
4. Glowlite, Inc., Model 932

#### **STRIPING AND PAVEMENT MARKING MATERIAL**

##### **Permanent Traffic Striping and Pavement Marking Tape**

1. Advanced Traffic Marking, Series 300 and 400
2. Brite-Line, Series 1000
3. Brite-Line, "DeltaLine XRP"
4. Swarco Industries, "Director 35" (For transverse application only)
5. Swarco Industries, "Director 60"
6. 3M, "Stamark" Series 380 and 270 ES
7. 3M, "Stamark" Series 420 (For transverse application only)

##### **Temporary (Removable) Striping and Pavement Marking Tape (180 days or less)**

1. Advanced Traffic Marking, Series 200
2. Brite-Line, Series 100
3. Garlock Rubber Technologies, Series 2000
4. P.B. Laminations, Aztec, Grade 102
5. Swarco Industries, "Director-2"
6. Trelleborg Industries, R140 Series
7. 3M Series 620 "CR", and Series 780
8. 3M Series A145, Removable Black Line Mask  
(Black Tape: for use only on Hot mix asphalt surfaces)
9. Advanced Traffic Marking Black "Hide-A-Line"  
(Black Tape: for use only on Hot mix asphalt surfaces)
10. Brite-Line "BTR" Black Removable Tape  
(Black Tape: for use only on Hot mix asphalt surfaces)
11. Trelleborg Industries, RB-140  
(Black Tape: for use only on Hot mix asphalt surfaces)

##### **Preformed Thermoplastic (Heated in place)**

1. Flint Trading Inc., "Hot Tape"

2. Flint Trading Inc., "Premark Plus"
3. Ennis Paint Inc., "Flametape"

**Ceramic Surfacing Laminate, 6" x 6"**

1. Highway Ceramics, Inc.

**CLASS 1 DELINEATORS**

**One Piece Driveable Flexible Type, 66-inch**

1. Pexco LLC, "Flexi-Guide Models 400 and 566"
2. Carsonite, Curve-Flex CFRM-400
3. Carsonite, Roadmarker CRM-375
4. FlexStake, Model 654 TM
5. GreenLine Model CGD1-66

**Special Use Type, 66-inch**

1. Pexco LLC, Model FG 560 (with 18-inch U-Channel base)
2. Carsonite, "Survivor" (with 18-inch U-Channel base)
3. Carsonite, Roadmarker CRM-375 (with 18-inch U-Channel base)
4. FlexStake, Model 604
5. GreenLine Model CGD (with 18-inch U-Channel base)
6. Impact Recovery Model D36, with #105 Driveable Base
7. Safe-Hit with 8-inch pavement anchor (SH248-GP1)
8. Safe-Hit with 15-inch soil anchor (SH248-GP2) and with 18-inch soil anchor (SH248-GP3)
9. Safe-Hit RT 360 Post with Soil Mount Anchor (GPS)
10. Shur-Tite Products, Shur-Flex Drivable

**Surface Mount Type, 48-inch**

1. Bent Manufacturing Company, Masterflex Model MFEX 180-48
2. Carsonite, "Channelizer"
3. FlexStake, Models 704, 754 TM, and EB4
4. Impact Recovery Model D48, with #101 Fixed (Surface-Mount) Base
5. Three D Traffic Works "Channelflex" ID No. 522248W
6. Flexible Marker Support, Flexistiff Model C-9484
7. Safe-Hit, SH 248 SMR

**CHANNELIZERS**

**Surface Mount Type, 36-inch**

1. Bent Manufacturing Company, Masterflex Models MF-360-36 (Round) MF-180-36 (Flat) and MFEX 180—36
2. Pexco LLC, Flexi-Guide Models FG300PE, FG300UR, and FG300EFX
3. Carsonite, "Super Duck" (Round SDR-336)
4. Carsonite, Model SDCF03601MB "Channelizer"
5. FlexStake, Models 703, 753 TM, and EB3
6. GreenLine, Model SMD-36
7. Hi-way Safety, Inc. "Channel Guide Channelizer" Model CGC36
8. Impact Recovery Model D36, with #101 Fixed (Surface-Mount) Base
9. Safe-Hit, Guide Post, Model SH236SMA and Dura-Post, Model SHL36SMA
10. Three D Traffic Works "Boomerang" 5200 Series
11. Flexible Marker Support, Flexistiff Model C-9484-36
12. Shur-Tite Products, Shur-Flex

### **Lane Separation System**

1. Pexco LLC, "Flexi-Guide (FG) 300 Curb System"
2. Qwick Kurb, "Klemmfix Guide System"
3. Dura-Curb System
4. Tuff Curb
5. FG 300 Turnpike Curb

### **CONICAL DELINEATORS, 42-inch**

(For 28-inch Traffic Cones, see Standard Specifications)

1. Bent Manufacturing Company "T-Top"
2. Plastic Safety Systems "Navigator-42"
3. TrafFix Devices "Grabber"
4. Three D Traffic Works "Ringtop" TD7000, ID No. 742143
5. Three D Traffic Works, TD7500
6. Work Area Protection Corp. C-42

### **OBJECT MARKERS**

#### **Type "K", 18-inch**

1. Pexco LLC, Model FG318PE
2. Carsonite, Model SMD 615
3. FlexStake, Model 701 KM
4. Safe-Hit, Model SH718SMA

#### **Type "Q" Object Markers, 24-inch**

1. Bent Manufacturing "Masterflex" Model MF-360-24
2. Pexco LLC, Model FG324PE
3. Carsonite, "Channelizer"
4. FlexStake, Model 701KM
5. Safe-Hit, Models SH824SMA\_WA and SH824GP3\_WA
6. Three D Traffic Works ID No. 531702W and TD 5200
7. Three D Traffic Works ID No. 520896W
8. Safe-Hit, Dura-Post SHLQ-24 inch

### **CONCRETE BARRIER MARKERS AND TEMPORARY RAILING (TYPE K) REFLECTORS**

#### **Impactable Type**

1. ARTUK, "FB"
2. Pexco LLC, Models PCBM-12 and PCBM-T12
3. Duraflex Corp., "Flexx 2020" and "Electriflexx"
4. Hi-Way Safety, Inc., Model GMKRM100
5. Plastic Safety Systems "BAM" Models OM-BARR and OM-BWAR
6. Three D Traffic Works "Roadguide" Model TD 9300

#### **Non-Impactable Type**

1. ARTUK, JD Series
2. Plastic Safety Systems "BAM" Models OM-BITARW and OM-BITARA
3. Vega Molded Products, Models GBM and JD
4. Plastic Vacuum Forming, "Cap-It C400"

## **METAL BEAM GUARD RAIL POST MARKERS**

(For use to the left of traffic)

1. Pexco LLC, "Mini" (3" x 10")
2. Creative Building Products, "Dura-Bull, Model 11201"
3. Duraflex Corp., "Railrider"
4. Plastic Vacuum Forming, "Cap-It C300"

## **CONCRETE BARRIER DELINEATORS, 16-inch**

(For use to the right of traffic)

1. Pexco LLC, Model PCBM T-16
2. Safe-Hit, Model SH216RBM
3. Three D Traffic Works "Roadguide" Model 9400

## **CONCRETE BARRIER-MOUNTED MINI-DRUM (10" x 14" x 22")**

1. Stinson Equipment Company "SaddleMarker"

## **GUARD RAILING DELINEATOR**

(Place top of reflective element at 48 inches above plane of roadway)

### **Wood Post Type, 27-inch**

1. Pexco LLC, FG 427 and FG 527
2. Carsonite, Model 427
3. FlexStake, Model 102 GR
4. GreenLine GRD 27
5. Safe-Hit, Model SH227GRD
6. Three D Traffic Works "Guardflex" TD9100
7. New Directions Mfg, NDM27
8. Shur-Tite Products, Shur-Tite Flat Mount

### **Steel Post Type**

1. Carsonite, Model CFGR-327

## **RETROREFLECTIVE SHEETING**

### **Channelizers, Barrier Markers, and Delineators**

1. Avery Dennison T-6500 Series (For rigid substrate devices only)
2. Avery Dennison WR-7100 Series
3. Nippon Carbide Industries, Flexible Ultralite Grade (ULG) II
4. Reflexite, PC-1000 Metalized Polycarbonate
5. Reflexite, AC-1000 Acrylic
6. Reflexite, AP-1000 Metalized Polyester
7. Reflexite, Conformalight, AR-1000 Abrasion Resistant Coating
8. 3M, High Intensity

### **Traffic Cones, 4-inch and 6-inch Sleeves**

1. Nippon Carbide Industries, Flexible Ultralite Grade (ULG) II
2. Reflexite, Vinyl, "TR" (Semi-transparent) or "Conformalight"
3. 3M Series 3840
4. Avery Dennison S-9000C

### **Drums**

1. Avery Dennison WR-6100

2. Nippon Carbide Industries, Flexible Ultralite Grade (ULG) II
3. Reflexite, "Conformalight", "Super High Intensity" or "High Impact Drum Sheeting"
4. 3M Series 3810

**Barricades: Type I, Medium-Intensity (Typically Enclosed Lens, Glass-Bead Element)**

1. Nippon Carbide Industries, CN8117
2. Avery Dennison, W 1100 series
3. 3M Series CW 44

**Barricades: Type II, Medium-High-Intensity (Typically Enclosed Lens, Glass-Bead Element)**

1. Avery Dennison, W-2100 Series

**Vertical Clearance Signs: Structure Mounted**

1. 3M Model 4061, Diamond Grade DG3, Fluorescent Yellow

**Signs: Type II, Medium-High-Intensity (Typically Enclosed Lens, Glass-Bead Element)**

1. Avery Dennison, T-2500 Series
2. Nippon Carbide Industries, Nikkalite 18000

**Signs: Type III, High-Intensity (Typically Encapsulated Glass-Bead Element)**

1. Avery Dennison, T-5500A and T-6500 Series
2. Nippon Carbide Industries, Nikkalite Brand Ultralite Grade II
3. 3M 3870 and 3930 Series

**Signs: Type IV, High-Intensity (Typically Unmetallized Microprismatic Element)**

1. Avery Dennison, T-6500 Series
2. Nippon Carbide Industries, Crystal Grade, 94000 Series
3. Nippon Carbide Industries, Model No. 94847 Fluorescent Orange
4. 3M Series 3930 and Series 3924S

**Signs: Type VI, Elastomeric (Roll-Up) High-Intensity, without Adhesive**

1. Avery Dennison, WU-6014
2. Novabrite LLC, "Econobrite"
3. Reflexite "Vinyl"
4. Reflexite "SuperBright"
5. Reflexite "Marathon"
6. 3M Series RS20

**Signs: Type VII, Super-High-Intensity (Typically Unmetallized Microprismatic Element)**

1. 3M Series 3924S, Fluorescent Orange
2. 3M LDP Series 3970

**Signs: Type VIII, Super-High-Intensity (Typically Unmetallized Microprismatic Element)**

1. Avery Dennison, T-7500 Series

2. Avery Dennison, T-7511 Fluorescent Yellow
3. Avery Dennison, T-7513 Fluorescent Yellow Green
4. Avery Dennison, W-7514 Fluorescent Orange
5. Nippon Carbide Industries, Nikkalite Crystal Grade Series 92800
6. Nippon Carbide Industries, Nikkalite Crystal Grade Model 92847 Fluorescent Orange

**Signs: Type IX, Very-High-Intensity (Typically Unmetallized Microprismatic Element)**

1. 3M VIP Series 3981 Diamond Grade Fluorescent Yellow
2. 3M VIP Series 3983 Diamond Grade Fluorescent Yellow/Green
3. 3M VIP Series 3990 Diamond Grade
4. Avery Dennison T-9500 Series
5. Avery Dennison, T9513, Fluorescent Yellow Green
6. Avery Dennison, W9514, Fluorescent Orange
7. Avery Dennison, T-9511 Fluorescent Yellow

**SPECIALTY SIGNS**

1. Reflexite "Endurance" Work Zone Sign (with Semi-Rigid Plastic Substrate)

**ALTERNATIVE SIGN SUBSTRATES**

**Fiberglass Reinforced Plastic (FRP) and Expanded Foam PVC**

1. Fiber-Brite (FRP)
2. Sequentia, "Polyplate" (FRP)
3. Inteplast Group "InteCel" (0.5 inch for Post-Mounted CZ Signs, 48-inch or less)(PVC)

**Aluminum Composite, Temporary Construction Signs and Permanent Signs up to 4 foot, 7 Inches**

1. Alcan Composites "Dibond Material, 80 mils"
2. Mitsubishi Chemical America, Alpolic 350
3. Bone Safety Signs, Bone Light ACM (temporary construction signs only)

**The pre-qualified list of LED products are as follows:**

- A. Photometric Equivalent to 200W HPS luminaire.  
 General Electric: ERMC-240V-A3-60-A-1-GRAY-E-F-L  
 Beta Lighting: STR-LWY-3M-HT-06-LED-C-UL-SV-R-UTL  
 Leotek: GCA1-80C-MV-NW-2M-GY-530FDC-WL
- B. Photometric Equivalent to 310W HPS luminaire  
 General Electric: ERMC-240V-A3-100-MOD-A-1-GRAY-E-F-L  
 Beta Lighting: STR-LWY-3M-HT-10-LED-C-UL-SV-R-UTL  
 Leotek: GCA2-100C-MV-NW-2M-GY-530FDC-WL

**8-1.02 ADHESIVE FOR BONDING REFLEX REFLECTORS TO PORCELAIN ENAMEL TRAFFIC SIGNS**

Adhesive shall be an RTV (room temperature vulcanizing) one-component silicone - rubber adhesive. Adhesive shall be compounded to be highly resistant to ozone,

ultraviolet light, and extremes of ambient temperature, shall possess good chemical resistance, and shall exhibit excellent overall weatherability. The cured material shall remain flexible and maintain its adhesive qualities indefinitely.

The adhesive shall possess the following physical properties:

Property	Value	Test Method
Color	Translucent	Visual Determination
Consistency	Soft, spreadable thixotropic paste	Visual Determination
Tack-Free Time	One hour maximum	Finger-touch test
Durometer, Shore A	25-40	ASTM Designation: D 2240(1)
Tensile Strength, psi	300 minimum	ASTM Designation: D 412(1)
Elongation, Percent	350 minimum	ASTM Designation: D 412(1)
Specific Gravity	1.07±0.02	ASTM Designation: D 792, Method A-1, Notes: (1) and (2)
Shear-Adhesion, psi	150 minimum	Note: (3)

Notes:

- (1) After specimen has cured for a total of 48 hours.
- (2) One-inch square specimen.
- (3) Test method on file and available at the Transportation Laboratory.

When stored at temperatures below 80° F, the adhesive shall have a shelf life of at least one year.

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications shall be furnished for each lot of adhesive supplied.

### **8-1.03 REFLEX REFLECTORS**

Reflex reflectors shall be made of methyl methacrylate plastic molded into a shape which will reflect incident light in a narrow pattern back toward the source of the light.

Reflectors shall be circular and of flange-mount design.

Reflectors shall have a corrosion resistant backing, hermetically-sealed, that, when tested in conformance with California Test 603, shall not show any evidence of internal moisture condensation. The reflectors shall reflect the light from a sealed beam automobile headlight without color. Off-color reflection shall constitute grounds for rejection.

When tested in conformance with California Test 602, the percent reflectance shall be not less than:

Nominal Diameter (inches)	Incidence (degrees)	Angle	Percent Reflectance
1/2 (Single reflector)	0		0.030
1/2 (19-reflector cluster)	20		0.410
11/16 (Single reflector)	0		0.036
11/16 (19-reflector cluster)	20		0.014
7/8 (Single reflector)	0		0.060
7/8 (19-reflector cluster)	20		0.024
1-1/4 (Single reflector)	0		0.126
1-1/4 (19-reflector cluster)	20		0.050
1-5/8 (Single reflector)	0		0.200
1-5/8 (19-reflector cluster)	20		0.080

Each container shall be clearly marked with the name of the manufacturer, size, color, type, quantity, and production lot number.

Each manufacturer's production lot within an inspection lot shall be sampled at the rate of 50 reflectors for each group of 25,000 reflectors or fraction thereof in the given production lot. A resample will be double the size of the initial sample, and not more than one resample per lot will be allowed.

A lot will be considered as complying with this special provision when at least 96 percent of the reflectors in the sample or resample representing the lot comply with the requirements of this special provision. When less than 96 percent but at least 90 percent of an original sample pass the tests, then a resample will be allowed at the request of the vendor. When less than 90 percent of an original sample passes the tests, then the lot represented thereby will be rejected and no resample will be allowed.

#### **8-1.04 FILTER FABRIC**

Filter fabric must be Class A as specified in Section 88-1.02, "Filtration," of the Standard Specifications.

### **SECTION 8-2. CONCRETE**

#### **8-2.01 PORTLAND CEMENT CONCRETE**

Portland cement concrete shall conform to the provisions in Section 90, "Portland Cement Concrete," of the Standard Specifications and these Special Provisions.

## STRENGTH DEVELOPMENT TIME

The time allowed to obtain the minimum required compressive strength as specified in Section 90-1.01, "Description," of the Standard Specifications will be 56 days when the Contractor chooses cementitious material that satisfies the following equation:

$$\frac{(41 \times UF) + (19 \times F) + (11 \times SL)}{TC} \geq 7.0$$

Where:

F = Fly ash or natural pozzolan conforming to the requirements in AASHTO Designation: M 295, Class F or N, including the amount in blended cement, pounds per cubic yard. F is equivalent to either FA or FB as defined in Section 90-2.01C, "Required Use of Supplementary Cementitious Materials," of the Standard Specifications

SL = GGBFS, including the amount in blended cement, pounds per cubic yard

UF = Silica fume, metakaolin, or UFFA, including the amount in blended cement, pounds per cubic yard

TC = Total amount of cementitious material used, pounds per cubic yard

For concrete satisfying the equation above, the Contractor shall test for the modulus of rupture or compressive strength specified for the concrete involved, at least once every 500 cubic yards, at 28, 42, and 56 days. The Contractor shall submit test results to the Engineer and the Transportation Laboratory, Attention: Office of Concrete Materials.

## SUPPLEMENTARY CEMENTITIOUS MATERIALS

The Contractor may use rice hull ash as a supplementary cementitious material (SCM) to make minor concrete. Rice hull ash shall conform to the requirements in AASHTO Designation: M 321 and the following chemical and physical requirements:

Chemical Requirements	Percent
Silicon Dioxide (SiO <sub>2</sub> ) <sup>a</sup>	90 min.
Loss on ignition	5.0 max.
Total Alkalies (as Na <sub>2</sub> O) equivalent	3.0 max.

Physical Requirements	Percent
Particle size distribution	
Less than 45 microns	95
Less than 10 microns	50
Strength Activity Index with portland cement <sup>b</sup>	
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 <sup>c</sup>	0.10 max.
Surface Area when testing by nitrogen adsorption in conformance with ASTM D 5604	40.0 m <sup>2</sup> /g min.

Notes:

<sup>a</sup> A maximum of 1.0% of the SiO<sub>2</sub> may exist in crystalline form.

<sup>b</sup> When tested in conformance with the requirements for strength activity testing of silica fume in AASHTO Designation: M 307

<sup>c</sup> In the test mix, Type II or Type V portland cement shall be replaced with at least 12% RHA by weight.

Rice hull ash will be considered as a Type UF SCM for the purposes of calculating cementitious material requirements in Section 90-2.01C, "Required Use of Supplementary Cementitious Materials," of the Standard Specifications and these Special Provisions.

## 8-2.02 RAPID STRENGTH CONCRETE FOR STRUCTURES

### GENERAL

#### Summary

This section includes specifications for rapid strength concrete (RSC) for structures. You may only use RSC when specified elsewhere in these Special Provisions.

### DEFINITIONS

**Opening age:** The age at which the concrete will achieve the specified strength for opening to public or construction traffic.

### SUBMITTALS

#### Mix Design

Submit the RSC mix design at least 10 days before use. If a trial slab is required, submit the RSC mix design at least 10 days before constructing the trial slab. Include the following in the submittal:

1. Compressive strength test results for prequalification of RSC at age of break, at 3 days, and at 28 days
2. Opening age
3. Proposed aggregate grading
4. Mix proportions of cementitious material, aggregate, and water
5. Types and amounts of chemical admixtures, if used
6. Range of ambient temperatures over which the mix design will achieve the required minimum compressive strength

## 7. Source of materials

### **Volumetric Proportioning**

When using volumetric proportioning, submit the following:

1. Aggregate moisture test results
2. Log of production data

### **Certificate of Compliance**

Submit a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance," of the Standard Specifications with each delivery of aggregate, cementitious material, and admixtures used for calibration tests. Include certified copies of the weight of each delivery.

The Certificate of Compliance must state that the source of materials used for the calibration tests is from the same source as to be used for the planned work. The Certificate of Compliance must be signed by an authorized representative.

## **QUALITY CONTROL and ASSURANCE**

### **Prequalification of RSC**

Prequalification of a RSC mix design includes determining the opening age and achieving the minimum specified 28-day compressive strength.

Prequalify RSC under the specifications for prequalification of concrete specified by compressive strength in Section 90-9.01, "General," of the Standard Specifications. Determine the opening age as follows:

1. Fabricate at least 5 test cylinders to be used to determine the age of break.
2. Immediately after fabrication of the 5 test cylinders, store the cylinders in a temperature medium of  $70 \pm 3$  °F until the cylinders are tested.
3. Determine the age of break to achieve an average strength of the 5 test cylinders of not less than 1200 psi. Not more than 2 test cylinders shall have a strength of less than 1150 psi.
4. The opening age is the age of break plus 1 hour.

### **Weighmaster Certifications**

Weighmaster certificates for RSC, regardless of the proportioning method used, must include all information necessary to trace the manufacturer and manufacturer's lot number for the cement being used. When proportioned into fabric containers, the weighmaster certificates for the cement must contain the date of proportioning, location of proportioning, and actual net draft weight of the cement. When proportioned at the job site from a storage silo, the weighmaster certificates must contain the date of proportioning, location of proportioning, and the net draft weight of the cement used in the load.

## **MATERIALS**

### **GENERAL**

RSC must comply with one of the following:

1. Concrete made with portland cement concrete and a nonchloride Type C chemical admixture. The concrete must comply with Section 90, "Portland

Cement Concrete," of the Standard Specifications, except that Type III cement may be used.

2. Concrete made with a proprietary cementitious material. The concrete must comply with Section 90, "Portland Cement Concrete," of the Standard Specifications, except that:

- 2.1. Cementitious material shall meet the definition of hydraulic cement in ASTM C 219, and the following:

**Proprietary Cementitious Material**

Test Description	Test Method	Requirement
Contraction in Air	California Test 527, w/c ratio = 0.39±0.010	0.053%, max.
Mortar Expansion in Water	ASTM C 1038	0.04%, max.
Soluble Chloride*	California Test 422	0.05%, max.
Soluble Sulfate*	California Test 417	0.30%, max.
Thermal Stability	California Test 553	90%, min.
Compressive Strength @ 3 days	ASTM C 109	2500 psi

\*Test is to be done on a cube specimen fabricated in conformance with the requirements in ASTM C 109, cured at least 14 days, and then pulverized so that 100% passes the No. 50 sieve.

- 2.2 Citric acid or borax may be used if requested in writing by the cement manufacturer and a sample is submitted to the Engineer. Chemical admixtures, if used, shall be included when testing for requirements listed in the table above.

RSC must have a minimum 28-day compressive strength of 3600 psi, except that RSC placed in bridge decks must have a minimum 28-day compressive strength of 4500 psi and must comply with the shrinkage limitations as specified for bridge deck concrete in Section 90-1.01, "Description," of the Standard Specifications.

Supplementary cementitious material is not required. Penetration requirements of Section 90-6.06, "Amount of Water and Penetration," of the Standard Specifications do not apply.

**CONSTRUCTION**

**GENERAL**

RSC may be proportioned and placed by a volumetric mixer.

**Volumetric Proportioning**

RSC proportioned by a volumetric mixer must comply with the requirements specified herein.

Proportion liquid admixtures under Section 90-4.10, "Proportioning and Dispensing Liquid Admixtures," of the Standard Specifications, except proportion liquid admixtures with a meter.

Batch-mixer trucks must proportion cement, water, aggregate, and additives by volume. Aggregate feeders must be connected directly to the drive on the cement

vane feeder. The cement feed rate must be tied directly to the feed rate for the aggregate and other ingredients. Only change the ratio of cement to aggregate by changing the gate opening for the aggregate feed. The drive shaft of the aggregate feeder must have a revolution counter reading to the nearest full or partial revolution of the aggregate delivery belt.

Proportion aggregate with a belt feeder operated with an adjustable cutoff gate delineated to the nearest quarter increment. The gate opening height must be readily determinable. Proportion cement by any method that complies with the accuracy tolerance specifications. Proportion water with a meter under Section 9-1.01, "Measurement of Quantities," of the Standard Specifications.

Calibrate the cutoff gate for each batch-mixer truck used and for each aggregate source. Calibrate batch-mixer trucks at 3 different aggregate gate settings that are commensurate with production needs. Perform at least 2 calibration runs for each aggregate gate.

Individual aggregate delivery rate check-runs must not deviate more than 1.0 percent from the mathematical average of all runs for the same gate and aggregate type. Each test run must be at least 1,000 pounds.

At the time of batching, dry and drain aggregates to a stable moisture content. Do not proportion aggregates with visible separation of water from the aggregate during proportioning. At the time of batching, the free moisture content of fine aggregate must not exceed 8 percent of its saturated, surface-dry weight.

If the proportioning plant has separate supplies of the same size group of aggregate with different moisture content, specific gravity, or surface characteristics affecting workability, exhaust 1 supply before using another supply.

Cover rotating and reciprocating equipment on batch-mixer trucks with metal guards.

Individual cement delivery rate check-runs must not deviate more than 1.0 percent of the mathematical average of 3 runs of at least 1,000 pounds each.

When the water meter operates between 50 percent and 100 percent of production capacity, the indicated weight of water delivered must not differ from the actual weight delivered by more than 1.5 percent for each of 2 runs of 300 gallons. Calibrate the water meter under California Test 109. The water meter must be equipped with a resettable totalizer and display the operating rate.

Conduct calibration tests for aggregate, cement, and water proportioning devices with a platform scale located at the calibration site. Platform scales for weighing test-run calibration material must have a maximum capacity of 2.75 tons with maximum graduations of 1 pound. Error test the platform scale within 8 hours of calibrating the batch-mixer truck proportioning devices. Perform error-testing with test weights under California Test 109. Furnish a witness scale that is within 2 graduations of the test weight load. The witness scale must be available for use at the production site throughout the production period. Equipment needed for the calibration of proportioning systems must remain available at the production site throughout the production period.

The batch-mixer truck must be equipped so that accuracy checks can be made. Recalibrate proportioning devices every 30 days after production begins or when you change the source or type of any ingredient.

A spot calibration is calibration of the cement proportioning system only. Perform a 2-run spot calibration each time 55 tons of cement passes through the batch-mixer

truck. If the spot calibration shows the cement proportioning system does not comply with the specifications, complete a full calibration of the cement proportioning system before you resume production.

Locate cement storage immediately before the cement feeder. Equip the system with a device that automatically shuts down power to the cement feeder and aggregate belt feeder when the cement storage level is less than 20 percent of the total volume.

Determine aggregate moisture under California Test 223 at least every 2 hours during proportioning and mixing operations. Record aggregate moisture determinations and submit them at the end of each production shift.

Equip each aggregate bin with a device that automatically shuts down the power to the cement feeder and the aggregate belt feeder when the aggregate discharge rate is less than 95 percent of the scheduled discharge rate.

Proportioning device indicators must be in working order before beginning proportioning and mixing operations and must be visible when standing near the batch-mixer truck.

Identifying numbers of batch-mixer trucks must be at least 3 inches in height, and be located on the front and rear of the vehicle.

Mix volumetric proportioned RSC in a mechanically operated mixer. You may use auger-type mixers. Operate mixers uniformly at the mixing speed recommended by the manufacturer. Do not use mixers that have an accumulation of hard concrete or mortar.

Do not mix more material than will permit complete mixing. Reduce the volume of material in the mixer if complete mixing is not achieved. Continue mixing until a homogeneous mixture is produced at discharge. Do not add water to the RSC after discharge.

Do not use equipment with components made of aluminum or magnesium alloys that may have contact with plastic concrete during mixing or transporting of RSC.

The Engineer determines uniformity of concrete mixtures by differences in penetration measurements made under California Test 533. Differences in penetration are determined by comparing penetration tests on 2 samples of mixed concrete from the same batch or truck mixer load. The differences must not exceed 5/8 inch. Submit samples of freshly mixed concrete. Sampling facilities must be safe, accessible, clean, and produce a sample that is representative of production. Sampling devices and sampling methods must comply with California Test 125.

Do not use ice to cool RSC directly. If ice is used to cool water used in the mix, it must be melted before entering the mixer.

Proportion and charge cement into a mixer so that there are no losses of cement due to wind or accumulation on equipment, or other conditions that may vary the required quantity of cement.

Each mixer must have metal plates that provide the following information:

1. Designed usage
2. Manufacturer's guaranteed mixed concrete volumetric capacity
3. Rotation speed

The device controlling the proportioning of cement, aggregate, and water must produce production data. The production data must be captured at 15-minute intervals throughout daily production. Each capture of production data represents production activity at that time and is not a summation of data. The amount of material represented by each production capture is the amount produced in the period from 7.5 minutes before to 7.5 minutes after the capture time. Submit the daily production data in electronic or printed media at the end of each production shift. Report the data including data titles in the following order:

1. Weight of cement per revolution count
2. Weight of each aggregate size per revolution count
3. Gate openings for each used aggregate size
4. Weight of water added to the concrete per revolution count
5. Moisture content of each used aggregate size
6. Individual volume of other admixtures per revolution count
7. Time of day
8. Day of week
9. Production start and stop times
10. Batch-mixer truck identification
11. Name of supplier
12. Specific type of concrete being produced
13. Source of the individual aggregate sizes
14. Source, brand, and type of cement
15. Source, brand and type of individual admixtures
16. Name and signature of operator

You may input production data by hand into a pre-printed form or it may be captured and printed by the proportioning device. Present electronic media containing recorded production data in a tab delimited format on a CD or DVD. Each capture of production data must be followed by a line-feed carriage-return with sufficient fields for the specified data.

### **Curing Concrete**

For RSC made with a proprietary cement, the curing method must be as recommended by the manufacturer of the cement and as approved by the Engineer. For RSC made using portland cement concrete, you must:

1. Cure the concrete using the curing compound method under Section 90-7.03, "Curing Structures," of the Standard Specifications. Fogging of the surface with water after the curing compound has been applied will not be required.
2. Repair immediately any damage to the film of the curing compound with additional compound. Do not repair damage to the curing compound after the concrete is opened to public traffic.
3. Cover the surface with an insulating layer or blanket when the ambient temperature is below 65 °F during the curing period. The insulation layer or blanket shall have an R-value rating given in the table below. A heating tent may be used in lieu of or in combination with the insulating layer or blanket:

### **R-Value Ratings**

Temperature Range During Curing Period	R-value, minimum
55 °F to 65 °F	1
45 °F to 55 °F	2
39 °F to 45 °F	3

If compressive strength tests are performed in the field showing that the concrete has achieved 1200 psi, you may open the lane to traffic at the age of break. Perform the compressive strength tests under the provisions for sampling and testing cylinders in Section 90-9.01, "General," of the Standard Specifications. The decision to use this option must be made in writing to the Engineer before beginning construction.

## **8-2.03 PRECAST CONCRETE QUALITY CONTROL**

### **GENERAL**

Precast concrete quality control shall conform to these Special Provisions.

Unless otherwise specified, precast concrete quality control shall apply when any precast concrete members are fabricated in conformance with the provisions in Section 49, "Piling," or Section 51, "Concrete Structures," of the Standard Specifications.

Precast concrete quality control shall not apply to precast concrete members that are fabricated from minor concrete.

Quality Control (QC) shall be the responsibility of the Contractor. The Contractor's QC inspectors shall perform inspection and testing prior to precasting, during precasting, and after precasting, and as specified in this section and additionally as necessary to ensure that materials and workmanship conform to the details shown on the plans, and to the specifications.

Quality Assurance (QA) is the prerogative of the Engineer. Regardless of the acceptance for a given precast element by the Contractor, the Engineer will evaluate the precast element. The Engineer will reject any precast element that does not conform to the approved Precast Concrete Quality Control Plan (PCQCP), the details shown on the plans, or to these Special Provisions.

The Contractor shall designate in writing a precast Quality Control Manager (QCM) for each precasting facility. The QCM shall be responsible directly to the Contractor for the quality of precasting, including materials and workmanship, performed by the Contractor and all subcontractors. The QCM shall be the sole individual responsible to the Contractor for submitting, receiving, and approving all correspondence, required submittals, and reports to and from the Engineer. The QCM shall not be employed or compensated by any subcontractor, or other persons or entities hired by subcontractors, or suppliers, who will provide other services or materials for the project. The QCM may be an employee of the Contractor.

Prior to submitting the PCQCP required herein, a meeting between the Engineer, the Contractor's QCM, and a representative from each entity performing precast concrete operations for this project, shall be held to discuss the requirements for precast quality control.

QC Inspectors shall either be 1) licensed as Civil Engineers in the State of California, or 2) have a current Plant Quality Personnel Certification, Level II, from the Precast/Prestressed Concrete Institute. A QC Inspector shall witness all precast concrete operations.

### **PRECAST CONCRETE QUALIFICATION AUDIT**

Unless otherwise specified, no Contractors or subcontractors performing precast concrete operations for the project shall commence work without having successfully completed the Department's Precast Fabrication Qualification Audit, hereinafter referred to as the audit. Copies of the audit form, along with procedures for requesting and completing the audit, are available at:

<http://www.dot.ca.gov/hq/esc/Translab/OSM/smbresources.htm>

An audit that was previously approved by the Department no more than 3 years before the award of this contract will be acceptable for the entire period of this contract, provided the Engineer determines the audit is for the same type of work that is to be performed on this contract.

A list of facilities who have successfully completed the audit and are authorized to provide material for this contract is available at:

[http://www.dot.ca.gov/hq/esc/Translab/OSM/smdocuments/Internet\\_auditlisting.pdf](http://www.dot.ca.gov/hq/esc/Translab/OSM/smdocuments/Internet_auditlisting.pdf)

Successful completion of an audit shall not relieve the Contractor of the responsibility for furnishing materials or producing finished work of the quality specified in these Special Provisions and as shown on the plans.

### **PRECAST CONCRETE QUALITY CONTROL PLAN**

Prior to performing any precasting operations, the Contractor shall submit to the Engineer, in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications, 3 copies of a separate PCQCP for each item of work to be precast. A separate PCQCP shall be submitted for each facility. As a minimum, each PCQCP shall include the following:

- A. The name of the precasting firm, the concrete plants to be used, and any concrete testing firm to be used;
- B. A manual prepared by the precasting firm that includes equipment, testing procedures, safety plan, and the names, qualifications, and documentation of certifications for all personnel to be used;
- C. The name of the QCM and the names, qualifications, and documentation of certifications for all QC inspection personnel to be used;
- D. An organizational chart showing all QC personnel and their assigned QC responsibilities;
- E. The methods and frequencies for performing all required quality control procedures, including all inspections, material testing, and any required survey procedures for all components of the precast elements including prestressing systems, concrete, grout, reinforcement, steel components embedded or attached to the precast member, miscellaneous metal, and formwork;

- F. A system for identification and tracking of required precast element repairs, and a procedure for the reinspection of any repaired precast element. The system shall have provisions for a method of reporting nonconforming precast elements to the Engineer; and
- G. Forms to be used for Certificates of Compliance, daily production logs, and daily reports.

The Engineer shall have 4 weeks to review the PCQCP submittal after a complete plan has been received. No precasting shall be performed until the PCQCP is approved in writing by the Engineer.

A PCQCP that was previously approved by the Engineer no more than one year prior to the beginning of work on this contract will be acceptable for the entire period of this contract, provided the Engineer determines the PCQCP is for the same type of work that is to be performed on this contract.

An amended PCQCP or addendum shall be submitted to, and approved in writing by the Engineer, for any proposed revisions to the approved PCQCP. An amended PCQCP or addendum will be required for any revisions to the PCQCP, including but not limited to changes in concrete plants or source materials, changes in material testing procedures and testing labs, changes in procedures and equipment, changes in QC personnel, or updated systems for tracking and identifying precast elements. The Engineer shall have 2 weeks to complete the review of the amended PCQCP or addendum, once a complete submittal has been received. Work that is affected by any of the proposed revisions shall not be performed until the amended PCQCP or addendum has been approved.

After final approval of the PCQCP, amended PCQCP, or addendum, the Contractor shall submit 7 copies to the Engineer of each of these approved documents.

It is expressly understood that the Engineer's approval of the Contractor's PCQCP shall not relieve the Contractor of any responsibility under the contract for the successful completion of the work in conformance with the requirements of the plans and specifications. The Engineer's approval shall neither constitute a waiver of any of the requirements of the plans and specifications nor relieve the Contractor of any obligation thereunder; and defective work, materials, and equipment may be rejected notwithstanding approval of the PCQCP.

## **REPORTING**

The QC Inspector shall provide reports to the QCM on a daily basis for each day that precasting operations are performed.

A daily production log for precasting shall be kept by the QCM for each day that precasting operations, including setting forms, placing reinforcement, setting prestressing steel, casting, curing, post tensioning, and form release, are performed. The log shall include the facility location, and shall include a specific description of casting or related operations, any problems or deficiencies discovered, any testing or repair work performed, and the names of all QC personnel and the specific QC inspections they performed that day. The daily report from each QC Inspector shall

also be included in the log. This daily log shall be available for viewing by the Engineer, at the precasting facility.

All reports regarding material tests and any required survey checks shall be signed by the person who performed the test or check, and then submitted directly to the QCM for review and signature prior to submittal to the Engineer. Corresponding names shall be clearly printed or type-written next to all signatures.

The Engineer shall be notified immediately in writing when any precasting problems or deficiencies are discovered and of the proposed repair or process changes required to correct them. The Engineer shall have 4 weeks to review these procedures. No remedial work shall begin until the Engineer approves these procedures in writing.

The following items shall be included in a precast report that is to be submitted to the Engineer following the completion of any precast element:

- A. Reports of all material tests and any required survey checks;
- B. Documentation that the Contractor has evaluated all tests and corrected all rejected deficiencies, and all repairs have been re-examined with the required tests and found acceptable; and
- C. A daily production log.

At the completion of any precast element, and if the QCM determines that element is in conformance with these Special Provisions, the QCM shall sign and furnish to the Engineer, a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. This Certificate of Compliance shall be submitted with the precast report. The certificate shall state that all of the materials and workmanship incorporated in the work, and all required tests and inspections of this work, have been performed in conformance with the details shown on the plans and the provisions of the Standard Specifications and these Special Provisions.

## **PAYMENT**

In the event the Engineer fails to complete the review of 1) a PCQCP, 2) an amended PCQCP or addendum, or 3) a proposed repair or process change, within the time allowed, and if, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in completing the review, the Contractor will be compensated for any resulting loss, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

All required repair work or process changes required to correct precasting operation deficiencies, whether discovered by the QCM, QC Inspector, or by the Engineer, and any associated delays or expenses to the Contractor caused by performing these repairs, shall be at the Contractor's expense.

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

## **8-2.04 SELF-CONSOLIDATING CONCRETE FOR PRECAST ELEMENTS**

### **GENERAL**

#### **Summary**

This section includes specifications for self-consolidating concrete (SCC). You may use SCC for precast concrete.

### **DEFINITIONS**

#### **Self-consolidating Concrete:**

Flowing concrete capable of spreading to a level state without segregation and without the use of internal or external vibrators.

### **SUBMITTALS**

Submit the following for approval before placing SCC:

1. SCC mix design and placement procedures
2. Trial batch test report

### **QUALITY CONTROL and ASSURANCE**

#### **GENERAL**

Prepare SCC specimens for compressive strength testing under California Test 540 except fabricate test specimens as follows:

1. Place test molds on a firm, flat surface to prevent distortion of the bottom surface. When more than 1 specimen is to be made from the same batch, make all specimens simultaneously. Fill the mold in 1 lift, pouring the concrete from a larger container. Pat sides of the mold lightly by hand, or jig by rocking the mold from side to side.
2. Strike off the surface of the concrete even with the top edge of the mold. Wipe the sides of the mold free of excess concrete and press the lid on.

#### **Prequalification of SCC Mix Design**

Prequalify the SCC mix design with a trial batch using the same materials, mix proportions, mixing equipment, procedures, and size of batch to be used in the production of SCC. The trial batch test report for the SCC mix design must include the following tests and results:

### SCC Mix Design Requirements

Property	Requirement	Test Method
Slump Flow	At least 20 inches	ASTM C 1611
Flow Rate - T <sub>50</sub>	Between 2 and 7 seconds	ASTM C 1611
Visual Stability Index	1.0 or less	ASTM C 1611
J-Ring Flow	The difference between J-Ring flow and the slump flow must not exceed 2 inches	ASTM C 1621
Column Segregation	Static segregation must not exceed 15%	ASTM C 1610
Bleeding	Bleeding capacity must not exceed 2.5%	ASTM C 232
Compressive Strength	The average of 5 test cylinders must be at least 580 psi greater than the specified strength. <sup>a</sup>	California Test 521
Minimum Compressive Strength	The minimum for an individual test cylinder must not be less than the specified strength. <sup>a</sup>	California Test 521

Note:

<sup>a</sup> At the maximum age specified or allowed

### FIELD QUALITY CONTROL

Determine the fine aggregate moisture content for each batch of SCC.

Determine slump flow and visual stability index (VSI) at the beginning of SCC placement and whenever a set of concrete cylinders is prepared. The slump flow must not vary by more than 3 inches from the mix design slump flow, and the minimum allowable slump flow is 20 inches. VSI must be 1.0 or less. If the Engineer rejects SCC for slump flow and VSI, make corrective changes in the SCC mix design or placement procedures before placing additional SCC. Submit revised SCC mix design or placement procedures for approval.

### MATERIALS

SCC must comply with Section 90, "Portland Cement Concrete," of the Standard Specifications except Section 90-3, "Aggregate Gradings," of the Standard Specifications does not apply.

### PAYMENT

The County measures and pays for SCC under the specifications requiring or allowing its use.

## SECTION 8-3. WELDING

### 8-3.01 WELDING

#### GENERAL

Unless otherwise specified, Section 8-3, "Welding," shall apply to any welding that is specified to conform to an AWS welding code.

Requirements of the AWS welding codes shall apply unless otherwise specified in the Standard Specifications, on the plans, or in these Special Provisions. Wherever the abbreviation AWS is used, it shall be equivalent to the abbreviations ANSI/AWS or AASHTO/AWS.

Wherever reference is made to the following AWS welding codes in the Standard Specifications, on the plans, or in these Special Provisions, the year of adoption for these codes shall be as listed:

AWS Code	Year of Adoption
D1.1	2008
D1.3	2008
D1.4	2005
D1.5	2008
D1.6	2007
D1.8	2009

Flux cored welding electrodes conforming to the requirements of AWS A5.20 E6XT-4 or E7XT-4 shall not be used to perform welding for this project.

Unless otherwise specified, Clause 6.1.3 of AWS D1.1, paragraph 1 of Section 7.1.2 of AWS D1.4, and Clause 6.1.1.2 of AWS D1.5, are replaced with the following:

- The QC Inspector shall be the duly designated person who acts for and on behalf of the Contractor for inspection, testing, and quality related matters for all welding.
- Quality Assurance (QA) is the prerogative of the Engineer. The QA Inspector is the duly designated person who acts for and on behalf of the Engineer.
- The QC Inspector shall be responsible for quality control acceptance or rejection of materials and workmanship.
- When the term "Inspector" is used without further qualification, it shall refer to the QC Inspector.

Inspection and approval of all joint preparations, assembly practices, joint fit-ups, welding techniques, and the performance of each welder, welding operator, and tack welder shall be documented by the QC Inspector on a daily basis for each day welding is performed. For each inspection, including fit-up, Welding Procedure Specification (WPS) verification, and final weld inspection, the QC Inspector shall confirm and document compliance with the requirements of the AWS or other specified code criteria and the requirements of these Special Provisions on all welded joints before welding, during welding, and after the completion of each weld.

The Engineer shall have the authority to verify the qualifications or certifications of any welder, QC Inspector, or NDT personnel to specified levels by retests or other means approved by the Engineer.

When joint weld details that are not prequalified to the details of Clause 3 of AWS D1.1 or to the details of Figure 2.4 or 2.5 of AWS D1.5 are proposed for use in the work, the joint details, their intended locations, and the proposed welding parameters and essential variables, shall be approved by the Engineer. The Contractor shall allow the Engineer 15 days to complete the review of the proposed joint detail locations.

In addition to the requirements of AWS D1.1, welding procedure qualifications for work welded in conformance with this code shall conform to the following:

When a nonstandard weld joint is to be made using a combination of WPSs, a single test may be conducted combining the WPSs to be used in production, provided the essential variables, including weld bead placement, of each process are limited to those established in Table 4.5.

Upon approval of the proposed joint detail locations and qualification of the proposed joint details, welders and welding operators using these details shall perform a qualification test plate using the WPS variables and the joint detail to be used in production. The test plate shall have the maximum thickness to be used in production and a minimum length of 18 inches. The test plate shall be mechanically and radiographically tested. Mechanical and radiographic testing and acceptance criteria shall be as specified in the applicable AWS codes.

The Engineer will witness all qualification tests for WPSs that were not previously approved by the Department.

In addition to the requirements specified in the applicable code, the period of effectiveness for a welder's or welding operator's qualification shall be a maximum of 3 years for the same weld process, welding position, and weld type. If welding will be performed without gas shielding, then qualification shall also be without gas shielding. Excluding welding of fracture critical members, a valid qualification at the beginning of work on a contract will be acceptable for the entire period of the contract, as long as the welder's or welding operator's work remains satisfactory.

The Contractor shall notify the Engineer 7 days prior to performing any procedure qualification tests. Witnessing of qualification tests by the Engineer shall not constitute approval of the intended joint locations, welding parameters, or essential variables. The Contractor shall notify the Engineer using the "Standard TL-38 Inspection Form" located at:

<http://www.dot.ca.gov/hq/esc/Translab/OSM/smbforms.htm>

Clause 6.14.6, "Personnel Qualification," of AWS D1.1, Section 7.8, "Personnel Qualification," of AWS D1.4, and Clause 6.1.3.4, "Personnel Qualification," of AWS D1.5 are replaced with the following:

Personnel performing nondestructive testing (NDT) shall be qualified and certified in conformance with the requirements of the American Society for Nondestructive

Testing (ASNT) Recommended Practice No. SNT-TC-1A and the Written Practice of the NDT firm. The Written Practice of the NDT firm shall meet or exceed the guidelines of the ASNT Recommended Practice No. SNT-TC-1A. Individuals who perform NDT, review the results, and prepare the written reports shall be either:

- A. Certified NDT Level II technicians, or;
- B. Level III technicians who hold a current ASNT Level III certificate in that discipline and are authorized and certified to perform the work of Level II technicians.

Clause 6.6.5, "Nonspecified NDT Other than Visual," of AWS D1.1, Section 7.6.5 of AWS D1.4 and Clause 6.6.5 of AWS D1.5 shall not apply.

For any welding, the Engineer may direct the Contractor to perform NDT that is in addition to the visual inspection or NDT specified in the AWS or other specified welding codes, in the Standard Specifications, or in these Special Provisions. Except as provided for in these Special Provisions, additional NDT required by the Engineer, and associated repair work, will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications. Prior to release of welded material by the Engineer, if testing by NDT methods other than those originally specified discloses an attempt to defraud or reveals a gross nonconformance, all costs associated with the repair of the deficient area, including NDT of the weld and of the repair, and any delays caused by the repair, shall be at the Contractor's expense. A gross nonconformance is defined as the sum of planar type rejectable indications in more than 20 percent of the tested length.

When less than 100 percent of NDT is specified for any weld, it is expected that the entire length of weld meet the specified acceptance-rejection criteria. Should any welding deficiencies be discovered by additional NDT directed or performed by the Engineer that utilizes the same NDT method as that originally specified, all costs associated with the repair of the deficient area, including NDT of the weld and of the weld repair, and any delays caused by the repair, shall be at the Contractor's expense.

Repair work to correct welding deficiencies discovered by visual inspection directed or performed by the Engineer, and any associated delays or expenses caused to the Contractor by performing these repairs, shall be at the Contractor's expense.

### **Welding Quality Control**

Welding quality control shall conform to the requirements in the AWS or other specified welding codes, the Standard Specifications, and these Special Provisions.

Unless otherwise specified, welding quality control shall apply to work welded in conformance with the provisions in the following:

- A. Section 49, "Piling," Section 52, "Reinforcement," Section 55, "Steel Structures," and Section 75-1.035, "Bridge Joint Restrainer Units," of the Standard Specifications
- B. "Structural Steel for Building Work" of these Special Provisions

Unless otherwise specified, Clauses 6.1.4.1 and 6.1.4.3 of AWS D1.1, paragraph 2 of Section 7.1.2 of AWS D1.4, and Clauses 6.1.3.2 through 6.1.3.3 of AWS D1.5 are replaced with the following:

- The QC Inspector shall be currently certified as an AWS Certified Welding Inspector (CWI) in conformance with the requirements in AWS QC1, "Standard for AWS Certification of Welding Inspectors."
- The QC Inspector may be assisted by an Assistant QC Inspector provided that this individual is currently certified as an AWS Certified Associate Welding Inspector (CAWI) in conformance with the requirements in AWS QC1, "Standard for AWS Certification of Welding Inspectors." The Assistant QC Inspector may perform inspection under the direct supervision of the QC Inspector provided the assistant is always within visible and audible range of the QC Inspector. The QC Inspector shall be responsible for signing all reports and for determining if welded materials conform to workmanship and acceptance criteria. The ratio of QC Assistants to QC Inspectors shall not exceed 5 to 1.

The Contractor shall designate in writing a welding Quality Control Manager (QCM). The QCM shall be responsible directly to the Contractor for the quality of welding, including materials and workmanship, performed by the Contractor and subcontractors.

The QCM shall be the sole individual responsible to the Contractor for submitting, receiving, reviewing, and approving all correspondence, required submittals, and reports to and from the Engineer. The QCM shall be a registered professional engineer or shall be currently certified as a CWI.

Unless the QCM is hired by a subcontractor providing only QC services, the QCM shall not be employed or compensated by any subcontractor, or by other persons or entities hired by subcontractors, who will provide other services or materials for the project. The QCM may be an employee of the Contractor.

The QCM shall sign and furnish to the Engineer, a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for each item of work for which welding was performed. The certificate shall state that all of the materials and workmanship incorporated in the work, and all required tests and inspections of this work, have been performed in conformance with the details shown on the plans, the Standard Specifications, and these Special Provisions.

Welding inspection personnel or NDT firms to be used in the work shall not be employed or compensated by any subcontractor, or by other persons or entities hired by subcontractors, who will provide other services or materials for the project, except for the following conditions:

- A. The work is welded in conformance with AWS D1.5 and is performed at a permanent fabrication or manufacturing facility that is certified under the AISC Quality Certification Program, Category CBR, Major Steel Bridges and Fracture Critical endorsement F, when applicable.
- B. Structural steel for building work is welded in conformance with AWS D1.1 and is performed at a permanent fabrication or manufacturing facility that is certified

under the AISC Quality Certification Program, Category STD, Standard for Steel Building Structures.

For welding performed at such facilities, the inspection personnel or NDT firms may be employed or compensated by the facility performing the welding provided the facility maintains a QC program that is independent from production.

Unless otherwise specified, an approved independent third party will witness the qualification tests for welders or welding operators. The independent third party shall be a current CWI and shall not be an employee of the Contractor performing the welding. The Contractor shall allow the Engineer 15 days to review the qualifications and copy of the current certification of the independent third party.

Prior to submitting the Welding Quality Control Plan (WQCP) required herein, a prewelding meeting between the Engineer, the Contractor's QCM, and a representative from each entity performing welding or inspection for this project, shall be held to discuss the requirements for the WQCP.

Information regarding the contents, format, and organization of a WQCP, is available at the Transportation Laboratory and at:

<http://www.dot.ca.gov/hq/esc/Translab/OSM/smbresources.htm>

The Contractor shall submit to the Engineer, in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications, 2 copies of a separate WQCP for each subcontractor or supplier for each item of work for which welding is to be performed.

The Contractor shall allow the Engineer 15 days to review the WQCP submittal after a complete plan has been received. No welding shall be performed until the WQCP is approved in writing by the Engineer.

An amended WQCP or any addendum to the approved WQCP shall be submitted to, and approved in writing by the Engineer, for proposed revisions to the approved WQCP. An amended WQCP or addendum will be required for revisions to the WQCP, including but not limited to a revised WPS; additional welders; changes in NDT firms, QC, or NDT personnel or procedures; or updated systems for tracking and identifying welds. The Engineer shall have 7 days to complete the review of the amended WQCP or addendum. Work affected by the proposed revisions shall not be performed until the amended WQCP or addendum has been approved.

After final approval of the WQCP, amended WQCP, or addendum, the Contractor shall submit 7 copies to the Engineer of the approved documents. A copy of the Engineer approved document shall be available at each location where welding is to be performed.

All welding will require inspection by the Engineer. The Contractor shall request inspection at least 3 business days prior to the beginning of welding for locations within California and 5 business days for locations outside of California. The Contractor shall request inspection at:

<http://www.dot.ca.gov/hq/esc/Translab/OSM/smbforms.htm>

Continuous inspection shall be provided when any welding is being performed. Continuous inspection, as a minimum, shall include having a QC Inspector within such close proximity of all welders or welding operators so that inspections by the QC Inspector of each welding operation at each welding location does not lapse for a period exceeding 30 minutes.

A daily production log for welding shall be kept for each day that welding is performed. The log shall clearly indicate the locations of all welding. The log shall include the welders' names, amount of welding performed, any problems or deficiencies discovered, and any testing or repair work performed, at each location. The daily report from each QC Inspector shall also be included in the log.

The following items shall be included in a Welding Report that is to be submitted to the Engineer within 15 days following the performance of any welding:

- A. A daily production log.
- B. Reports of all visual weld inspections and NDT.
- C. Radiographs and radiographic reports, and other required NDT reports.
- D. A summary of welding and NDT activities that occurred during the reporting period.
- E. Reports of each application of heat straightening.
- F. A summarized log listing the rejected lengths of weld by welder, position, process, joint configuration, and piece number.
- G. Documentation that the Contractor has evaluated all radiographs and other nondestructive tests and corrected all rejectable deficiencies, and that all repaired welds have been reexamined using the required NDT and found acceptable.

The following information shall be clearly written on the outside of radiographic envelopes: name of the QCM, name of the nondestructive testing firm, name of the radiographer, date, contract number, complete part description, and all included weld numbers, report numbers, and station markers or views, as detailed in the WQCP. In addition, all interleaves shall have clearly written on them the part description and all included weld numbers and station markers or views, as detailed in the WQCP. A maximum of 2 pieces of film shall be used for each interleave.

Reports of all visual inspections and NDT shall be signed by the inspector or technician and submitted daily to the QCM for review and signature prior to submittal to the Engineer. Corresponding names shall be clearly printed or typewritten next to all signatures. Reports of all NDT, whether specified, additional, or informational, performed by the Contractor shall be submitted to the Engineer.

The Engineer will review the Welding Report to determine if the Contractor is in conformance with the WQCP. Except for field welded steel pipe piling, the Engineer shall be allowed 15 days to review the report and respond in writing after the complete Welding Report has been received. Prior to receiving notification from the Engineer of the Contractor's conformance with the WQCP, the Contractor may encase in concrete or cover welds for which the Welding Report has been submitted. However, should the Contractor elect to encase or cover those welds prior to receiving notification from the Engineer, it is expressly understood that the Contractor shall not be relieved of the responsibility for incorporating material in the

work that conforms to the requirements of the plans and specifications. Material not conforming to these requirements will be subject to rejection.

For field welded steel pipe piling, including bar reinforcement in the piling, the Contractor shall allow the Engineer 2 business days to review the Welding Report and respond in writing after the required items have been received. No field welded steel pipe piling shall be installed, and no reinforcement in the piling shall be encased in concrete until the Engineer has approved the above requirements in writing.

In addition to the requirements in AWS D1.1 and AWS D1.5, third-time excavations of welds or base metal to repair unacceptable discontinuities, regardless of NDT method, and all repairs of cracks require prior approval of the Engineer.

The Engineer shall be notified immediately in writing when welding problems, deficiencies, base metal repairs, or any other type of repairs not submitted in the WQCP are discovered, and also of the proposed repair procedures to correct them. For requests to perform third-time excavations or repairs of cracks, the Contractor shall include an engineering evaluation of the proposed repair. The engineering evaluation, at a minimum, shall address the following:

- A. What is causing each defect?
- B. Why the repair will not degrade the material properties?
- C. What steps are being taken to prevent similar defects from happening again?

The Contractor shall allow the Engineer 7 days to review these procedures. No remedial work shall begin until the repair procedures are approved in writing by the Engineer.

Clause 6.5.4 of AWS D1.5 is replaced with the following:

The QC Inspector shall inspect and approve each joint preparation, assembly practice, welding technique, joint fit-up, and the performance of each welder, welding operator, and tack welder to make certain that the applicable requirements of this code and the approved Welding Procedure Specification (WPS) are met. The QC Inspector shall examine the work to make certain that it meets the requirements of Clauses 3 and 6.26. The size and contour of all welds shall be measured using suitable gages. Visual inspection for cracks in welds and base metal, and for other discontinuities shall be aided by strong light, magnifiers, or such other devices as may be helpful. Acceptance criteria different from those specified in this code may be used when approved by the Engineer.

In addition to the requirements of AWS D1.5, Clause 5.12 or 5.13, welding procedures qualification for work welded in conformance with that code shall conform to the following requirements:

- A. Unless considered prequalified, fillet welds shall be qualified in each position. The fillet weld soundness test shall be conducted using the essential variables of the WPS as established by the Procedure Qualification Record (PQR).
- B. For qualification of joints that do not conform to Figures 2.4 and 2.5 of AWS D1.5, a minimum of 2 WPS qualification tests are required. The tests shall be conducted using both Figure 5.1 and Figure 5.3. The test conforming to Figure

5.1 shall be conducted in conformance with AWS D1.5, Clause 5.12 or 5.13. The test conforming to Figure 5.3 shall be conducted using the welding electrical parameters that were established for the test conducted conforming to Figure 5.1. The ranges of welding electrical parameters established during welding per Figure 5.1 in conformance with AWS D1.5, Clause 5.12, shall be further restricted according to the limits in Table 5.3 during welding per Figure 5.3.

- C. Multiple zones within a weld joint may be qualified. The travel speed, amperage, and voltage values that are used for tests conducted per AWS D1.5 Clause 5.13 shall be consistent for each pass in a weld joint, and shall in no case vary by more than  $\pm 10$  percent for travel speed,  $\pm 10$  percent for amperage, and  $\pm 7$  percent for voltage as measured from a predetermined target value or average within each weld pass or zone. The travel speed shall in no case vary by more than  $\pm 15$  percent when using submerged arc welding.
- D. For a WPS qualified in conformance with AWS D1.5 Clause 5.13, the values to be used for calculating ranges for current and voltage shall be based on the average of all weld passes made in the test. Heat input shall be calculated using the average of current and voltage of all weld passes made in the test for a WPS qualified in conformance with Clause 5.12 or 5.13.
- E. Macroetch tests are required for WPS qualification tests, and acceptance shall be per AWS D1.5 Clause 5.19.3.
- F. When a nonstandard weld joint is to be made using a combination of WPSs, a test conforming to Figure 5.3 may be conducted combining the WPSs to be used in production, provided the essential variables, including weld bead placement, of each process are limited to those established in Table 5.3.
- G. Prior to preparing mechanical test specimens, the PQR welds shall be inspected by visual and radiographic tests. Backing bar shall be 3 inches in width and shall remain in place during NDT testing. Results of the visual and radiographic tests shall comply with AWS D1.5 Clause 6.26.2, excluding Clause 6.26.2.2. Test plates that do not comply with both tests shall not be used.

### **Welding for Overhead Sign and Pole Structures**

The Contractor shall meet the following requirements for any work welded in conformance with the provisions in Section 56-1, "Overhead Sign Structures," or Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications.

Welding inspection personnel or NDT firms to be used in the work shall not be employed or compensated by any subcontractor or by other persons or entities hired by subcontractors who will provide other services or materials for the project except for when the welding is performed at a permanent fabrication or manufacturing facility that is certified under the AISC Quality Certification Program. The AISC Certification category for overhead sign structures shall be Simple Steel Bridge Structures (SBR), and the AISC Certification category for pole structures shall be Simple Steel Bridge Structures (SBR) or Standard for Steel Building Structures (STD).

### **Welding Qualification Audit**

Contractors or subcontractors performing welding operations for overhead sign and pole structures shall have successfully completed the Department's "Manufacturing

Qualification Audit for Overhead Sign and Pole Structures." Copies of the audit form and procedures for requesting and completing the audit are available at:

<http://www.dot.ca.gov/hq/esc/Translab/OSM/smbresources.htm>

An audit that was approved by the Engineer no more than 3 years prior to the award of the contract will be acceptable for the entire period of this contract provided the Engineer determines the audit was for the same type of work that is to be performed on this contract.

A list of facilities that have successfully completed the audit and are authorized to provide material for this contract is available at:

[http://www.dot.ca.gov/hq/esc/Translab/OSM/smdocuments/Internet\\_auditlisting.pdf](http://www.dot.ca.gov/hq/esc/Translab/OSM/smdocuments/Internet_auditlisting.pdf)

Successful completion of an audit shall not relieve the Contractor of the responsibility for furnishing materials or producing finished work of the quality specified in these Special Provisions and as shown on the plans.

### **Welding Report**

For work welded in conformance with the provisions in Section 56-1, "Overhead Sign Structures," or Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications, a Welding Report shall be submitted in conformance with the provisions in "Welding Quality Control" of these Special Provisions.

### **STEEL PIPE PILING QUALIFICATION AUDIT**

The Contractor shall submit documentation that one of the following steel pipe piling qualification audits has been successfully completed before welding operations are performed, other than field welding, for steel pipe piling:

- A. "Class R Steel Pipe Piling Qualification Audit"
- B. "Class N Steel Pipe Piling Qualification Audit"

An audit shall have been completed for each pipe pile diameter, thickness, grade of steel, and class of piling to be supplied for this project. The procedures for requesting and completing the audit are available at:

<http://www.dot.ca.gov/hq/esc/Translab/OSM/smbresources.htm>

An audit that was approved by the Department no more than 3 years prior to the award of the contract will be acceptable for the entire period of this contract provided the Engineer determines the audit was for the same type of work that is to be performed on this contract.

A list of facilities that have successfully completed the audit and are authorized to provide material for this contract is available at:

[http://www.dot.ca.gov/hq/esc/Translab/OSM/smdocuments/Internet\\_auditlisting.pdf](http://www.dot.ca.gov/hq/esc/Translab/OSM/smdocuments/Internet_auditlisting.pdf)

Successful completion of an audit shall not relieve the Contractor of the responsibility for furnishing materials or producing finished work of the quality specified in these Special Provisions and as shown on the plans.

#### **PAYMENT**

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

## **SECTION 9. DESCRIPTION OF BRIDGE WORK**

### **9-1 WILLOW ROAD EXTENSION**

Demolition, clearing / grubbing / removing tree stems and roots and relocation / reconstruction fence shall be performed, excavation embankment and grading shall be performed, aggregate base shall be placed, a hot mix asphalt concrete pavement and dike, hot mix asphalt concrete shall be placed and constructed, retaining walls, box girder bridge structure, pile foundations, concrete slab bridge, and drainage pipe systems shall be constructed, survey monuments shall be furnished and installed, pavement delineation and roadside signs shall be furnished and installed, gas services shall be furnished and installed, lighting systems shall be furnished and installed, traffic control, erosion control and property restoration shall be performed, and other such items or detail work not mentioned herein that is required by the Plans, the Standard Specifications and/or these Special Provisions shall be performed, constructed, furnished and/or installed.

### **9-2 NCSD WATERLINE EXTENSION PHASE II**

The Contractor shall furnish, in accordance with the Contract Documents, all materials, labor and equipment, necessary to install a new water transmission mainline for the WILLOW ROAD EXTENSION project, together with all appurtenant work and facilities, as shown on the Drawings and as specified herein. The project generally consists of construction of a complete and operational municipal potable water transmission/distribution pipeline including: approximately 3,115 linear feet of new 12-inch diameter PVC water main; various water main appurtenances such as fire hydrants, air release/vacuum release assemblies, blow-off drains; water service connections; and, all auxiliary facilities in connection with the new pipeline.

**SECTION 10. CONSTRUCTION DETAILS**

**SECTION 10-1. GENERAL**

**10-1.00 CONSTRUCTION PROJECT INFORMATION SIGNS**

Before any major physical construction work readily visible to highway users is started on this contract, the Contractor shall furnish and erect 2 Type 1 Construction Project Information signs at the locations designated by the Engineer.

The signs and overlays shall be of a type and material consistent with the estimated time of completion of the project and shall conform to the details shown on the plans.

The sign letters, the border and the Department's construction logos shall conform to the colors (non-reflective) and details shown on the plans, and shall be on a white background (non-reflective). The colors blue and orange shall conform to PR Color Number 3 and Number 6, respectively, as specified in the Federal Highway Administration's Color Tolerance Chart.

The sign message to be used for fund types shall consist of the following, in the order shown:

FEDERAL HIGHWAY TRUST FUNDS
STATE HIGHWAY FUNDS
SAN LUIS OBISPO COUNTY TRANSPORTATION FUNDS

Type of Project:	Work Descriptions:
Highway Construction	Construct Expressway, Freeway, Shoulders, Structure, HOV Lane, Ramp, Interchange, Left Turn Lane, Truck Escape Ramp, or Weigh Station; Widen Freeway, Roadway or Shoulders; Realign Roadways.

The sign message to be used for type of work shall consist of the following:

HIGHWAY CONSTRUCTION  
BRIDGE CONSTRUCTION

The sign message to be used for the Year of Completion of Project Construction will be furnished by the Engineer. The Contractor shall furnish and install the "Year" sign overlay within 10 working days of notification of the year date to be used.

The letter sizes to be used shall be as shown on the plans. The information shown on the signs shall be limited to that shown on the plans.

The signs shall be kept clean and in good repair by the Contractor.

Upon completion of the work, the signs shall be removed and disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13 of the Standard Specifications.

Full compensation for furnishing, erecting, maintaining, and removing and disposing of the construction project information signs shall be considered as included in the contract lump sum price paid for construction area signs and no additional compensation will be allowed therefor.

#### **10-1.01 ORDER OF WORK**

Order of work shall conform to the provisions in Section 5-1.05, "Order of Work," of the Standard Specifications and these Special Provisions.

After having received written notice to proceed, Contractor shall install the required construction area signs as the first item of work in accordance with these Special Provisions. No other work will be allowed until the placement of the construction area signs has been completed.

Fences (Type BW and Chain Link) and Gates shall be installed as a first item of work in accordance with these Special Provisions.

Temporary railing (Type K) and temporary crash cushions shall be secured in place prior to commencing work for which the temporary railing and crash cushions are required and shown on the project plans.

Removal of base and surfacing for existing Willow Road shall be done after traffic is shifted to new Willow Road.

The Contractor's attention is directed "Delivery and Setup of Construction Jobsite Office Trailer" of these Special Provisions.

Prior to the start of construction, the Contractors shall verify the location and depth of all existing utilities and underground facilities within the project limits. The Contractor shall notify the Engineer of any discrepancies between the conditions in the field and the plans.

Work in Nipomo Creek shall be performed during periods when the channel is dry or flows are absent or minimal, generally May through October.

The Contractor shall attend the pre-construction Archaeological Workshop meeting prior to start of construction, as required in the Environmental Impact Report, mitigation measure G-3, "Pre-Construction Archaeological Workshop" and comply with the conditions set forth at this meeting.

Attention is directed to "Slope Paving" of these Special Provisions regarding constructing a 4' x 6' test panel prior to placing the permanent slope paving.

Attention is directed to "Environmentally Sensitive Area" and "Temporary Fence (Type ESA)" of these Special Provisions. Prior to beginning work, the boundaries of the Environmentally Sensitive Areas (ESA) shall be clearly delineated in the field. The boundaries shall be delineated by the installation of temporary fence (Type ESA).

Attention is directed to "Maintaining Traffic" and "Temporary Pavement Delineation" of these Special Provisions and to the stage construction sheets of the plans.

Attention is directed to "Progress Schedule (Critical Path Method)" of these Special Provisions regarding the submittal of a general time-scaled logic diagram within 10 days after approval of the contract. The diagram shall be submitted prior to performing any work that may be affected by any proposed deviations to the construction staging of the project.

The work shall be performed in conformance with the stages of construction shown on the plans. Nonconflicting work in subsequent stages may proceed concurrently with work in preceding stages, provided satisfactory progress is maintained in the preceding stages of construction.

In each stage, after completion of the preceding stage, the first order of work shall be the removal of existing pavement delineation as directed by the Engineer. Pavement delineation removal shall be coordinated with new delineation so that lane lines are provided at all times on traveled ways open to public traffic.

Before obliterating any pavement delineation (traffic stripes, pavement markings, and pavement markers) that is to be replaced on the same alignment and location, as determined by the Engineer, the pavement delineation shall be referenced by the Contractor, with a sufficient number of control points to reestablish the alignment and location of the new pavement delineation. The references shall include the limits or changes in striping pattern, including one- and 2-way barrier lines, limit lines, crosswalks and other pavement markings. Full compensation for referencing existing pavement delineation shall be considered as included in the contract prices paid for new pavement delineation and no additional compensation will be allowed therefor.

Construction of the new structural section adjacent to the existing traveled way shall be performed in successive and, once all operations are under way, concurrent operations of excavating, preparing subgrade, placing base materials and paving. Excavation within 8 feet of the existing traveled way shall not precede the paving operation by more than 3 working days unless:

- A. Approved in writing by the Engineer and;
- B. Material is placed and compacted against the vertical cuts within 8 feet of the existing traveled way. During excavation operations, native material may be used for this purpose, however, once the placing of the structural section commences, structural material shall be used. The material shall be placed to the level of the elevation of the top of existing pavement and tapered at a slope of 4:1 (horizontal:vertical) or flatter to the bottom of the excavation. Full compensation for placing the material on a 4:1 (horizontal:vertical) slope, regardless of the number of times it is required, and subsequent removing or reshaping of the material to the lines and grades shown on the plans shall be considered as included in the contract price paid for the materials involved and no additional

compensation will be allowed therefor. No payment will be made for material placed in excess of that required for the structural section.

At the end of each working day if a difference in excess of .15 foot exists between the elevation of the existing pavement and the elevation of excavations within 8 feet of the traveled way, material shall be placed and compacted against the vertical cuts adjacent to the traveled way. During excavation operations, native material may be used for this purpose; however, once placing of the structural section commences, structural material shall be used. The material shall be placed to the level of the elevation of the top of existing pavement and tapered at a slope of 4:1 (horizontal:vertical) or flatter to the bottom of the excavation. Treated base shall not be used for the taper. Full compensation for placing the material on a 4:1 slope, regardless of the number of times the material is required, and subsequent removing or reshaping of the material to the lines and grades shown on the plans shall be considered as included in the contract price paid for the materials involved and no additional compensation will be allowed therefor. No payment will be made for material placed in excess of that required for the structural section.

At those locations exposed to public traffic where guard railings or barriers are to be constructed, reconstructed, or removed and replaced, the Contractor shall schedule operations so that at the end of each working day there shall be no post holes open nor shall there be any railing or barrier posts installed without the blocks and rail elements assembled and mounted thereon.

Permanent Erosion Control (Hydroseed) shall be placed on the areas to receive erosion control type D as soon as the finish grading has been completed for that area or prior to the specified rainy season when practical.

Other permanent erosion control measures such as rock slope protection and storm drain energy dissipaters shall be installed as soon as practical after the grading has been completed in those areas.

The Biofiltration Strips shown on the plans shall be installed as soon as practical, and shall be maintained during construction.

Full compensation for conforming to the requirements outlined in "Order of Work" 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 MITIGATION MEASURES**

The Contractor shall review the conditions set forth in the "Environmental Impact Report" (EIR) provided for this project and shall comply with all conditions and/or mitigation measures as they pertain to construction. A copy of this report is available at the County of San Luis Obispo's website at the following address,

<http://www.slocounty.ca.gov/Page11623.aspx>

The Contractors attention is directed to the following conditions and mitigation measures of the Environmental Impact Report (EIR) specifically called out and are required to be identified in these Special Provisions. It shall be the Contractors

responsibility to review the “Environmental Impact Report” and comply with all of the requirements and familiarize themselves with the mitigation measures outlined.

Below is a list of mitigation measures that are required, followed by the complete mitigation measure included in the Final SEIR, April 2006.

- C-1, Construction Hours
- C-2, Caltrans Sound Control Requirements
- C-3, Construction Noise Restrictions
- C-4, Portable Equipment
- C-5, Staging Areas
- C-6, Internal Combustion Engine Mufflers
- D-1, APCD Asphalt Paving Regulations
- D-2, Pre-Construction Asbestos Detection Program
- D-3, Procedure for Handling Unanticipated Discoveries of Asbestos
- D-4, ARB Certified Equipment
- D-5, Installation of Emission Reduction Devices
- D-6, Construction Activity Management Plan
- D-7, Construction Truck Trips
- D-8, Construction Work-Day
- D-10, PM<sub>10</sub> and Dust Emissions Reduction
- D-11, Well -Tuned, Efficient Equipment
- D-12, Alternative-Fuel-Powered Equipment
- D-13, ARB-Certified Fuel
- D-14, Equipment Shut Off
- D-15, Construction Timing
- D-16, Ridesharing
- D-17, Portable Equipment
- F-1, Construction Fencing
- F-4, Vegetation Removal Restriction/Nesting Birds
- F-6, Avoidance of Work During the Rainy Season
- F-7, Sensitive Habitat Buffers
- F-8, Non-Native Vegetation Removal
- F-11, Temporary and Long-Term Lighting Minimization
- F-14, Trash Disposal
- F-19, Construction Equipment Staging
- F-20, Creek Crossing Lighting
- F-23, Speed Limits
- F-24, Pollution Prevention
- F-25, Best Management Practices
- G-4, Procedure for Handling Unanticipated Discoveries
- G-5, Procedure for Handling the Discovery of Human Remains
- J-5, Mitigation of Potentially Collapsible Soil
- K-1, Construction During the Dry Season
- M-1, Soil Contamination
- M-2, Southern California Gas Company Pipeline
- M-3, Conoco-Philips Pipelines
- M-4, Conoco-Philips Pipeline Monitoring
- UTIL-3, DWR Encroachment Permit

**C-1, Construction Hours.** The Contractor shall restrict construction activities to the hours between 7:00 a.m. and 9:00 p.m. on Monday through Friday and 9:00 a.m. to

5:00 p.m. on Saturdays and Sundays. This condition shall be included in the construction plan specifications.

**C-2, Caltrans Sound Control Requirements.** To minimize the construction related noise impacts for existing residences adjacent to the project site, the Contractor shall ensure that the project follows Caltrans Standard Specifications, Section 7-10/I, "Sound Control Requirements." This condition shall be included in the construction plan specifications.

**C-3, Construction Noise Restrictions.**

- A. The Contractor shall provide training for all crew members regarding all requirements to minimize construction related noise impacts. This condition shall be included in the construction plan specifications.
- B. The Contractor shall ensure the construction of temporary barriers where construction activities will be conducted near residential receptors, and where complaints have been received. This condition shall be included in the construction plan specifications.

**C-4, Portable Equipment.** The Contractor shall ensure that portable equipment is located as far as possible from the noise sensitive locations as is feasible. This condition shall be included in the construction plan specifications.

**C-5, Staging Areas.** The Contractor shall ensure that the construction vehicle staging areas and equipment maintenance areas are located as far as possible from sensitive receptor locations. This condition shall be included in the construction plan specifications.

**C-6, Internal Combustion Engine Mufflers.** The Contractor shall ensure that each internal combustion engine used for any purpose on the job or related to the job shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without the muffler. This condition shall be included in the construction plan specifications.

**D-1, APCD Asphalt Paving Regulations.** The Contractor shall adhere to the requirements of APCD rules and regulations on cutback and emulsified asphalt paving materials pursuant to APCD Rule 420. As part of any County Request for Proposal to complete this work, and/or contract specifications, applicable provisions of this Rule shall be incorporated. Prior to work commencing, the County shall contact APCD for verification that construction plans have incorporated appropriate measures.

**D-2, Pre-Construction Asbestos Detection Program.** Prior to the start of any construction activities, the County shall conduct borings in the project area to test for the occurrence of ultramafic or asbestos containing materials. In the event that ultramafic or asbestos containing materials are discovered, the Contractor shall comply with all requirements outlined in the Asbestos ATCM for Construction, Grading, Quarrying and Surface Mining Operations. These requirements may include, but are not limited to preparation of: 1) an Asbestos Dust Mitigation Plan that shall be approved by the APCD before construction begins, and 2) an Asbestos Health and Safety Program in accordance with the California Air Resources Board

regulations. This program shall be prepared and reviewed as part of the final plan check. This condition shall be included in the construction plan specifications.

**D-3, Procedure for Handling Unanticipated Discoveries of Asbestos.** In the event of the discovery of ultramafic or asbestos containing materials during construction, construction operations in the affected area should cease immediately and the Contractor shall comply with all requirements outlined in the Asbestos ATCM for Construction, Grading, Quarrying and Surface Mining Operations. These requirements may include, but are not limited to preparation of: 1) an Asbestos Dust Mitigation Plan that shall be approved by the APCD before construction gets back underway, and 2) an Asbestos Health and Safety Program in accordance with the California Air Resources Board regulations. This program shall be prepared and reviewed as part of the final plan check. This condition shall be included in the construction plan specifications.

**D-4, ARB Certified Equipment.** Maximize to the extent feasible the use of diesel construction equipment meeting the ARB's 1996 or newer certification standard for off-road heavy-duty diesel engines during any construction activities. This condition shall be included in the construction plan specifications.

**D-5, Installation of Emission Reduction Devices.** The Contractor shall install diesel oxidation catalysts (DOC), catalyzed diesel particulate filters (CDPF), or other District-approved emission-reduction retrofit devices prior to construction activities. The ARB has recently verified DOC and CDPF systems for HD diesel vehicles. DOCs have control efficiencies on the order of 25 percent, while CDPFs can achieve diesel PM reductions of 85 percent or better. In general, DOCs are effective at reducing the fine particle component, while CDPFs are effective at reducing both the fine particle and larger black soot components. Manufacturer data indicates that both types of devices can reduce about 90 percent of CO emissions and 50 to 70 percent of ROG emissions, some being a portion of the diesel PM component. Some devices/systems are being developed that have the added benefit of being able to reduce NOx emissions. Determination of the appropriate CBACT control device(s) for the project must be performed in consultation with APCD staff. This condition shall be included in the construction plan specifications.

**D-6, Construction Activity Management Plan.** The contractor will prepare and submit a comprehensive Construction Activity Management Plan to the APCD for review and approval prior to the start of construction. The plans will include but not be limited to the following elements:

- Schedule construction truck trips during non-peak hours to reduce peak hour emissions;
- Limit the length of the construction work-day period, if necessary; and
- Phase construction activities, if appropriate.

This condition shall be included in the construction plan specifications.

**D-7, Construction Truck Trips.** The Contractor shall schedule construction truck trips during non-peak hours to reduce peak hour emissions prior to and during any construction activities. This condition shall be included in the construction plan specifications.

**D-8, Construction Work-Day.** The Contractor shall limit the length of the construction work-day period, as specified in these Special Provisions. This condition shall be included in the construction plan specifications.

**D-10, PM<sub>10</sub> and Dust Emissions Reduction.** Proper implementation of the following measures during construction activities will achieve a significant reduction in PM<sub>10</sub> emissions. All PM<sub>10</sub> mitigation measures required shall be included on grading and building plans. In addition, the contractor must designate a monitor for the dust control program and order increased watering, as necessary, to prevent transport of dust off site. 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 prior to land use clearance for map recordation and land use clearance for finish grading of the structure.

- a. Reduce the amount of the disturbed area where possible.
- b. Use water trucks or sprinkler systems to prevent airborne dust from leaving the site. Increase watering frequency whenever wind speed exceeds 15 mph. Reclaimed (nonpotable) water should be used whenever possible.
- c. Spray all dirt stock-pile areas daily as needed.
- d. Implement permanent dust control measures identified in the approved project revegetation and landscape plans as soon as possible following completion of any soil-disturbing activities.
- e. Sow exposed ground areas that are planned to be reworked at dates more than one month after initial grading with a fast-germinating native grass seed, and water until vegetation is established.
- f. Stabilize all disturbed soil areas not subject to revegetation using approved chemical soil binders, jute netting, or other methods approved in advance by the APCD.
- g. Complete all roadways, driveways, sidewalks, etc., to be paved as soon as possible. In addition, lay building pads as soon as possible after grading unless seeding or soil binders are used.
- h. Construction vehicles shall not exceed a speed of 15 mph on any unpaved surface at the construction site. SLOAPCD CEQA Air Quality Handbook 2003
- i. Cover trucks hauling dirt, sand, soil, or other loose materials or maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114.
- j. Install wheel washers where vehicles enter and exit unpaved roads, or wash off trucks and equipment leaving the site.
- k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Use water sweepers with reclaimed water where feasible.

The Contractor shall adhere to the requirements of APCD CEQA Air Quality Handbook to reduce fugitive dust emissions. The Best Available Control Technologies for construction equipment (CBACT) shall be adhered to during the project construction.

**D-11, Well -Tuned, Efficient Equipment.** Prior approval of any grading permits, the Contractor shall select the construction equipment used on site based on low emission factors and high energy efficiency. The contractor shall also ensure that all construction equipment is maintained in proper tune according to manufacturer's specification prior to and during any construction activities. The County shall ensure that construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.

**D-12, Alternative-Fuel-Powered Equipment.** The Contractor shall utilize electric or alternative-fuel powered equipment in lieu of gasoline and diesel powered engines where feasible during construction activities. This condition shall be included in the construction plan specifications.

**D-13, ARB-Certified Fuel.** The Contractor shall ensure that all off-road and portable diesel powered equipment, including but not limited to bulldozers, graders, cranes, loaders, scrapers, backhoes, generator sets, compressors, auxiliary power units, are powered with ARB-certified motor vehicle diesel fuel (non-taxed version suitable for off-road use) during any construction activities. This condition shall be included in the construction plan specifications.

**D-14, Equipment Shut Off.** Prior to approval of grading permits, the Contractor shall ensure that construction grading plans include a statement that work crews will shut off equipment when not in use. This condition shall be included in the construction plan specifications.

**D-15, Construction Timing.** During construction activities, the Contractor shall manage the time of the construction activities so as not to interfere with peak hour traffic and to minimize obstruction of through traffic lanes adjacent to the site; if necessary, a flag-person shall be retained to maintain safety adjacent to existing roadways. This condition shall be included in the construction plan specifications.

**D-16, Ridesharing.** The Contractor shall support and encourage ridesharing and transit incentives for the construction crew during construction activities. This condition shall be included in the construction plan specifications.

**D-17, Portable Equipment:** Portable equipment, 50 horsepower (hp) or greater, used during construction activities may require California statewide portable equipment registration (issued by the California Air Resources Board) or an APCD permit. The following list is provided as a guide to equipment and operations that may have permitting requirements, but should not be viewed as exclusive. For a more detailed listing, refer to page A-5 in the District's CEQA handbook.

- Power screens, conveyors, diesel engines, and/or crushers;
- Portable generators (50hp or greater);
- IC engines;
- Rock and pavement crushing;
- Tub grinders; and,
- Trommel screens.

**F-1, Construction Fencing.** All construction-related activities shall be confined to the proposed boundaries by installing construction fencing along the boundary prior

to any ground disturbance to prevent any construction activities from encroaching into adjacent areas. All construction staging will occur within the proposed roadway or in existing developed areas as these areas are less likely to contain habitat suitable for sensitive species. Project construction plans shall include this measure in the specifications. All fencing shall remain in good working order for the duration of all construction-related activities. All-weather signs stating "Sensitive Area – Stay Out" shall be posted every 50 feet.

**F-4, Vegetation Removal Restriction/Nesting Birds.** During construction, vegetation removal or construction activities shall not occur during the primary nesting season for local birds (April 1–August 31) where oak woodlands, wetlands, and maritime chaparral occur on, or adjacent to, the proposed project. If vegetation removal or construction activities must occur in these areas during this period, then preconstruction surveys shall be conducted in the appropriate habitats within and adjacent to the project boundary to identify nesting birds within or adjacent to the proposed project. If active nests are observed within or adjacent to the project boundary then a buffer is required until either the young have fledged or the nest becomes inactive. The preconstruction survey limits and buffer shall be designated by the project biologist prior to construction in the affected nesting areas. Limits and buffers shall be clearly marked in the field and shown on applicable construction plans.

**F-6, Avoidance of Work During the Rainy Season.** Construction activities in the Nipomo Creek area shall occur outside the rainy season to minimize sedimentation within the drainage. Project construction plans shall include this measure in the specifications.

**F-7, Sensitive Habitat Buffers.** Permanent fences or other approved methods (such as planting suitable native trees and shrubs in the buffer area between the side of the road and native habitats) shall be used to discourage off-road disturbance from pedestrians and vehicles in sensitive habitat areas. Project construction plans shall include these measures in the specifications.

**F-11, Temporary and Long-Term Lighting Minimization.** During construction, if deemed necessary by the project biologist, lighting screens shall be used to reduce light pollution during evening construction. In addition, construction crews shall also reduce the number of times the lights are turned on and off to avoid sudden changes that may disturb wildlife and/or wildlife movement.

**F-14, Trash Disposal.** The Contractor shall ensure that trash and debris deposits adjacent to native habitats shall be disposed of daily during construction to reduce impacts to sensitive habitats, such as maritime chaparral and oak woodland. Project construction plans shall include this measure in the specifications.

**F-19, Construction Equipment Staging.** No fueling, lubrication, storage, or maintenance of construction equipment within 46 meters (150 feet) of CDFG or Corps jurisdictional areas shall be permitted, which includes riparian and sensitive habitats. Spoil sites shall not be located within CDFG and Corps jurisdictional areas, including riparian and sensitive habitats, or in areas where it could be washed into Nipomo Creek.

**F-20, Creek Crossing Lighting.** The use of lights on the proposed creek crossing shall be minimized to reduce impacts on wildlife movement under the crossing. No artificial lighting shall be installed or used in or around the bridge/culvert unless otherwise required to meet Caltrans approval. If lights are required for the crossing, a biologist shall be retained to assist in the creation of a lighting plan design. Low-light features shall be used where feasible, including: (1) low-intensity street lamps, (2) lower elevation street poles, or (3) shielding by internal silvering of globes or external opaque reflectors. This measure shall be included on the construction specifications.

**F-23, Speed Limits.** The Contractor shall ensure that all construction personnel obey speed limit rules both along public roads and designated project access. Driving off designated project routes shall not be permitted. This measure shall be included in the construction plan specifications.

**F-24, Pollution Prevention.** The Contractor shall ensure that pollution prevention practices shall be employed to prevent contamination of native habitats by construction-related materials. All project-related trash shall be collected and properly disposed of at the end of each work day. This measure shall be included in the construction plan specifications.

**F-25, Best Management Practices.** The Contractor shall ensure that Best Management Practices (BMPs) are employed to minimize erosion from the construction of project facilities and deposition of soil or sediment in off-site areas, especially in the vicinity of the riparian/wetlands areas associated with Nipomo Creek, east of US 101. This measure shall be included in the construction plan specifications. Specific water quality BMPs are specified in Section V.L.5 of this EIR.

**G-4, Procedure for Handling Unanticipated Discoveries.** If any cultural or paleontological material is unearthed during grading or excavation associated with the project, work in that area shall be halted until such material can be examined by the County and appropriate recommendations made.

**G-5, Procedure for Handling the Discovery of Human Remains.** If human remains are encountered during grading or excavation associated with the project, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of the origin and disposition of the materials pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC). The NAHC will determine and notify a Most Likely Descendent (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The descendent must complete the inspection within 24 hours of notification by the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

**J-5, Mitigation of Potentially Collapsible Soils.** If any potentially collapsible soil is identified during design-level geotechnical investigations, the affected area shall be temporarily flooded with water by the Project Engineer or Project Contractor to induce collapse before construction. This requirement shall be shown on all applicable construction plans.

**K-1, Construction During the Dry Season.** Prior to approval by the County, the final PS&E for the project shall specify that construction of any project facilities within or adjacent to Nipomo Creek east of the proposed US 101 interchange will take place during the dry season. As defined by County Land Use Ordinance Section 22.05.036, this season occurs between April 15 and October 15.

**M-1, Soil Contamination.** To confirm whether lead contaminants are present in surface soils adjacent to US 101, soil sampling and testing shall be conducted by a County-approved soil scientist prior to any grading or construction activities. Should elevated levels of lead or petroleum contaminants be found, a Health and Safety Plan shall be prepared by a qualified individual approved by the County. Work practices and worker health and safety must conform to California Code of Regulations, Title 8, Section 1532.1 (Construction Safety Orders). The compliance program required under this section, which would include the health and safety plan, must be prepared by an industrial hygienist certified by the American Board of Industrial Hygiene. A qualified person who is capable of taking corrective action must monitor the compliance program/Health and Safety Plan. The following measures shall be implemented as part of the Health and Safety Plan should contaminated soil be encountered during construction activities:

- Covers on storage piles shall be maintained in place at all times in areas not actively involved in soil addition or removal;
- Contaminated soil shall be covered with at least six inches of packed uncontaminated soil or other TPH – non-permeable barrier such as plastic tarp. No headspace shall be allowed where vapors could accumulate;
- Covered piles shall be designed in such a way to eliminate erosion due to wind or water. No openings in the covers are permitted;
- During soil excavation, odors shall not be evident to such a degree as to cause a public nuisance; and,
- Clean soil must be segregated from contaminated soil.

**M-2, Southern California Gas Company Pipeline.** The existing So Cal Gas pipeline along the western side of US 101 will require special consideration during project grading activities associated with proposed Willow Road and interchange alignment. Optional design considerations include:

- Avoidance of the existing pipeline;
- Stabilization of the existing pipeline through strengthening materials;
- Relocation of the existing pipeline outside of the axis of grading.

Project design and construction plans shall include specifications for the appropriate method to avoid or remedy any impact to the pipeline. If avoidance is not feasible, the County shall consult PG&E for appropriate means to ensure that the pipeline is stabilized and strengthened. If it is determined that the pipeline must be relocated, the County will analyze for the potential environmental impacts (e.g. archaeological, biological, etc.) caused by relocating the line. A Relocation Analysis will be conducted prior to construction activities and the County will either redesign construction plans or provide adequate mitigation measures to reduce potential impacts to less than significant levels. The mitigation measures will meet the performance criteria established by PG&E and the State Fire Marshall for pipeline stability, security and proper function to prevent leakage or other hazardous effects.

**M-3, Conoco-Philips Pipelines.** The two existing Unocal pipelines along the eastern alignment of US 101, east of Nipomo Creek and west of Thompson Avenue will require special consideration during project grading activities associated with proposed Willow Road and interchange alignment. Considerations include:

- Avoidance of the existing pipelines;
- Stabilization of the existing pipelines through strengthening materials;
- Relocation of the existing pipelines outside of the axis of grading.

If the pipelines cannot be avoided, and stabilization of the lines is feasible, Unocal shall be consulted on appropriate means to stabilize the pipelines. If it is determined that one or both of the lines must be relocated, the County will analyze for potential environmental impacts of relocating the line. A relocation analysis will be conducted prior to construction activities and the County will either redesign construction plans or provide adequate mitigation measures to reduce potential impacts to less than significant levels. The mitigation measures will meet the performance criteria established by Unocal and the State Fire Marshall for pipeline stability, security and proper function to prevent leakage or other hazardous effects.

**M-4, Conoco-Pipeline Pipeline Monitoring.** Due to the potential impacts of a leaky or broken oil pipeline, the Unocal pipeline and surrounding areas shall be monitored by a County-designated monitor for the presence or absence of leaks and contaminants prior to project construction in the affected areas. If leaks or contaminants are detected, proper corrective actions shall be taken to comply with all regulatory codes. At a minimum, the contractor shall notify the County engineer and Unocal to turn off the line, as necessary; the affected soil shall be removed and monitoring shall be conducted in accordance with the County Environmental Health Department.

**UTIL-3 DWR Encroachment Permit.** The County of San Luis Obispo Department of Public Works shall submit an application to obtain an Encroachment Permit from the Department of Water Resources timed so as to receive the permit prior to commencement of construction within DWR's right of way.

#### **PAYMENT**

Compensation for compliance with the conditions and mitigation measures listed above and any others that apply to construction, identified by the "Environmental Impact Report" shall be considered as included in the various items of work as they pertain to these conditions and mitigation measures and no additional compensation will be allowed therefor.

### **10-1.03 EXCAVATION SAFETY PLANS**

The Contractor shall submit to the Engineer an Excavation Safety Plan for any excavations 5 feet or more in depth for approval prior to any such excavations. The excavation safety plan shall be in conformance with Section 5-1.02A of the Standard Specifications.

Full compensation for the "Excavation Safety Plan" shall be considered as included in the various items of work with which it is associated and no additional compensation will be allowed therefor.

#### **10-1.04 RELATIONS WITH PRIVATE PROPERTY OWNERS**

A portion of this project is located within the private properties. The Contractor shall notify the private property owner of any construction operations two weeks prior to construction and shall coordinate the work with private property owners. The Contractor shall give a minimum of 48 hours notice to the property owner of any work that may affect their ingress or egress to and from their property. The Contractor shall also provide a minimum of 24 hours notice to adjacent property owners of any road closures. Attention is directed to the relocation/restoration requirements of the Right of Way agreements between the property owners and the County of San Luis Obispo. The Contractor can request to review these agreements from the County.

Full compensation for "Relation with Private Property Owners" including complying with these provisions shall be considered as included in the contract prices paid for the various items of work, and no additional compensation will be allowed therefor.

#### **10-1.05 PROPERTY RESTORATION**

Contractor shall repair and restore existing driveway, fencing, gates, sprinkler systems, and other facilities on private properties, disturbed or damaged by construction activities, to their original conditions in accordance with the requirements as shown on the plans, as specified in Standard Specifications and these Special Provisions, and as directed by the Engineer. Immediately prior and after the completion of pertinent contract work, Contractor shall record the pre-construction and post-construction conditions of disturbed private properties with video recording devices as required by these Special Provisions and as directed by the Engineer.

Full compensation for "Property Restoration" including complying with these provisions shall be considered as included in the contract prices paid for the various items of work, and no additional compensation will be allowed therefor.

#### **10-1.06 NON-HIGHWAY FACILITIES (INCLUDING UTILITIES)**

Attention is directed to Sections 7-1.14, "Cooperation," 8-1.10, "Utility and Non-Highway Facilities," and 15, "Existing Highway Facilities," of the Standard Specifications and these Special Provisions.

During the progress of the work under this Contract, the utility owner will relocate a utility shown in the following table d. Notify the Engineer before you work within the approximate location of a utility shown.

### Utility Relocation and Date of the Relocation

Utility	Location	Date
AT&T (pole line #224) Neil Zakaria (805) 546-7012	Sta: 108+80± 40'LT, "T" Line	January 29, 2011
Conoco-Phillips (pipeline) 8" Orcott Line (Idle) 12" Santa Maria Line (Crude Oil) Doug Lehrman (661) 587-2964 (661) 428-2381 (cell)	Sta: 371+90± "A" Line Sta: 372+30± "A" Line	September 31, 2011
So Cal Gas (pipeline) 16" Steel Transmission pipeline Claudia Turner (805) 681-8024	Sta: 333+20± 50'LT, "U" Line	September 31, 2011
PG&E (pole line & conductors) Claire Mastin (805) 546-3888	Sta: 341+35± "F1" Line Sta: 355+00± 15'LT, "A1" Line	July 1, 2011

Certain utilities may be constructed or relocated by others prior to this contract, as shown on utility plans. If this work has not been completed prior to the start of this contract the Contractor shall coordinate with the County and the other Contractor performing under another contract to facilitate the cooperation needed to allow for this work. This cooperation shall be considered as part of the overall project schedule and no other extensions of time will be allowed therefor.

The Contractor shall provide access to areas needed for construction of work by others according to a mutually agreed schedule. These areas shall not be covered with finished surfaces such as asphalt paving or concrete until this work by others has been completed.

Attention is directed to the utility contact list provided with these Special Provisions. The Contractor shall coordinate with these contacts to facilitate the relocations necessary to complete the project per the plans and these Special Provisions. This work is to be included as part of the overall schedule and no additional time for this work will be allowed therefor.

Attention is directed to the existence of certain underground facilities that may require special precautions be taken by the Contractor to protect the health, safety and welfare of workers and of the public. Facilities requiring special precautions include, but are not limited to: conductors of petroleum products, oxygen, chlorine, and toxic or flammable gases; natural gas in pipelines greater than 6 inches in diameter or pipelines operating at pressures greater than 60 pounds per square inch (gage); underground electric supply system conductors or cables, with potential to ground of more than 300 V, either directly buried or in a duct or conduit which do not have concentric grounded or other effectively grounded metal shields or sheaths.

The Contractor shall notify the Engineer and the appropriate regional notification center for operators of subsurface installations at least 5 working days, but not more than 14 calendar days, prior to performing any excavation or other work close to any

underground pipeline, conduit, duct, wire or other structure. Regional notification centers include, but are not limited to, the following:

Notification Center	Telephone Number
Underground Service Alert-Northern California (USA)	(800) 642-2444
Underground Service Alert-Southern California (USA)	(800) 422-4133

**CONTACT LIST**

Claudia Turner, Southern California Gas Co.	(805) 681-8024
Peter Sevcik, NCSD	(805) 929-1133
Bruce Jensen, Charter Communications	(805) 466-4423
Claire Masten, PG&E	(805) 546-3888
Michael Orban	(805) 346-2225
Neil Zakaria, AT&T	(805) 546-7012
Doug Lehrman, Conoco Phillips	(661) 587-2964
	(661) 428-2381 (cell)
Rosemary Hamill, AT&T LL	(925) 944-8416
Don Beckerman, Verizon	115 W. Palmetto Dr. Pasadena, CA
John Bachelder, MCI	(972) 729-6016
John Brady, Central Coast Water Authority	(805) 688-2992 ext. 228

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

**10-1.07 ENCROACHMENT PERMIT**

Contractor shall be required to apply for and obtain an encroachment permit from Caltrans prior to starting work in or along State Route 101.

The Contractor shall contact the State Permit Engineer, Steve Senet, telephone number (805) 549-3206, 48 hours prior to commencing work to arrange a pre-job meeting. The Contractor shall provide 5 construction plan sets.

A copy of the Caltrans General Conditions are attached in Section 13.

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.

**10-1.08 MOBILIZATION**

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

Portions of the work involved with this contract will require funding for "COZEEP" (Construction Zone Enhanced Enforcement Program). This funding will be provided by the County as part of supplemental work. The Contractor shall provide 15 days

notice to the County and shall coordinate with the County and the California Highway Patrol for the implementation of the "COZEEP" requirements.

Payments for 15 days notification and coordination with the County and the California Highway Patrol for the "COZEEP" requirements shall be considered as included in the contract price paid for mobilization and no additional compensation will be allowed therefor.

## **PAYMENT**

The contract lump sum price paid for "MOBILIZATION" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in mobilization, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.09 DELIVERY AND SET UP OF CONSTRUCTION JOBSITE TRAILER/OFFICE**

This work shall consist of pickup and delivery from corner of Willow Road and Pomeroy Road to the southeast corner of Willow Road and Hetrick Road, installing and maintaining, a field office and associated services for the exclusive use of the Engineer.

The Contractor shall pickup the field office trailer at the corner of Willow Road and Pomeroy Road. The field office will be delivered back to the County of San Luis Obispo's Corporation Yard, located at Kansas Avenue and State Highway 1, upon completion of the contract. The Contractor shall perform all site work necessary to set up the field office including providing and connection of site utilities. Site plan and location are subject to Engineers approval.

It will be the Contractor's responsibility to obtain any required permits for the delivery of the office trailer on the public roads.

The field office installation shall be safe, sanitary and include the appropriate electrical service, communication services, potable water supply, toilet accommodations and waste disposal services. The Contractor shall pay utility bills (electricity, water and waste disposal) promptly. Provide local and long distance telephone services as specified. Provide high-speed internet connection (DSL or cable). The County will pay the cost of the telephone service, all telephone calls, and the internet service. The Contractor shall pay the cost for all connection and disconnection fees for electricity, phone, internet, and water service, as applies. The Contractor shall conform to all applicable ordinances, safety codes, and regulations.

The Contractor shall supply a field office with the following minimum requirements:

- Adequate electrical service (120/240 volt, 60 cycle,)
- Telephone and Internet Services
- Adequate potable water supply
- Parking for 2 vehicles

The field office shall be reasonably secure, and if determined necessary by the Engineer, shall be enclosed by a 6 foot high chain link fence with a gate around the building and parking area. If a restroom facility is not available within 150 feet of the

field office, for use by the Engineer or office personnel, the Contractor shall provide a restroom facility in a separate room or in the field office,.

## **PAYMENT**

The contract lump sum price paid for "FIELD OFFICE" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in pickup, delivery, setup and return to the corporation yard of the field office for the Engineer, complete in place, as specified in these Special Provisions, and as directed by the Engineer.

### **10-1.10 PROGRESS SCHEDULE (CRITICAL PATH METHOD)**

#### **GENERAL**

##### **Summary**

Comply with Section 8-1.04, "Progress Schedule," of the Standard Specifications, except you must:

1. Use a computer software to prepare the schedule
2. Furnish compatible software for the Engineer's exclusive possession and use

You are responsible for assuring that all activity sequences are logical and that each schedule shows a coordinated plan for complete performance of the work.

#### **DEFINITIONS**

**contract completion date:** The current extended date for completion of the contract shown on the weekly statement of working days furnished by the Engineer as specified in Section 8-1.06, "Time of Completion," of the Standard Specifications.

**data date:** The day after the date through which a schedule is current. Everything occurring earlier than the data date is "as-built" and everything on or after the data date is "planned."

**early completion time:** The difference in time between an early scheduled completion date and the contract completion date.

**float:** The difference between the earliest and latest allowable start or finish times for an activity.

**milestone:** An event activity that has zero duration and is typically used to represent the beginning or end of a certain stage of the project.

**narrative report:** A document submitted with each schedule that discusses topics related to project progress and scheduling.

**near critical path:** A chain of activities with total float exceeding that of the critical path but having no more than 10 working days of total float.

**County owned float activity:** The activity documenting time saved on the critical path by actions of the County. It is the last activity prior to the scheduled completion date.

**time impact analysis:** A schedule and narrative report developed specifically to demonstrate what effect a proposed change or delay has on the current scheduled completion date.

**time-scaled network diagram:** A graphic depiction of a CPM schedule comprised of activity bars with relationships for each activity represented by arrows. The tail of each arrow connects to the activity bar for the predecessor and points to the successor.

**total float:** The amount of time that an activity or chain of activities can be delayed before extending the scheduled completion date.

## **SUBMITTALS**

### **General Requirements**

Submit to the Engineer baseline, monthly updated, and final updated schedules, each consistent in all respects with the time and order of work requirements of the contract. Perform work in the sequence indicated on the current accepted schedule.

Each schedule must show:

1. Calculations using the critical path method to determine controlling activities.
2. Duration activities less than 20 working days.
3. At least 50 but not more than 500 activities, unless authorized. The number of activities must be sufficient to assure adequate planning of the project, to permit monitoring and evaluation of progress, and to do an analysis of time impacts.
4. Each required constraint. Constraints other than those required by these Special Provisions may be included only if authorized.
5. County-owned float as the predecessor activity to the scheduled completion date.
6. Activities with identification codes for responsibility, stage, work shifts, location, and contract pay item numbers.

You may show early completion time on any schedule provided that the requirements of the contract are met. Early completion time is considered a resource for your exclusive use. You may increase early completion time by improving production, reallocating resources to be more efficient, performing sequential activities concurrently, or by completing activities earlier than planned. You may also submit for approval a VECP as specified in Section 4-1.035B, "Value Engineering Change Proposal." of the Standard Specifications that will reduce time of construction.

You may show a scheduled completion date that is later than the contract completion date on an update schedule, after the baseline schedule is accepted. Provide an explanation for a late scheduled completion date in the narrative report that is included with the schedule.

County-owned float is considered a resource for the exclusive use of the County. The Engineer may accrue County-owned float by the early completion of review of any type of required submittal when it saves time on the critical path. Prepare a time impact analysis, when requested by the Engineer, to determine the effect of the action as specified in "Time Impact Analysis." The Engineer documents County-owned float by directing you to update the County-owned float activity on the next

updated schedule. Include a log of the action on the County-owned float activity and include a discussion of the action in the narrative report. The Engineer may use County-owned float to mitigate past, present, or future County or State delays by offsetting potential time extensions for contract change orders.

The Engineer may adjust contract working days for ordered changes that affect the scheduled completion date as specified in Section 4-1.03, "Changes," of the Standard Specifications. Prepare a time impact analysis to determine the effect of the change as specified in "Time Impact Analysis" and include the impacts acceptable to the Engineer in the next updated schedule. Changes that do not affect the controlling operation on the critical path will not be considered as the basis for a time adjustment. Changes that do affect the controlling operation on the critical path will be considered by the Engineer in decreasing time or granting an extension of time for completion of the contract. Time extensions will only be granted if the total float is absorbed and the scheduled completion date is delayed one or more working days because of the ordered change.

The Engineer's review and acceptance of schedules does not waive any contract requirements and does not relieve you of any obligation or responsibility for submitting complete and accurate information. Correct rejected schedules and resubmit them within 7 days of notification by the Engineer, at which time a new review period of 7 days will begin.

Errors or omissions on schedules do not relieve you from finishing all work within the time limit specified for completion of the contract. If, after a schedule has been accepted by the Engineer, either you or the Engineer discover that any aspect of the schedule has an error or omission, you must correct it on the next updated schedule.

### **Computer Software**

Submit to the Engineer for review a description of proposed schedule software to be used. After the Engineer accepts the proposed software, furnish schedule software and all original software instruction manuals. All software must be compatible with the current version of the Windows operating system in use by the Engineer. The schedule software must include:

1. Latest version of Primavera SureTrak Project Manager for Windows, or equivalent
2. Latest version of schedule-comparing HST SureChange, or equivalent

If a schedule software equivalent to SureTrak is proposed, it must be capable of generating files that can be imported into SureTrak. The schedule-comparing software must be compatible with schedule software submitted and must be able to compare two schedules and provide reports of changes in activity ID, activity description, constraints, calendar assignments, durations, and logic ties.

The schedule software and schedule-comparing software will be returned to you before the final estimate. The County will compensate you as specified in Section 4-1.03, "Extra Work," of the Standard Specifications for replacement of software or manuals damaged, lost, or stolen after delivery to the Engineer.

Within 15 days of receipt of the executed contract, provide a commercial 8-hour training session for 2 County employees in the use of the software at a location acceptable to the Engineer. It is recommended that you also send at least 2 employees to the same training session to facilitate development of similar knowledge and skills in the use of the software. If schedule software other than SureTrak is submitted, then the training session must be a total of 16-hours for each County employee.

### **Network Diagrams, Reports, and Data**

Include the following with each schedule submittal:

1. Two sets of originally plotted, time-scaled network diagrams
2. Two copies of a narrative report
3. One read-only compact disk or floppy diskette containing the schedule data

The time-scaled network diagrams must conform to the following:

1. Show a continuous flow of information from left to right
2. Be based on early start and early finish dates of activities
3. Clearly show the primary paths of criticality using graphical presentation
4. Be prepared on 34" x 44"
5. Include a title block and a timeline on each page

The narrative report must be organized in the following sequence with all applicable documents included:

1. Transmittal letter
2. Work completed during the period
3. Identification of unusual conditions or restrictions regarding labor, equipment or material; including multiple shifts, 6-day work weeks, specified overtime or work at times other than regular days or hours
4. Description of the current critical path
5. Changes to the critical path and scheduled completion date since the last schedule submittal
6. Description of problem areas
7. Current and anticipated delays:
  - 7.1. Cause of delay
  - 7.2. Impact of delay on other activities, milestones, and completion dates
  - 7.3. Corrective action and schedule adjustments to correct the delay
8. Pending items and status thereof:
  - 8.1. Permits
  - 8.2. Change orders
  - 8.3. Time adjustments
  - 8.4. Noncompliance notices
9. Reasons for an early or late scheduled completion date in comparison to the contract completion date

Schedule submittals will only be considered complete when all documents and data have been submitted as described above.

## **Preconstruction Scheduling Conference**

Schedule a preconstruction scheduling conference with your project manager and the Engineer within 15 days after receipt of the executed contract. The Engineer will conduct the meeting and review the requirements of this section with you.

Submit a general time-scaled logic diagram displaying the major activities and sequence of planned operations and be prepared to discuss the proposed work plan and schedule methodology that comply with the requirements of this section. If you propose deviations to the construction staging, then the general time-scaled logic diagram must also display the deviations and resulting time impacts. Be prepared to discuss the proposal.

At this meeting, also submit the alphanumeric coding structure and activity identification system for labeling work activities. To easily identify relationships, each activity description must indicate its associated scope or location of work by including such terms as quantity of material, type of work, bridge number, station to station location, side of highway (such as left, right, northbound, southbound), lane number, shoulder, ramp name, ramp line descriptor, or mainline.

The Engineer reviews the logic diagram, coding structure, and activity identification system, and provide any required baseline schedule changes to you for implementation.

## **Baseline Schedule**

Beginning the week following the preconstruction scheduling conference, meet with the Engineer weekly to discuss schedule development and resolve schedule issues until the baseline schedule is accepted.

Submit a baseline schedule within 20 days of receipt of the executed contract. Allow 20 days for the Engineer's review after the baseline schedule and all support data are submitted. In addition, the baseline schedule submittal is not considered complete until the computer software is delivered and installed for use in review of the schedule.

The baseline schedule must include the entire scope of work and how you plan to complete all work contemplated. The baseline schedule must show the activities that define the critical path. Multiple critical paths and near-critical paths must be kept to a minimum. A total of not more than 50 percent of the baseline schedule activities must be critical or near critical, unless otherwise authorized.

The baseline schedule must not extend beyond the number of contract working days.

If you submit an early completion baseline schedule that shows contract completion in less than 85 percent of the contract working days, the baseline schedule must be supplemented with resource allocations for every task activity and include time-scaled resource histograms. The resource allocations must be shown to a level of detail that facilitates report generation based on labor crafts and equipment classes for you and your subcontractors. Use average composite crews to display the labor loading of on-site construction activities. Optimize and level labor to reflect a reasonable plan for accomplishing the work of the contract and to assure that

resources are not duplicated in concurrent activities. The time-scaled resource histograms must show labor crafts and equipment classes to be used. The Engineer may review the baseline schedule activity resource allocations using Means Productivity Standards or equivalent to determine if the schedule is practicable.

### **Updated Schedule**

Submit an updated schedule and meet with the Engineer to review contract progress, on or before the 1st day of each month, beginning one month after the baseline schedule is accepted. Allow 15 days for the Engineer's review after the updated schedule and all support data are submitted, except that the review period will not start until the previous month's required schedule is accepted. Updated schedules that are not accepted or rejected within the review period are considered accepted by the Engineer.

The updated schedule must have a data date of the 21st day of the month or other date established by the Engineer. The updated schedule must show the status of work actually completed to date and the work yet to be performed as planned. Actual activity start dates, percent complete, and finish dates must be shown as applicable. Durations for work that has been completed must be shown on the updated schedule as the work actually occurred, including Engineer submittal review and your resubmittal times.

You may include modifications such as adding or deleting activities or changing activity constraints, durations, or logic that do not (1) alter the critical path(s) or near critical path(s) or (2) extend the scheduled completion date compared to that shown on the current accepted schedule. Justify in writing the reasons for any changes to planned work. If any proposed changes in planned work will result in (1) or (2) above, then submit a time impact analysis as specified in this section.

### **Time Impact Analysis**

Submit a written time impact analysis (TIA) with each request for adjustment of contract time, or when you or the Engineer consider that an approved or anticipated change may impact the critical path or contract progress.

The TIA must illustrate the impacts of each change or delay on the current scheduled completion date or internal milestone, as appropriate. The analysis must use the accepted schedule that has a data date closest to and before the event. If the Engineer determines that the accepted schedule used does not appropriately represent the conditions before the event, the accepted schedule must be updated to the day before the event being analyzed. The TIA must include an impact schedule developed from incorporating the event into the accepted schedule by adding or deleting activities, or by changing durations or logic of existing activities. If the impact schedule shows that incorporating the event modifies the critical path and scheduled completion date of the accepted schedule, the difference between scheduled completion dates of the two schedules must be equal to the adjustment of contract time. The Engineer may construct and use an appropriate project schedule or other recognized method to determine adjustments in contract time until you provide the TIA.

Submit 2 copies of your TIA within 20 days of receiving a written request for a TIA from the Engineer. Allow the Engineer 15 days after receipt to review the submitted TIA. All approved TIA schedule changes must be shown on the next updated schedule.

If a TIA you submit is rejected, meet with the Engineer to discuss and resolve issues related to the TIA. If agreement is not reached, you are allowed 15 days from the meeting with the Engineer to give notice as specified in Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications. Only show actual as-built work, not unapproved changes related to the TIA, in subsequent updated schedules. If agreement is reached at a later date, approved TIA schedule changes must be shown on the next updated schedule. The Engineer withholds remaining payment on the schedule contract item if a TIA is requested and not submitted within 20 days. The schedule item payment resumes on the next estimate after the requested TIA is submitted. No other contract payment is withheld regarding TIA submittals.

### **Final Updated Schedule**

Submit a final update, as-built schedule with actual start and finish dates for the activities, within 30 days after completion of contract work. Provide a written certificate with this submittal signed by your project manager or an officer of the company stating, "To my knowledge and belief, the enclosed final update schedule reflects the actual start and finish dates of the actual activities for the project contained herein." An officer of the company may delegate in writing the authority to sign the certificate to a responsible manager.

### **PAYMENT**

The contract lump sum price paid for "PROGRESS SCHEDULE (CRITICAL PATH METHOD)", includes full compensation for furnishing all labor, material, tools, equipment, and incidentals, including computer software, and for doing all the work involved in preparing, furnishing, and updating schedules, and instructing and assisting the Engineer in the use of computer software, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Payments for the progress schedule (critical path method) contract item will be made progressively as follows:

1. A total of 25 percent of the item amount will be paid upon achieving all of the following:
  - 1.1. Completion of 5 percent of all contract item work.
  - 1.2. Acceptance of all schedules and approval of all TIAs required to the time when 5 percent of all contract item work is complete.
  - 1.3. Delivery of schedule software to the Engineer.
  - 1.4. Completion of required schedule software training.
2. A total of 50 percent of the item amount will be paid upon completion of 25 percent of all contract item work and acceptance of all schedules and approval of all TIAs required to the time when 25 percent of all contract item work is complete.
3. A total of 75 percent of the item amount will be paid upon completion of 50 percent of all contract item work and acceptance of all schedules and approval of

- all TIAs required to the time when 50 percent of all contract item work is complete.
4. A total of 100 percent of the item amount will be paid upon completion of all contract item work, acceptance of all schedules and approval of all TIAs required to the time when all contract item work is complete, and submittal of the certified final update schedule.

If you fail to complete any of the work or provide any of the schedules required by this section, the Engineer makes an adjustment in compensation as specified in Section 4-1.03C, "Changes in Character of Work," of the Standard Specifications for the work not performed. Adjustments in compensation for schedules will not be made for any increased or decreased work ordered by the Engineer in submitting schedules.

## **10-1.11 TEMPORARY FENCE (TYPE ESA)**

### **GENERAL**

#### **Summary**

This work includes constructing, maintaining, and removing temporary fence (Type ESA). Temporary fence (Type ESA) provides a visible boundary adjacent to protected areas such as an environmentally sensitive area.

Signs are required for temporary fence (Type ESA).

#### **Submittals**

Submit a Certificate of Compliance as specified in Section 6-1.07, "Certificates of Compliance" of the Standard Specifications for:

1. High visibility fabric
2. Safety cap for metal posts

### **MATERIALS**

#### **High Visibility Fabric**

High visibility fabric for temporary fence (Type ESA) must consist of one of the following:

1. Polyethylene
2. Polypropylene
3. Combined polyethylene and polypropylene

Sample under ASTM D 4354, Procedure C.

Test under ASTM D 4759. All properties must be based on Minimum Average Roll Value.

Identify, store, and handle under ASTM D 4873.

High visibility fabric must:

1. Contain ultraviolet inhibitors
2. Comply with the following:

Property	Specifications	Requirements
Width, inches, Min	Measured	48
Opening size inches	Measured	1" x 1" (Min) 2" x 2" (Max)
Color	Observed	Orange
Grab breaking load 1-inch grip, lb, Min. in each direction	ASTM D4632	260
Apparent elongation percent, Min., in each direction	ASTM D4632	5
Ultraviolet Degradation percent of original unexposed grab breaking load 500 hr, minimum	ASTM D4355	70

### Posts

Posts must be wood or steel.

Wood posts must be:

1. Untreated fir, redwood, cedar, or pine and cut from sound timber
2. Straight and free of loose or unsound knots and other defects that would render the stakes unfit for use
3. Pointed on the end to be driven into the ground
4. At least 2" x 2" in size and 6 feet long

Steel posts must:

1. Have a "U," "T," "L," or other cross sectional shape that can resist failure from lateral loads.
2. Be pointed on the end to be driven into the ground.
3. Weigh at least 0.75-pound per foot.
4. Be at least 6 feet long.
5. Have a safety cap attached to the exposed end. The safety cap must be yellow, orange or red plastic and fit snugly to the metal post.

### Signs

If specified, signs must be:

1. Weatherproof and fade-proof and may include plastic laminated printed paper affixed to an inflexible weatherproof backer board
2. Attached to the high visibility fabric with tie wire or locking plastic fasteners
3. Posted every 50' with "Sensitive Area-Stay Out" as specified in the "EIR"

## **CONSTRUCTION**

### **General**

Install temporary fence (Type ESA):

1. With high visibility fabric, posts, and fasteners as follows:
  - 1.1. If wood posts are used, fasteners must be staples or nails
  - 1.2. If steel posts are used, fasteners must be tie wires or locking plastic fasteners
  - 1.3. Spacing of the fasteners must be no more than 8 inches apart
2. Before clearing and grubbing activities
3. From outside of the protected area
4. With posts spaced 8 feet apart and embedded at least 16 inches in the soil

If specified, signs must be:

1. Attached with the top of the sign panel flush with the top of the high visibility fabric
2. Placed 50 feet apart along the length and at each end of the fence

If trees and other plants need protection, install fence to:

1. Enclose the foliage canopy (drip line) of protected plants
2. Protect visible roots from encroachment

### **Maintenance**

Maintain temporary fence (Type ESA) by:

1. Keeping posts in a vertical position
2. Reattaching fabric to posts
3. Replacing damaged sections of fabric
4. Replacing and securing signs

### **Removal**

When the Engineer determines that temporary fence (Type ESA) is no longer required, remove and dispose of it under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Backfill and repair ground disturbance caused by the installation and removal of temporary fence (Type ESA), including holes and depressions, under Section 15-1.02, "Preservation of Property," of the Standard Specifications.

## **MEASUREMENT AND PAYMENT**

Temporary fence (Type ESA) is measured and paid for by the linear foot in the manner specified for fence (Type BW or WM) in Section 80, "Fences," of the Standard Specifications.

The contract price paid per linear foot for "TEMPORARY FENCE (TYPE ESA)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the temporary fence (Type ESA), complete in place, including maintenance, removal of materials, and backfilling and repairing holes, depressions and other ground disturbance, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as ordered by the Engineer.

## **10-1.12 WATER POLLUTION CONTROL**

### **GENERAL**

In accordance with the General Permit, the Director of Public Works is the Legally Responsible Person.

### **Summary**

Discharges of storm water from the project must comply with NPDES General Permit for "Storm Water Discharges Associated with Construction and Land Disturbance Activities" (Order No. 2009-0009-DWQ, NPDES No. CAS000002) hereinafter called the "Permit." Manage work activities to reduce the discharge of pollutants to surface waters, groundwater, or municipal separate storm sewer systems including work items shown in the Bid Item List for:

1. Prepare Storm Water Pollution Prevention Plan. SWPPP preparation includes obtaining SWPPP approval, amending the SWPPP, preparing a CSMP and a SAP, and monitoring and inspecting WPC practices at the job site.
2. Storm Water Annual Report. Storm Water Annual Report preparation includes certifications, monitoring and inspection results, and obtaining Storm Water Annual Report acceptance.
3. Storm Water Sampling and Analysis Day. Storm Water Sampling and Analysis Day includes reporting of storm water quality per qualifying rain event. If specified for the risk level, the work includes preparation, collection, analysis, and reporting of storm water samples for turbidity, pH, and other constituents.
4. Rain Event Action Plan. If specified for the project risk level, REAP preparation includes preparing and submitting REAP forms and monitoring weather forecasts.

Do not start work until:

1. SWPPP is approved.
2. WDID is issued.

**This project is Risk Level 2.**

### **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.

**CSMP:** Construction Site Monitoring Program.

**NAL:** Numeric Action Level.

**NEL:** Numeric Effluent Limit.

**NPDES:** National Pollutant Discharge Elimination System.

**NOI:** Notice of Intent.

**normal working hours:** The hours you normally work on this project.

**Preparation Manual:** The Department's "Storm Water Pollution Prevention Plan and Water Pollution Control Program Preparation Manual."

**QSD:** Qualified SWPPP Developer.

**QSP:** Qualified SWPPP Practitioner.

**qualified rain event:** A qualified rain event is a storm that produces at least 0.5 inch of precipitation with a 48 hour or greater period between storms.

**REAP:** Rain Event Action Plan.

**RWQCB:** Regional Water Quality Control Board.

**SAP:** Sampling and Analysis Plan.

**SSC:** Suspended Sediment Concentration.

**SWRCB:** State Water Resources Control Board.

**SWPPP:** Storm Water Pollution Prevention Plan.

**WDID:** Waste Discharge Identification Number.

**WPC:** Water Pollution Control.

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

## **SUBMITTALS**

Within 10 days after receipt of the executed contract, start the following process for SWPPP acceptance:

1. Submit 3 copies of the SWPPP and allow 10 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 SWPPP within 5 days of receipt of the Engineer's comments. The Engineer's review resumes when the complete SWPPP is resubmitted.
3. When the Engineer approves the SWPPP, submit an electronic and 4 printed copies of the approved SWPPP.

4. Following acceptance of the Permit Registration Documents the Engineer will submit the Permit Registration Documents, along with the electronic Notice of Intent and annual fee, to the SWRCB.
5. The SWRCB will issue a WDID number to the Engineer. The Contractor shall not begin work until receipt of the WDID number.

Submit:

1. Storm water training records including training dates and subjects for employees and subcontractors. Include dates and subjects for ongoing training, including tailgate meetings.
2. Employee training records:
  - 2.1. Within 5 days of SWPPP 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

Prepare a Storm Water Annual Report for the reporting period from July 1st to June 30th. For the prior reporting period, submit the report no later than July 15th if construction occurs from July 1st through June 30th or within 15 days after contract acceptance if construction ends before June 30th.

Submit the Storm Water Annual Report as follows:

1. Submit 2 copies of the Storm Water Annual Report and allow 10 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 Storm Water Annual Report within 5 days of receipt of the Engineer's comments. The Engineer's review resumes when the complete Storm Water Annual Report is resubmitted.
3. When the Engineer accepts the Storm Water Annual Report, insert the WPC Manager's signed certification and the Engineer's signed certification.

Submit one electronic copy and 2 printed copies of the accepted Storm Water Annual Report.

Submit as required:

1. NAL Exceedance Reports
2. NEL Exceedance Reports
3. Visual Monitoring Reports
4. Inspection Reports
5. BMP Status Report

At least 5 days before operating any construction support facility, submit:

1. A plan showing the location and quantity of WPC practices associated with the construction support facility
2. A copy of the NOI approved by the RWQCB and the SWPPP approved by the RWQCB if you will be operating a batch plant or a crushing plant under the General Industrial Permit

## **QUALITY CONTROL and ASSURANCE**

### **Training**

Provide storm water training for:

1. Project managers
2. Supervisory personnel
3. Employees involved with WPC work

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

1. WPC 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 WPC training before working on the job site.

Conduct weekly training meetings covering:

1. WPC BMP 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

Training for personnel to collect water quality samples must include:

1. SAP review
2. Health and safety review
3. Sampling simulations

If you operate construction support facilities, protect storm water systems or receiving waters from the discharge of potential pollutants by using WPC 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 General 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." For the General Industrial Permit, go to:

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

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

The Preparation Manual and other WPC references are available at the Department's "Construction Storm Water and Water Pollution Control" Web site. For the Web site, go to:

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

### **WATER POLLUTION CONTROL MANAGER**

Assign one WPC Manager to implement the SWPPP. The WPC Manager must comply with the Permit qualifications for a QSP and a QSD. You may assign a different QSD to prepare the SWPPP.

The QSD must have the following qualifications:

1. Department approved storm water management training described in the Department's "Construction Storm Water and Water Pollution Control" web site
2. Registration or certification described in the Permit

The QSP must meet the qualifications of the QSD or have the following certifications:

1. Department approved storm water management training described in the Department's "Construction Storm Water and Water Pollution Control" web site
2. Certification described in the Permit

At the job site, the WPC Manager must:

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

WPC Manager must oversee:

1. Inspections of WPC practices identified in the SWPPP
2. Inspections and reports for visual monitoring
3. Preparation and implementation of REAPs
4. Sampling and analysis
5. Preparation and submittal of:
  - 5.1. NAL exceedance reports
  - 5.2. NEL exceedance reports
  - 5.3. SWPPP annual certification
  - 5.4. Annual reports
  - 5.5. BMP status reports

## **STORM WATER POLLUTION PREVENTION PLAN (SWPPP)**

### **GENERAL**

SWPPP work includes preparing a SWPPP including a CSMP, obtaining SWPPP approval, amending the SWPPP, inspecting and reporting on WPC practices at the job site. The SWPPP must comply with the Preparation Manual and the Permit. The SWPPP must be submitted in place of the water pollution control program under Section 7-1.01G, "Water Pollution," of the Standard Specifications.

You may request, or the Engineer may order, changes to the WPC work. Changes may include the addition of new WPC practices. Additional WPC work will be paid for as extra work under Section 4-1.03D, "Extra Work," of the Standard Specifications.

The SWPPP must include sections as specified for the project risk level as follows:

1. For risk level 1:
  - 1.1. Schedule
  - 1.2. CSMP
2. For risk level 2:
  - 2.1. Schedule
  - 2.2. CSMP
  - 2.3. Adherence to Effluent Standards for NALs
  - 2.4. REAP
3. For risk level 3:
  - 3.1. Schedule
  - 3.2. CSMP
  - 3.3. Adherence to Effluent Standards for NALs and NELs

### 3.4. REAP

The SWPPP must include WPC practices for:

1. 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. Activities or mobile operations related to Contractor obtained NPDES permits
3. Construction support facilities

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

Amend the SWPPP annually and resubmit it by July 15th.

Amend the SWPPP if:

1. Changes in work activities could affect the discharge of pollutants
2. WPC practices are added by change order work
3. WPC practices are added at your discretion
4. Changes in the amount of disturbed soil are substantial
5. Objectives for reducing or eliminating pollutants in storm water discharges have not been achieved
6. There is a Permit violation

Whenever you amend the SWPPP, follow the same process specified for SWPPP approval.

Retain a printed copy of the approved SWPPP at the job site.

### **SWPPP Schedule**

The SWPPP schedule must:

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

### **CONSTRUCTION SITE MONITORING PROGRAM (CSMP)**

#### **General**

The QSD must prepare a CSMP as part of the SWPPP. The CSMP must be developed before starting work and be revised to reflect current construction activities as necessary.

The CSMP must include sections for the project risk level as follows:

1. For risk level 1:

- 1.1. Visual Monitoring
- 1.2. SAP for Non-Visible Pollutants
- 2. For risk level 2:
  - 2.1. Visual Monitoring
  - 2.2. SAP for Non-Visible Pollutants
  - 2.3. SAP for sediment and turbidity
  - 2.4. SAP for pH
- 3. For risk level 3:
  - 3.1. Visual Monitoring
  - 3.2. SAP for Non-Visible Pollutants
  - 3.3. SAP for sediment and turbidity
  - 3.4. SAP for pH
  - 3.5. SAP for receiving waters
  - 3.6. SAP for temporary active treatment systems

### **Visual Monitoring**

The WPC Manager must oversee the performance of visual inspections for qualifying rain events.

For each qualifying rain event, perform visual inspections and record observations during normal working hours as follows:

- 1. Record the time, date, and rain gauge reading
- 2. Observe:
  - 2.1. Within 2 days before the storm:
    - 2.1.1. Drainage areas for spills, leaks, or uncontrolled pollutants
    - 2.1.2. Proper implementation of WPC practices
    - 2.1.3. Storm water storage areas for leaks and adequate freeboard
  - 2.2. Every 24 hours during the storm:
    - 2.2.1. WPC practices for effective operation
    - 2.2.2. WPC practices needing maintenance and repair
  - 2.3. Within 2 days after the storm event:
    - 2.3.1. Discharge locations
    - 2.3.2. WPC practices to evaluate the design, implementation, and effectiveness
    - 2.3.3. To identify where additional WPC practices may be needed

Perform non-stormwater discharge visual inspections as follows:

- 1. At least once during each of the following periods:
  - 1.1. January through March
  - 1.2. April through June
  - 1.3. July through September
  - 1.4. October through December
- 2. Observe flowing and contained storm water for the presence of floating and suspended materials, sheen on the surface, discoloration, turbidity, odors, and sources of observed pollutants
- 3. Observe the job site for the presence of authorized and unauthorized non-stormwater discharges and their sources

The WPC Manager must prepare visual inspection reports that include the following:

1. Name of personnel performing the inspection, inspection date, and date inspection report completed
2. Storm and weather conditions
3. Locations and observations
4. Corrective actions taken

Maintain visual inspections reports at the job site as part of the SWPPP.

## **SAMPLING and ANALYSIS PLAN (SAP)**

### **GENERAL**

Include a SAP in the CSMP to monitor the effectiveness of WPC practices.

The SAP must comply with the Preparation Manual.

Assign trained personnel to collect water quality samples. Document their training in the SAP.

Describe the following water quality sampling procedures in the SAP:

1. Sampling equipment
2. Sample preparation
3. Collection
4. Field measurement methods
5. Analytical methods
6. Quality assurance and quality control
7. Sample preservation and labeling
8. Collection documentation
9. Sample shipping
10. Chain of custody
11. Data management and reporting
12. Precautions from the construction site health and safety plan
13. Laboratory selection and certifications

Whenever assigned field personnel take samples, comply with the equipment manufacturer's recommendation for collection, analysis methods, and equipment calibration.

Samples taken for laboratory analysis must follow water quality sampling procedures and be analyzed by a State-certified laboratory under 40 CFR Part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants."

The SAP must identify the State-certified laboratory, sample containers, preservation requirements, holding times, and analysis method. For a list of State-certified laboratories, go to:

<http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx>

Include procedure for sample collection during precipitation.

Retain water quality sampling documentation and analytical results with the SWPPP at the job site.

Show pollutant sampling locations on SWPPP drawings.

If discharges or sampling locations change because of changed work activities or knowledge of site conditions, amend the SAP.

If the project is risk level 2 or risk level 3, include procedures for collecting and analyzing at least 3 samples for each day of each qualifying rain event. Describe the collection of effluent samples at all locations where the storm water is discharged off-site.

### **Analytical Results and Evaluation**

Submit an electronic copy (in file format .xls, .txt, .csv, .dbs, or .mdb) and a printed copy of water quality analytical results, and quality assurance and quality control within 48 hours of field analysis sampling, and within 30 days for laboratory analysis. Also provide an evaluation of whether the downstream samples show levels of the tested parameter that are higher than the control sample.

Electronic water quality analysis results must have the following information:

1. Sample identification number
2. Contract number
3. Constituent
4. Reported value
5. Analytical method
6. Method detection limit
7. Reported limit

### **SAP for Non-Visible Pollutants**

The SAP must include a description of the sampling and analysis strategy for monitoring non-visible pollutants.

The SAP must identify potential non-visible pollutants present at the job site associated with any of the following:

1. Construction materials and waste
2. Existing contamination due to historical site usage
3. Application of soil amendments, including soil stabilization materials, with the potential to change pH or contribute toxic pollutants to storm water

SWPPP drawings must show the locations planned for storage and use of potential non-visible pollutants.

The SAP must include sampling procedures for the following conditions when observed during a storm water visual inspection. For each of the following, collect at least one sample for each qualifying storm event:

1. Materials or waste containing potential non-visible pollutants that are not stored under watertight conditions
2. Materials or waste containing potential non-visible pollutants that are stored under watertight conditions, but a breach, leakage, malfunction, or spill is observed; the leak or spill has not been cleaned up before precipitation; and material or waste could discharge non-visible pollutants to surface waters or drainage system
3. Chemical applications, including fertilizer, pesticide, herbicide, methyl methacrylate concrete sealant, or non-pigmented curing compound used during precipitation or within 24 hours preceding precipitation, and could discharge pollutants to surface waters or drainage system
4. Applied soil amendments, including soil stabilization materials that could change pH levels or contribute toxic pollutants to storm water runoff and discharge pollutants to surface waters or drainage system, unless available independent test data indicates acceptable concentrations of non-visible pollutants in the soil amendment
5. Storm water runoff from an area contaminated by historical usage of the site that could discharge pollutants to surface waters or drainage systems

The SAP must provide sampling procedures and schedule for:

1. Sample collection during the first 2 hours of each rain event that generate runoff
2. Sample collection during normal working hours
3. Each non-visible pollutant source
4. Uncontaminated control sample

The SAP must identify locations for sampling downstream and control samples, and reasons for selecting those locations. Select control sample locations where the sample will not come in contact with materials, waste, or areas associated with potential non-visible pollutants or disturbed soil areas.

### **SAP for Sediment and Turbidity**

If the project is risk level 2 or risk level 3, sample and analyze for turbidity:

Parameter	Test Method	Detection Limit (Min)	Unit
Turbidity	Field test with calibrated portable instrument	1	NTU

If the project is risk level 3 and the turbidity NEL has been exceeded, sample and analyze for SSC:

Parameter	Test Method	Detection Limit (Min)	Unit
SSC	ASTM Method D3977-97	5	Mg/L

### **SAP for pH**

If the project is risk level 2 or risk level 3, sample and analyze for pH:

Parameter	Test Method	Detection Limit (Min)	Unit
pH	Field test with calibrated portable instrument	0.2	pH units

### **SAP for Receiving Waters**

If the project is risk level 3, describe procedures for obtaining samples from representative and accessible locations:

1. Upstream of the discharge point
2. Downstream of the discharge point

Show receiving water sampling locations on SWPPP drawings.

If there are several discharge points, describe procedures for obtaining samples from a single upstream and a single downstream location.

### **Rain Event Action Plan (REAP)**

REAP work includes preparing and submitting REAP forms and monitoring weather forecasts. The WPC Manager must submit a REAP to protect the job site at least 48 hours before a predicted rain event.

Prepare a REAP when the National Weather Service is predicting at least a 50 percent probability of precipitation within 72 hours.

For the REAP, use approved forms and include:

1. Site location
2. Risk level
3. Contact information including 24-hour emergency phone numbers for:
  - 3.1. WPC Manager
  - 3.2. Erosion and sediment control providers or subcontractors
  - 3.3. Storm water sampling providers or subcontractors
4. Storm Information
5. Construction phase information for:
  - 5.1. Highway Construction including active and inactive areas for work activities for building roads and structures
  - 5.2. Plant Establishment including maintenance on vegetation installed for final stabilization where areas are inactive
  - 5.3. Suspension where work activities are suspended and areas are inactive
6. Construction phase information including:
  - 6.1. Construction activities
  - 6.2. Subcontractors and trades on the job site
  - 6.3. Pre-storm activities including:
    - 6.3.1. Responsibilities of the WPC Manager
    - 6.3.2. Responsibilities of the crew and crew size
    - 6.3.3. Stabilization for active and inactive disturbed soil areas
    - 6.3.4. Stockpile management

6.3.5. Corrective actions taken for deficiencies identified during pre-storm visual inspection

6.4. Activities to be performed during storm events including:

6.4.1. Responsibilities of the WPC Manager

6.4.2. Responsibilities of the crew and crew size

6.4.3. BMP maintenance and repair

6.5. Description of flood contingency measures

You must have the REAP onsite at least 24 hours before a predicted rain event. A printed copy of each REAP must be at the job site as part of the SWPPP.

Implement the REAP including mobilizing crews to complete activities no later than 24 hours before precipitation occurs.

## **IMPLEMENTATION REQUIREMENTS**

### **SWPPP Implementation**

Obtain, install, and maintain a rain gauge at the job site. Observe and record daily precipitation.

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 approved SWPPP:

1. Correct the deficiency immediately, unless the Engineer agrees to a later date for making the 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 Department may correct the deficiency and deduct the cost of correcting the deficiency from payment.

Continue SWPPP implementation during any temporary suspension of work activities.

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

### **Numeric Action Levels (NALs)**

If the project is risk level 2 or risk level 3, then it is subject to NALs:

Parameter	Test Method	Detection Limit (Min)	Unit	Numeric Action Level
pH	Field test with calibrated portable instrument	0.2	pH units	Lower NAL = 6.5 Upper NAL = 8.5
Turbidity	Field test with calibrated portable instrument	1	NTU	250 NTU

### Numeric Effluent Limits (NELs)

If the project is risk level 3, then it is subject to NELs:

Parameter	Test Method	Detection Limit (Min)	Unit	Numeric Effluent Limit
pH	Field test with calibrated portable instrument	0.2	pH units	Lower NEL = 6.0 Upper NEL = 9.0
Turbidity	Field test with calibrated portable instrument	1	NTU	500 NTU

The storm event daily average for storms up to the 5-year, 24-hour storm, must not exceed the NEL for turbidity.

The daily average sampling results must not exceed the NEL for pH.

### Storm Water Sampling and Analysis Day

Storm Water Sampling and Analysis Day work includes preparation, collection, analysis, and reporting of storm water samples for turbidity, pH, and other constituents. If the project is risk level 2 or risk level 3, and there is a qualified rain event that produces runoff, comply with the project's SAP for preparation, collection, analysis, and reporting of storm water samples. Collect:

1. Samples for each non-visible pollutant source and a corresponding uncontaminated control sample
2. Samples for turbidity, pH, and other constituents as specified
3. At least 3 samples for each day of each qualifying rain event
4. Samples for all locations where the storm water is discharged off-site

Perform sample collection during:

1. First 2 hours of each qualified rain event that produces runoff
2. Normal working hours

If the project is risk level 3, obtain receiving water samples.

You are not required to physically collect samples during dangerous weather conditions such as flooding or electrical storms.

If downstream samples show increased levels, assess WPC practices, site conditions, and surrounding influences to determine the probable cause for the increase.

### **Inspection**

The WPC Manager must oversee inspections for WPC practices identified in the SWPPP:

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 WPC Manager must oversee daily inspections of:

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

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

The WPC Manager must prepare BMP status reports that include the following:

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

Within 24 hours of finishing the weekly inspection, the WPC Manager must submit:

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

## **REPORTING REQUIREMENTS**

### **Storm Water Annual Report**

Storm Water Annual Report work includes certifications, monitoring and inspection results, and obtaining Storm Water Annual Report acceptance. The WPC Manager must prepare a Storm Water Annual Report. The report must:

1. Use an approved report format
2. Include project information including description and location
3. Include storm water monitoring information including:
  - 3.1. Summary and evaluation of sampling and analysis results including laboratory reports
  - 3.2. Analytical methods, reporting units, detections limits for analytical parameters
  - 3.3. Summary of corrective actions

- 3.4. Identification of corrective actions or compliance activities that were not implemented
- 3.5. Summary of violations
- 3.6. Names of individuals performing storm water inspections and sampling
- 3.7. Logistical information for inspections and sampling including location, date, time, and precipitation
- 3.8. Visual observations and sample collection records
- 4.0. Include documentation on training for:
  - 4.1. Individuals responsible for NPDES permit compliance
  - 4.2. Individuals responsible for BMP installation, inspection, maintenance, and repair
  - 4.3. Individuals responsible for preparing, revising, and amending the SWPPP

### **NAL Exceedance Report**

If the project is risk level 2 or risk level 3 and an effluent sample exceeds a NAL, notify the Engineer and submit a NAL Exceedance Report no later than 48 hours after the conclusion of the storm event. The report must:

- 1. Include the following field sampling results and inspections:
  - 1.1. Analytical methods, reporting units, and detection limits
  - 1.2. Date, location, time of sampling, visual observation and measurements
  - 1.3. Quantity of precipitation of the storm event
- 2. Description of BMPs and corrective actions taken to manage NAL exceedance

### **NEL Violation Report**

If the project is risk level 3 and an NEL is exceeded, notify the Engineer and submit a NEL Violation Report within 6 hours. The report must:

- 1. Include the following field sampling results and inspections:
  - 1.1. Analytical methods, reporting units, and detection limits
  - 1.2. Date, location, time of sampling, visual observations and measurements
  - 1.3. Quantity of precipitation of the storm event
- 2. Description of BMPs and corrective actions taken to manage NEL exceedance

If the project is risk level 2 or risk level 3, submit all sampling results to the Engineer no later than 48 hours after the conclusion of a storm event.

### **MEASUREMENT AND PAYMENT**

The contract lump sum price paid for "WATER POLLUTION CONTROL" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in water pollution control, including the installation, maintenance, repair, and removal of BMPs and WPC practices, as specified in the Standard Specifications and these Special Provisions, as shown in the SWPPP, and as directed by the Engineer.

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

Withholds for failure to perform WPC 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.

The contract lump sum price paid for "PREPARE STORM WATER POLLUTION PREVENTION PLAN" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in preparing, obtaining approval of, and amending the SWPPP and CSMP, inspecting water pollution control practices, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Payments for SWPPP are made as follows:

1. After the Engineer accepts the SWPPP, 10 percent of the contract item price for "PREPARE STORM WATER POLLUTION PREVENTION PLAN" will be included in the monthly progress estimate.
2. The County pays 80 percent of the contract item price for "PREPARE STORM WATER POLLUTION PREVENTION PLAN" over the life of the contract.
3. After contract acceptance, the County pays for the remaining 10 percent of the contract item price for "PREPARE STORM WATER POLLUTION PREVENTION PLAN".

If risk level 2 or 3, the County pays \$500 for each Rain Event Action Plan submitted. The contract unit price paid for "RAIN EVENT ACTION PLAN" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in preparation and submittal of REAP forms, and monitoring weather forecasts as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The County does not adjust payment for an increase or decrease in the quantity of rain event action plans submitted. Section 4-1.03B, "Increased or Decreased Quantities," of the Standard Specifications does not apply.

The County pays \$2,000 for each Storm Water Annual Report submitted. The contract unit price paid for "STORM WATER ANNUAL REPORT" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in preparation and submittal of Storm Water Annual Report as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The County does not adjust payment for an increase or decrease in the quantity of Storm Water Annual Reports submitted. Section 4-1.03B, "Increased or Decreased Quantities," of the Standard Specifications does not apply.

The work to complete the final Storm Water Annual Report contract item is excluded from Section 7-1.17, "Acceptance of Contract," of the Standard Specifications.

If risk level 2 or 3, the contract unit price paid for "STORM WATER SAMPLING AND ANALYSIS DAY" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in preparation, collection, analysis, and reporting of storm water samples per qualifying rain event as

specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The County does not adjust payment for an increase or decrease in the quantity of storm water sampling and analysis day. Section 4-1.03B, "Increased or Decreased Quantities," of the Standard Specifications does not apply.

You may request or the Engineer may order laboratory analysis of storm water samples. Laboratory analysis of storm water samples will be paid for as extra work under Section 4-1.03D, "Extra Work," of the Standard Specifications.

The County does not pay for the preparation, collection, laboratory analysis, and reporting of storm water samples for non-visible pollutants if WPC practices are not implemented before precipitation or if a failure of a WPC practice is not corrected before precipitation.

The County does not pay for implementation of WPC practices in areas outside the highway right-of-way not specifically provided for in the plans or in the Special Provisions.

The County does not pay for WPC practices installed at your construction support facilities.

WPC practices for which there are separate bid items of work are measured and paid for as those bid items of work.

For each failure to submit a completed Storm Water Annual Report, the County withholds \$10,000. This withhold is in addition to other withholds under Section 9-1.07E(3), "Performance Failure Withholds," of the Standard Specifications.

Each failure to comply with any part of these Special Provisions and each failure to implement water pollution control practices are considered separate performance failures.

## **10-1.13 CONSTRUCTION SITE MANAGEMENT**

### **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

## **QUALITY CONTROL and ASSURANCE**

Not Used

## **MATERIALS**

Not Used

## **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.

## **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.
11. Staging and storage areas for equipment and materials shall be located in uplands and where possible, a minimum of 100 feet from waters of the U.S. Storage areas located less than 100 feet from waters shall be specifically authorized by the Corps.

### **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 14-9.02, "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.

## **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 waste. 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 waste
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. Saw cutting, 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 waste includes 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.

## **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

## **PAYMENT**

The contract lump sum price paid for “CONSTRUCTION SITE MANAGEMENT” includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in spill prevention and control, material management, waste management, non-stormwater management, and dewatering and identifying, sampling, testing, handling, and disposing of hazardous waste resulting from your activities, as specified in the Standard Specifications and these Special Provisions, and as ordered by the Engineer.

### **10-1.14 MATERIAL CONTAINING AERIALY DEPOSITED LEAD**

This work shall consist of handling material contaminated by aerially deposited lead in conformance with the Standard Specifications and these Special Provisions.

Aerially deposited lead is typically found within the top 2 feet of material in unpaved areas within the Caltrans right of way. Levels of lead found near the project limits range from less than 2.5 mg/kg to 210 mg/kg total lead with an average concentration of 21.6 mg/kg total lead, as analyzed by EPA Test Method 6010 or EPA Test Method 7000 series.

After the Contractor has completed handling materials containing aerially deposited lead, in conformance with the plans, Standard Specifications, and these Special Provisions, the Contractor shall have no responsibility for such materials in place and shall not be obligated for further cleanup, removal, or remedial actions for such materials.

Handling material containing aerially deposited lead shall be in conformance with rules and regulations including, but not limited to, those of the following agencies:

California Division of Occupational Safety and Health Administration (Cal-OSHA)  
California Regional Water Quality Control Board, Region 3 – Central Coast.

## **LEAD COMPLIANCE PLAN**

The Contractor shall prepare a project specific Lead Compliance Plan to prevent or minimize worker exposure to lead while handling material containing aerially deposited lead. Attention is directed to Title 8, California Code of Regulations, Section 1532.1, “Lead,” for specific Cal-OSHA requirements when working with lead.

The Lead Compliance Plan shall contain the elements listed in Title 8, California Code of Regulations, Section 1532.1(e)(2)(B). Before submission to the Engineer,

the Lead Compliance Plan shall be approved by an Industrial Hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene. The plan shall be submitted to the Engineer at least 7 days prior to beginning work in areas containing aeri ally deposited lead.

Prior to performing work in areas containing lead, personnel who have no prior training, including County and State personnel, shall complete a safety training program provided by the Contractor, that meets the requirements of Title 8, California Code of Regulations, Section 1532.1, "Lead," and the Contractor's Lead Compliance Program.

Personal protective equipment, training, and washing facilities, required by the Contractor's Lead Compliance Plan shall be supplied to County and State personnel by the Contractor. The number of State and County personnel will be 5.

### **SOIL HANDLING**

Handling of materials containing aeri ally deposited lead shall result in no visible dust migration. The Contractor shall have a means of dust control available at all times while handling material in work areas containing aeri ally deposited lead.

The Contractor shall separate material from vegetation and the soils shall remain on site.

This will not be required for vegetation removal performed during plant establishment.

Surplus material excavated from areas containing aeri ally deposited lead shall remain in the area of soil disturbance. The surplus soil shall not be disposed of outside the highway right of way.

### **PAYMENT**

Full compensation for conforming to the requirements of this section, except for the Lead Compliance Plan, shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

The contract lump sum price paid for "LEAD COMPLIANCE PLAN" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in preparing the Lead Compliance Plan, including paying the Certified Industrial Hygienist, and for providing personal protective equipment, training and medical surveillance, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Full compensation for handling material contaminated with aeri ally deposited lead, except as otherwise provided, shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

## 10-1.15 CONSTRUCTION AREA SIGNS

Construction area signs for temporary traffic control shall be furnished, installed, maintained, and removed when no longer required in conformance with the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these Special Provisions.

Attention is directed to "Furnish Sign" of these Special Provisions.

Attention is directed to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions. Type II retroreflective sheeting shall not be used on construction area sign panels. Type III, IV, VII, VIII, or IX retroreflective sheeting shall be used for stationary mounted construction area sign panels.

Attention is directed to "Construction Project Information Signs" of these Special Provisions regarding the number and type of construction project information signs to be furnished, erected, maintained, and removed and disposed of.

Unless otherwise shown on the plans or specified in these Special Provisions, the color of construction area warning and guide signs shall have black legend and border on orange background.

Orange background on construction area signs shall be fluorescent orange.

Repair to construction area sign panels will not be allowed, except when approved by the Engineer. At nighttime under vehicular headlight illumination, sign panels that exhibit irregular luminance, shadowing or dark blotches shall be immediately replaced at the Contractor's expense.

The Contractor shall notify the appropriate regional notification center for operators of subsurface installations at least 2 business days, but not more than 14 days, prior to commencing excavation for construction area sign posts. The regional notification centers include, but are not limited to, the following:

Notification Center	Telephone Number
Underground Service Alert-Northern California (USA)	(800) 642-2444
Underground Service Alert-Southern California (USA)	(800) 422-4133

Excavations required to install construction area signs shall be performed by hand methods without the use of power equipment, except that power equipment may be used if it is determined there are no utility facilities in the area of the proposed post holes. The post hole diameter, if backfilled with portland cement concrete, shall be at least 4 inches greater than the longer dimension of the post cross section.

Construction area signs placed within 15 feet from the edge of the travel way shall be mounted on stationary mounted sign supports as specified in "Construction Area Traffic Control Devices" of these Special Provisions.

The Contractor shall maintain accurate information on construction area signs. Signs that are no longer required shall be immediately covered or removed. Signs that convey inaccurate information shall be immediately replaced or the information shall

be corrected. Covers shall be replaced when they no longer cover the signs properly. The Contractor shall immediately restore to the original position and location any sign that is displaced or overturned, from any cause, during the progress of work.

The term "construction area signs" shall include temporary object markers required for the direction of public traffic through or around the work during construction. Object markers listed or designated on the plans as construction area signs shall be considered to be signs and shall be furnished, erected, maintained, and removed by the Contractor in the same manner specified for construction area signs.

Object markers shall be stationary mounted on wood or metal posts in conformance with the details shown on the plans and the provisions in Section 82, "Markers and Delineators," of the Standard Specifications.

Marker panels for Type N (CA), Type P (CA) and Type R (CA) object markers shall conform to the provisions for sign panels for stationary mounted signs.

Target plates for Type K (CA) and Type L (CA) object markers and posts, reflectors and hardware shall conform to the provisions in Section 82, "Markers and Delineators," but need not be new.

## **PAYMENT**

"CONSTRUCTION AREA SIGNS" will be paid for on a lump sum basis in the manner specified in Section 12, "Construction Area Traffic Control Devices", of the Standard Specifications.

Temporary roadside signs shall be considered as included in the contract lump sum price paid for "Construction Area Signs" and no additional compensation will be allowed therefor.

### **10-1.16 CONSTRUCTION AREA TRAFFIC CONTROL DEVICES**

Flagging, signs, and temporary traffic control devices furnished, installed, maintained, and removed when no longer required shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these Special Provisions.

Category 1 temporary traffic control devices are defined as small and lightweight (less than 100 pounds) devices. These devices shall be certified as crashworthy by crash testing, crash testing of similar devices, or years of demonstrable safe performance. Category 1 temporary traffic control devices include traffic cones, plastic drums, portable delineators, and channelizers.

If requested by the Engineer, the Contractor shall provide written self-certification for crashworthiness of Category 1 temporary traffic control devices at least 5 business days before beginning any work using the devices or within 2 business days after the request if the devices are already in use. Self-certification shall be provided by the manufacturer or Contractor and shall include the following:

A. Date,

- B. Federal Aid number (if applicable),
- C. Contract number, district, county, route and post mile of project limits,
- D. Company name of certifying vendor, street address, city, state and zip code,
- E. Printed name, signature and title of certifying person; and
- F. Category 1 temporary traffic control devices that will be used on the project.

The Contractor may obtain a standard form for self-certification from the Engineer.

Category 2 temporary traffic control devices are defined as small and lightweight (less than 100 pounds) devices that are not expected to produce significant vehicular velocity change, but may cause potential harm to impacting vehicles. Category 2 temporary traffic control devices include barricades and portable sign supports.

Category 2 temporary traffic control devices shall be on the Federal Highway Administration's (FHWA) list of Acceptable Crashworthy Category 2 Hardware for Work Zones. This list is maintained by FHWA and can be located at:

[http://safety.fhwa.dot.gov/roadway\\_dept/road\\_hardware/listing.cfm?code=workzone](http://safety.fhwa.dot.gov/roadway_dept/road_hardware/listing.cfm?code=workzone)

The Department also maintains this list at:

<http://www.dot.ca.gov/hq/traffops/signtech/signdel/pdf/Category2.pdf>

Category 2 temporary traffic control devices that have not received FHWA acceptance shall not be used. Category 2 temporary traffic control devices in use that have received FHWA acceptance shall be labeled with the FHWA acceptance letter number and the name of the manufacturer. The label shall be readable and permanently affixed by the manufacturer. Category 2 temporary traffic control devices without a label shall not be used.

If requested by the Engineer, the Contractor shall provide a written list of Category 2 temporary traffic control devices to be used on the project at least 5 business days before beginning any work using the devices or within 2 business days after the request if the devices are already in use.

Category 3 temporary traffic control devices consist of temporary traffic-handling equipment and devices that weigh 100 pounds or more and are expected to produce significant vehicular velocity change to impacting vehicles. Temporary traffic-handling equipment and devices include crash cushions, truck-mounted attenuators, temporary railing, temporary barrier, and end treatments for temporary railing and barrier.

Type III barricades may be used as sign supports if the barricades have been successfully crash tested, meeting the NCHRP Report 350 criteria, as one unit with a construction area sign attached.

Category 3 temporary traffic control devices shall be shown on the plans or on the Department's Highway Safety Features list. This list is maintained by the Division of Engineering Services and can be found at:

[http://www.dot.ca.gov/hq/esc/approved\\_products\\_list/](http://www.dot.ca.gov/hq/esc/approved_products_list/)

Category 3 temporary traffic control devices that are not shown on the plans or not listed on the Department's Highway Safety Features list shall not be used.

Full compensation for providing, installing, maintaining, and removing construction area traffic control devices including providing self-certification for crashworthiness of Category 1 temporary traffic control devices and for providing a list of Category 2 temporary traffic control devices used on the project shall be considered as included in the prices paid for the various items of work requiring the use of the Category 1 or Category 2 temporary traffic control devices and no additional compensation will be allowed therefor.

#### **10-1.17 MAINTAINING TRAFFIC**

Maintaining traffic shall conform to the provisions in 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.

Closures shall conform to the provisions in "Traffic Control System for Lane Closure" of these Special Provisions.

The Contractor shall conduct operations in such a manner that access of abutting residences and businesses along the road is not obstructed. Care shall be taken by the Contractor so that materials or equipment placed or parked within the County road right of way will not block driveways or other access means used by the adjacent property owners.

Work that interferes with public traffic shall be limited to the hours when lane closures are allowed, except for work required under Sections 7-1.08, "Public Convenience," and Section 7-1.09, "Public Safety," of the Standard Specifications

The full width of the traveled way shall be open for use by public traffic as shown in the table "Lane Closure Restriction for Designated Legal Holidays and Special Days" included in this section.

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

Under one-way reversing traffic control operations, public traffic may be stopped in one direction for periods not to exceed 10 minutes. After each stoppage, all accumulated traffic for that direction shall pass through the work zone before another stoppage is made.

The maximum length of a single stationary lane closure shall be .5 miles.

Not more than 1 separate stationary lane closures will be allowed in each direction of travel at one time.

Local authorities shall be notified at least 5 business days before work begins. The Contractor shall cooperate with local authorities to handle traffic through the work area and shall make arrangements to keep the work area clear of parked vehicles.

No work on local streets is allowed between 6 p.m. and 7 a.m.

C43(CA) (FRESH CONCRETE) sign shall be used at the beginning of the pavement slab replacement work area. The sign shall be in place during the entire curing period.

The freeway may be closed only if signed for closing 7 days in advance. The Contractor shall notify the Engineer not less than 5 business days prior to signing the freeway. If the freeway is not closed on the posted day, the closure shall be changed to allow a 3-business-day advance notice before closure.

Freeway closure charts are for the erection and removal of falsework, placement and removal of overhead sign bridges, and other work as approved in writing by the Engineer.

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

Personal vehicles of the Contractor's employees shall not be parked within the right of way except between 7am and 6pm

Personal vehicles of the Contractor's employees shall not be parked within the right of way except in the area designated by the Engineer.

When work vehicles or equipment are parked within 6 feet of a traffic lane to perform active construction, the shoulder area shall be closed with fluorescent orange traffic cones or portable delineators placed on a taper in advance of the parked vehicles or equipment and along the edge of the pavement at 25-foot intervals to a point not less than 25 feet past the last vehicle or piece of equipment. A minimum of 9 traffic cones or portable delineators shall be used for the taper. A W20-1 (ROAD WORK AHEAD) or W21-5b (RIGHT/LEFT SHOULDER CLOSED AHEAD) or C24(CA) (SHOULDER WORK AHEAD) sign shall be mounted on a crashworthy portable sign support with flags. The sign shall be placed where designated by the Engineer. The sign shall be a minimum of 48" x 48" in size. The Contractor shall immediately restore to the original position and location a traffic cone or delineator that is displaced or overturned, during the progress of work.

A minimum of one paved traffic lane, not less than 12 feet wide, shall be open for use by public traffic in each direction of travel.

If minor deviations from the lane requirement charts are required, a written request shall be submitted to the Engineer at least 15 days before the proposed date of the closure. The Engineer may approve the deviations if there is no significant increase in the cost to the County and if the work can be expedited and better serve the public traffic.

Full compensation for maintaining traffic including but not limited to furnishing, erecting, maintaining, and removing and disposing of the C43(CA), W20-1, W21-5b,

and C24(CA) signs shall be considered as included in the contract lump sum price paid for "TRAFFIC CONTROL SYSTEM" and no additional compensation will be allowed therefor.

<b>Lane Closure Restriction for Designated Legal Holidays and Special Days</b>											
Thu	Fri	Sat	Sun	Mon	Tues	Wed	Thu	Fri	Sat	Sun	
x	<b>H</b> xx	xx	xx								
	<b>SD</b> xx										
x	xx	<b>H</b> xx	xx								
		<b>SD</b> xx									
	x	xx	<b>H</b> xx	xx							
			<b>SD</b> xx								
	x	xx	xx	<b>H</b> xx	xxx						
	x	xx	xx	<b>SD</b> xx	xxx						
				x	<b>H</b> xx						
				x	<b>SD</b> xx						
					x	<b>H</b> xx					
						<b>SD</b> xx					
						x	<b>H</b> xx	xx	xx	xx	xx
							<b>SD</b> xx				
<b>Legends:</b>											
	Refer to lane closure charts										
x	The full width of the traveled way shall be open for use by public traffic after 6 a.m.										
xx	The full width of the traveled way shall be open for use by public traffic.										
xxx	The full width of the traveled way shall be open for use by public traffic until 7:30p.m.										
<b>H</b>	Designated Legal Holiday										
<b>SD</b>	Special Day none										



Contractor will be notified of disapproved closures or closures that require coordination with other parties as a condition of approval.

Closure Schedule amendments, including adding additional closures, shall be submitted by noon to the Engineer, in writing, at least 3 business days in advance of a planned closure. Approval of Closure Schedule amendments will be at the discretion of the Engineer.

The Engineer shall be notified of cancelled closures 2 business days before the date of closure.

Closures that are cancelled due to unsuitable weather may be rescheduled at the discretion of the Engineer.

**CONTINGENCY PLAN**

A detailed contingency plan shall be prepared for reopening closures to public traffic. If required by "Beginning of Work, Time of Completion and Liquidated Damages" of these Special Provisions, the contingency plan shall be submitted to the Engineer before work at the job site begins. Otherwise, the contingency plan shall be submitted to the Engineer within one business day of the Engineer's request.

**LATE REOPENING OF CLOSURES**

If a closure is not reopened to public traffic by the specified time, work shall be suspended in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications. No further closures are to be made until the Engineer has accepted a work plan, submitted by the Contractor, that will insure that future closures will be reopened to public traffic at the specified time. The Engineer will have 2 business days to accept or reject the Contractor's proposed work plan. The Contractor will not be entitled to compensation for the suspension of work resulting from the late reopening of closures.

For each 10-minute interval, or fraction thereof past the time specified to reopen the closure, the Department will deduct the amount per interval shown below from moneys due or that may become due the Contractor under the contract. Damages are limited to 5 percent of project cost per occurrence and will not be assessed when the Engineer requests that the closure remain in place beyond the scheduled pickup time.

Type of Facility	Route or Segment	Period	Damages/interval (\$)
Mainline		1st half hour	\$xx / 10 minutes
		2nd half hour	\$xx / 10 minutes
		2nd hour and beyond	\$xx / 10 minutes
Connector		1st half hour	\$xx / 10 minutes
		2nd half hour	\$xx / 10 minutes
		2nd hour and beyond	\$xx / 10 minutes

**COMPENSATION**

The Engineer shall be notified of delays in the Contractor's operations due to the following conditions, and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of those conditions, and the Contractor's loss due to that delay could not have been avoided by rescheduling the affected closure or by judicious handling of forces, equipment and plant, the delay will be considered a right of way delay and will be compensated in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications:

1. The Contractor's proposed Closure Schedule is denied and planned closures are within the time frame allowed for closures in "Maintaining Traffic" of these Special Provisions, except that the Contractor will not be entitled to compensation for amendments to the Closure Schedule that are not approved.
2. The Contractor is denied a confirmed closure.

Should the Engineer direct the Contractor to remove a closure before the time designated in the approved Closure Schedule, delay to the Contractor's schedule due to removal of the closure will be considered a right of way delay and compensation for the delay will be determined in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

#### **10-1.19 TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE**

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

The Contractor shall submit a traffic control plan based on field construction activities and traffic conditions, including construction area sign plan to the Engineer and Caltrans for approval and obtain the necessary encroachment permits prior to starting construction that will require traffic controls.

The traffic control plan submitted by the Contractor to the Engineer and Caltrans shall comply with the "Manual on Uniform Traffic Control Devices" (MUTCD)

At the conclusion of each work day there shall not be a drop-off along the edge of traveled way greater than 0.15', unless temporary Type K railing has been installed adjacent to the drop-off. The Contractor shall place "Low Shoulder" signs along the traveled way where there is drop-off. Drop-offs greater than 0.15' will require material to be placed and compacted against the vertical cuts adjacent to the traveled way. During excavation operations, native material may be used for this purpose; however, once placing of the structural section commences, structural material shall be used. The material shall be placed to the level of the elevation of the top of existing pavement and tapered at a slope of 4:1 (horizontal:vertical) or flatter to the bottom of the excavation. Treated base shall not be used for the taper. Full compensation for placing the material on a 4:1 slope, regardless of the number of times the material is required, and subsequent removing or reshaping of the material to the lines and grades shown on the plans shall be considered as included in the contract price paid for the materials involved and no additional compensation will be

allowed therefor. No payment will be made for material placed in excess of that required for the structural section.

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

Each vehicle used to place, maintain and remove components of a traffic control system on multilane highways shall be equipped with a Type II flashing arrow sign which shall be in operation when the vehicle is being used for placing, maintaining or removing components. Vehicles equipped with Type II flashing arrow sign not involved in placing, maintaining or removing components when operated within a stationary lane closure shall only display the caution display mode. The sign shall be controllable by the operator of the vehicle while the vehicle is in motion. The flashing arrow sign shown on the plans shall not be used on vehicles which are being used to place, maintain and remove components of a traffic control system and shall be in place before a lane closure requiring its use is completed.

The traffic cones shown to be placed transversely across closed traffic lanes and shoulders on the plans entitled "Traffic Control System for Lane Closures on Freeways and Expressways" and "Traffic Control System for Lane and Complete Closures on Freeways and Expressways" shall not be placed.

If components in the traffic control system are displaced or cease to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately repair the components to the original condition or replace the components and shall restore the components to the original location.

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

The contract lump sum price paid for "TRAFFIC CONTROL SYSTEM" shall include full compensation for furnishing all labor, materials (including signs), tools, equipment, and incidentals, and for doing all the work involved in placing, removing, storing, maintaining, moving to new locations, replacing, and disposing of the components of the traffic control system shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The adjustment provisions in Section 4-1.03, "Changes," of the Standard Specifications shall not apply to the item of traffic control system. Adjustments in compensation for traffic control system will be made only for increased or decreased traffic control system required by changes ordered by the Engineer and will be made on the basis of the cost of the increased or decreased traffic control necessary. The 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.

Traffic control system required by work which is classed as extra work, as provided in Section 4-1.03D of the Standard Specifications, will be paid for as a part of the extra work.

## **10-1.20 PORTABLE CHANGEABLE MESSAGE SIGNS**

### **GENERAL**

#### **Summary**

Work includes furnishing, placing, operating, maintaining, and removing portable changeable message signs.

Comply with Section 12-3.12, "Portable Changeable Message Signs," of the Standard Specifications.

#### **Definitions**

**useable shoulder area:** Paved or unpaved contiguous surface adjacent to the traveled way with:

1. Sufficient weight bearing capacity to support portable changeable message sign
2. Slope not greater than 6:1 (horizontal:vertical)

#### **Submittals**

Upon request, submit a Certificate of Compliance for each portable changeable message sign under Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

#### **Quality Control and Assurance**

Comply with the manufacturer's operating instructions for portable changeable message sign.

Approaching drivers must be able to read the entire message for all phases at least twice at the posted speed limit before passing portable changeable message sign. You may use more than 1 portable changeable message sign to meet this requirement.

Only display the message shown on the plans or ordered by the Engineer or specified in these Special Provisions.

### **MATERIALS**

Portable changeable message sign must have 24-hour timer control or remote control capability.

The text of the message displayed on portable changeable message sign must not scroll, or travel horizontally or vertically across the face of the message panel.

## **CONSTRUCTION**

Continuously repeat the entire message in no more than 2 phases of at least 3 seconds per phase.

If useable shoulder area is at least 15 feet wide, the displayed message on portable changeable message sign must be minimum 18-inch character height. If useable shoulder area is less than 15 feet wide, you may use a smaller message panel with minimum 12-inch character height to prevent encroachment in the traveled way.

You or your representative must be available by cell phone for operations that require portable changeable message signs. Give the Engineer your cell phone number. When the Engineer contacts you, immediately comply with the Engineer's request to modify the displayed message.

Start displaying the message on portable changeable message sign 15 minutes before closing the lane.

Place portable changeable message sign in advance of the first warning sign for:

1. Each stationary lane closure
2. Each connector closure
3. Each speed reduction zone

Place portable changeable message sign as far from the traveled way as practicable where it is legible to traffic and does not encroach on the traveled way. Place portable changeable sign before or at the crest of vertical roadway curvature where it is visible to approaching traffic. Avoid placing portable changeable message sign within or immediately after horizontal roadway curvature. Where possible, place portable changeable message sign behind guardrail or temporary railing (Type K).

Except where placed behind guardrail or temporary railing (Type K) use traffic control for shoulder closure to delineate portable changeable message sign.

Remove portable changeable message sign when not in use.

## **MEASUREMENT AND PAYMENT**

The contract price paid per each for "PORTABLE CHANGEABLE MESSAGE SIGNS" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing, placing, operating, modifying messages, maintaining portable changeable message signs, complete in place, including transporting from location to location, removing, and repairing or replacing defective or damaged portable changeable message signs, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.21 TEMPORARY RAILING (TYPE K)**

Temporary Railing (Type K) shall be furnished, placed and maintained at the locations shown on the plans, specified in the Standard Specifications or in these

Special Provisions or where designated by the Engineer. Temporary Railing (Type K) shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these Special Provisions.

Attention is directed to "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions regarding reflectors and object markers for temporary railing (Type K).

Attention is directed to Section 7-1.09, "Public Safety," of the Standard Specifications and Order of Work" of these Special Provisions.

Temporary railing (Type K) placed in conformance with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications will be neither measured nor paid for.

#### **MEASUREMENT AND PAYMENT**

"TEMPORARY RAILING (TYPE K) will be measured and paid for by the linear foot in the manner specified in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications.

#### **10-1.22 TEMPORARY TRAFFIC SCREEN**

Temporary traffic screen shall be furnished, installed, and maintained on top of temporary railing (Type K) at the locations designated on the plans, specified in the Special Provisions or directed by the Engineer and shall conform to the provisions specified for traffic handling equipment and devices in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these Special Provisions.

Temporary traffic screen panels shall be new or used CDX Grade, or better, plywood or weather resistant strandboard mounted and anchored on temporary railing (Type K). Wale boards shall be new or used Douglas fir, rough sawn, Construction Grade, or better. Pipe screen supports shall be new or used galvanized steel pipe, Schedule 40. Nuts, bolts, and washers shall be cadmium plated. Screws shall be black or cadmium plated flat head, cross slotted screws with full thread length.

When no longer required, as determined by the Engineer, temporary traffic screen shall be removed from the site of the work and shall become the property of the Contractor.

#### **MEASUREMENT AND PAYMENT**

Temporary traffic screen will be measured by the linear foot from actual measurements along the line of the completed temporary traffic screen, at each location designated on the plans, specified or directed by the Engineer. If the Engineer orders a lateral move of temporary railing, with temporary traffic screen attached, and the repositioning is not shown on the plans, moving the temporary traffic screen will be paid for as part of the extra work for moving the temporary railing as specified in Section 12-4.01, "Measurement and Payment," of the Standard

Specifications. Temporary traffic screen placed in excess of the length shown, specified or directed by the Engineer will not be paid for.

The contract price paid per linear foot for "TEMPORARY TRAFFIC SCREEN" shall include full compensation for furnishing all labor, materials (including anchoring systems), tools, equipment, and incidentals, and for doing all the work involved in installing, maintaining, and removing the temporary traffic screen, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.23 TEMPORARY CRASH CUSHION MODULE**

This work shall consist of furnishing, installing, and maintaining sand filled temporary crash cushion modules in groupings or arrays at each location shown on the plans, as specified in these Special Provisions or where designated by the Engineer. The grouping or array of sand filled modules shall form a complete sand filled temporary crash cushion in conformance with the details shown on the plans and these Special Provisions.

Temporary crash cushions shall be secured in place prior to commencing work for which the temporary crash cushions are required.

Whenever the work or the Contractor's operations establishes a fixed obstacle, the exposed fixed obstacle shall be protected with a sand filled temporary crash cushion. The sand filled temporary crash cushion shall be in place prior to opening the lanes adjacent to the fixed obstacle to public traffic.

Sand filled temporary crash cushions shall be maintained in place at each location, including times when work is not actively in progress. Sand filled temporary crash cushions may be removed during a work period for access to the work provided that the exposed fixed obstacle is 15 feet or more from a lane carrying public traffic and the temporary crash cushion is reset to protect the obstacle prior to the end of the work period in which the fixed obstacle was exposed. When no longer required, as determined by the Engineer, sand filled temporary crash cushions shall be removed from the site of the work.

Sand filled temporary crash cushion modules shall be one of the following, or equal, and be manufactured after March 31, 1997:

1. Energite III and Fitch Inertial Modules, manufactured by Energy Absorption Systems, Inc., 35 East Wacker Drive, Suite 1100, Chicago, IL 60601:
  - 1.1. Northern California: Traffic Control Service, Inc., 8585 Thys Court, Sacramento, CA 95828, telephone (800) 884-8274, FAX (916) 387-9734
  - 1.2. Southern California: Traffic Control Service, Inc., 1818 E. Orangethorpe, Fullerton, CA 92831-5324, telephone (800) 222-8274, FAX (714) 526-9501
2. TrafFix Sand Barrels, manufactured by TrafFix Devices, Inc., 220 Calle Pintoresco, San Clemente, CA 92672, telephone (949) 361-5663, FAX (949) 361-9205
  - 2.1. Northern California: United Rentals, Inc., 1533 Berger Drive, San Jose, CA 95112, telephone (408) 287-4303, FAX (408) 287-1929

- 2.2. Southern California: Statewide Safety & Sign, Inc., P.O. Box 1440, Pismo Beach, CA 93448, telephone (800) 559-7080, FAX (805) 929-5786
3. CrashGard Model CC-48 Sand Barrels, manufactured by Plastic Safety Systems, Inc., 2444 Baldwin Road, Cleveland, OH 44104:
  - 3.1. Northern California:
    - 3.1.1. Capitol Barricade Safety & Sign, 6329 Elvas Ave, Sacramento, CA 95819, telephone (888) 868-5021, FAX (916) 451-5388
    - 3.1.2. Sierra Safety, Inc., 9093 Old State Highway, New Castle, CA 95658, telephone (916) 663-2026, FAX (916) 663-1858
  - 3.2. Southern California: Hi Way Safety Inc., 13310 5th Street, Chino, CA 91710, telephone (909) 591-1781, FAX (909) 627-0999

Modules contained in each temporary crash cushion shall be of the same type at each location. The color of the modules shall be the standard yellow color, as furnished by the vendor, with black lids. The modules shall exhibit good workmanship free from structural flaws and objectionable surface defects. The modules need not be new. Good used undamaged modules conforming to color and quality of the types specified herein may be utilized. If used Fitch modules requiring a seal are furnished, the top edge of the seal shall be securely fastened to the wall of the module by a continuous strip of heavy duty tape.

Modules shall be filled with sand in conformance with the manufacturer's directions, and to the sand capacity in pounds for each module shown on the plans. Sand for filling the modules shall be clean washed concrete sand of commercial quality. At the time of placing in the modules, the sand shall contain not more than 7 percent water as determined by California Test 226.

Modules damaged due to the Contractor's operations shall be repaired immediately by the Contractor at the Contractor's expense. Modules damaged beyond repair, as determined by the Engineer, due to the Contractor's operations shall be removed and replaced by the Contractor at the Contractor's expense.

Temporary crash cushion modules may be placed on movable pallets or frames. Comply with dimensions shown on the plans. The pallets or frames shall provide a full bearing base beneath the modules. The modules and supporting pallets or frames shall not be moved by sliding or skidding along the pavement or bridge deck.

A Type R or P marker panel shall be attached to the front of the crash cushion as shown on the plans, when the closest point of the crash cushion array is within 12 feet of the traveled way. The marker panel, when required, shall be firmly fastened to the crash cushion with commercial quality hardware or by other methods determined by the Engineer.

At the completion of the project, temporary crash cushion modules, sand filling, pallets or frames, and marker panels shall become the property of the Contractor and shall be removed from the site of the work. Temporary crash cushion modules shall not be installed in the permanent work.

Temporary crash cushion modules will be measured by the unit as determined from the actual count of modules used in the work or ordered by the Engineer at each location. Temporary crash cushion modules placed in conformance with Section 7-

1.09, "Public Safety," of the Standard Specifications and modules placed in excess of the number specified or shown will not be measured nor paid for.

Repairing modules damaged by public traffic will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications. Modules damaged beyond repair by public traffic, when ordered by the Engineer, shall be removed and replaced immediately by the Contractor. Modules replaced due to damage by public traffic will be measured and paid for as temporary crash cushion module.

If the Engineer orders a lateral move of the sand filled temporary crash cushions and the repositioning is not shown on the plans, moving the sand filled temporary crash cushion will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications and these temporary crash cushion modules will not be counted for payment in the new position.

### **MEASUREMENT AND PAYMENT**

The contract unit price paid per each for "TEMPORARY CRASH CUSHION MODULE" shall include full compensation for furnishing all labor, materials (including sand, pallets or frames and marker panels), tools, equipment, and incidentals, and for doing all the work involved in furnishing, installing, maintaining, moving, and resetting during a work period for access to the work, and removing from the site of the work when no longer required (including those damaged by public traffic) sand filled temporary crash cushion modules, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

## **10-1.24 TREATED WOOD WASTE**

### **GENERAL**

#### **Summary**

This work includes handling, storing, transporting, and disposing of treated wood waste.

Wood removed from guardrails is treated with one or more of the following:

1. Creosote
2. Pentachlorophenol
3. Copper azole
4. Copper boron azole
5. Chromated copper arsenate
6. Ammoniacal copper zinc arsenate
7. Copper naphthenate
8. Alkaline copper quaternary

Manage treated wood waste under Title 22 CA Code of Regulations, Division 4.5, Chapter 34.

## **Submittals**

For disposal of treated wood waste submit a copy of each completed shipping record and weight receipt to the Engineer within 5 business days of disposal.

## **CONSTRUCTION**

Provide training to personnel who handle treated wood waste or may come in contact with treated wood waste that includes:

1. All applicable requirements of Title 8 CA Code of Regulations
2. Procedures for identifying and segregating treated wood waste
3. Safe handling practices
4. Requirements of Title 22 CA Code of Regulations, Division 4.5, Chapter 34
5. Proper disposal methods

Store treated wood waste before disposal using any of the following methods:

1. Elevate on blocks above a reasonably foreseeable run-on elevation and protect from precipitation
2. Place in water-resistant containers designed for shipping or solid waste collection
3. Place on a containment surface protected from run-on and precipitation

Prevent unauthorized access to treated wood waste using a secured enclosure such as a locked chain link fenced area or a lockable shipping container located within the project limits.

Resize and segregate treated wood waste at a location where debris from the operation including sawdust and chips can be contained. Collect and manage the debris as treated wood waste.

Provide water-resistant labels, that comply with Title 22 CA Code of Regulations, Division 4.5, Chapter 34, § 67386.5, to clearly mark and identify treated wood waste and accumulation areas. Labels must include:

1. Caltrans, District number, Construction, contract number
2. District office address
3. Engineer's name, address, and telephone number
4. Contractor's contact name and telephone number

Before transporting treated wood waste, obtain agreement from the receiving facility that the treated wood waste will be accepted. Protect shipments of treated wood waste from loss and exposure to precipitation. Each shipment must be accompanied by a shipping record such as a manifest or bill of lading that includes:

1. Caltrans with district number
2. Construction contract number
3. District office address
4. Engineer name, address, and telephone number
5. Contractor contact name and telephone number
6. Receiving facility name and address

7. Waste description: Treated wood waste (preservative type if known or unknown/mixture)
8. Project location
9. Estimated quantity of shipment by weight or volume
10. Date of transport
11. Date of receipt by the receiving treated wood waste facility
12. Weight of shipment as measured by the receiving treated wood waste facility

The shipping record must be at least a 4-part carbon or carbonless 8-1/2" x 11" form to allow retention of copies by the Engineer, transporter, and disposal facility.

Dispose of treated wood waste in an approved treated wood waste facility. A list of currently approved treated wood waste facilities may be viewed at:

[http://www.dtsc.ca.gov/HazardousWaste/upload/TWW\\_Confirmed\\_Landfill\\_List.pdf](http://www.dtsc.ca.gov/HazardousWaste/upload/TWW_Confirmed_Landfill_List.pdf)

Dispose of treated wood waste within:

1. 90 days of generation if stored on blocks
2. 90 days of filling a container if containerized
3. 180 days of generation if stored on a containment surface

#### **MEASUREMENT AND PAYMENT**

Full compensation for handling, storing, transporting, and disposing treated wood waste, including personnel training, is included in the contract price paid per linear foot for "REMOVE METAL BEAM GUARD RAILING" and no additional compensation will be allowed therefor.

### **10-1.25 MOVE-IN/MOVE-OUT (TEMPORARY EROSION CONTROL)**

#### **GENERAL**

This work includes moving onto the project when an area is ready to receive temporary erosion control, setting up required personnel and equipment for the application of erosion control materials, and moving out all personnel and equipment when temporary erosion control in that area is completed.

Temporary erosion control consists of any water pollution control practice for soil stabilization.

When notified by the Engineer that an area is ready for temporary erosion control, start erosion control work within 5 business days.

#### **MEASUREMENT AND PAYMENT**

Move-in/move-out (temporary erosion control) is measured as units from actual count. A move-in followed by a move-out is considered one unit.

The contract unit price each paid for "MOVE-IN/MOVE-OUT (TEMPORARY EROSION CONTROL)" shall include full compensation for furnishing all labor,

materials (excluding temporary erosion control materials), tools, equipment, and incidentals and for doing all the work involved in moving in and removing from the project all personnel and equipment necessary for application of temporary erosion control, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

## **10-1.26 TEMPORARY EROSION CONTROL (HYDROSEED)**

### **GENERAL**

#### **Summary**

This work includes applying, maintaining, and removing temporary hydroseed. Hydroseed uses a mixture of tackifier, fiber, seed, and water to stabilize active and nonactive disturbed soil areas.

The SWPPP must describe and include the use of temporary hydroseed as a water pollution control practice for soil stabilization.

#### **Submittals**

At least 5 business days before applying hydroseed, submit:

1. Material Safety Data Sheet for the tackifier.
2. Product label describing the tackifier as an erosion control product.
3. List of pollutant indicators and potential pollutants for the use of temporary hydroseed. Pollutant indicators are described under "Sampling and Analysis Plan for Non-Visible Pollutants" in the Preparation Manual.
4. Determination of acute and chronic toxicity for aquatic organisms conforming to EPA methods for the tackifier.
5. Composition of ingredients including chemical formulation.

Submit a Certificate of Compliance as specified in Section 6-1.07, "Certificates of Compliance" of the Standard Specifications for:

1. Tackifier
2. Fiber
3. Seed

#### **Quality Control and Assurance**

Retain and submit records of temporary hydroseed applications including:

1. Compliance with specified rates
2. Application area
3. Application time
4. Quantity

## **MATERIALS**

### **Tackifier**

The tackifier must be:

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 plant-based product must be:

1. A natural high molecular weight polysaccharide
2. A 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. A guar gum based product derived from the ground endosperm of the guar plant, *Cyamopsis 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 a non-ionic, water-soluble granular material derived from corn, potato, or other plant-based source.

Tackifier classified as polymeric emulsion blend must be:

1. A polymeric emulsion blend with a 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. A 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

### **Fiber**

Fiber must be wood fiber, cellulose fiber, alternate fiber, or a combination of these fibers as specified. 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

If wood fiber is specified, 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

If cellulose fiber is specified, 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.

If alternate fiber is specified, 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

### **Coloring Agent**

Use a biodegradable nontoxic coloring agent free from copper, mercury, and arsenic to ensure the hydroseed contrasts with the application area.

### **Seed**

Seed must comply with Section 20-2.10, "Seed," of the Standard Specifications. 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 tags attached. A container without a seed tag attached is not accepted. The Engineer takes a sample of approximately 1 ounce or 0.25 cup of seed for each seed lot greater than 2 pounds.

Seed must comply with the following:

**SEED**

Botanical Name (Common Name)	Percent Germination (Minimum)	Pounds Pure Live Seed Per Acre (Slope Measurement)
Nemophila menziesii Hook. Et Arn (baby blue eyes)	80	10
Trifolium willdenovii Spreng. (tomcat clover)	80	15
Lotus purshianus (Benth.) Clements et E.G. Clements (Spanish lotus)	80	15
Lupinus nanus Dougl. Ex Benth. (lupine)	80	15

<sup>a</sup>Seed produced in CA only.

**Seed Sampling Supplies**

At the time of seed sampling, furnish a glassine lined bag and custody seal tag for each seed lot sample.

**CONSTRUCTION**

**Application**

Apply temporary hydroseed when an area is ready to receive temporary erosion control under "Move-in/Move-out (Temporary Erosion Control)." The quantity of tackifier in the mixture must be as recommended by the manufacturer. The ratio of water to fiber and tackifier in the mixture must be as recommended by the manufacturer. The proportions of various erosion control materials may be changed by the Engineer to meet field conditions. Use hydroseeding equipment to apply hydroseed. Apply hydroseed:

1. At application rate indicated. Successive applications or passes may be needed to achieve the indicated rate:

Material	Application Rate lbs/acre
Wood Fiber	750
Cellulose Fiber	750
Alternate Fiber	
Seed	55

2. To form a continuous mat with no gaps between the mat and the soil surface.
3. From 2 or more directions to achieve a continuous mat.
4. In layers to avoid slumping and to aid drying.
5. During dry weather or at least 24 hours before predicted rain.

Do not apply hydroseed if:

1. Water is standing on or moving across the soil surface
2. Soil is frozen
3. Air temperature is below 40 °F during the tackifier curing period unless allowed by the tackifier manufacturer and approved by the Engineer

Do not allow over-spray onto the traveled way, sidewalks, lined drainage channels, or existing vegetation.

### **Maintenance**

Reapply hydroseed within 24 hours of discovering visible erosion, unless the Engineer approves a longer period. Temporary hydroseed disturbed or displaced by your vehicles, equipment, or operations must be reapplied at your expense. Cleanup, repair, removal, disposal, or replacement due to improper installation or your negligence are not included in the cost for performing maintenance.

### **Removal**

Remove hydroseed by mechanically blending it into the soil with track laying equipment, disking, or other approved method.

### **MEASUREMENT AND PAYMENT**

Temporary Erosion Control (hydroseed) is measured by the square foot from measurements along the slope of the areas covered by the hydroseed.

The contract price paid per square foot for "TEMPORARY EROSION CONTROL (HYDROSEED)" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in applying temporary hydroseed, complete in place, including removal of hydroseed, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The County and you share the cost of maintaining the temporary hydroseed. The County determines the maintenance cost under Section 9-1.03, "Force Account Payment," of the Standard Specifications and pays you one-half of that cost.

#### **10-1.27 TEMPORARY FENCE (TYPE CL-6 WITH DUST SCREEN)**

Temporary fence type CL-6 with dust screen shall be furnished, constructed, maintained, and later removed as shown on the plans, as specified in these Special Provisions and as directed by the Engineer.

Except as otherwise specified in this section, temporary fence shall conform to the plan details and the specifications for permanent fence of similar character as provided in Section 80, "Fences," of the Standard Specifications.

Used materials may be installed provided the used materials are good, sound and are suitable for the purpose intended, as determined by the Engineer.

Materials may be commercial quality provided the dimensions and sizes of the materials are equal to, or greater than, the dimensions and sizes shown on the plans or specified herein.

Posts shall be either metal or wood at the Contractor's option.

Galvanizing and painting of steel items will not be required.

Treating wood with a wood preservative will not be required.

Concrete footings for metal posts will not be required.

Temporary fence that is damaged during the progress of the work shall be repaired or replaced by the Contractor at the Contractor's expense.

When no longer required for the work, as determined by the Engineer, temporary fence shall be removed. Removed facilities shall become the property of the Contractor and shall be removed from the site of the work, except as otherwise provided in this section.

Removed temporary fence materials that are not damaged may be constructed in the permanent work provided the materials conform to the requirements specified for the permanent work and such materials are new when used for the temporary fence.

Holes caused by the removal of temporary fence shall be backfilled in conformance with the provisions in the second paragraph of Section 15-1.02, "Preservation of Property," of the Standard Specifications.

The various types and kinds of temporary fence will be measured and paid for in the manner specified for permanent fence of similar character as provided in Section 80, "Fences," of the Standard Specifications.

The Contractor shall provide submittal to the County, for the dust screen materials to be used on temporary fences for approval prior to installation.

## **MEASUREMENT AND PAYMENT**

Temporary fence shall be measured by the linear foot from actual measurements in the manner as specified in Section 80-4, "Chain Link Fence," of the Standard Specifications.

The contract price paid per linear foot for "TEMPORARY FENCE (TYPE CL-6 WITH DUST SCREEN)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the temporary fence (Type CL-6 with dust screen), complete in place, including maintenance, removal of materials, and backfilling and repairing holes, depressions and other ground disturbance, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as ordered by the Engineer.

## **10-1.28 TEMPORARY COVER**

### **GENERAL**

#### **Summary**

This work includes constructing, maintaining, and removing temporary cover.

The SWPPP must describe and include the use of temporary cover as a water pollution control practice for soil stabilization and stockpile management.

#### **Submittals**

Submit a Certificate of Compliance as specified in Section 6-1.07, "Certificates of Compliance" of the Standard Specifications for:

1. Gravel-filled bag fabric
2. Temporary cover fabric

If you substitute a material in the following list, submit a sample of the alternative material for approval at least 5 business days before installation:

1. Alternative restrainer
2. Alternative linear sediment barrier

### **MATERIALS**

#### **Geosynthetic Fabrics**

Geosynthetic fabrics must consist of one of the following:

1. Polyester
2. Polypropylene
3. Combined polyester and polypropylene

Sample under ASTM D 4354, Procedure C.

Test under ASTM D 4759. All properties are based on Minimum Average Roll Value (MARV).

Identify, store, and handle under ASTM D 4873.

Protect geosynthetics from moisture, sunlight and damage during shipping and storage. Label each unit with the manufacturer's name, identifying information and product identification.

Gravel-filled bag fabric must comply with:

Specification	Requirements
Grab breaking load 1-inch grip, lb, min. in each direction	205
Apparent elongation percent, min., in each direction	50
Water Flow Rate max. average roll value, gallons per minute/square foot	80-150
Permittivity 1/sec., min	1.2
Apparent opening size max. average roll value, U.S. Standard sieve size	40-80
Ultraviolet Degradation percent of original unexposed grab breaking load 500 hr, minimum	70

The temporary cover fabric must be geosynthetic cover fabric, plastic sheeting, or a combination of both.

Temporary cover fabric must be either:

1. Plastic sheeting consisting of a single-ply geomembrane material, 10 mils thick, that complies with ASTM D 5199
2. Geosynthetic cover fabric that complies with the following properties:

Specification	Requirements
Grab breaking load 1-inch grip, lb, min. in each direction	200
Apparent elongation percent, min., in each direction	50
Water Flow Rate max. average roll value, gallons per minute/square foot	75-120
Permittivity 1/sec., min	0.08
Apparent opening size max. average roll value, U.S. Standard sieve size	100
Ultraviolet Degradation percent of original unexposed grab breaking load 500 hr, minimum	70

### **Gravel**

Gravel for gravel-filled bags must be:

1. From 3/8 to 3/4 inch in diameter
2. Clean and free from clay balls, organic matter, and other deleterious materials

### **Gravel-filled Bags**

Gravel-filled bags must:

1. Be made from gravel-filled bag fabric.

2. Have inside dimensions from 24 to 32 inches in length, and from 16 to 20 inches in width.
3. Have the opening bound to retain the gravel. The opening must be sewn with yarn, bound with wire, or secured with a closure device.
4. Weigh from 30 to 50 pounds when filled with gravel.

### **Restrainers**

Restrainers must be used to secure the cover fabric or plastic sheeting to the surface of the slope or stockpile.

Restrainers must be one of the following:

1. Made of gravel-filled bags that are roped together and spaced no more than a 6 feet apart
2. Made of wooden lath and anchor restrainers as shown on the plans and the following:
  - 2.1 Wooden lath must be 2" x 4" x 8', made from fir or pine, and comply with Section 88-2.12, "Lumber," of the Standard Specifications
  - 2.2 Anchor restrainers must be made from steel reinforcing bars and spaced no more than 4 feet apart along the wooden lath
3. An approved alternate method

### **Rope**

Rope must be at least 3/8 inch in diameter.

Rope must be one of the following:

1. Biodegradable, such as sisal or manila
2. Nondegradable, such as polypropylene or nylon

### **Linear Sediment Barrier**

Linear sediment barriers consist of one or more of the following:

1. Gravel bag berm
2. Earthen berm
3. Approved alternate method

## **CONSTRUCTION**

### **Temporary Cover Fabric**

Install temporary cover fabric by:

1. Placing the temporary cover fabric loosely on the slope or stockpile with the longitudinal edges perpendicular to the slope contours
2. Placing the temporary cover fabric on the upper portion of the slope to overlap cover fabric on the lower portion of the slope
3. Placing the temporary cover fabric on the side of the prevailing wind to overlap the cover fabric on the downwind side of the slope

4. Anchoring the perimeter edge of the temporary cover fabric in key trenches
5. Overlapping edges of the temporary cover fabric by at least 2 feet
6. Placing restrainers at the overlap area and along the toe of the slope. Between overlaps, the restrainers must be spaced a maximum of 8 feet on center.
7. Ensuring that, if anchor restraints are used, the leg of the steel reinforcing bar pierces the temporary cover fabric and holds the wooden lath firmly against the surface of the slope or stockpile.

### **Linear Sediment Barrier**

Protect excavation and embankment slopes with linear sediment barrier by:

1. Preventing run-on and concentrated flows from damaging the slopes
2. Placing the barrier approximately parallel to the slope contour at the toe of the slope
4. Angling the last 6 feet of the barrier up-slope

Protect stockpiles with linear sediment barrier by:

1. Preventing run-on and concentrated flows from touching the stockpiled material
2. Surrounding the stockpile with a linear sediment barrier
3. Adding more linear sediment barrier within 24 hours of adding more material to the stockpile

If earthen berms are used as a linear sediment barrier, they must be:

1. At least 8 inches high and 36 inches wide
2. Compacted by hand or mechanical method

If gravel bag berms are used as a linear sediment barrier:

1. Place gravel bags as a single layer
2. Place gravel bags end-to-end to eliminate gaps

If you need to increase the height of the gravel bag berm:

1. Increase height by adding rows of gravel-filled bags
2. Stack bags in a way that the bags in the top row overlap the joints in the lower row
3. Stabilize berm by adding rows at the bottom

If you remove the temporary cover to do other work, replace and secure temporary cover within one hour.

### **MAINTENANCE**

Maintain temporary cover to minimize exposure of the slopes or stockpile and prevent movement of the material beyond the linear sediment barrier.

Maintain temporary cover by:

1. Relocating and securing restrainers to keep the erosion control blankets in place. Temporary cover fabric that breaks free must be immediately secured.
2. Repairing or replacing the temporary cover fabric when the area covered by temporary cover becomes exposed or exhibits visible erosion.
3. Repairing or replacing the linear sediment barrier when washouts occur between joints or beneath the linear sediment barrier.
4. Repairing or replacing the temporary cover fabric when it becomes detached, torn, or unraveled.

Repair temporary cover within 24 hours of discovering damage unless the Engineer approves a longer period.

If your vehicles, equipment, or activities disturb or displace temporary cover, repair temporary cover at your expense.

## **REMOVAL**

When the Engineer determines that temporary cover is not required, it must be removed and disposed of under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Ground disturbance, including holes and depressions, caused by the installation and removal of the temporary cover must be backfilled and repaired under Section 15-1.02, "Preservation of Property," of the Standard Specifications.

## **MEASUREMENT AND PAYMENT**

Temporary cover is measured by the square yard of the actual area covered excluding overlaps.

The contract price paid per square yard for "TEMPORARY COVER" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing temporary cover, complete in place, including restrainers, and maintenance and removal of temporary cover, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.29 TEMPORARY FIBER ROLL**

#### **GENERAL**

##### **Summary**

This work includes constructing, maintaining, and removing temporary fiber roll.

The SWPPP must describe and include the use of temporary fiber roll as a water pollution control practice for sediment control.

##### **Submittals**

Submit a Certificate of Compliance as specified in Section 6-1.07, "Certificates of Compliance" of the Standard Specifications for fiber roll.

## **MATERIALS**

### **Fiber Roll**

Fiber roll must:

1. Last for at least one year after installation
2. Be Type 1 or Type 2

If specified, Type 1 fiber roll must be:

1. Made from an erosion control blanket:
  - 1.1. Classified by the Erosion Control Technology Council (ECTC) as ECTC 2D
  - 1.2. With a Universal Soil Loss Equation (USLE) C-Factor of not more than 0.20 at a 2:1 (horizontal:vertical) slope
  - 1.3. Capable to withstand a maximum shear stress of 1.75 pounds per square foot under ASTM D 6460
  - 1.4. With a minimum tensile strength of 75 pounds per foot under ASTM D 5035
  - 1.5. With top and bottom surfaces covered with lightweight non-synthetic netting
  - 1.6. That complies with one of the following:
    - 1.6.1. Double net straw and coconut blanket with 70 percent straw and 30 percent coconut fiber
    - 1.6.2. Double net excelsior blanket with 80 percent of the wood excelsior fibers being 6 inches or longer
2. Rolled along the width
3. Secured with natural fiber twine every 6 feet and 6 inches from each end
4. Finished to be either:
  - 4.1. From 8 to 10 inches in diameter, from 10 to 20 feet long, and at least 0.5 pounds per linear foot
  - 4.2. From 10 to 12 inches in diameter, at least 10 feet long, and at least 2
  - 4.3. Pounds per linear foot

If specified, Type 2 fiber roll must:

1. Be filled with rice or wheat straw, wood excelsior, or coconut fiber
2. Be covered with a biodegradable jute, sisal, or coir fiber netting
3. Have the netting secured tightly at each end
4. Be finished to be either:
  - 4.1. From 8 to 10 inches in diameter, from 10 to 20 feet long, and at least 1.1 pounds per linear foot
  - 4.2. From 10 to 12 inches in diameter, at least 10 feet long, and at least 3 pounds per linear foot

### **Wood Stakes**

Wood stakes must be:

1. Untreated fir, redwood, cedar, or pine and cut from sound timber

2. Straight and free of loose or unsound knots and other defects which would render the stakes unfit for use
3. Pointed on the end to be driven into the ground

For fiber roll, wood stakes must be at least:

1. 1" x 1" x 24" in size for Type 1 installation
2. 1" x 2" x 24" in size for Type 2 installation

## **Rope**

For Type 2 installation, rope must:

1. Be biodegradable, such as sisal or manila
2. Have a minimum diameter of 1/4 inch

## **CONSTRUCTION**

Before placing fiber roll, remove obstructions including rocks, clods, and debris greater than one inch in diameter from the ground.

If fiber roll is to be placed in the same area as erosion control blanket, install the blanket before placing the fiber roll. For other soil stabilization practices such as hydraulic mulch or compost, place the fiber roll and then apply the soil stabilization practice.

Place fiber roll on slopes at the following spacing unless the plans show a different spacing:

1. 10 feet apart for slopes steeper than 2:1 (horizontal:vertical)
2. 15 feet apart for slopes from 2:1 to 4:1 (horizontal:vertical)
3. 20 feet apart for slopes from 4:1 to 10:1 (horizontal:vertical)
4. 50 feet apart for slopes flatter than 10:1 (horizontal:vertical)

Place fiber roll approximately parallel to the slope contour. For any 20 foot section of fiber roll, do not allow the fiber roll to vary more than 5 percent from level.

Type 1 and Type 2 fiber roll may be installed using installation method Type 1, Type 2, or a combination:

For installation method Type 1, install fiber roll by:

1. Placing in a furrow that is from 2 to 4 inches deep
2. Securing with wood stakes every 4 feet along the length of the fiber roll
3. Securing the ends of the fiber roll by placing a stake 6 inches from the end of the roll
4. Driving the stakes into the soil so that the top of the stake is less than 2 inches above the top of the fiber roll

For installation method Type 2, install fiber roll by:

1. Securing with rope and notched wood stakes.

2. Driving stakes into the soil until the notch is even with the top of the fiber roll.
3. Lacing the rope between stakes and over the fiber roll. Knot the rope at each stake.
4. Tightening the fiber roll to the surface of the slope by driving the stakes further into the soil.

## **MAINTENANCE**

Maintain temporary fiber roll to provide sediment holding capacity and to reduce runoff velocities.

Remove sediment deposits, trash, and debris from temporary fiber roll as needed or when directed by the Engineer. If removed sediment is deposited within project limits, it must be stabilized and not subject to erosion by wind or water. Trash and debris must be removed and disposed of as specified in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Maintain temporary fiber roll by:

1. Removing sediment from behind the fiber roll when sediment is 1/3 the height of the fiber roll above ground
2. Repairing or adjusting the fiber roll when rills and other evidence of concentrated runoff occur beneath the fiber roll.
3. Repairing or replacing the fiber roll when they become split, torn, or unraveled
4. Adding stakes when the fiber roll slump or sag
5. Replacing broken or split wood stakes

Repair temporary fiber roll within 24 hours of discovering damage unless the Engineer approves a longer period.

If your vehicles, equipment, or activities disturb or displace temporary fiber roll, repair temporary fiber roll at your expense.

The Department does not pay maintenance costs for cleanup, repair, removal, disposal, or replacement due to improper installation or your negligence.

## **REMOVAL**

When the Engineer determines that temporary fiber roll is not required, they must be removed and disposed of under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Ground disturbance, including holes and depressions, caused by the installation and removal of the temporary fiber roll must be backfilled and repaired under Section 15-1.02, "Preservation of Property," of the Standard Specifications.

## **MEASUREMENT AND PAYMENT**

Temporary fiber roll is measured by the linear foot along the centerline of the installed roll. Where temporary fiber roll is joined and overlapped, the overlap is measured as a single installed roll.

The contract price paid per linear foot for "TEMPORARY FIBER ROLL" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the temporary fiber roll, complete in place, including removal of materials, cleanup and disposal of retained sediment and debris, and backfilling and repairing holes, depressions and other ground disturbance, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer

The County and you share the cost of maintaining the temporary fiber roll. The County determines the maintenance cost under Section 9-1.03, "Force Account Payment," of the Standard Specifications and pays you one-half of that cost.

### **10-1.30 TEMPORARY SILT FENCE**

#### **GENERAL**

##### **Summary**

This work includes installing, maintaining, and removing temporary silt fence. The SWPPP must describe and include the use of temporary silt fence as a water pollution control practice for sediment control.

##### **Submittals**

Submit a Certificate of Compliance as specified in Section 6-1.07, "Certificates of Compliance" of the Standard Specifications for silt fence fabric.

#### **MATERIALS**

##### **Silt Fence Fabric**

Geosynthetic fabric for temporary silt fence must consist of one of the following:

1. Polyester
2. Polypropylene
3. Combined polyester and polypropylene

Sample under ASTM D 4354, Procedure C.

Test under ASTM D 4759. All properties must be based on Minimum Average Roll Value (MARV).

Identify, store, and handle under ASTM D 4873.

Protect geosynthetics from moisture, sunlight, and damage during shipping and storage. Label each unit with the manufacturer's name, identifying information, and product identification.

Silt fence fabric must comply with:

Property	ASTM Designation	Specification	
		Woven	Non-woven
Grab breaking load 1-inch grip, lb, min. in each direction	D 4632	120	120
Apparent elongation percent, min., in each direction	D 4632	15	50
Water Flow Rate max. average roll value, gallons per minute/square foot	D 4491	10-50	100-150
Permittivity 1/sec., min.	D 4491	0.05	0.05
Apparent opening size max. average roll value, U.S. Standard sieve size	D 4751	30	30
Ultraviolet Degradation percent of original unexposed grab breaking load 500 hr, minimum	D 4595	70	

### Posts

Posts must be wood or metal.

Wood posts must be:

1. Untreated fir, redwood, cedar, or pine and cut from sound timber
2. Straight and free of loose or unsound knots and other defects that would render the stakes unfit for use
3. Pointed on the end to be driven into the ground
4. At least 2" x 2" in size, and 4 feet long

Metal posts must:

1. Be made of steel.
2. Have a "U," "T," "L," or other cross sectional shape that can resist failure from lateral loads.
3. Be pointed on the end to be driven into the ground.
4. Weigh at least 0.75-pound per foot.
5. Be at least 4 feet long.
6. Have a safety cap attached to the exposed end. The safety cap must be orange or red plastic and fit snugly to the metal post.

### CONSTRUCTION

Silt fence must be:

1. Constructed with silt fence fabric, posts, and fasteners
2. Prefabricated or assembled at the job site

Silt fence fabric must be attached to posts using these methods:

1. If prefabricated silt fence is used, posts must be inserted into sewn pockets
2. If assembled on the job site:

- 2.1. If wood posts are used, fasteners must be staples or nails
- 2.2. If steel posts are used, fasteners must be tie wires or locking plastic fasteners
- 2.3. Spacing of the fasteners must be no more than 8 inches apart

Place silt fence approximately parallel to the slope contour. For any 50 foot section of silt fence, do not allow the elevation at the base of the fence to vary more than 1/3 of the fence height.

Install silt fence by:

1. Placing the bottom of the fabric in a trench that is 6 inches deep
2. Securing with posts placed on the downhill side of the fabric
3. Backfilling the trench with soil and hand or mechanically tamping to secure the fabric in the trench

If you reinforce the silt fence fabric with wire or plastic mesh, you may increase the post spacing to a maximum of 10 feet. The field-assembled reinforced silt fence must be able to retain saturated sediment without collapsing.

Connect silt fence sections by:

1. Joining separate sections of silt fence to form reaches that are no more than 500 feet long
2. Securing the end posts of each section by wrapping the tops of the posts with at least two wraps of 16-gage diameter tie wire
3. Ensuring that each reach is a continuous run of silt fence from end to end or from an end to an opening, including joined panels

If you mechanically push the silt fence fabric vertically through the soil, you must demonstrate that the silt fence fabric will not be damaged and will not slip out of the soil, resulting in sediment passing under the silt fence fabric.

## **MAINTENANCE**

Maintain temporary silt fence to provide sediment holding capacity and to reduce runoff velocities.

Remove sediment deposits, trash, and debris from temporary silt fence as needed or when directed by the Engineer. If removed sediment is deposited within project limits, it must be stabilized and not subject to erosion by wind or water. Trash and debris must be removed and disposed of as specified in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Maintain temporary silt fence by:

1. Removing sediment from behind the silt fence when sediment is 1/3 the height of the silt fence above ground
2. Repairing or adjusting the silt fence when rills and other evidence of concentrated runoff occur beneath the silt fence fabric
3. Repairing or replacing the silt fence fabric when it become split, torn, or unraveled

Repair temporary silt fence within 24 hours of discovering damage unless the Engineer approves a longer period.

If your vehicles, equipment, or activities disturb or displace temporary silt fence, repair temporary silt fence at your expense.

The Department does not pay maintenance costs for cleanup, repair, removal, disposal, or replacement due to improper installation or your negligence.

## **REMOVAL**

When the Engineer determines that temporary silt fence is not required, remove and dispose of fence under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Ground disturbance, including holes and depressions, caused by the installation and removal of the temporary silt fence must be backfilled and repaired under Section 15-1.02, "Preservation of Property," of the Standard Specifications.

## **MEASUREMENT AND PAYMENT**

Temporary silt fence is measured by the linear foot along the centerline of the installed fence.

The contract price paid per linear foot for "TEMPORARY SILT FENCE" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the temporary silt fence, complete in place, including removal of materials, cleanup and disposal of retained sediment and debris, and backfilling and repairing holes, depressions and other ground disturbance, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The County and you share the cost of maintaining the temporary silt fence. The County determines the maintenance cost under Section 9-1.03, "Force Account Payment," of the Standard Specifications and pays you one-half of that cost.

### **10-1.31 TEMPORARY CONCRETE WASHOUT FACILITY**

#### **GENERAL**

##### **Summary**

This work includes removal and disposal of concrete waste by furnishing, maintaining, and removing temporary concrete washout facilities.

SWPPP must describe and include the use of temporary concrete washout facilities as a water pollution control practice for waste management and materials pollution control.

## **Submittals**

At least 5 business days before concrete activities start, submit:

1. Location of washout facilities
2. Name and location of off-site concrete waste disposal facility to receive concrete waste
3. Copy of permit issued by RWQCB for off-site commercial disposal facility
4. Copy of license for off-site commercial disposal facility
5. Copy of permit issued by state or local agency having jurisdiction over disposal facility if disposal site is located outside of the State of California
6. Gravel-filled bag fabric
7. Plastic liner
8. Alternate attachment device for staples, if used

## **Quality Control and Assurance**

Retain and submit records of disposed concrete waste.

## **MATERIALS**

### **Straw Bales**

Straw bales must comply with Section 20-2.06, "Straw," of the Standard Specifications and be:

1. At least 14 inches wide, 18 inches high, 36 inches long, and weigh at least 50 pounds.
2. Composed entirely of vegetative matter, except for binding material.
3. Bound by wire, nylon, or polypropylene string. Do not use jute or cotton binding. Baling wire must be minimum 16 gauge. Nylon or polypropylene string must be approximately 0.08-inch in diameter with 80 pounds of breaking strength.

### **Stakes**

Stakes may be either wood or metal and must comply with the following:

1. Wood stakes must be:
  - 1.1. Untreated fir, redwood, cedar, or pine and cut from sound timber
  - 1.2. Straight and free of loose or unsound knots and other defects which would render stakes unfit for use
  - 1.3. Pointed on the end to be driven into the ground
  - 1.4. At least 2" x 2" x 48" in size
2. Metal stakes must be at least 0.5-inch diameter and 48 inches long. Tops of metal stakes must be bent at a 90-degree angle or capped with an orange or red plastic safety cap that fits snugly to the metal stake.

### **Concrete Washout Sign**

Concrete washout sign must comply with Section 12-3.06B, "Portable Signs," of the Standard Specifications and:

1. Be approved by the Engineer
2. Consist of base, framework, and sign panel
3. Be made of plywood
4. Be minimum 2' x 4' in size
5. Read "Concrete Washout" with 3 inches high black letters on white background

**Gravel-filled Bag Fabric**

Geosynthetic fabric for temporary gravel bag berm must consist of one of these:

1. Polyester
2. Polypropylene
3. Combined polyester and polypropylene

Sample under ASTM D 4354, Procedure C.

Test under ASTM D 4759. All properties must be based on Minimum Average Roll Value (MARV).

Identify, store, and handle under ASTM D 4873.

Protect geosynthetics from moisture, sunlight, and damage during shipping and storage.

Label each unit with manufacturer's name, identifying information, and product identification.

Gravel-filled bag fabric must comply with requirements in this table:

Specification	Requirements
Grab breaking load 1-inch grip, lb, min. in each direction	205
Apparent elongation percent, min., in each direction	50
Water Flow Rate max. average roll value, gallons per minute/square foot	80-150
Permittivity 1/sec., min	1.2
Apparent opening size max. average roll value, U.S. Standard sieve size	40-80
Ultraviolet Degradation percent of original unexposed grab breaking load 500 hour, minimum	70

**Gravel**

Gravel for gravel-filled bags must be:

1. From 3/8 to 3/4 inch in diameter
2. Clean and free of clay balls, organic matter, and other deleterious materials

## **Gravel-filled Bag**

Gravel-filled bag must:

1. Be made of gravel-filled bag fabric.
2. Have inside dimensions from 24 to 32 inches long, and from 16 to 20 inches wide.
3. Have bound opening to retain gravel. Opening must be sewn with yarn, bound with wire, or secured with a closure device.
4. Weigh from 30 to 50 pounds when filled with gravel.

## **Plastic Liner**

Plastic liner must be:

1. Single ply, new polyethylene sheeting
2. At least 10 mils thick
3. Free of holes, punctures, tears or other defects
4. Without seams or overlapping joints

## **CONSTRUCTION**

### **Placement**

Place concrete washout facilities at job site:

1. Before concrete placement activities start
2. In the immediate area of concrete work as approved by the Engineer
3. No closer than 50 feet from storm drain inlets, open drainage facilities, ESAs, or watercourses
4. Away from construction traffic or public access areas

Install a concrete washout sign adjacent to each temporary concrete washout facility location.

For at grade and below grade concrete washout facilities:

1. Build to contain liquid and concrete waste without seepage, spills, or overflow
2. Build in sufficient quantity and size to contain liquid and concrete waste generated by washout activities for concrete wastes
3. Install with plastic liner

If approved, the length and width of temporary concrete washout facility may be increased from minimum dimensions shown on the plans.

If below grade concrete washout facilities are used, construct berms from compacted native material. Gravel may be used in conjunction with compacted native material.

### **Operation**

Use concrete washout facilities for:

1. Washout from concrete delivery trucks
2. Slurries containing portland cement concrete or hot mix asphalt from sawcutting, coring, grinding, grooving, and hydro-concrete demolition
3. Concrete waste from mortar mixing stations

Relocate concrete washout facilities as needed for concrete construction work.

Do not fill higher than 6 inches below rim.

Your WPC manager must inspect concrete washout facilities:

1. Daily if concrete work occurs daily
2. Weekly if concrete work does not occur daily

### **Maintenance**

Maintain temporary concrete washout facility by:

1. Providing adequate holding capacity with 12-inch minimum freeboard
2. Removing and disposing of hardened concrete under Section 15-3.02, "Removal Methods"
3. Patching holes, rips, and voids in plastic liner with tape
4. If plastic liner leaks after patching, replace plastic liner
5. Repairing or replacing gravel-filled bags when they become split, torn, unraveled, or gravel spills out

Repair temporary concrete washout facility within 24 hours of discovering damage unless the Engineer approves a longer period.

If your vehicles, equipment, or activities disturb or displace temporary concrete washout facility, repair temporary concrete washout facility at your expense.

### **Removal**

Dispose of concrete waste material at a facility specifically licensed to receive solid concrete waste, liquid concrete waste, or both. When concrete washout facility is full, remove and dispose of concrete waste within 2 days.

When the Engineer determines that temporary concrete washout facility is not needed, remove and dispose of it under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Backfill and repair ground disturbance, including holes and depressions, caused by the installation and removal of temporary concrete washout facility, under Section 15-1.02, "Preservation of Property," of the Standard Specifications.

### **MEASUREMENT AND PAYMENT**

Temporary concrete washout facility is measured by the actual count of concrete washout facilities in place.

The contract unit price per each paid for "TEMPORARY CONCRETE WASHOUT FACILITY" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing, maintaining, and removing the concrete washout facility, including removal and disposal of concrete waste, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

## **10-1.32 TEMPORARY CONSTRUCTION ENTRANCE**

### **GENERAL**

#### **Summary**

This work includes constructing, maintaining, and removing temporary construction entrance to provide temporary access.

The SWPPP must describe and include the use of temporary construction entrance as a water pollution control practice for tracking control.

Temporary construction entrance must be Type 1, Type 2, or a combination.

#### **Submittals**

Submit a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for:

1. Temporary entrance fabric
2. Rock

Submit details for alternatives at least 5 business days before installation. You may propose alternatives for the following items:

1. Alternative sump
2. Alternative corrugated steel panels

If the Engineer approves, you may eliminate the sump.

### **MATERIALS**

#### **Temporary Entrance Fabric**

Temporary entrance fabric must comply with Section 88-1.04, "Rock Slope Protection Fabric," of the Standard Specifications and be woven Type B or non-woven Type B.

#### **Rock**

Rock must be Type A or Type B.

Rock (Type A) must comply with:

1. Requirements under Section 72-2.02, "Materials," of the Standard Specifications
2. Following sizes:

Square Screen Size (inch)	Percentage Passing	Percentage Retained
6	100	0
3	0	100

Rock (Type B) must be Railway Ballast Number 25. Do not use blast furnace slag. Railway Ballast Number 25 must comply with:

1. Description in AREMA Manual for Railway Engineering.
2. Following sizes:

Nominal Size Square Opening	Percentage Passing								
	3"	2-1/2"	2"	1-1/2"	1"	3/4"	1/2"	3/8"	No. 4
2-1/2"-3/8"	100	80-100	60-85	50-70	25-50	-	5-20	0-10	0-3

3. Following properties:

Specification	Requirements
Percent material passing No. 200 sieve, max. ASTM: C 117	1.0
Bulk specific gravity, min. ASTM: C 127	2.60
Absorption, percent min. ASTM: C 127	1.0
Clay lumps and friable particles, percent max. ASTM: C 142	0.5
Degradation, percent max. ASTM: C 535	30
Soundness (Sodium Sulfate), percent max. ASTM: C 88	5.0
Flat, elongated particles, or both, percent max. ASTM: D 4791	5.0

### Corrugated Steel Panels

Corrugated steel panels must:

1. Be made of steel.
2. Be pressed or shop welded
3. Have a slot or hook for connecting panels together

### CONSTRUCTION

Prepare location for temporary construction entrance by:

1. Removing vegetation to ground level and clear away debris

2. Grading ground to uniform plane
3. Grading ground surface to drain
4. Removing sharp objects that may damage fabric
5. Compacting the top 1.5 feet of soil to at least 90 percent relative compaction

If temporary entrance (Type 1) is specified, use rock (Type A).

If temporary construction entrance (Type 2) is specified, use Rock (Type B) under corrugated steel panels. Use at least 6 corrugated steel panels for each entrance. Couple panels together.

Install temporary construction entrance by:

1. Positioning fabric along the length of the entrance
2. Overlapping sides and ends of fabric by at least 12 inches
3. Spreading rock over fabric in the direction of traffic
4. Covering fabric with rock within 24 hours
5. Keeping a 6 inch layer of rock over fabric to prevent damage to fabric by spreading equipment

Do not drive on fabric until rock is spread.

Unless the Engineer eliminates the sump, install a sump within 20 feet of each temporary construction entrance.

Repair fabric damaged during rock spreading by placing a new fabric over the damaged area. New fabric must be large enough to cover damaged area and provide at least 18-inch overlap on all edges.

### **Maintenance**

Maintain temporary construction entrance to minimize generation of dust and tracking of soil and sediment onto public roads. If dust or sediment tracking increases, place additional rock unless the Engineer approves another method.

Repair temporary construction entrance if:

1. Fabric is exposed
2. Depressions in the entrance surface develop
3. Rock is displaced

Repair temporary construction entrance within 24 hours of discovering damage unless the Engineer approves a longer period.

During use of temporary construction entrance, do not allow soil, sediment, or other debris tracked onto pavement to enter storm drains, open drainage facilities, or watercourses. When material is tracked onto pavement, remove it within 24 hours unless the Engineer approves a longer period.

If your vehicles, equipment, or activities disturb or displace the temporary construction entrance, repair it at your expense.

The Department does not pay maintenance costs for cleanup, repair, removal, disposal, or replacement due to improper installation or your negligence.

### **Removal**

When the Engineer determines that temporary construction entrance is not required, remove and dispose of it under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Backfill and repair ground disturbance, including holes and depressions, caused by installation and removal of temporary construction entrance under Section 15-1.02, "Preservation of Property," of the Standard Specifications.

### **MEASUREMENT AND PAYMENT**

Temporary construction entrance is determined from actual count in place. Temporary construction entrance is measured one time only and no additional measurement will be recognized.

The contract price per each paid for "TEMPORARY CONSTRUCTION ENTRANCE" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing temporary construction entrance, complete in place, including maintenance and removal of temporary construction entrance, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

No additional compensation will be made if the temporary construction entrance is relocated during the course of construction.

## **10-1.33 TEMPORARY CHECK DAM**

### **GENERAL**

#### **Summary**

The SWPPP must describe and include the use of temporary check dams as a water pollution control practice for soil stabilization in flow conveyances.

#### **Submittals**

Submit a Certificate of Compliance as specified in Section 6-1.07, "Certificates of Compliance" of the Standard Specifications for:

1. Fiber rolls
2. Gravel-filled bag fabric

### **MATERIALS**

#### **Fiber Rolls**

Fiber rolls must:

1. Last for at least one year after installation
2. Be Type 1 or Type 2

If specified, Type 1 fiber rolls must be:

1. Made from an erosion control blanket:
  - 1.1. Classified by the Erosion Control Technology Council (ECTC) as ECTC 2D
  - 1.2. With a Universal Soil Loss Equation (USLE) C-Factor of not more than 0.20 at a 2:1 (horizontal:vertical) slope
  - 1.3. Capable to withstand a maximum shear stress of 1.75 pounds per square foot under ASTM D 6460
  - 1.4. With a minimum tensile strength of 75 pounds per foot under ASTM D 5035
  - 1.5. With top and bottom surfaces covered with extruded lightweight non-synthetic netting
  - 1.6. Either of the following:
    - 1.6.1. Double net straw and coconut blanket with 70 percent straw and 30 percent coconut fiber
    - 1.6.2. Double net excelsior blanket with 80 percent of the wood excelsior fibers being 6 inches or longer
2. Rolled along the width
3. Secured with natural fiber twine every 6 feet and 6 inches from each end
4. Finished to be either:
  - 4.1. From 8 to 10 inches in diameter, from 10 to 20 feet long, and at least 0.5 pounds per linear foot
  - 4.2. From 10 to 12 inches in diameter, at least 10 feet long, and at least 2 pounds per linear foot

If specified, Type 2 fiber rolls must:

1. Be filled with rice or wheat straw, wood excelsior, or coconut fiber
2. Be covered with a photodegradable plastic netting or a biodegradable jute, sisal, or coir fiber netting
3. Have the netting secured tightly at each end
4. Be finished to be either:
  - 4.1. From 8 to 10 inches in diameter, from 10 to 20 feet long, and at least 1.1 pounds per linear foot
  - 4.2. From 10 to 12 inches in diameter, at least 10 feet long, and at least 3 pounds per linear foot

### **Wood Stakes**

Wood stakes must be:

1. Untreated fir, redwood, cedar, or pine and cut from sound timber
2. Straight and free of loose or unsound knots and other defects which would render the stakes unfit for use
3. Pointed on the end to be driven into the ground

For fiber rolls, wood stakes must be at least:

1. 1" x 1" x 24" in size for Type 1 installation
2. 1" x 2" x 24" in size for Type 2 installation

**Rope**

For Type 2 installation, rope must:

1. Be biodegradable, such as sisal or manila
2. Have a minimum diameter of 1/4 inch

**Gravel-filled Bag Fabric**

Geosynthetic fabric for temporary gravel bag berm must consist of one of the following:

1. Polyester
2. Polypropylene
3. Combined polyester and polypropylene

Sample under ASTM D 4354, Procedure C.

Test under ASTM D 4759. All properties are based on Minimum Average Roll Value (MARV).

Identify, store, and handle under ASTM D 4873.

Protect geosynthetics from moisture, sunlight and damage during shipping and storage. Label each unit with the manufacturer's name, identifying information and product identification.

Gravel-filled bag fabric must comply with:

Specification	Requirements
Grab breaking load 1-inch grip, lb, min. in each direction	205
Apparent elongation percent, min., in each direction	50
Water Flow Rate max. average roll value, gallons per minute/square foot	80-150
Permittivity 1/sec., min	1.2
Apparent opening size max. average roll value, U.S. Standard sieve size	40-80
Ultraviolet Degradation percent of original unexposed grab breaking load 500 hr, minimum	70

**Gravel**

Gravel for gravel-filled bags must be:

1. From 3/8 to 3/4 inch in diameter
2. Clean and free from clay balls, organic matter, and other deleterious materials

## **Gravel-filled Bags**

Gravel-filled bags must:

1. Be made from gravel-filled bag fabric.
2. Have inside dimensions from 24 to 32 inches in length, and from 16 to 20 inches in width.
3. Have the opening bound to retain the gravel. The opening must be sewn with yarn, bound with wire, or secured with a closure device.
4. Weigh from 30 to 50 pounds when filled with gravel.

## **CONSTRUCTION**

Before placing temporary check dam, remove obstructions including rocks, clods, and debris greater than one inch in diameter from the ground.

If check dams are to be placed in the same areas as erosion control blankets, then install the blankets before placing the check dams.

Temporary check dams must be:

1. Placed approximately perpendicular to the centerline of the ditch or drainage line
2. Installed with sufficient spillway depth to prevent flanking of concentrated flow around the ends of the check dam
3. Type 1 for lashed fiber rolls, Type 2 for gravel-filled bags, or a combination:
  - 3.1. If the ditch is lined with concrete or hot mix asphalt, use temporary check dam (Type 2)
  - 3.2. If the ditch is unlined, you may use temporary check dam (Type 1) or (Type 2)

Temporary check dam (Type 1) must be:

1. Secured with rope and notched wood stakes.
2. Installed by driving stakes into the soil until the notch is even with the top of the fiber roll.
3. Installed by lacing the rope between stakes and over the fiber roll. Knot the rope at each stake.
4. Tightened by driving the stakes further into the soil forcing the fiber roll against the surface of the ditch or drainage line.

Temporary check dam (Type 2) must be:

1. Placed as a single layer of gravel bags
2. End-to-end to eliminate gaps

If you need to increase the height of the temporary check dam (Type 2):

1. Increase height by adding rows of gravel-filled bags
2. Stack bags in a way that the bags in the top row overlap the joints in the lower row
3. Stabilize dam by adding rows of bags at the bottom

## **MAINTENANCE**

Maintain temporary check dams to provide sediment holding capacity and to reduce concentrated flow velocities.

Remove sediment deposits, trash, and debris from temporary check dams as needed or when directed by the Engineer. If removed sediment is deposited within project limits, it must be stabilized and not subject to erosion by wind or water. Trash and debris must be removed and disposed of as specified in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Maintain temporary check dams by:

1. Removing sediment from behind the check dam when sediment is 1/3 the height of the check dam above ground
2. Repairing or adjusting the check dams when scour and other evidence of concentrated flow occur beneath the fiber roll
3. Repairing or replacing the fiber rolls or gravel-filled bags when they become split, torn, or unraveled
4. Adding stakes when the fiber rolls slump or sag
5. Replacing broken or split wood stakes

Repair temporary check dams within 24 hours of discovering damage unless the Engineer approves a longer period.

If your vehicles, equipment, or activities disturb or displace temporary check dams, repair temporary check dams at your expense.

The County does not pay maintenance costs for cleanup, repair, removal, disposal, or replacement due to improper installation or your negligence.

## **REMOVAL**

When the Engineer determines that temporary check dams are not required, they must be removed and disposed of under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Ground disturbance, including holes and depressions, caused by the installation and removal of the temporary check dams must be backfilled and repaired under Section 15-1.02, "Preservation of Property," of the Standard Specifications.

## **MEASUREMENT AND PAYMENT**

Temporary check dam is measured by the linear foot along the centerline of the check dams. Where temporary fiber rolls are joined and overlapped, the overlap is measured as a single installed check dam.

The contract price paid per linear foot for "TEMPORARY CHECK DAM" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the temporary check dams,

complete in place, including removal of materials, cleanup and disposal of retained sediment and debris, and backfilling and repairing holes, depressions and other ground disturbance, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer

The County and you share the cost of maintaining the temporary check dams. The State determines the maintenance cost under Section 9-1.03, "Force Account Payment," of the Standard Specifications and pays you one-half of that cost.

## **10-1.34 STREET SWEEPING**

### **GENERAL**

#### **Summary**

This work includes street sweeping.

The SWPPP must describe and include the use of street sweeping as a water pollution control practice for sediment control and tracking control.

#### **Submittals**

At least 5 business days before starting clearing and grubbing, earthwork, or other activities with the potential for tracking sediment or debris, submit:

1. Number of sweepers described in the SWPPP
2. Type of sweeper technology

#### **Quality Control and Assurance**

Retain and submit records of street sweeping including:

1. Quantity of sweeping waste disposal
2. Sweeping times and locations

### **CONSTRUCTION**

#### **Street Sweepers**

Sweepers must use one of these technologies:

1. Mechanical sweeper followed by a vacuum-assisted sweeper
2. Vacuum-assisted dry (waterless) sweeper
3. Regenerative-air sweeper

#### **Operation**

Street sweeping must be done at:

1. Paved roads at job site entrance and exit locations
2. Paved areas within the job site that flow to storm drains or water bodies

Street sweeping must be done:

1. During clearing and grubbing activities
2. During earthwork activities
3. During trenching activities
4. During roadway structural section activities
5. When vehicles are entering and leaving the job site
6. After soil disturbing activities
7. After observing offsite tracking of material

Monitor paved areas and roadway within the jobsite. Street sweeping must be done:

1. Within 1 hour, if sediment or debris is observed during activities that require sweeping
2. Within 24 hours, if sediment or debris is observed during activities that do not require sweeping

At least 1 sweeper must be on the job site at all times when sweeping work is required. The sweeper must be in good working order.

Perform street sweeping to minimize dust. If dust generation is excessive or sediment pickup is ineffective, use water or a vacuum.

You may stockpile collected material on the jobsite according to the approved SWPPP. Dispose of collected material at least once per week.

Material collected during street sweeping must be removed and disposed of under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Your WPCM must inspect paved roads at job site access points:

1. Daily if earthwork and other sediment or debris generating activities occur daily
2. Weekly if earthwork and other sediment or debris generating activities do not occur daily
3. When the National Weather Service predicts precipitation with a probability of at least 30 percent

#### **PAYMENT**

The contract lump sum price paid for "STREET SWEEPING" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in street sweeping, including disposal of collected material, as shown on the plans, as specified in the Standard Specifications, these Special Provisions, and as directed by the Engineer.

### **10-1.35 TEMPORARY DRAINAGE INLET PROTECTION**

## **GENERAL**

### **Summary**

This work includes constructing, maintaining, and removing temporary drainage inlet protection. Drainage inlet protection settles and filters sediment before stormwater runoff discharges into storm drainage systems.

The SWPPP must describe and include the use of temporary drainage inlet protection as a water pollution control practice for sediment control.

Provide temporary drainage inlet protection around the drainage inlet. Temporary drainage inlet protection must be Type 1 & Type 2:

### **Submittals**

Submit a Certificate of Compliance as specified in Section 6-1.07, "Certificates of Compliance" of the Standard Specifications for:

1. Erosion control blanket
2. Fiber rolls
3. Safety cap for metal posts
4. Silt fence fabric
5. Sediment filter bag
6. Foam barrier
7. Rigid plastic barrier
8. Gravel-filled bag fabric

If you substitute the steel wire staple with an alternative attachment device, submit a sample of the device for approval at least 5 business days before installation.

## **MATERIALS**

### **Geosynthetic Fabrics**

Geosynthetic fabrics for temporary drainage inlet protection must consist of one of the following:

1. Polyester
2. Polypropylene
3. Combined polyester and polypropylene

Geosynthetic fabrics for temporary drainage inlet must comply with the specifications for water pollution control in Section 88-1.05, "Water Pollution Control," of the Standard Specifications.

Foam barrier must comply with:

**Foam Barrier**

Property	ASTM Designation	Specification
Grab breaking load 1-inch grip, lb, min. in each direction	D 4632	200
Apparent elongation percent, min., in each direction	D 4632	15
Water Flow Rate max. average roll value, gallons per minute/square foot	D 4491	100-150
Permittivity 1/sec., min.	D 4491	0.05
Apparent opening size max. average roll value, U.S. Standard sieve size	D 4751	40
Ultraviolet Degradation percent of original unexposed grab breaking load 500 hr, minimum	D 4595	70

Sample under ASTM D 4354, Procedure C.

Test under ASTM D 4759. All properties are based on Minimum Average Roll Value (MARV).

Identify, store, and handle under ASTM D 4873.

**Erosion Control Blanket**

Erosion control blanket must be:

1. Described as a rolled erosion control product (RECP)
2. Classified as temporary and degradable or long-term and non-degradable
3. Machine-made mats
4. Provided in rolled strips
5. Classified by the Erosion Control Technology Council (ECTC)

Erosion control blanket classified as temporary and degradable must be one of the following:

1. Double net excelsior blanket:
  - 1.1. Classified as ECTC Type 2D
  - 1.2. Classified as an erosion control blanket
  - 1.3. Designed to last for at least one year after installation

- 1.4. With a Universal Soil Loss Equation (USLE) C-Factor of not more than 0.20 at a 2:1 (horizontal:vertical) slope
- 1.5. With 80 percent of the wood excelsior fibers being 6 inches or longer
- 1.6. Capable to withstand a maximum shear stress of 1.75 pounds per square foot under ASTM D 6460
- 1.7. With a minimum tensile strength of 75 pounds per foot under ASTM D 5035
- 1.8. With top and bottom surfaces covered with extruded lightweight non-synthetic netting
2. Double net straw and coconut blanket:
  - 2.1. Classified as ECTC Type 2D
  - 2.2. Classified as an erosion control blanket
  - 2.3. Designed to last for at least one year after installation
  - 2.4. With a USLE C-Factor of not more than 0.20 at a 2:1 (horizontal:vertical) slope
  - 2.5. Comprised of 70 percent straw and 30 percent coconut fiber
  - 2.6. Capable to withstand a maximum shear stress of 1.75 pounds per square foot under ASTM D 6460
  - 2.7. With a minimum tensile strength of 75 pounds per foot under ASTM D 5035
  - 2.8. With top and bottom surfaces covered with extruded lightweight non-synthetic netting
3. Jute netting:
  - 3.1. Classified as ECTC Type 3B
  - 3.2. Classified as an open weave textile and have from 14 to 20 strands per foot in each direction
  - 3.3. Designed to last for at least one year after installation
  - 3.4. With a USLE C-Factor of not more than 0.25 at a 1.5:1 (horizontal:vertical) slope
  - 3.5. Comprised of 100 percent unbleached and undyed spun yarn made of jute fiber
  - 3.6. With an average open area from 63 to 70 percent
  - 3.7. From 48 to 72 inches in width
  - 3.8. Capable to withstand a maximum shear stress of 2.0 pounds per square foot under ASTM D 6460
  - 3.9. With a minimum tensile strength of 100 pounds per foot under ASTM D 5035
  - 3.10. From 0.90 to 1.20 pounds per square yard in weight
4. Coir netting:
  - 4.1. Classified as ECTC Type 4
  - 4.2. Classified as an open weave textile and from 13 to 18 strands per foot in each direction
  - 4.3. Designed to last for at least three years after installation
  - 4.4. With a USLE C-Factor of not more than 0.25 at a 1:1 (horizontal:vertical) slope
  - 4.5. Comprised of 100 percent unbleached and undyed spun coir yarn made of coconut fiber
  - 4.6. With an average open area from 63 to 70 percent
  - 4.7. From 72 to 158 inches in width
  - 4.8. Capable to withstand a maximum shear stress of 2.25 pounds per square foot under ASTM D6460
  - 4.9. With a minimum tensile strength of 125 pounds per foot under ASTM D 5035
  - 4.10. From 1.20 to 1.67 pounds per square yard in weight

Erosion control blanket classified as long-term and non-degradable must:

1. Be a geosynthetic fabric
2. Comply with the specifications for rock slope protection fabric (Class 8) in Section 88-1.06, "Channel and Shore Protection," of the Standard Specifications

### **Staples**

You may use an alternative attachment device such as a geosynthetic pins or plastic pegs to install erosion control blanket.

### **Rock**

Rock must comply with:

1. Requirements under Section 72-2.02, "Materials," of the Standard Specifications
2. Following sizes:

Square Screen Size (inch)	Percentage Passing	Percentage Retained
6	100	0
3	0	100

### **Rope**

Rope for fiber rolls must be:

1. Biodegradable, such as sisal or manila
2. At least 1/4 inch in diameter

### **Fiber Rolls**

Fiber rolls must:

1. Last for at least one year after installation
2. Be Type 1 or Type 2

For Type 1, fiber rolls must be:

1. Made from an erosion control blanket classified as temporary and degradable
2. Rolled along the width
3. Secured with natural fiber twine every 6'-6" from each end
4. Finished to be either:
  - 4.1. From 8 to 10 inches in diameter, from 10 to 20 feet long, and at least 0.5 pounds per linear foot
  - 4.2. From 10 to 12 inches in diameter, at least 10 feet long, and at least 2 pounds per linear foot

For Type 2, fiber rolls must:

1. Be filled with rice or wheat straw, wood excelsior, or coconut fiber
2. Be covered with biodegradable jute, sisal, or coir fiber netting
3. Have netting secured tightly at each end
4. Be finished to be either:
  - 4.1. From 8 to 10 inches in diameter, from 10 to 20 feet long, and at least 1.1 pounds per linear foot
  - 4.2. From 10 to 12 inches in diameter, at least 10 feet long, and at least 3 pounds per linear foot

### **Wood Stakes**

Wood stakes must be:

1. Untreated fir, redwood, cedar, or pine and cut from sound timber
2. Straight and free of loose or unsound knots and other defects which would render the stakes unfit for use
3. Pointed on the end to be driven into the ground

For fiber rolls, wood stakes must be at least:

1. 1" x 1" x 24" in size for Type 1 installation
2. 1" x 2" x 24" in size for Type 2 installation

### **Posts**

Posts must be wood or metal.

Wood posts must be:

1. Untreated fir, redwood, cedar, or pine and cut from sound timber
2. Straight and free of loose or unsound knots and other defects that would render the stakes unfit for use
3. Pointed on the end to be driven into the ground
4. At least 2" x 2" in size, and 4 feet long

Metal posts must:

1. Be made of steel.
2. Have a "U," "T," "L," or other cross sectional shape that can resist failure from lateral loads.
3. Be pointed on the end to be driven into the ground.
4. Weigh at least 0.75-pound per foot.
5. Be at least 4 feet long.
6. Have a safety cap attached to the exposed end. The safety cap must be orange or red plastic and fit snugly to the metal post.

### **Silt Fence**

Silt fence must be:

1. Constructed with silt fence fabric, posts, and fasteners
2. Prefabricated or assembled at the job site

Silt fence fabric must be attached to posts using these methods:

1. If prefabricated silt fence is used, posts must be inserted into sewn pockets
2. If assembled on the job site:
  - 2.1. If wood posts are used, fasteners must be staples or nails
  - 2.2. If steel posts are used, fasteners must be tie wires or locking plastic fasteners
  - 2.3. Spacing of the fasteners must be at least 8 inches

### **Gravel-filled Bags**

Gravel-filled bags must:

1. Be made from fabric.
2. Have inside dimensions from 24 to 32 inches in length, and from 16 to 20 inches in width.
3. Have the opening bound to retain the gravel. The opening must be sewn with yarn, bound with wire, or secured with a closure device.
4. Weigh from 30 to 50 pounds when filled with gravel.

Gravel for gravel-filled bags must be:

1. From 3/8 to 3/4 inch in diameter
2. Clean and free from clay balls, organic matter, and other deleterious materials

### **Sediment Filter Bag**

Sediment filter bag must:

1. Be made of fabric
2. Be sized to fit the catch basin or drainage inlet
3. Include a high-flow bypass

Sediment filter bag may include a metal frame. Sediment filter bags that do not have a metal frame and are deeper than 18 inches must:

1. Include lifting loops and dump straps
2. Include a restraint cord to keep the sides of the bag away from the walls of the catch basin

### **Foam Barriers**

Foam barriers must:

1. Be filled with a urethane foam core
2. Have a geosynthetic fabric cover and flap
3. Have a triangular, circular, or square shaped cross section
4. Have a vertical height of at least 5 inches after installation
5. Have a horizontal flap of at least 8 inches in width
6. Have a length of at least 4 feet per unit

7. Have the ability to interlock separate units into a longer barrier so that water does not flow between the units
8. Be secured to:
  - 8.1. Pavement with 1-inch concrete nails with 1-inch washers and solvent-free adhesive
  - 8.2. Soil with 6-inch nails with 1-inch washers

**Rigid Plastic Barriers**

Rigid plastic barriers must:

1. Have an integrated filter
2. Have a formed outer jacket of perforated high density polyethylene (HDPE) or polyethylene terephthalate (PET)
3. Have a flattened tubular shaped cross section
4. Be made from virgin or recycled materials
5. Be free from biodegradable filler materials that degrade the physical or chemical characteristics of the finished filter core or outer jacket
6. Have a length of at least 4 feet per unit
7. Have the ability to interlock separate units into a longer barrier so that water does not flow between the units
8. Be secured to:
  - 8.1 Pavement with 1-inch concrete nails with 1-inch washers and solvent-free adhesive, with gravel-filled bags, or a combination
  - 8.2 Soil with 6-inch nails with 1-inch washers and wood stakes
9. Comply with the following properties:

Specification	Requirements
Grab tensile strength of outer jacket material, pounds/square inch, min. in each direction ASTM D 4632*	4000
Break strength of outer jacket, pounds/square inch ASTM D 4632*	1300
Permittivity of filter core, 1/sec., min. ASTM D 4491	0.38
Flow rate of filter core, gallons per minute per square foot, ASTM D 4491	100 min. 200 max.
Filter core aperture size, max., Average Opening Size (AOS), microns	425
Ultraviolet stability (outer jacket & filter core), percent tensile strength retained after 500 hours, min. ASTM D 4355 (xenon-arc lamp and water spray weathering method)	90

\* or appropriate test method for specific polymer

If used at a curb inlet without a grate, rigid plastic barriers must:

1. Have a horizontal flap of at least 6 inches with an under-seal gasket to prevent underflows
2. Include a high-flow bypass
3. Have a vertical height of at least 7 inches after installation
4. Be sized to fit the catch basin or drainage inlet

If used at a grated catch basin without a curb inlet, rigid plastic barriers must:

1. Cover the grate by at least 2 inches on each side and have an under-seal gasket to prevent underflows
2. Include a high-flow bypass
3. Have a vertical height of at least 1.5 inches after installation
4. Be sized to fit the catch basin or drainage inlet

If used at a curb inlet with a grate, rigid plastic barriers must:

1. Have a horizontal flap that covers the grate by at least 2 inches on the 3 sides away from the curb opening and have an under-seal gasket to prevent underflows
2. Include a high-flow bypass
3. Have a vertical section that covers the curb opening by at least 5 inches after installation
4. Be sized to fit the catch basin or drainage inlet

If used as a linear sediment barrier, rigid plastic barriers:

1. Must have an installed height of at least 6 inches
2. May have a horizontal flap of at least 4 inches

### **Linear Sediment Barrier**

Linear sediment barriers must consist of one or more of the following:

1. Silt fence
2. Gravel-filled bags
3. Fiber roll
4. Rigid plastic barrier
5. Foam barrier

### **Flexible Sediment Barrier**

Flexible sediment barriers consist of one or more of the following:

1. Rigid plastic barrier
2. Foam barrier

## **CONSTRUCTION**

For drainage inlet protection at drainage inlets in paved and unpaved areas:

1. Prevent ponded runoff from encroaching on the traveled way or overtopping the curb or dike. Use linear sediment barriers to redirect runoff and control ponding.
2. Clear the area around each drainage inlet of obstructions including rocks, clods, and debris greater than one inch in diameter before installing the drainage inlet protection.

3. Install a linear sediment barrier up-slope of the existing drainage inlet and parallel with the curb, dike, or flow line to prevent sediment from entering the drainage inlet.

### **Erosion Control Blanket**

To install erosion control blanket and geosynthetic fabric:

1. Secure blanket or fabric to the surface of the excavated sediment trap with staples and embed in a trench adjacent to the drainage inlet
2. Anchor the perimeter edge of the erosion control blanket in a trench

### **Silt Fence**

If silt fence is used as a linear sediment barrier:

1. Place fence along the perimeter of the erosion control blanket, with the posts facing the drainage inlet
2. Install fence with the bottom edge of the silt fence fabric in a trench. Backfill the trench with soil and compact manually

### **Gravel Bag Berm**

If gravel bag berm is used as a linear sediment barrier:

1. Place gravel-filled bags end-to-end to eliminate gaps
2. Stack bags in a way that the bags in the top row overlap the joints in the lower row

If gravel bag berms are used for Type 3A and Type 3B:

1. Place gravel-filled bags end-to-end to eliminate gaps
2. Stack bags in a way that the bags in the top row overlap the joints in the lower row
3. Arrange bags to create a spillway by removing one or more gravel-filled bags from the upper layer

If used within shoulder area, place gravel-filled bags behind temporary railing (Type K).

### **Fiber Rolls**

If fiber rolls are used as a linear sediment barrier:

1. Place fiber rolls in a furrow.
2. Secure fiber rolls with stakes installed along the length of the fiber rolls. Stakes must be installed from 6 to 12 inches from the end of the rolls.

If fiber rolls are used as a linear sediment barrier for Type 4A, place them over the erosion control blanket.

## **Foam Barriers**

If foam barriers are used as a linear sediment barrier:

1. Install barriers with the horizontal flap in a 3 inch deep trench and secured with nails and washers placed no more than 4 feet apart
2. Secure barriers with 2 nails at the connection points where separate units overlap
3. Place barriers without nails or stakes piercing the core

## **Flexible Sediment Barriers**

If flexible sediment barriers are used:

1. Secure barriers to the pavement with nails and adhesive, gravel-filled bags, or a combination
2. Install barriers flush against the sides of concrete, asphalt concrete, or hot mix asphalt curbs or dikes
3. Place barriers to provide a tight joint with the curb or dike and anchored in a way that runoff cannot flow behind the barrier

If flexible sediment barriers are used for Type 4B:

1. Secure barriers to the pavement according to the angle and spacing shown on the plans
2. Place barriers to provide a tight joint with the curb or dike. Cut the cover fabric or jacket to ensure a tight fit

## **Rigid Sediment Barriers**

If rigid sediment barriers are used at a grated catch basin without a curb inlet:

1. Place barriers using the gasket to prevent runoff from flowing under the barrier
2. Secure barriers to the pavement with nails and adhesive, gravel-filled bags, or a combination

If rigid sediment barriers are used for linear sediment barriers:

1. Install barriers in a trench. Backfill the trench with soil and compact manually
2. Place barrier with separate units overlapping at least 4 inches
3. Reinforce barriers with a wood stake at each overlap
4. Fasten barriers to the wood stakes with steel screws, 16 gauge galvanized steel wire, or with UV stabilized cable ties that are from 5 to 7 inches in length

## **Sediment Filter Bags**

Install sediment filter bags for Type 5 by:

1. Removing the drainage inlet grate
2. Placing the sediment bag in the opening
3. Replacing the grate to secure the sediment filter bag in place

## **MAINTENANCE**

Maintain temporary drainage inlet protection to provide sediment holding capacity and to reduce runoff velocities.

Remove sediment deposits, trash, and debris from temporary drainage inlet protection as needed or when directed by the Engineer. If removed sediment is deposited within project limits, it must be stabilized and not subject to erosion by wind or water. Trash and debris must be removed and disposed of as specified in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Maintain temporary drainage inlet protection by removing sediment from:

1. Behind flexible sediment barriers when sediment exceeds 1 inch in depth
2. Surface of the erosion control blanket when sediment exceeds 1 inch in depth
3. Sediment trap for Type 2 when the volume has been reduced by approximately one-half
4. Behind silt fence when the sediment is  $\frac{1}{3}$  the height of the silt fence fabric above ground
5. Sediment filter bags when filled or when the restraint cords are no longer visible

If rills and other evidence of concentrated runoff occur beneath the linear sediment barrier, repair or adjust the barrier.

If silt fence fabric becomes split, torn, or unraveled, repair or replace silt fence.

If geosynthetic fabric becomes split, torn, or unraveled, repair or replace foam barriers.

Repair or replace sagging or slumping linear sediment barriers with additional stakes. Replace broken or split wood stakes.

Reattach foam barriers and rigid plastic barriers that become detached or dislodged from the pavement.

Repair split or torn rigid plastic barriers with 16 gauge galvanized steel wire or UV stabilized cable ties that are from 5 to 7 inches in length.

For sediment filter bags without metal frames, empty by placing one inch steel reinforcing bars through the lifting loops and then lift the filled bag from the drainage inlet. For sediment filter bags with metal frames, empty by lifting the metal frame from the drainage inlet. Rinse before replacing in the drainage inlet. When rinsing the sediment filter bags, do not allow the rinse water to enter a drain inlet or waterway.

Repair temporary drainage inlet protection within 24 hours of discovering damage unless the Engineer approves a longer period.

If your vehicles, equipment, or activities disturb or displace temporary drainage inlet protection, repair temporary drainage inlet protection at your expense.

The County does not pay maintenance costs for cleanup, repair, removal, disposal, or replacement due to improper installation or your negligence.

## **REMOVAL**

When the Engineer determines that the temporary drainage inlet protection is not required, it must be removed and disposed of under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Ground disturbance, including holes and depressions, caused by the installation and removal of the temporary drainage inlet protection must be backfilled and repaired under Section 15-1.02, "Preservation of Property," of the Standard Specifications.

## **MEASUREMENT AND PAYMENT**

Quantities of temporary drainage inlet protection will be determined from actual count in place. The protection will be measured one time only and no additional measurement will be recognized.

The contract unit price per each paid for "TEMPORARY DRAINAGE INLET PROTECTION" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the temporary drainage inlet protection, complete in place, including removal of materials, cleanup and disposal of retained sediment and debris, and backfilling and repairing holes, depressions and other ground disturbance, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

No additional compensation will be made if the temporary drainage inlet protection is relocated during the course of construction.

The County and you share the cost of maintaining the temporary drainage inlet protection. The County determines the maintenance cost under Section 9-1.03, "Force Account Payment," of the Standard Specifications and pays you one-half of that cost.

### **10-1.36 TEMPORARY MULCH**

#### **GENERAL**

##### **Summary**

This work includes spreading, maintaining, and removing temporary mulch to stabilize active and nonactive disturbed soil areas.

The SWPPP must describe and include the use of temporary mulch as a water pollution control practice for soil stabilization.

##### **Submittals**

At least 5 business days before applying mulch, submit:

1. List of pollutant indicators and potential pollutants for the use of temporary mulch. Pollutant indicators are described under "Sampling and Analysis Plan for Non-Visible Pollutants" in the Preparation Manual.
2. If compost is used:
  - 2.1. Copy of compost technical data sheet from producer including:
    - 2.1.1. Laboratory analytical test results.
    - 2.1.2. Directions for product use.
    - 2.1.3. List of product ingredients.
  - 2.2. Copy of certification under US Composting Council (USCC) Seal of Testing Assurance (STA) program.

Submit a Certificate of Compliance as specified in Section 6-1.07, "Certificates of Compliance" of the Standard Specifications for the mulch material.

### **Quality Control and Assurance**

Compost producer must:

1. Have valid permits issued by the California Integrated Waste Management Board, Local Enforcement Agency and any other State and local agencies that regulate solid waste facilities
2. Participate in US Composting Council's Seal of Testing Assurance program

If compost facility is exempt from State permit requirements, the compost producer must certify that it follows guidelines and procedures for production of compost meeting the environmental health standards of 14 CA Code of Regs, Ch 3.1, Art 7.

Retain and submit records of temporary mulch applications including:

1. Compliance with specified rates
2. Application area
3. Application time
4. Quantity

## **MATERIALS**

### **Mulch**

Mulch must be compost, shredded green material, or a combination of both.

Compost may be derived from one or a combination of the following feedstock materials:

1. Green material consisting of chipped, shredded, or ground vegetation; or clean processed recycled wood products
2. Biosolids
3. Manure
4. Mixed food waste

Compost derived from feedstock materials must not contain weed seeds, pathogens, or deleterious materials as specified in 14 CA Code of Regs, Ch 3.1, Art 7, § 17868.3.

Compost must not:

1. Be derived from mixed municipal solid waste and must be free of visible contaminants
2. Contain paint, petroleum products, pesticides, or any other chemical residues harmful to animal life or plant growth
3. Possess objectionable odors
4. Exceed the maximum metal concentration listed in 14 CA Code of Regs, Ch 3.1, § 17868.2

Compost must comply with the following:

Physical and Chemical Requirements

Property	Test Method	Requirement
pH	*TMECC 04.11-A Elastometric pH 1:5 Slurry Method pH Units	6.0–8.0
Soluble Salts	TMECC 04.10-A Electrical Conductivity 1:5 Slurry Method dS/m (mmhos/cm)	0-10.0
Moisture Content	TMECC 03.09-A Total Solids & Moisture at 70+/-5 °C % Wet Weight Basis	30-60
Organic Matter Content	TMECC 05.07-A Loss-On-Ignition Organic Matter Method (LOI) % Dry Weight Basis	30–65
Maturity	TMECC 05.05-A Germination and Vigor Seed Emergence Seedling Vigor % Relative to Positive Control	80 or Above 80 or Above
Stability	TMECC 05.08-B Carbon Dioxide Evolution Rate mg CO <sub>2</sub> -C/g OM per day	8 or below
Particle Size	TMECC 02.02-B Sample Sieving for Aggregate Size Classification % Dry Weight Basis	Inches      % Passing 3            99% 3/8         25% Max. Length 6 inches
Pathogen	TMECC 07.01-B Fecal Coliform Bacteria < 1000 MPN/gram dry wt.	Pass
Pathogen	TMECC 07.01-B Salmonella < 3 MPN/4 grams dry wt.	Pass
Physical Contaminants	TMECC 02.02-C Man Made Inert Removal and Classification: Plastic, Glass and Metal % > 4mm fraction	Combined Total: < 1.0
Physical Contaminants	TMECC 02.02-C Man Made Inert Removal and Classification: Sharps (Sewing needles, straight pins and hypodermic needles) % > 4mm fraction	None Detected

\*TMECC refers to "Test Methods for the Examination of Composting and Compost," published by the US Department of Agriculture and the US Compost Council (USCC).

Shredded green material must:

1. Be chipped, shredded, or ground vegetation; or clean processed recycled wood products. Wood chips produced from tree trimmings may contain leaves and small twigs.
2. Comply with the following particle size requirements:

Sieve Size	Percent Passing
3 inch	100
1 inch	90-100
3/4 inch	65-100
1/4 inch	0-75
Maximum length	6 inches

3. Not be more than 0.1 percent by volume of deleterious materials such as rocks, glass, plastics, metals, clods, weeds, weed seeds, coarse objects, salts, paint, petroleum products, pesticides, or other chemical residues that would be harmful to plant or animal life.

## **CONSTRUCTION**

### **Application**

Spread temporary mulch when an area is ready to receive temporary erosion control under "Move-in/Move-out (Temporary Erosion Control)."

Spread mulch:

1. To a uniform thickness of 2 inches
2. To extend to the edge of retaining walls, dikes, paving and to within 4 feet from the flow line of paved and unpaved drainage ditches
3. Using mechanical, pneumatic, or manual methods

### **Maintenance**

Reapply mulch within 24 hours of discovering visible erosion, unless the Engineer approves a longer period.

Temporary mulch disturbed or displaced by your vehicles, equipment, or operations must be reapplied at your expense.

Cleanup, repair, removal, disposal, or replacement, due to improper installation or your negligence are not included in the cost for performing maintenance.

### **Removal**

Remove mulch by mechanically blending it into the soil with track laying equipment, disking, or other approved method.

## **MEASUREMENT AND PAYMENT**

Temporary mulch is measured by the square yard from measurements along the slope of the areas covered by the mulch.

The contract price paid per square yard for "TEMPORARY MULCH" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in applying temporary mulch, complete in place, including removal of mulch, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The County and you share the cost of maintaining the mulch. The County determines the maintenance cost under Section 9-1.03, "Force Account Payment," of the Standard Specifications and pays you one-half of that cost.

### **10-1.37 BARRICADE (TYPE III)**

Barricades (Type III) shall be furnished, placed and maintained at the locations shown on the plans, specified in the Standard Specifications or in these Special Provisions or where designated by the Engineer. Barricades shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these Special Provisions.

Attention is directed to "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions regarding retroreflective sheeting for barricades.

Construction area sign and marker panels conforming to the provisions in Section 12-3.06, "Construction Area Signs," of the Standard Specifications shall be installed on barricades in a manner determined by the Engineer at the locations shown on the plans.

Sign panels for construction area signs and marker panels installed on barricades shall conform to the provisions in Section 12-3.06A, "Stationary Mounted Signs," of the Standard Specifications.

### **MEASUREMENT AND PAYMENT**

Full compensation for furnishing, installing, maintaining, and removing construction area signs and marker panels on barricades shall be considered as included in the contract unit price paid for "BARRICADE (TYPE III)" and no additional compensation will be allowed therefor.

Barricades shown on the plans as part of a traffic control system will be paid for as provided in "Traffic Control System for Lane Closure" of these special provisions and will not be included in the count for payment of barricades.

"BARRICADE (TYPE III)" will be measured and paid for by the unit as determined from actual count in the manner specified in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications.

### **10-1.38 CHANNELIZER (SURFACE MOUNTED)**

Channelizers shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these Special Provisions.

Channelizers shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions.

When no longer required for the work as determined by the Engineer, channelizers and underlying adhesive used to cement the channelizer bases to the pavement shall be removed. Removed channelizers and adhesive shall become the property of the Contractor and shall be removed from the site of work.

Channelizers used to close eastbound of Willow Road at ramp intersection will remain if Additive Bid Item 1 work is not constructed. This item will be deleted if bid Additive Bid Item 1 work is constructed. Contractor shall refund the County the amount paid for Channelizers at this location.

#### **MEASUREMENT AND PAYMENT**

The contract price per each paid for "CHANNELIZERS (SURFACE MOUNTED)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing channelizers, complete in place, including removal and cleanup as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.39 TEMPORARY PAVEMENT DELINEATION**

Temporary pavement delineation shall be furnished, placed, maintained, and removed in conformance with the provisions in Section 12-3.01, "General," of the Standard Specifications and these Special Provisions. Nothing in these Special Provisions shall be construed as reducing the minimum standards specified in the California MUTCD or as relieving the Contractor from the responsibilities specified in Section 7-1.09, "Public Safety," of the Standard Specifications.

#### **GENERAL**

When the work causes obliteration of pavement delineation, temporary or permanent pavement delineation shall be in place before opening the traveled way to public traffic. Lane line or centerline pavement delineation shall be provided for traveled ways open to public traffic. On multilane roadways (freeways and expressways) edge line delineation shall be provided for traveled ways open to public traffic.

The Contractor shall perform the work necessary to establish the alignment of temporary pavement delineation, including required lines or markers. Surfaces to receive application of paint or removable traffic tape temporary pavement delineation shall be dry and free of dirt and loose material. Temporary pavement delineation shall not be applied over existing pavement delineation or other temporary pavement delineation. Temporary pavement delineation shall be maintained until superseded

or replaced with a new pattern of temporary pavement delineation or permanent pavement delineation, or as determined by the Engineer.

Temporary pavement markers, including underlying adhesive, and removable traffic tape that are applied to the final layer of surfacing or existing pavement to remain in place or that conflicts with a subsequent or new traffic pattern for the area shall be removed when no longer required for the direction of public traffic, as determined by the Engineer.

### **TEMPORARY LANELINE AND CENTERLINE DELINEATION**

When lanelines or centerlines are obliterated and temporary pavement delineation to replace the lines is not shown on the plans, the minimum laneline and centerline delineation to be provided for that area shall be temporary pavement markers placed at longitudinal intervals of not more than 24 feet. The temporary pavement markers shall be the same color as the laneline or centerline the pavement markers replace. Temporary pavement markers shall be, at the option of the Contractor, one of the temporary pavement markers listed for short term day/night use (14 days or less) or long term day/night use (180 days or less) in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions. The temporary pavement markers shall be placed in conformance with the manufacturer's instructions. Temporary pavement markers for long term day/night use (180 days or less) shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used to place the temporary pavement markers in areas where removal of the temporary pavement markers will be required.

Temporary laneline or centerline delineation consisting entirely of temporary pavement markers listed for short term day/night use (14 days or less), shall be placed on longitudinal intervals of not more than 24 feet and shall be used for a maximum of 14 days on lanes opened to public traffic. Before the end of the 14 days the permanent pavement delineation shall be placed. If the permanent pavement delineation is not placed within the 14 days, the Contractor shall replace the temporary pavement markers and provide additional temporary pavement delineation and shall bear the cost thereof. The additional temporary pavement delineation to be provided shall be equivalent to the pattern specified for the permanent pavement delineation for the area, as determined by the Engineer.

### **TEMPORARY EDGELINE DELINEATION**

On multilane roadways (freeways and expressways), when edgelines are obliterated and temporary pavement delineation to replace those edgelines is not shown on the plans, the edgeline delineation to be provided for those areas adjacent to lanes open to public traffic shall be as follows:

1. Temporary pavement delineation for right edgelines shall, at the option of the Contractor, consist of either a solid 4-inch wide traffic stripe tape of the same color as the stripe it replaces, traffic cones, portable delineators or channelizers placed at longitudinal intervals not to exceed 100 feet.
2. Temporary pavement delineation for left edgelines shall, at the option of the Contractor, consist of either solid 4-inch wide traffic stripe tape of the same color as the stripe it replaces, traffic cones, portable delineators or channelizers placed

at longitudinal intervals not to exceed 100 feet or temporary pavement markers placed at longitudinal intervals of not more than 6 feet.

Where removal of the 4-inch wide traffic stripe will not be required, painted traffic stripe conforming to the provisions of "Temporary Traffic Stripe (Paint)" of these Special Provisions may be used.

The lateral offset for traffic cones, portable delineators or channelizers used for temporary edgeline delineation shall be as determined by the Engineer. If traffic cones or portable delineators are used as temporary pavement delineation for edgelines, the Contractor shall provide personnel to remain at the project site to maintain the cones or delineators during the hours of the day that the portable delineators are in use.

Channelizers used for temporary edgeline delineation shall be the surface mounted type and shall be orange in color. Channelizer bases shall be cemented to the pavement in the same manner provided for cementing pavement markers to pavement in "Pavement Markers" of these Special Provisions, except epoxy adhesive shall not be used to place channelizers on the top layer of pavement. Channelizers shall be, at the Contractor's option, one of the surface mount types (36 inch) listed in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions.

Temporary edgeline delineation shall be removed when no longer required for the direction of public traffic as determined by the Engineer.

#### **TEMPORARY TRAFFIC STRIPE (PAINT)**

The painted temporary traffic stripe shall be complete in place at the location shown before opening the traveled way to public traffic. Removal of painted temporary traffic stripe is required at all location except final configuration.

Temporary painted traffic stripe shall conform to the provisions in "Paint Traffic Stripe and Pavement Marking" of these Special Provisions, except for payment. At the option of the Contractor, either one or 2 coats shall be applied regardless of whether on new or existing pavement.

#### **TEMPORARY PAVEMENT MARKERS**

Temporary pavement markers shall be applied complete in place before opening the traveled way to public traffic.

Temporary pavement markers shall be, at the option of the Contractor, one of the temporary pavement markers for long term day/night use (180 days or less) listed in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions.

Temporary pavement markers shall be placed in conformance with the manufacturer's instructions and shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used in areas where removal of the pavement markers will be required.

Retroreflective pavement markers conforming to the provisions in "Pavement Markers" of these Special Provisions may be used in place of temporary pavement markers for long term day/night use (180 days or less) except to simulate patterns of broken traffic stripe. Placement of the retroreflective pavement markers used for temporary pavement markers shall conform to the provisions in "Pavement Markers" of these Special Provisions except the waiting period provisions before placing the pavement markers on new hot mix asphalt surfacing as specified in Section 85-1.06, "Placement," of the Standard Specifications shall not apply and epoxy adhesive shall not be used to place pavement markers in areas where removal of the pavement markers will be required.

## **MEASUREMENT AND PAYMENT**

"TEMPORARY TRAFFIC STRIPE (PAINT)" will be measured and paid for by the linear foot in the manner specified for paint traffic stripe in Section 84-3.06, "Measurement," and Section 84-3.07, "Payment," of the Standard Specifications.

"TEMPORARY PAVEMENT MARKER" will be measured and paid for by the unit in the manner specified for retroreflective pavement markers in Section 85-1.08, "Measurement," and Section 85-1.09, "Payment," of the Standard Specifications.

Full compensation for furnishing, placing, maintaining, and removing the temporary pavement markers (including underlying adhesive, layout (dribble) lines to establish alignment of temporary pavement markers or used for temporary laneline and centerline delineation and signing specified for those areas where temporary laneline and centerline delineation is not shown on the plans and for providing equivalent patterns of permanent traffic lines for those areas when required, shall be considered as included in the contract prices paid for the items of work that obliterated the laneline and centerline pavement delineation and no additional compensation will be allowed therefor.

Full compensation for furnishing, placing, maintaining, and removing temporary edgeline delineation not shown on the plans shall be considered as included in the contract prices paid for the items of work that obliterated the edgeline pavement delineation and no additional compensation will be allowed therefor. The quantity of channelizers used as temporary edgeline delineation will not be included in the quantity of channelizer (surface mounted) to be paid for.

### **10-1.40 EXISTING HIGHWAY FACILITIES**

The work performed in connection with various existing highway facilities shall conform to the provisions in Section 15, "Existing Highway Facilities," of the Standard Specifications and these Special Provisions.

Attention is directed to Section 7-1.06, "Safety and Health Provisions," of the Standard Specifications. Work practices and worker health and safety shall conform to the California Division of Occupational Safety and Health Construction Safety Orders Title 8, of the California Code of Regulations including Section 5158, "Other Confined Space Operation

## 10-1.40A EARTH MATERIAL CONTAINING LEAD

### General

This work includes handling earth material containing lead under the Standard Specifications and these Special Provisions.

Attention is directed to "Material Containing Aerially Deposited Lead" of these Special Provisions.

### Submittals

Submit a lead compliance plan under Section 7-1.07, "Lead Compliance Plan," of the Standard Specifications.

### Project Conditions

Lead is present in earth material within the project limits at average concentrations below 1,000 mg/kg total lead and below 5 mg/l soluble lead. Earth material within the project limits:

1. Is not a hazardous waste
2. Does not require disposal at a permitted landfill or solid waste disposal facility

Lead has been detected in earth material in unpaved areas of the highway. Levels of lead found within the project limits range from less than 2.5 to 210 mg/kg total lead with an average concentration of 21.6 mg/kg total lead as analyzed by EPA Test Method 6010 or EPA Test Method 7000 series and based upon a 95% Upper Confidence Limit. Levels of lead found within the project limits have a predicted average soluble concentration of 1.64 mg/l as analyzed by the California Waste Extraction Test and based upon a 95% Upper Confidence Limit.

### Construction

Handle earth material containing lead under all applicable laws, rules, and regulations, including those of the following agencies:

1. Cal/OSHA
2. CA Regional Water Quality Control Board, Region 3 – Central Coast.
3. CA Department of Toxic Substances Control
4. County of San Luis Obispo Requirements

Manage earth material as shown in the following table.

**Earth Material Management**

Location	Depth	Management requirements
Highway 101 Median	>1.5 feet	Excavate to greater than 1.5 feet deep. Do not excavate in lifts.

If earth material is disposed of:

1. Dispose of under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way, " of the Standard Specifications
2. Disclose the lead concentration of the earth material to the receiving property owner when obtaining authorization for disposal on the property
3. Obtain the receiving property owner's acknowledgment of lead concentration disclosure in the written authorization for disposal
4. You are responsible for any additional sampling and analysis required by the receiving property owner

If you choose to dispose of earth material at a commercial landfill:

1. Transport it to a Class III or Class II landfill appropriately permitted to receive the material
2. You are responsible for identifying the appropriately permitted landfill to receive the earth material and for all associated trucking and disposal costs including any additional sampling and analysis required by the receiving landfill.

#### **MEASUREMENT AND PAYMENT**

Full compensation for handling earth material containing lead is included in the contract unit price paid per cubic yard for "ROADWAY EXCAVATION" and no additional compensation will be allowed therefor.

#### **10-1.40B ABANDON EXISTING EQUIPMENT CROSSING**

The existing cattle crossing under Highway 101 at approximate Station 346+00 shall be abandoned in place in conformance with Section 15 "Existing Highway Facilities," of the Standard Specifications and these Special Provisions.

This work shall include installation of storm drain piping within the existing equipment crossing per the details shown on the plans.

The storm drain piping used in the equipment crossing will be included in the contract unit price paid for storm drains and shall not be considered as included in unit price paid for abandoning equipment crossing.

The existing flow line of equipment crossing shall be prepared, graded, and/or cleaned as deemed necessary by the Engineer to provide invert elevation of the storm drain piping, prior to storm drain pipe installation.

The Contractor shall backfill the cavity between the new storm drain piping and the existing equipment crossing with sand backfill in conformance with the Standard Specifications and these Special Provisions and to the satisfaction of the Engineer.

Should the Contractor wish to use an alternate type of backfill other than sand, the Contractor shall obtain prior approval from the Engineer.

#### **MEASUREMENT AND PAYMENT**

The contract price paid per linear foot for "ABANDON EQUIPMENT CROSSING" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in abandoning the equipment

crossing, including preparation, removal of debris, disposals and backfill as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.40C REMOVE FENCE**

Removing fencing shall conform to the provisions in Section 15, "Existing Highway Facilities," of the Standard Specifications and these Special Provisions.

Removal of the fence shall be performed in a manner that will prevent the escape of livestock.

The above ground portions of the fence shall be removed in accordance with Section 15-2.0b of the Standard Specifications. Below ground portion of the fence that does not interfere with construction shall be removed to a depth of 18".

Removed fence materials shall become the property of the Contractor and shall be disposed of outside of the highway right of way in accordance with the provision of Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

#### **MEASUREMENT AND PAYMENT**

The contract unit price paid per linear foot for "REMOVE FENCE" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in completing the operations to remove fencing, including removing and disposing of the materials removed, backfilling and re-grading the site, as shown on the plans, as specified in the Standard Specifications, these Special Provisions, and as directed by the Engineer, and no additional compensation will be allowed therefor.

#### **10-1.40D RELOCATE GATES**

Existing gates shall be relocated to the new Right of Way per the plans or as directed by the Engineer. Gates damaged by removal and/or construction shall be replaced with new materials to match in kind. Gate relocation shall include new posts, hardware, excavation and concrete footings for posts or as directed by the Engineer.

Relocation of existing gates in kind shall be first item of work or as directed by the Engineer. Contractor shall coordinate this work with individual property owners and the Engineer prior to start of construction.

#### **MEASUREMENT AND PAYMENT**

The contract unit price paid per each location for "RELOCATE GATES" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in relocating gates with new hardware, complete in place, as shown on the plans, and as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.40E REMOVE METAL BEAM GUARD RAILING AND THRIE BEAM BARRIER**

Existing metal beam guard railing and thrie beam barrier where shown on the plans to be removed, shall be removed and disposed of outside the highway right of way in accordance with the provision of Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Existing concrete anchors or steel foundation tubes shall be completely removed and disposed of. Payment for removing concrete anchors shall be considered as included in the contract price paid per linear foot for remove metal beam guard railing and thrie beam barrier and no separate payment will be made therefor.

Payment for removing cable anchor assemblies, terminal anchor assemblies or steel foundation tubes or wood posts shall be considered as included in the contract price paid per linear foot for remove metal beam guard railing and thrie beam barrier and no separate payment will be made therefor.

#### **MEASUREMENT AND PAYMENT**

The contract price paid per linear foot for "REMOVE METAL BEAM GUARD RAILING" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in completing the operation to remove the metal beam guard railing, including removing and disposing of the materials removed, backfilling and re-grading the site, 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.

The contract price paid per linear foot for "REMOVE DOUBLE THRIE BEAM BARRIER" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in completing the operation to remove the thrie beam barrier, including removing and disposing of the materials removed, backfilling and re-grading the site, 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.

#### **10-1.40F REMOVE TRAFFIC STRIPE AND PAVEMENT MARKING**

This work includes removing existing traffic stripe and pavement marking at the locations shown on the plans.

Submit a lead compliance plan under Section 7-1.07, "Lead Compliance Plan," of the Standard Specifications.

Waste residue from removal of thermoplastic and painted traffic stripe and pavement marking is a non-hazardous waste residue and contains lead in average concentrations less than 1000 mg/kg total lead and 5 mg/L soluble lead. This waste residue does not contain heavy metals in concentrations that exceed thresholds established by the Health and Safety Code and 22 CA Code of Regs and is not regulated under the Federal Resource Conservation and Recovery Act (RCRA), 42 USC § 6901 et seq.

## **MEASUREMENT AND PAYMENT**

The contract price paid per linear foot for "REMOVE TRAFFIC STRIPE" shall include full compensation for furnishing all labor, materials, tools, equipment and incidental for doing all the work involved in removing traffic striping and pavement marking, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price paid per square foot for "REMOVE PAVEMENT MARKING" shall include full compensation for furnishing all labor, materials, tools, equipment and incidental for doing all the work involved in removing pavement marking, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-1.40G REMOVE PAVEMENT MARKER**

Existing pavement markers, including underlying adhesive, when no longer required for traffic lane delineation as determined by the Engineer, shall be removed and disposed of.

## **MEASUREMENT AND PAYMENT**

The contract price paid per each for "REMOVE PAVEMENT MARKER" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in removing pavement marker, cleaning and disposal, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.40H REMOVE DRAINAGE FACILITY**

Existing drainage culverts, flared end sections and inlets, where any portion of these structures is within 3 feet of the grading plane in excavation areas, or within one foot of original ground in embankment areas, or where shown on the plans to be removed, shall be completely removed and disposed of.

## **MEASUREMENT AND PAYMENT**

The contract price per linear foot paid for "REMOVE CULVERT" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in completing the operation to remove the culverts, including removing and disposing of the materials removed, backfilling and re-grading the site 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.

The contract price per each paid for "REMOVE INLET" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in completing the operation to remove the inlets, including removing and disposing of the materials removed, backfilling and re-grading the site 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.

The contract price per each paid for "REMOVE FLARED END SECTION" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in completing the operation to remove the flared end section, including removing and disposing of the materials removed, backfilling and re-grading the site 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.

#### **10-1.40I REMOVE ROADSIDE SIGN**

Existing roadside signs and sign posts at those locations shown on the plans to be removed, shall be removed and disposed of.

Sign panels shown on the plans to be relocated shall be relocated to the locations as shown on the plan.

Existing roadside signs shall not be removed until replacement signs have been installed or until the existing signs are no longer required for the direction of public traffic, unless otherwise directed by the Engineer.

Full compensation for salvaging sign panels shall be considered as included in the contract unit price paid for remove roadside sign and no additional compensation will be allowed therefor.

#### **MEASUREMENT AND PAYMENT**

The contract price paid per each for "REMOVE ROADSIDE SIGN" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in removing roadside sign and posts and disposal, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.40J RELOCATE ROADSIDE SIGN**

Existing roadside signs shall be removed and relocated to the new locations shown on the plans.

Each roadside sign shall be installed at the new location on the same day that the sign is removed from its original location.

Two holes shall be drilled in each existing post as required to provide the breakaway feature shown on the plans.

#### **MEASUREMENT AND PAYMENT**

"RELOCATE ROADSIDE SIGN" will be measured by each from actual field count.

The contract unit price paid per each for "RELOCATE ROADSIDE SIGN" shall include full compensation for furnishing all labor, materials, tools, equipment, and

incidentals, and for doing all the work involves in relocating roadside signs, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.40K REMOVE BASE AND SURFACING**

Existing base and bituminous surfacing shown on the plans to be removed, shall be removed to a depth of at least 6 inches below the grade of the existing surfacing. Resulting holes and depressions shall be backfilled with earthy material selected from excavation to the lines and grade established by the Engineer.

This work shall include minor grading of the surface for erosion control (hydroseed) at locations as shown on plans.

If temporary pavement constructed in the median of Route 101 shall be removed and backfilled with native material,, this work shall also be considered as "Remove Base and Surfacing" and compensation shall be paid for at the contract unit price as specified in these Special Provisions.

After removing base and surfacing, Contractor shall restore the original grade with native material.

The material removed shall be disposed of outside the highway right of way in conformance with the provisions in Section 15-2.03, "Disposal," of the Standard Specifications.

#### **MEASUREMENT AND PAYMENT**

The contract unit price paid per square yard for "REMOVE BASE AND SURFACING" shall include full compensation for furnishing all labor, materials, tools, equipment, restore original grade with native material, and incidentals, and for doing all the work involve in remove base and surfacing, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### **10-1.41 TREE REMOVAL**

Tree to be removed as shown on the plans, shall conform to the provisions in Section 16, "Clearing and Grubbing," of the Standard Specifications and these Special Provisions.

Tree removal shall include removing and disposing of the associated root system of each tree removed to the satisfaction of the Engineer.

The Contractor shall coordinate with the Engineer to confirm that no protected birds have active nests in the trees to be removed, prior to removal.

The Contractor shall backfill and/or re-grade the areas where the tree root systems have been excavated to the satisfaction of the Engineer

## **MEASUREMENT AND PAYMENT**

The contract price paid per each for "REMOVE TREE" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in tree removal including, disposal of debris, root system removal and disposal, backfilling and re-grading, as specified the Standard Specifications, and these Special Provisions and as directed by the Engineer.

### **10-1.42 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.

Improvements remaining either wholly or partially within the highway right of way, including, but not limited to, sheds, stables, buildings, foundations, and slabs above ground, shall be demolished and removed as part of the work included under clearing and grubbing.

The Contractor shall not dispose of the improvements or materials there from by sale, gift or in any manner whatsoever to the general public at the site, provided however, that this provision shall not be construed as limiting or prohibiting the sale or disposal of the improvements or materials at the site to duly licensed contractors or material vendors, and provided that the materials are removed from the improvement by the County's Contractor. Removal of buildings as a unit, or in sections capable of reassembly as a structure, is expressly prohibited.

## **PAYMENT**

Full compensation for demolition, removal, and disposal of the facilities specified herein shall be considered as included in the contract lump sum price paid for "CLEARING AND GRUBBING" and no additional compensation will be allowed therefor.

"CLEARING AND GRUBBING" will be paid for on a lump sum basis in the manner specified in Section 16, "Clearing and Grubbing" of the Standard Specifications.

Exotic and invasive plant species removed during construction activities shall be disposed at an approved off-site location, outside waters of the U.S.

### **10-1.43 COLD PLANE ASPHALT CONCRETE PAVEMENT**

#### **GENERAL**

#### **Summary**

This work includes cold planing existing asphalt concrete pavement.

The Contractor shall grind existing pavement or place asphalt concrete leveling course to provide smooth transition between existing pavement grade and proposed bridge approach slab grade through cold plane asphalt concrete pavement

### **Sequencing and Scheduling**

Schedule cold planing activities so that not more than 24 hours elapses between the time the pavement is cold planed and the HMA is placed.

### **MATERIALS**

HMA for temporary tapers must be of the same quality as the HMA used elsewhere on the project or comply with "Minor Hot Mix Asphalt" of these Special Provisions.

### **CONSTRUCTION**

#### **General**

Perform planing of asphalt concrete pavement without the use of a heating device to soften the pavement.

#### **Cold Planing Equipment**

Cold planing machine must be:

1. Equipped with a cutter head width that matches the planing width. If the only available cutter head width is wider than the cold plane area shown, submit to the Engineer a request for using a wider cutter head. Do not cold plane until the Engineer approves your request.
2. Equipped with automatic controls to control the longitudinal grade and transverse slope of the cutter head and:
  - 2.1. If a ski device is used, it must be at least 30 feet long, rigid, and 1 piece unit. The entire length must be used in activating the sensor.
  - 2.2. If referencing from existing pavement, the cold planing machine must be controlled by a self-contained grade reference system. The system must be used at or near the centerline of the roadway. On the adjacent pass with the cold planing machine, a joint matching shoe may be used.
3. Equipped to effectively control dust generated by the planing operation.
4. Operated so that no fumes or smoke is produced.

Replace broken, missing, or worn machine teeth.

#### **Grade Control and Surface Smoothness**

Furnish, install, and maintain grade and transverse slope references.

The depth, length, width, and shape of the cut must be as shown on the plans or as directed by the Engineer. The final cut must result in a neat and uniform surface. Do not damage remaining surface.

The completed surface of the planed asphalt concrete pavement must not vary more than 0.02 foot when measured with a 12-foot straightedge parallel with the

centerline. The transverse slope of the planed surface must not vary more than 0.03 foot from the straightedge when placed at right angles to the centerline.

A drop-off of more than 0.15 foot is not allowed between adjacent lanes open to public traffic.

### **Temporary HMA Tapers**

If a drop-off between the existing pavement and the planed area at transverse joints cannot be avoided before opening to traffic, construct a temporary HMA taper. HMA for temporary taper must be:

1. Placed to the level of the existing pavement and tapered on a slope of 30:1 (Horizontal: Vertical) or flatter to the level of the planed area
2. Compacted by any method that will produce a smooth riding surface
3. Completely removed before placing the permanent surfacing. The removed material must be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

### **Disposal of Planed Material**

Remove cold planed material concurrent with planing activities, within 50 feet of the planer or as directed by the Engineer.

Dispose of planed material and under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

## **MEASUREMENT AND PAYMENT**

Cold plane asphalt concrete pavement is measured by the square yard.

The contract price paid per square yard for "COLD PLANE ASPHALT CONCRETE PAVEMENT" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in cold planing asphalt concrete surfacing and disposing of planed material, including constructing, maintaining, removing temporary HMA tapers if applicable, placing asphalt concrete leveling course, as specified in the Standard Specifications and these Special Provisions and as directed by the Engineer.

The contract price paid per square yard for "GRINDING PAVEMENT" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in grinding asphalt concrete surfacing and disposing of planed material, including constructing, maintaining, removing temporary HMA tapers if applicable, as specified in the Standard Specifications and these Special Provisions and as directed by the Engineer.

Full compensation for removal of thermoplastic traffic stripe, painted traffic stripe, and pavement marking in areas of grinding asphalt concrete is included in the contract price paid for grinding asphalt concrete and no separate payment will be made therefor.

#### **10-1.44 EARTHWORK**

Earthwork shall conform to the provisions in Section 19, "Earthwork," of the Standard Specifications and these Special Provisions.

Slope grading and finish grading shall be in conformance with Section 19-2.05, "Slopes," of the Standard Specifications and per the grades and lines shown on the plans.

The Contractor is required to perform light grading works for the Nursery property adjacent to northbound off-ramp with right of entry permit. The Contractor shall comply with disinfection requirement and other requirements from Nursery property.

The Contractor has option to use existing ground as the support for bridge superstructure construction. Contractor shall complete excavation under bridge superstructure after bridge construction. This work shall be considered as paid under roadway exaction and no additional compensation will be allowed therefor.

Surplus excavated material shall become the property of the Contractor and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Where a portion of the existing surfacing is to be removed, the outline of the area to be removed shall be cut on a neat line with a power-driven saw to a minimum depth of 0.17-foot before removing the surfacing. Full compensation for cutting the existing surfacing shall be considered as included in the contract price paid per cubic yard for roadway excavation and no additional compensation will be allowed therefor.

The portion of imported borrow placed within 4 feet of the finished grade shall have a Resistance (R-Value) of not less than 60.

Reinforcement or metal attached to reinforced concrete rubble placed in embankments shall not protrude above the grading plane. Prior to placement within 2 feet below the grading plane of embankments, reinforcement or metal shall be trimmed to no greater than 3/4 inch from the face of reinforced concrete rubble. Full compensation for trimming reinforcement or metal shall be considered as included in the contract prices paid per cubic yard for the types of excavation shown in the Engineer's estimate, and no additional compensation will be allowed therefor.

#### **MEASUREMENT AND PAYMENT**

Slope Grading shall be considered as included in the contract unit price per cubic yard paid for "ROADWAY EXCAVATION" and no additional compensation will be allowed therefor.

The contract price per cubic yard paid for "ROADWAY EXCAVATION" shall include full compensation for furnishing all labor, materials, tools, equipment and incidental for doing all the work involved in roadway excavation, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price per cubic yard paid for “STRUCTURE EXCAVATION (TYPE D)” shall include full compensation for furnishing all labor, materials, tools, equipment and incidental for doing all the work involved in structure excavation (type d), as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price per cubic yard paid for “STRUCTURE EXCAVATION (BRIDGE)” shall include full compensation for furnishing all labor, materials, tools, equipment and incidental for doing all the work involved in structure excavation (bridge), as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price per cubic yard paid for “STRUCTURE EXCAVATION (RETAINING WALL)” shall include full compensation for furnishing all labor, materials, tools, equipment and incidental for doing all the work involved in structure excavation (retaining wall), as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price per cubic yard paid for “STRUCTURE BACKFILL (BRIDGE)” shall include full compensation for furnishing all labor, materials, tools, equipment and incidental for doing all the work involved in structure backfill (bridge), as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price per cubic yard paid for “DITCH EXCAVATION” shall include full compensation for furnishing all labor, materials, tools, equipment and incidental for doing all the work involved in ditch excavation, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price per cubic yard paid for “SAND BACKFILL” shall include full compensation for furnishing all labor, materials, tools, equipment and incidental for doing all the work involved in sand backfill, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price per square yard paid for “NURSERY PROPERTY GRADING” shall include full compensation for furnishing all labor, materials, tools, equipment and incidental for doing all the work involved in re-grading the Nursery property, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

At the locations and to the limits shown on the plans, material below the bottom of retaining wall footings shall be removed and replaced with 2 feet of Class 1 permeable material conforming to the provisions in Section 68-1.025, “Permeable Material,” of Standard Specifications. The permeable material shall be wrapped in Class B2 subgrade enhancement geotextile conforming to the provisions in section 88-1.08A, “Subgrade Enhancement Geotextile,” of the Standard Specifications.

Removal of the material will be measured and paid for by the cubic yard as “STRUCTURE EXCAVATION (RETAINING WALL)” and furnishing, placing, and

compacting the replacement material will be measured and paid for by the cubic yard as “STRUCTURE BACKFILL (RETAINING WALL).”

Pervious backfill material placed within the limits of payment for bridges will be measured and paid for as “STRUCTURE BACKFILL (BRIDGE).”

Pervious backfill material placed within the limits of payment for retaining walls will be measured and paid for as “STRUCTURE BACKFILL (RETAINING WALL).”

If structure excavation or structure backfill for bridges is not otherwise designated by type and payment for the structure excavation or structure backfill has not otherwise been provided for in the Standard Specifications or these Special Provisions, the structure excavation or structure backfill will be measured and paid for as “STRUCTURE EXCAVATION (BRIDGE)” or “STRUCTURE BACKFILL (BRIDGE),” respectively.

Structure excavation designated as Type D for footings at the locations shown on the plans, will be measured and paid for as structure excavation (Type D). Ground water or surface water is expected to be encountered at these locations, but seal course concrete is not shown or specified. Structure excavation for footings at locations not designated on the plans as structure excavation (Type D) and where ground or surface water is encountered, will be measured and paid for as “STRUCTURE EXCAVATION (BRIDGE)” at the Willow Road undercrossing and Nipomo Creek bridges, and will be measured and paid for as “STRUCTURE EXCAVATION (RETAINING WALL)” for retaining wall 1A, 1B, 2, and 3.

#### **10-1.45 STRUCTURE BACKFILL (RETAINING WALLS)**

Structural backfill for Retaining Walls shall be in conformance with Section 19, Earthwork,” of the Standard Specifications and these Special Provisions.

##### **MEASUREMENT AND PAYMENT**

Structure backfill retaining walls shall be measured and paid for by the cubic yard.

The contract price per cubic yard paid for “STRUCTURE BACKFILL (RETAINING WALL)” shall include full compensation for all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing structure backfill retaining walls, complete in place, as shown on the plans, as specified in the Standard Specifications, and these Special Provisions, and as directed by the Engineer.

#### **10-1.46 SELECT FILL**

Select fill shall be placed at the locations shown on the plans and in conformance with these Special Provisions.

Attention is directed to “Supplemental Project Information“ of these Special Provisions.

Select fill shall have minimum R-Value of 60 and aggregates used for select fill shall be less than 3" in diameter. The Contractor shall submit a sample and material certification to the Engineer for approval prior to installation.

The over excavated material that cannot be used at other locations on-site shall be disposed of off-site at an approved location. The exported materials shall be considered as included in the contract price paid for select fill and no additional compensation will be allowed

## **MEASUREMENT AND PAYMENT**

The contract price paid per cubic yard for "SELECT FILL" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in placing select fill, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.47 CONTROLLED LOW STRENGTH MATERIAL**

Controlled low strength material shall consist of a workable mixture of aggregate, cementitious materials, and water and shall conform to the provisions for slurry cement backfill in Section 19-3.062, "Slurry Cement Backfill," of the Standard Specifications and these Special Provisions.

At the option of the Contractor, controlled low strength material may be used as structure backfill for pipe culverts, except that controlled low strength material shall not be used as structure backfill for culverts having a diameter or span greater than 20 feet.

When controlled low strength material is used for structure backfill, the width of the excavation shown on the plans may be reduced so that the clear distance between the outside of the pipe and the side of the excavation, on each side of the pipe, is a minimum of 12 inches. This minimum may be reduced to 6 inches when the height of cover is less than or equal to 20 feet or the pipe diameter or span is less than 42 inches.

Controlled low strength material in new construction shall not be permanently placed higher than the basement soil. For trenches in existing pavements, permanent placement shall be no higher than the bottom of the existing pavement permeable drainage layer. If a drainage layer does not exist, permanent placement in existing pavements shall be no higher than one inch below the bottom of the existing asphalt concrete surfacing or no higher than the top of base below the existing portland cement concrete pavement. The minimum height that controlled low strength material shall be placed, relative to the culvert invert, is 0.5 diameter or 0.5 height for rigid culverts and 0.7 diameter or 0.7 height for flexible culverts.

When controlled low strength material is proposed for use, the Contractor shall submit a mix design and test data to the Engineer for approval prior to excavating the trench for which controlled low strength material is proposed for use. The test data and mix design shall provide for the following:

- A. A 28-day compressive strength between 50 pounds per square inch and 100 pounds per square inch for pipe culverts having a height of cover of 20 feet or less and a minimum 28-day compressive strength of 100 pounds per square inch for pipe culverts having a height of cover greater than 20 feet. Compressive strength shall be determined in conformance with the requirements in ASTM Designation: D 4832.
- B. Cement shall be any type of portland cement conforming to the requirements in ASTM Designation: C 150; or any type of blended hydraulic cement conforming to the requirements in ASTM Designation: C 595M or the physical requirements in ASTM Designation: C 1157M. Testing of cement will not be required.
- C. Admixtures may be used in conformance with the provisions in Section 90-4, "Admixtures," of the Standard Specifications. Chemical admixtures containing chlorides as Cl in excess of one percent by weight of admixture, as determined in conformance with the requirements of California Test 415, shall not be used. If an air-entraining admixture is used, the maximum air content shall be limited to 20 percent. Mineral admixtures may be used at the Contractor's option.

Materials for controlled low strength material shall be thoroughly machine-mixed in a pugmill, rotary drum or other approved mixer. Mixing shall continue until the cementitious material and water are thoroughly dispersed throughout the material. Controlled low strength material shall be placed in the work within 3 hours after introduction of the cement to the aggregates.

When controlled low strength material is to be placed within the traveled way or otherwise to be covered by paving or embankment materials, the material shall achieve a maximum indentation diameter of 3 inches prior to covering and opening to public traffic. Penetration resistance shall be measured in conformance with the requirements in ASTM Designation: D 6024.

Full compensation for controlled low strength material used as structure backfill for pipe culverts will be considered as included in the contract unit price paid for pipe culverts and no additional compensation will be allowed therefor.

#### **10-1.48 MINOR CONCRETE (CONCRETE BACKFILL)**

Concrete backfill for reinforced concrete culverts shall be constructed in conformance with the provisions in Section 66-1.045, "Concrete Backfill," of the Standard Specifications and will be measured and paid for in conformance with the provisions in Section 66-4, "Measurement and Payment," of the Standard Specifications and the following:

- A. The quantity of concrete backfill to be paid for, regardless of the kind of culvert and wall thickness of the culvert installed, will be based on the dimensions shown on the plans and the installation of reinforced concrete pipe with the least wall thickness shown in AASHTO Designation: M 170M for the Class of pipe designated.

#### **MEASUREMENT AND PAYMENT**

The contract unit price per cubic yard paid for "MINOR CONCRETE (CONCRETE BACKFILL)" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in installing concrete

backfill, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.49 IRRIGATION CROSSOVERS**

Irrigation crossovers shall conform to the provisions in Section 20-5, "Irrigation Systems," of the Standard Specifications and these Special Provisions.

Conduits shall be placed in open trenches in conformance with the provisions in Section 20-5.03B, "Conduit for Irrigation Crossovers," of the Standard Specifications.

Conduits shall be corrugated steel pipe.

Conduits shall be corrugated high density polyethylene (CHDPE) pipe. Corrugated high density polyethylene pipe shall conform to the requirements in ASTM Designation: F 405 or F 667, or AASHTO Designation: M 252 or M 294 and shall be Type S. Couplings and fittings shall be as recommended by the pipe manufacturer.

Conduits shall be alternative conduits and, at the option of the Contractor, shall be one of the following:

- A. Steel pipe.
- B. Corrugated aluminum pipe,
- C. Acrylonitrile-butadiene-styrene (ABS) composite pipe,
- D. Corrugated high density polyethylene (CHDPE) pipe conforming to the requirements in ASTM Designation: F 405 or F 667, or AASHTO Designation: M 252 or M 294 and shall be Type S. Couplings and fittings for CHDPE pipe shall be as recommended by the pipe manufacturer.

Water line crossovers shall conform to the provisions in Section 20-5.03C, "Water Line Crossovers," of the Standard Specifications.

Fittings for water line crossovers shall be Schedule 80.

The contract price paid per linear foot for "IRRIGATION CROSSOVER" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in irrigation crossover, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.50 IRRIGATION SLEEVE**

Irrigation sleeves shall be polyvinyl chloride (PVC) plastic pipe and shall conform to the provisions in Section 20-2.15B(1), "Plastic Pipe Supply Line," of the Standard Specifications and these Special Provisions.

Irrigation sleeves less than 6 inches in diameter shall have a pressure rating (PR) 315.

Irrigation sleeves 6 inches or larger in diameter shall be Schedule 40.

Fittings shall be Schedule 40.

Irrigation sleeves shall be installed where shown on the plans.

Irrigation sleeves shall be installed not less than 1.5 feet below finished grade measured to the top of the sleeve. Sleeves shall extend 6 inches beyond paving. The ends of the sleeve shall be capped until use.

#### **MEASUREMENT AND PAYMENT**

Quantities of irrigation sleeve to be paid will be determined from the slope length designated by the Engineer. Irrigation sleeve placed in excess of the lengths designated will not be paid for.

The contract price paid per linear foot for "IRRIGATION SLEEVE" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in irrigation sleeve, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.51 WATER PIPE**

##### **Steel Pipe**

Galvanized steel pipe supply lines installed between water meters and backflow preventer assemblies must be installed not less than 18 inches below finished grade, measured to the top of the pipe.

#### **MEASUREMENT AND PAYMENT**

The contract unit price per linear foot paid for "1½" STEEL WATER PIPE" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved installing steel water pipe, including excavation, backfill, and pipe installations, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.52 WATERING**

Developing a water supply and applying watering shall conform to the provisions in Section 17, "Watering," of the Standard Specifications and these Special Provisions.

Attention is directed to "Progress and Prosecution of the Work" of these Special Provisions regarding availability of water.

#### **PAYMENT**

The contract lump sum price paid for "DEVELOPING WATER SUPPLY" shall include full compensation for furnishing all labor, materials, tools, equipment and incidental

for doing all the work involved in developing water supply (including quantity of water used, applying the water for dust control and others as required for construction), complete in place, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

No adjustment of compensation will be made for the lump sum item of develop water supply for increase or decrease in the quantity of water required.

#### **10-1.53 EROSION CONTROL (SEQUENCING)**

Place erosion control treatments in the following sequence for each erosion control type identified:

Erosion Control (Type 3) Biofiltration Strips

Compost (Incorporate)

Rolled Erosion Control Product (Jute Mesh)

Erosion Control (Hydroseed)

#### **10-1.54 ROLLED EROSION CONTROL PRODUCT (NETTING)**

##### **GENERAL**

##### **Summary**

This work includes installing rolled erosion control product (netting).

##### **Definitions**

**Rolled erosion control product (RECP):** A long-term degradable material manufactured or fabricated into rolls designed to reduce soil erosion and assist in the growth, establishment and protection of vegetation.

**Open weave textile (OWT):** A degradable RECP composed of processed natural yarns woven into a matrix, used to provide erosion control and vegetation establishment.

##### **Submittals**

Submit a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for:

1. Netting
2. Fastener

##### **MATERIALS**

##### **Netting**

Netting must comply with the following:

1. Netting must be a OWT RECP.
2. Netting Type: A
3. Machine-made mats provided in rolled strips.
4. Minimum thickness: 0.30 inch.
5. Minimum width: 72 inches.
6. U.V. Stability under ASTM D 4355 (500 hours exposure): 80%
7. Physical properties in Table A:

**Table A**

Type	Number Of Nets	Net Type	Matrix	Maximum "C" Factor <sup>1</sup>	Minimum Sheer Stress <sup>2</sup>	Functional Longevity (months)	Minimum Tensile Strength <sup>3</sup>
A <sup>4</sup>	Single Net	Organic	100% Woven Coir (Coconut Fiber)	0.25	3	36	125
B <sup>5</sup>	Single Net	Organic	100% Woven Coir (Coconut Fiber)	0.25	4.4	36	125
C <sup>6</sup>	Single Net	Organic	100% Woven Coir (Coconut Fiber)	0.25	4.6	36	125

Notes:

<sup>1</sup> Universal Soil Loss Equation (USLE) C-Factor for a 1.5:1 (H:V) unvegetated slope.

<sup>2</sup> lb/ft<sup>2</sup> under ASTM D 6460.

<sup>3</sup> lb/ft under ASTM D 5035.

<sup>4</sup> Average open area of 65%, with a tolerance of ± two percent. Minimum weight of 11.8 ounces per square yard under ASTM D 3776.

<sup>5</sup> Average open area of 48%, with a tolerance of ± two percent. Minimum weight of 20 ounces per square yard under ASTM D 3776.

<sup>6</sup> Average open area of 38%, with a tolerance of ± two percent. Minimum weight of 26 ounces per square yard under ASTM D 3776.

### **Fasteners**

Fasteners must be 11 gauge, 6-inch U-shaped staples with 6-inch legs, and 1-inch crown.

Fasteners must be 6" biodegradable stakes.

Stakes must be manufactured from completely biodegradable substance derived from renewable agricultural resources leaving no residuals in the ground. Stakes must be T-shaped with a minimum 1.2-inch hooked head and 4-inch leg or 6-inch leg with serrations or barbs on its body.

Anchor pins must be steel spikes with a minimum diameter of 3/16 inch and a length of 18 inches. Each spike must be furnished with a 1 1/2-inch steel washer.

## **MEASUREMENT AND PAYMENT**

Full compensation for Rolled Erosion Control Product (Netting) shall be considered as included in the contract price per square foot paid for "EROSION CONTROL HYDROSEED (TYPE 3 BIOFILTRATION STRIP)" and no additional compensation shall be allowed therefor.

### **10-1.55 MOVE-IN/MOVE-OUT (EROSION CONTROL)**

Move-in/move-out (Erosion Control) shall include moving onto the project when an area is ready to receive erosion control as determined by the Engineer, setting up all required personnel and equipment for the application of erosion control materials and moving out all personnel and equipment when erosion control in that area is completed.

When areas are ready to receive applications of erosion control (Hydroseed), as determined by the Engineer, the Contractor shall begin erosion control work in that area within 5 working days of the Engineer's notification to perform the erosion control work.

## **MEASUREMENT AND PAYMENT**

Quantities of move-in/move-out (Erosion Control) will be determined as units from actual count as determined by the Engineer. For measurement purposes, a move-in followed by a move-out will be considered as one unit.

The contract unit price per each paid for "MOVE-IN/MOVE-OUT (EROSION CONTROL)" shall include full compensation for furnishing all labor, materials (excluding erosion control materials), tools, equipment, and incidentals and for doing all the work involved in moving in and removing from the project all personnel and equipment necessary for application of erosion control (Hydroseed), as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

No adjustment of compensation will be made for any increase or decrease in the quantities of move-in/move-out (Erosion Control) required, regardless of the reason for the increase or decrease. The provisions in Section 4-1.03B, "Increased or Decreased Quantities," of the Standard Specifications shall not apply to the item of move-in/move-out (Erosion Control).

### **10-1.56 EROSION CONTROL (HYDROSEED)**

#### **GENERAL**

#### **Summary**

This work includes removing and disposing of weeds, applying erosion control materials, seed, fiber, commercial fertilizer, organic fertilizer, straw, and tackifier to

erosion control (Hydroseed) areas shown on the plans and shall conform to the provisions in Section 20-3, "Erosion Control," of the Standard Specifications.

Apply erosion control (Hydroseed) when an area is ready to receive erosion control as determined by the Engineer and under "Move-In/Move-Out (Erosion Control)" of these Special Provisions.

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 indicate the various erosion control (Hydroseed) locations.

## **MATERIALS**

### **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 will not be 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:

The following hydroseed mix design shall be used at all locations within the County Right of Way per the detail shown on the plans. This Hydroseed mix design shall not be used within State of California's (Caltrans) Right of Way.

#### **County of SLO Seed Mix Design Type 1:**

Lupinus nanus (sky lupine) 3.0 Lbs/Acre  
Eschscholzia californica (ca. poppy) 2.25 Lbs/Acre  
Layia platyglossa (tidy tips) 0.75 Lbs/Acre  
Clarkia amoena (atlas flower) 1.5 Lbs/Acre  
Nemophila menziesii (baby blue eyes) 3 Lbs/Acre  
Nassella pulchra (purple needle grass) 6.0 Lbs/Acre  
Salvia mellifera (black sage) 1.5 Lbs/Acre  
Artemisia californica (ca. sage) 0.75 Lbs/Acre  
Encelia californica (coastal sunflower) 1.5 Lbs/Acre  
Hordeum californica (ca. barley) 10.5 Lbs/Acre  
Vulpia microstachys (small fescue) 10.5 Lbs/Acre

Type 2 Seed Mix Design shall be used for permanent erosion control hydroseed within the State of California (Caltrans) "Right of Way"

#### **Type 2 Seed Mix Design:**

Agrostis diegoensis Vasey (San Diego Bentgrass) 1.0 Lbs/Acre  
Achillea millefolium L. subsp. Lanulosa (Nutt.) Piper (Western Yarrow) 1 Lbs/Acre  
Vulpia microstachys (Nutt.) Munro in Benth. (Small Fescue) 3 Lbs/Acre  
Nassella lepida (A.S. Hitchc.) Barkworth (foothill needlegrass) 5 Lbs/Acre  
Salvia mellifera E.L. Greene (black sage) 3 Lbs/Acre  
Elymus glaucus Buckley (blue wildrye) 10 Lbs/Acre  
Bromus carinatus Hook. Et Arn. (California broome) 10 Lbs/Acre  
Artemisia californiaca Less. (Californian sagebrush) .50 Lbs/Acre  
Eriophyllum confertiflorum (D.C.) A. Gray (golden yarrow) 1 Lbs/Acre  
Lotus scoparius (Nutt.) Ottley (deer lotus) 2 Lbs/Acre  
Eriogonum fasciculatum Benth. (California buckwheat) 10 Lbs/Acre

Type 3 Seed Mix Design shall be used for biofiltration strips hydroseed mix design within the State of California (Caltrans) "Right of Way"

**Type 3 Seed Mix Design:**

Carex praegracilis W. Boott (clustered field sedge) 5 Lbs/Acre  
Achillea millefolium L. subsp. Lanulosa (Nutt.) Piper (Western Yarrow) 1 Lbs/Acre  
Hordeum brachyantherum Nevski (barley) 25 Lbs/Acre  
Leymus triticoides (Buckley) Pilger (beardless wildrye) 15 Lbs/Acre

**Seed Sampling Supplies**

At the time of seed sampling, provide the Engineer a glassine lined bag and custody seal tag for each seed lot sample.

**Commercial Fertilizer for use with the County of San Luis Obispo Type 1 Seed Mix Design**

Commercial fertilizer shall be 12-12-12 blend mix with 50% urea based and shall be applied at the rate of 350 lbs. per acre or as directed by the Engineer.

Tackifier for use within the Caltrans Right of Way must be:

1. Guar (Plant Based)
2. Psyllium (Plant Based)
3. Starch (Plant Based)

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 comply with the following:

1. A natural high molecular weight polysaccharide
2. A high viscosity hydrocolloid that is miscible in water
3. Functional for at least 180 days
4. Labeled as either guar, psyllium, or starch

Guar:

1. A guar 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:

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:

1. A non-ionic, water-soluble granular material derived from corn, potato, or other plant-based source.

Tackifier classified as polymeric emulsion blend for use within the County Right of Way must comply with the following:

1. A 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. A 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

**Fiber**

Fiber must be:

1. Wood
2. Cellulose
3. Alternate
4. A combination of Wood, Cellulose, or Alternate

Fiber must comply with the following:

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 comply with the following:

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 comply with the following:

1. 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 comply with the following:

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

### **Coloring Agent**

Use a biodegradable, nontoxic coloring agent free from copper, mercury, and arsenic.

## **CONSTRUCTION**

### **Site Preparation**

Immediately prior to applying seed to erosion control (Hydroseed) areas, trash and debris and weeds must be removed.

Removed weeds must be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

### **Application**

Apply erosion control (Hydroseed) materials in separate applications in the following sequence:

1. Apply the following mixture with hydroseeding equipment at the rates indicated within 60 minutes after the seed has been added to the mixture in the areas where the Type 1 Hydroseed Mix Design for use within the County Right of Way:

Material	Pounds Per Acre (Slope Measurement)
Seed	41.25
Fiber	1200
Mycorrhizal Inoculum	60
Commercial Fertilizer	350

2. Apply the following mixture with hydroseeding equipment at the rates indicated within 60 minutes after the seed has been added to the mixture in the areas where the Type 2 Hydroseed Mix Design for use within the Caltrans "Right of Way":

Material	Pounds Per Acre (Slope Measurement)
Seed	46.5
Fiber	1200

3. Apply the following mixture with hydroseeding equipment at the rates indicated within 60 minutes after the seed has been added to the mixture in the areas where the Type 3 Hydroseed Mix Design for use in the biofiltration strips within the Caltrans "Right of Way":

Material	Pounds Per Acre (Slope Measurement)
Seed	46
Fiber	1200

The ratio of total water to total tackifier in the mixture must be as recommended by the manufacturer.

Hydraulic application of erosion control (Hydroseed) materials for rolled erosion control product (Netting) areas must be applied by hose, from the ground. Erosion control (Hydroseed) materials must be applied onto the slope face such that the materials are well integrated into the rolled erosion control product (Netting) and in contact with ground surface. Application must be perpendicular to the slope face such that rolled erosion control product (Netting) materials are not damaged or displaced.

Once straw work is started in an area, complete tackifier applications in that area on the same working day.

The Engineer may change the rates of erosion control (Hydroseed) materials to meet field conditions.

For any area where erosion control (Hydroseed) materials are to be applied, the application of all erosion control (Hydroseed) materials to be applied to that area must be completed within 72 hours from when the first materials were applied.

The Contractor shall re-apply erosion control (hydroseed) if there is less than 70% vegetative cover in bio-filtration strips during the plant establishment period

## **MEASUREMENT AND PAYMENT**

Erosion control (Hydroseed) will be measured by the square foot. The area will be calculated on the basis of actual or computed slope measurements.

The contract price paid per square foot for "EROSION CONTROL HYDROSEED (TYPE 1 COUNTY)", includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in erosion control Hydroseed Type 1 County, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price paid per square foot for "EROSION CONTROL HYDROSEED (TYPE 2 CALTRANS)", includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in erosion control hydroseed (Type 2 Caltrans), complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price paid per square foot for "EROSION CONTROL HYDROSEED (TYPE 3 BIOFILTRATION STRIP)" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in erosion control hydroseed (Type 3 biofiltration strip), complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.57 COMPOST (INCORPORATE)**

#### **GENERAL**

##### **Summary**

This work includes removing and disposing of weeds and incorporating compost into the surface of compost (Incorporate) areas with a slope of 4:1 (horizontal:vertical) or flatter as shown on the plans.

Comply with Section 20-3, "Erosion Control," of the Standard Specifications and these Special Provisions.

Apply compost when an area is ready to receive it as determined by the Engineer.

The Engineer will designate the ground location of all compost (incorporate) 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 indicate the various compost (incorporate) locations.

## **MATERIALS**

### **Compost**

The compost producer must be fully permitted as specified under the California Integrated Waste Management Board, Local Enforcement Agencies and any other State and Local Agencies that regulate solid waste facilities. If exempt from State permitting requirements, the composting facility must certify that it follows guidelines and procedures for production of compost meeting the environmental health standards of Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7.

The compost producer must be a participant in the United States Composting Council's Seal of Testing Assurance program.

Compost may be derived from any single or mixture of any of the following feedstock materials:

1. Green material consisting of chipped, shredded, or ground vegetation; or clean processed recycled wood products
2. Biosolids
3. Manure
4. Mixed food waste

Compost feedstock materials such that weed seeds, pathogens and deleterious materials are reduced as specified under Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7, Section 17868.3.

Compost must not be derived from mixed municipal solid waste and must be reasonably free of visible contaminants. Compost must not contain paint, petroleum products, pesticides or any other chemical residues harmful to animal life or plant growth. Compost must not possess objectionable odors.

Metal concentrations in compost must not exceed the maximum metal concentrations listed in Title 14, California Code of Regulations, Division 7, Chapter 3.1, Section 17868.2.

Compost must comply with the following:

### Physical and Chemical Requirements

Property	Test Method	Requirement
pH	TMECC 04.11-A Elastometric pH 1:5 Slurry Method pH Units	6.0–8.0
Soluble Salts	TMECC 04.10-A Electrical Conductivity 1:5 Slurry Method dS/m (mmhos/cm)	0–10.0
Moisture Content	TMECC 03.09-A Total Solids & Moisture at 70+/- 5 deg C % Wet Weight Basis	30–60
Organic Matter Content	TMECC 05.07-A Loss-On-Ignition Organic Matter Method (LOI) % Dry Weight Basis	30–65
Maturity	TMECC 05.05-A Germination and Vigor Seed Emergence Seedling Vigor % Relative to Positive Control	80 or Above 80 or Above
Stability	TMECC 05.08-B Carbon Dioxide Evolution Rate mg CO <sub>2</sub> -C/g OM per day	8 or below
Particle Size	TMECC 02.02-B Sample Sieving for Aggregate Size Classification % Dry Weight Basis	Inches      % Passing 3            99% 3/8        < 25% Max. Length 4 inches
Pathogen	TMECC 07.01-B Fecal Coliform Bacteria < 1000 MPN/gram dry wt.	Pass
Pathogen	TMECC 07.01-B Salmonella < 3 MPN/4 grams dry wt.	Pass
Physical Contaminants	TMECC 02.02-C Man Made Inert Removal and Classification: Plastic, Glass and Metal % > 4mm fraction	Combined Total: < 1.0
Physical Contaminants	TMECC 02.02-C Man Made Inert Removal and Classification: Sharps (Sewing needles, straight pins and hypodermic needles) % > 4mm fraction	None Detected

NOTE: TMECC refers to "Test Methods for the Examination of Composting and Compost," published by the United States Department of Agriculture and the United States Compost Council (USCC).

Before compost application, submit a copy of the compost producer's compost technical data sheet and a copy of the compost producers Seal of Testing Assurance certification. The compost technical data sheet must include:

1. Laboratory analytical test results
2. List of product ingredients

Before compost application, submit a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

## **CONSTRUCTION**

### **Site Preparation**

Immediately prior to applying compost to compost (Incorporate) areas, remove trash, debris and weeds.

Removed weeds must be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

### **Application**

Apply and incorporate compost in separate applications in the following sequence:  
Biofiltration Strips only.

1. Apply compost to a depth of 4 inches by using specialized equipment such as a pneumatic blower or side discharge spreader.
2. You may incorporate the compost by hand; by using a backhoe, bulldozer, or grading blade to a depth between 12 and 18 inches. Do not incorporate compost to a strip 2 feet wide adjacent to the edge of pavement.
3. Following incorporation, compact the area to a relative compaction between 82 percent and 90 percent except as otherwise specified in Section 19-5 "Compaction," of the Standard Specifications.
4. Apply erosion control (Hydroseed) specified and paid for elsewhere in these Special Provisions.

## **MEASUREMENT AND PAYMENT**

Payment for "COMPOST (INCORPORATE)" shall be considered as included in various items of work which it is associated and no separate payment will be made therefor.

## **10-1.58 FIBER ROLLS**

### **GENERAL**

#### **Summary**

This work includes installing fiber rolls.

At the option of the Contractor, fiber rolls shall be Type 1 or Type 2.

### **MATERIALS**

#### **Fiber Roll**

Fiber roll shall be either:

1. Constructed with a premanufactured blanket consisting of wood excelsior, rice or wheat straw, or coconut fibers or a combination of these materials. The blanket shall be between 6 feet and 8 feet in width and between 65 feet and 95 feet in length. Wood excelsior shall be individual fibers, of which 80 percent shall be 6 inches or longer in length. The blanket shall have a biodegradable jute, sisal, or coir fiber netting on at least one side. The blanket shall be rolled along the width and secured with jute twine spaced 6 feet apart along the full length of the roll and placed 6 inches from the ends of each roll. The finished roll shall be between 8 inches and 10 inches in diameter, a minimum of 20 feet in length, and shall weigh a minimum of 0.5 pound per linear foot. More than one blanket may be required to achieve the finished roll diameter. When more than one blanket is required, blankets shall be jointed longitudinally with an overlap of 6 inches along the length of the blanket.
2. A premanufactured roll of rice or wheat straw, wood excelsior, or coconut fiber encapsulated within a biodegradable jute, sisal, or coir fiber netting. The netting shall have a minimum durability of one year after installation. The netting shall be secured tightly at each end of the roll. Rolls shall be between 8 inches and 12 inches in diameter. Rolls between 8 inches and 10 inches in diameter shall have a minimum weight of 1 pound per linear foot and a minimum length of 20 feet. Rolls between 10 inches and 12 inches in diameter shall have a minimum weight of 3 pounds per linear foot and a minimum length of 10 feet.

### **Stakes**

Wood stakes shall be a minimum of 1" x 1" x 24" in size for Type 1 installation, or a minimum of 1" x 2" x 24" in size for Type 2 installation. Wood stakes shall be untreated fir, redwood, cedar, or pine and cut from sound timber. They shall be straight and free of loose or unsound knots and other defects which would render them unfit for the purpose intended. Metal stakes shall not be used.

### **Rope**

Rope shall be biodegradable, such as sisal or manila, with a minimum diameter of 1/4 inch.

## **CONSTRUCTION**

### **Installation**

Fiber rolls shall be installed as follows:

1. Fiber rolls (Type 1): Furrows shall be constructed to a depth between 2 inches and 4 inches, and to a sufficient width to hold the fiber roll. Stakes shall be installed 24 inches apart along the length of the fiber rolls and stopped at 12 inches from each end of the rolls. Stakes shall be driven to a maximum of 2 inches above, or flush with the top of the roll.
2. Fiber rolls (Type 2): Rope and notched stakes shall be used to restrain the fiber rolls against the slope. Stakes shall be driven into the slope until the notch is even with the top of the fiber roll. Rope shall be knotted at each stake and laced between stakes. After installation of the rope, stakes shall be driven into the

slope such that the rope will hold the fiber roll tightly to the slope. Furrows will not be required.

3. Fiber rolls shall be placed 10 feet apart along the slope for slope inclination (horizontal: vertical) of 2:1 and steeper, 15 feet apart along the slope for slope inclination between 2:1 and 4:1, 20 feet apart along the slope for slope inclination between 4:1 and 10:1, and a maximum of 50 feet apart along the slope for slope inclination of 10:1 and flatter.
4. The bedding area for the fiber rolls shall be cleared of obstructions including rocks, clods, and debris greater than one inch in diameter before installation.
5. Fiber rolls shall be installed approximately parallel to the slope contour.

If the intended function of the fiber rolls to disperse concentrated water runoff and to reduce runoff velocities is impaired, the Contractor shall take action to repair or replace the fiber rolls. Split, torn, or unraveling rolls shall be repaired or replaced. Broken or split stakes shall be replaced. Sagging or slumping fiber rolls shall be repaired with additional stakes or replaced. Locations where rills and other evidence of concentrated runoff have occurred beneath the rolls shall be corrected. Fiber rolls shall be repaired or replaced within 24 hours of identifying the deficiency.

#### **MEASUREMENT AND PAYMENT**

Quantities of fiber rolls to be paid for will be determined by the linear foot measured along the centerline of the installed roll. Where fiber rolls are joined and overlapped, the overlap will be measured as a single installed roll.

The contract price paid per linear foot for "FIBER ROLL" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing fiber rolls, complete in place, including furrow excavation and backfill, repairing or replacing fiber rolls as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.59 AGGREGATE SUBBASE**

Aggregate subbase must comply with Section 25, "Aggregate Subbases," of the Standard Specifications and these Special Provisions.

Aggregate subbase must be Class 1.

Aggregate may include processed glass. Place aggregate subbase with glass only where the material is to be permanently covered.

#### **MEASUREMENT AND PAYMENT**

"CLASS 1 AGGREGATE SUBBASE" will be measured and paid for by the cubic yard in the manner as specified in Section 25, "Aggregate Subbase," of the Standard Specifications.

#### **10-1.60 AGGREGATE BASE**

Aggregate base must comply with Section 26, "Aggregate Bases," of the Standard Specifications and these Special Provisions.

Aggregate base must be Class 2.

Do not store reclaimed asphalt concrete or aggregate base with reclaimed asphalt concrete within 100 feet measured horizontally of any culvert, watercourse, or bridge.

The maximum compacted thickness of any 1 layer of aggregate base must not exceed .5 foot.

#### **MEASUREMENT AND PAYMENT**

"CLASS 2 AGGREGATE BASE" will be measured and paid for by the cubic yard in the manner as specified in Section 26, "Aggregate Bases," of the Standard Specifications.

### **10-1.61 SUBGRADE TREATMENT**

#### **Summary**

Attention is directed to "Supplemental Project Information" of these Special Provisions.

The geotextile fabric shall be in conformance with Section 88-1.04 Type B as amended of the Standard Specification and these Special Provisions.

This work shall include excavation and compaction of existing subgrade and installation of the 12" section of class 2 base underlain by the geotextile fabric.

#### **MEASUREMENT AND PAYMENT**

The contract item for subgrade treatment is measured by the cubic yard for the actual area placed. Overlaps are not measured for payment.

The contract price paid per cubic yard for "SUBGRADE TREATMENT (CLASS 2 AB WITH GEOTEXTILE FABRIC)" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in sub grade treatment, including geotextile excavation, compaction, geotextile fabric, and class 2 base, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.62 SUBGRADE ENHANCEMENT GEOTEXTILE**

Subgrade enhancement geotextile shall be installed at the locations shown on the project plans and shall conform to Section 8-1.04,"Engineering Fabric," of these Special Provisions.

#### **MEASUREMENT AND PAYMENT**

Payment for "SUBGRADE ENHANCEMENT GEOTEXTILE" shall be considered as included in various items of work which it is associated and no separate payment will be made therefor.

#### **10-1.63 PERMEABLE MATERIAL**

Permeable material shall conform with the details shown on the plans, and to the provisions in Section 68-1, "Underdrains," of the Standard Specifications and these Special Provisions.

Permeable material shall be Class 1.

Filter fabric for use with permeable material shall conform to the provisions in Section 88-1.02, "Filtration," of the Standard Specifications and the following:

- A. The subgrade and trench to receive the filter fabric, immediately prior to placing, shall conform to the compaction and elevation tolerance specified for the material involved.
- B. Filter fabric shall be handled and placed in conformance with the manufacturer's recommendations.
- C. The fabric shall be aligned and placed in a wrinkle-free manner.
- D. Within 72 hours after the filter fabric has been placed, the fabric shall be covered with the planned thickness of overlying material as shown on the plans.

#### **MEASUREMENT AND PAYMENT**

The contract price paid per cubic yard for "PERMEABLE MATERIAL WITH SUBGRADE ENHANCEMENT GEOTEXTILE" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in excavation, compaction, geotextile fabric, and class 1 permeable material wrapped in class B2 subgrade enhancement geotextile, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.64 LEAN CONCRETE BASE**

Lean concrete base shall conform to the provisions in Section 28, "Lean Concrete Base," of the Standard Specifications.

The finished surface of lean concrete base shall not be above the grade established by the Engineer, or more than 0.05-foot below the grade established by the Engineer.

#### **MEASUREMENT AND PAYMENT**

"LEAN CONCRETE BASE" shall be measured and paid for by the cubic yard in the manner specified in Section 28, "Lean Concrete Base," of the Standard Specifications.

## 10-1.65 HOT MIX ASPHALT

**This section shall only apply to the work in the Caltrans right of way,**

### **GENERAL**

#### **Summary**

This work includes producing and placing hot mix asphalt (HMA) Type A using the Quality Control/Quality Assurance process.

Comply with Section 39, "Hot Mix Asphalt," of the Standard Specifications.

#### **Submittals**

##### **Quality Control / Quality Assurance Projects**

With the job mix formula (JMF) submittal, submit:

1. California Test 204 plasticity index results
2. California Test 371 tensile strength ratio results for untreated HMA
3. California Test 371 tensile strength ratio results for treated HMA if untreated HMA tensile strength ratio is below 70

At project start-up and once during production, submit samples split from your HMA production sample for California Test 371 to the Engineer and the Transportation Laboratory, Attention: Moisture Test.

With the JMF submittal, at project start-up, and each 5,000 tons, submit the California Test 371 test results for mix design and production to the Engineer and electronically to:

Moisture\_Tests@dot.ca.gov

#### **Data Cores**

Three business days before starting coring, submit proposed methods and materials for backfilling data core holes.

Submit to the Engineer and electronically to Coring@dot.ca.gov:

1. A summary of data cores taken
2. A photograph of each data core

For each data core, the summary must include:

1. Project identification number
2. Date cored
3. Core identification number
4. Type of materials recovered
5. Type and approximate thickness of unstabilized material not recovered
6. Total core thickness
7. Thickness of each individual material to within:

- 7.1 For recovered material, 1/2 inch
- 7.2 For unstabilized material, 1.0 inch
- 8. Location including:
  - 8.1. County
  - 8.2. Route
  - 8.3. Post mile
  - 8.4. Lane number
  - 8.5. Lane direction
  - 8.6. Station

Each data core digital photograph must include a ruler laid next to the data core. Each photograph must include:

- 1. The core
- 2. Project identification number
- 3. Core identification number
- 4. Date cored
- 5. County
- 6. Route
- 7. Post mile
- 8. Lane number
- 9. Lane direction

After data core summary and photograph submittal, dispose of cores under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

**Quality Control and Assurance**

**Quality Control / Quality Assurance Projects**

For the mix design, determine the plasticity index of the aggregate blend under California Test 204. Choose an antistrip treatment and use the corresponding laboratory procedure for the mix design in compliance with:

**Antistrip Treatment Lab Procedures for Mix Design**

Antistrip Treatment	Lab Procedure
Plasticity index from 4 to 10 <sup>a</sup>	
Dry hydrated lime with marination	LP-6
Lime slurry with marination	LP-7
Plasticity index less than 4	
Liquid	LP-5
Dry hydrated lime without marination	LP-6
Dry hydrated lime with marination	LP-6
Lime slurry with marination	LP-7

Notes:

<sup>a</sup> If the plasticity index is greater than 10, do not use that aggregate blend.

For the mix design, determine tensile strength ratio under California Test 371 on untreated HMA. If the tensile strength ratio is less than 70:

1. Choose from the antistrip treatments specified based on plasticity index.
2. Test treated HMA under California Test 371.
3. Treat to a minimum tensile strength ratio of 70.

On the first production day and at least every 5,000 tons, sample HMA and test under California Test 371.

The County does not use California Test 371 test results for JMF verification and production to determine specification compliance.

## **MATERIALS**

### **Asphalt Binder**

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, "Asphalts," of the Standard Specifications

### **Aggregate**

The aggregate for HMA Type A shall comply with the 3/4-inch grading.

## **CONSTRUCTION**

### **Rumble Strips**

### **Vertical Joints**

If you perform half-width paving, at the end of each day's work the distance between the ends of adjacent surfaced lanes must not be greater than can be completed in the following day of normal paving.

Before opening the lane to public traffic, pave shoulders and median borders adjacent to a lane being paved.

Do not leave a vertical joint more than 0.15 foot high between adjacent lanes open to public traffic.

### **Widening**

If widening existing pavement, construct new structural section on both sides of the existing pavement to match the elevation of the existing pavement's edge at each location before placing HMA over the existing pavement.

### **Conform Tapers**

Place shoulder conform tapers concurrently with the adjacent lane's paving.

Place additional HMA along the pavement's edge to conform to road connections and private drives. Hand rake, if necessary, and compact the additional HMA to form a smooth conform taper.

## **MEASUREMENT AND PAYMENT**

"HOT MIX ASPHALT (TYPE A)" will be measured and paid for by the ton in the manner specified in Section 39, "Hot Mix Asphalt," of the Standard Specifications.

Full compensation for tack coat shall be considered as included in the contract price paid per ton for "HOT MIX ASPHALT (TYPE A)" and no additional compensation will be allowed therefor.

### **10-1.66 HOT MIX ASPHALT OPEN GRADED FRICTION COURSE**

#### **GENERAL**

##### **Summary**

This work includes producing and placing hot mix asphalt (HMA) open graded friction course (OGFC) using the Standard process and shall conform to the provisions in Section 39, "Hot Mix Asphalt," of the Standard Specifications and these Special Provisions.

##### **Submittals**

##### **Quality Control and Assurance**

Do not test OGFC for plasticity index and tensile strength ratio.

#### **MATERIALS**

The grade of asphalt binder mixed with aggregate for OGFC shall be Performance Grade PG 64-10 and shall conform to the provisions in Section 92, "Asphalts," of the Standard Specifications.

The aggregate for OGFC shall comply with the 1/2-inch grading.

Treat OGFC aggregate with the same antistrip treatment used for HMA Type A.

#### **CONSTRUCTION**

##### **Vertical Joints**

If you perform half-width paving, at the end of each day's work the distance between the ends of adjacent surfaced lanes must not be greater than can be completed in the following day of normal paving.

Before opening the lane to public traffic, pave shoulders and median borders adjacent to a lane being paved.

Do not leave a vertical joint more than 0.15 foot high between adjacent lanes open to public traffic.

Place OGFC on adjacent traveled way lanes so that at the end of each work shift, the distance between the ends of OGFC layers on adjacent lanes is between 5 feet and 10 feet. Place additional OGFC along the transverse edge at each lane's end and along the exposed longitudinal edges between adjacent lanes. Hand rake and compact the additional OGFC to form temporary conforms. You may place Kraft paper, or another approved bond breaker, under the conform tapers to facilitate the taper removal when paving operations resume.

### **Conform Tapers**

Place additional OGFC along the pavement's edge to conform to road connections and private drives. Hand rake, if necessary, and compact the additional OGFC to form a smooth conform taper.

## **MEASUREMENT AND PAYMENT**

The contract price paid per ton for "HOT MIX ASPHALT (OPEN GRADED FRICTION COURSE)" 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 (OGFC), complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Full compensation for tack coat shall be considered as included in the contract price paid per ton for "HOT MIX ASPHALT ASPHALT (OPEN GRADED FRICTION COURSE)" and no additional compensation will be allowed therefor.

## **10-1.67 MINOR HOT MIX ASPHALT**

### **GENERAL**

#### **Summary**

This work includes producing hot mix asphalt (HMA) at a central mixing plant and placing it as specified.

### **MATERIALS**

For minor HMA:

1. Do not submit a job mix formula.
2. Choose the 3/8-inch or 1/2-inch HMA Type A or Type B aggregate gradation under Section 39-1.02E, "Aggregate," of the Standard Specifications.
3. Minimum asphalt binder content must be 6.8 percent for 3/8-inch aggregate gradation and 6.0 percent for 1/2-inch aggregate gradation.
4. Choose asphalt binder Grade PG 64-10, PG 64-16, or PG 70-10 under Section 92, "Asphalts," of the Standard Specifications.

If you request and the Engineer authorizes, you may reduce the minimum asphalt binder content.

Tack coat must comply with Section 39, "Hot Mix Asphalt," of the Standard Specifications.

## **CONSTRUCTION**

Spread and compact minor HMA by methods that produce an HMA surfacing:

1. Textured uniformly
2. Compacted firmly
3. Without depressions, humps, and irregularities

### **10-1.68 HOT MIX ASPHALT AGGREGATE LIME TREATMENT - SLURRY METHOD**

#### **GENERAL**

##### **Summary**

This work includes treating hot mix asphalt (HMA) aggregate with lime using the slurry method and placing it in stockpiles to marinate.

Treat aggregate for HMA Type A with lime slurry.

##### **Submittals**

Determine the exact lime proportions for fine and coarse virgin aggregate and submit them as part of the proposed job mix formula (JMF) under Section 39, "Hot Mix Asphalt," of the Standard Specifications.

Submit the averaged aggregate quality test results to the Engineer within 24 hours of sampling.

Submit a treatment data log from the slurry proportioning device in the following order:

1. Treatment date
2. Time of day the data is captured
3. Aggregate size being treated
4. Wet aggregate flow rate collected directly from the aggregate weigh belt
5. Moisture content of the aggregate just before treatment, expressed as a percent of the dry aggregate weight
6. Dry aggregate flow rate calculated from the wet aggregate flow rate
7. Lime slurry flow rate measured by the slurry meter
8. Dry lime flow rate calculated from the slurry meter output
9. Approved lime ratio for each aggregate size being treated
10. Actual lime ratio calculated from the aggregate weigh belt and the slurry meter output, expressed as a percent of the dry aggregate weight
11. Calculated difference between the approved lime ratio and the actual lime ratio
12. Dry lime and water proportions at the slurry treatment time

Every day during lime treatment, submit the treatment data log on electronic media in tab delimited format on a removable CD-ROM storage disk. Each continuous

treatment data set must be a separate record using a line feed carriage return to present the specified data on one line. The reported data must include data titles at least once per report.

### Quality Control and Assurance

Your quality control plan (QCP) must include aggregate quality control sampling and testing during aggregate lime treatment. Perform sampling and testing in compliance with:

#### Aggregate Quality Control During Lime Treatment

Quality Characteristic	Test Method	Minimum sampling and testing frequency
Sand Equivalent	CT 217	Once per 1,000 tons of aggregate treated with lime
Percent of crushed particles	CT 205	As necessary and as designated in the QCP
Los Angeles Rattler	CT 211	
Fine aggregate angularity	AASHTO T 304, Method A	
Flat and elongated particles	ASTM D 4791	

Note: During lime treatment, sample coarse and fine aggregate from individual stockpiles. Combine aggregate in the JMF proportions. Run tests for aggregate quality in triplicate and report test results as the average of 3 tests.

The Engineer orders proportioning operations stopped for any of the following if you:

1. Do not submit the treatment data log.
2. Do not submit the aggregate quality control data.
3. Submit incomplete, untimely, or incorrectly formatted data.
4. Do not take corrective actions.
5. Take late or unsuccessful corrective actions.
6. Do not stop treatment when proportioning tolerances are exceeded.
7. Use malfunctioning or failed proportioning devices.

If you stop treatment, notify the Engineer of any corrective actions taken and conduct a successful 20-minute test run before resuming treatment.

For the aggregate to be treated, determine the moisture content at least once during each 2 hours of treatment. Calculate moisture content under California Test 226 or California Test 370 and report it as a percent of dry aggregate weight. Use the moisture content calculations as a set point for the proportioning process controller.

### MATERIALS

High-calcium hydrated lime and water must comply with Section 24-1.02, "Materials," of the Standard Specifications.

Before virgin aggregate is treated, it must comply with the aggregate quality specifications. Do not test treated aggregate for quality control except for gradation. The Engineer does not test treated aggregate for acceptance except for gradation.

The Engineer determines the combined aggregate gradation during HMA production after you have treated aggregate. If reclaimed asphalt pavement (RAP) is used, the Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.

Treated aggregate must not have lime balls or clods.

## **CONSTRUCTION**

### **General**

Notify the Engineer at least 24 hours before the start of aggregate treatment.

Treat aggregate separate from HMA production.

Do not treat RAP.

Add lime to the aggregate as slurry consisting of mixed dry lime and water at a ratio of 1 part lime to between 2 parts and 3 parts water by weight. The slurry must completely coat the aggregate.

Lime treat and marinate coarse and fine aggregates separately.

Immediately before mixing lime slurry with aggregate, water must not visibly separate from aggregate.

Treat aggregate and stockpile for marination only once.

The lime ratio is the pounds of dry hydrated lime per 100 pounds of dry virgin aggregate expressed as a percent. Water content of slurry or untreated aggregate must not affect the lime ratio.

Lime ratio ranges are:

Aggregate Gradation	Lime Ratio
Coarse	0.4 to 1.0
Fine	1.5 to 2.0
Combined virgin aggregate	0.8 to 1.5

You may reduce the combined aggregate lime ratio for open graded friction course to between 0.5 and 1.0 percent.

The lime ratio for fine and coarse aggregate must be within  $\pm 0.2$  percent of the lime ratio in the accepted JMF. The lime ratio must be within  $\pm 0.2$  percent of the approved lime ratio when you combine the individual aggregate sizes in the JMF proportions. The lime ratio must be determined before the addition of RAP.

If 3 consecutive sets of recorded treatment data indicate deviation more than 0.2 percent above or below the lime ratio in the accepted JMF, stop treatment.

If a set of recorded treatment data indicates a deviation of more than 0.4 percent above or below the lime ratio in the accepted JMF, stop treatment and do not use the material represented by that set of data in HMA.

If 20 percent or more of the total daily treatment indicates deviation of more than 0.2 percent above or below the lime ratio in the accepted JMF, stop treatment and do not use the day's total treatment in HMA.

If you stop treatment for noncompliance, you must implement corrective action and successfully treat aggregate for a 20-minute period. Notify the Engineer before beginning the 20-minute treatment period.

### **Lime Slurry Proportioning**

Proportion lime and water with a continuous or batch operation.

The device controlling slurry proportioning must produce a treatment data log. The log consists of a series of data sets captured at 10-minute intervals throughout daily treatment. The data must be a treatment activity register and not a summation. The material represented by the data set is the amount produced 5 minutes before and 5 minutes after the capture time. For the contract's duration, collected data must be stored by the controller.

### **Proportioning and Mixing Lime Slurry Treated Aggregate**

Treat HMA aggregate by proportioning lime slurry and aggregate by weight in a continuous operation.

Marinate treated aggregate in stockpiles from 24 hours to 60 days before using in HMA. Do not use aggregate marinated longer than 60 days.

## **MEASUREMENT AND PAYMENT**

Full compensation for treating aggregates with lime slurry shall be considered as included in the contract price paid per ton for "HOT MIX ASPHALT (TYPE A)" and no additional compensation will be allowed therefor.

### **10-1.69 HOT MIX ASPHALT AGGREGATE LIME TREATMENT - DRY LIME METHOD**

#### **GENERAL**

#### **Summary**

This work includes treating hot mix asphalt (HMA) aggregate with lime using the dry lime method either with marination or without.

Treat aggregate for HMA Type A with dry lime.

Marinate aggregate if the plasticity index determined under California Test 204 is from 4 to 10.

### **Submittals**

Determine the exact lime proportions for fine and coarse virgin aggregate and submit them as part of the proposed job mix formula (JMF) under Section 39, "Hot Mix Asphalt," of the Standard Specifications.

If marination is required, submit in writing the averaged aggregate quality test results to the Engineer within 24 hours of sampling.

Submit in writing a treatment data log from the dry lime and aggregate proportioning device in the following order:

1. Treatment date
2. Time of day the data is captured
3. Aggregate size being treated
4. HMA type and mix aggregate size
5. Wet aggregate flow rate collected directly from the aggregate weigh belt
6. Aggregate moisture content, expressed as a percent of the dry aggregate weight
7. Flow rate of dry aggregate calculated from the flow rate of wet aggregate
8. Dry lime flow rate
9. Lime ratio from the accepted JMF for each aggregate size being treated
10. Lime ratio from the accepted JMF for the combined aggregate
11. Actual lime ratio calculated from the aggregate weigh belt output, the aggregate moisture input, and the dry lime meter output, expressed as a percent of the dry aggregate weight
12. Calculated difference between the approved lime ratio and the actual lime ratio

Every day during lime treatment, submit the treatment data log on electronic media in tab delimited format on a removable CD-ROM storage disk. Each continuous treatment data set must be a separate record using a line feed carriage return to present the specified data on one line. The reported data must include data titles at least once per report.

### **Quality Control and Assurance**

If marination is required, the quality control plan (QCP) specified in Section 39-4, "Quality Control / Quality Assurance," must include aggregate quality control sampling and testing during lime treatment. Perform sampling and testing in compliance with:

Quality Characteristic	Test Method	Minimum sampling and testing frequency
Sand Equivalent	CT 217	Once per 1,000 tons of aggregate treated with lime
Percent of crushed particles	CT 205	As necessary and as designated in the QCP
Los Angeles Rattler	CT 211	
Fine aggregate angularity	AASHTO T 304, Method A	
Flat and elongated particles	ASTM D 4791	

Note: During lime treatment, sample coarse and fine aggregate from individual stockpiles. Combine aggregate in the JMF proportions. Run tests for aggregate quality in triplicate and report test results as the average of 3 tests.

The Engineer orders proportioning operations stopped for any of the following if you:

1. Do not submit the treatment data log
2. Do not submit the aggregate quality control data for marinated aggregate
3. Submit incomplete, untimely, or incorrectly formatted data
4. Do not take corrective actions
5. Take late or unsuccessful corrective actions
6. Do not stop treatment when proportioning tolerances are exceeded
7. Use malfunctioning or failed proportioning devices

If you stop treatment, notify the Engineer of any corrective actions taken and conduct a successful 20-minute test run before resuming treatment.

## **MATERIALS**

Lime must be high-calcium hydrated lime. Lime and water must comply with Section 24-1.02, "Materials," of the Standard Specifications.

Before virgin aggregate is treated, it must comply with the aggregate quality specifications. Do not test treated aggregate for quality control except for gradation. The Engineer does not test treated aggregate for acceptance except for gradation.

The Engineer determines the combined aggregate gradation during HMA production after you have treated aggregate. If reclaimed asphalt pavement (RAP) is used, the Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.

Treated aggregate must not have lime balls or clods.

## **CONSTRUCTION**

### **General**

Notify the Engineer in writing at least 24 hours before the start of aggregate treatment.

Do not treat RAP.

If marination is required:

1. Treat and marinate coarse and fine aggregates separately.
2. Treat aggregate and stockpile for marination only once.
3. Treat aggregate separate from HMA production.

The lime ratio is the pounds of dry hydrated lime per 100 pounds of dry virgin aggregate expressed as a percent. Water content of untreated aggregate must not affect the lime ratio.

Lime ratio ranges are:

Aggregate Gradation	Lime Ratio
Coarse	0.4 to 1.0
Fine	1.5 to 2.0
Combined virgin aggregate	0.8 to 1.5

You may reduce the combined aggregate lime ratio for open graded friction course to between 0.5 and 1.0 percent.

The lime ratio for fine and coarse aggregate must be within  $\pm 0.2$  percent of the lime ratio in the accepted JMF. The lime ratio must be within  $\pm 0.2$  percent of the approved lime ratio when you combine the individual aggregate sizes in the JMF proportions. Determine the lime ratio before you add RAP.

Proportion dry lime by weight with a continuous operation.

The device controlling dry lime and aggregate proportioning must produce a treatment data log. The log consists of a series of data sets captured at 10-minute intervals throughout daily treatment. The data must be a treatment activity register and not a summation. The material represented by a data set is the amount produced 5 minutes before and 5 minutes after the capture time. For the duration of the contract, collected data must be stored by the controller.

If 3 consecutive sets of recorded treatment data indicate deviation more than 0.2 percent above or below the lime ratio in the accepted JMF, stop treatment of lime treated aggregates.

If a set of recorded treatment data indicates a deviation of more than 0.4 percent above or below the lime ratio in the accepted JMF, stop treatment of lime treated aggregates and do not use the material represented by that set of data in HMA.

If 20 percent or more of the total daily treatment indicates deviation of more than 0.2 percent above or below the lime ratio in the accepted JMF, stop treatment and do not use the day's treated aggregate in HMA.

If you stop treatment for noncompliance, you must implement corrective action and successfully treat aggregate for a 20-minute period. Notify the Engineer before beginning the 20-minute treatment period.

If you use a batch-type proportioning operation for HMA production, control proportioning in compliance with the specifications for continuous mixing plants. Use a separate dry lime aggregate treatment operation from HMA batching operations including:

1. Pugmill mixer
2. Controller
3. Weigh belt for the lime
4. Weigh belt for the aggregate

If using a continuous mixing operation for HMA without lime marinated aggregates, use a controller that measures the blended aggregate weight after any additional water is added to the mixture. The controller must determine the amount of lime added to the aggregate from the aggregate weigh belt input in connection with the manually input total aggregate moisture, the manually input target lime content, and the lime proportioning system output. Use a continuous aggregate weigh belt and pugmill mixer for the lime treatment operation in addition to the weigh belt for the aggregate proportioning to asphalt binder in the HMA plant. If you use a water meter for moisture control for lime treatment, the meter must comply with California Test 109.

At the time of mixing dry lime with aggregate, the aggregate moisture content must ensure complete lime coating. The aggregate moisture content must not cause aggregate to be lost between the point of weighing the combined aggregate continuous stream and the dryer. Add water for mixing and coating aggregate to the aggregate before dry lime addition. Immediately before mixing lime with aggregate, water must not visibly separate from aggregate.

The HMA plant must be equipped with a bag house dust system. Material collected in the dust system must be returned to the mix.

### **Mixing Dry Lime and Aggregate**

Mix aggregate, water, and dry lime with a continuous pugmill mixer with twin shafts. Immediately before mixing lime with aggregate, water must not visibly separate from aggregate. Store dry lime in a uniform and free flowing condition. Introduce dry lime to the pugmill in a continuous operation. The introduction must occur after the aggregate cold feed and before the point of proportioning across a weigh belt and the aggregate dryer. Prevent loss of dry lime.

If marination is required, marinate treated aggregate in stockpiles between 24 hours and 60 days before using in HMA. Do not use aggregate marinated more than 60 days.

The pugmill must be equipped with paddles arranged to provide sufficient mixing action and mixture movement. The pugmill must produce a homogeneous mixture of uniformly coated aggregates at mixer discharge.

If the aggregate treatment operation is stopped longer than 1 hour, clean the equipment of partially treated aggregate and lime.

Aggregate must be completely treated before introduction into the mixing drum.

## **MEASUREMENT AND PAYMENT**

Full compensation for dry lime treating HMA aggregate including marination shall be considered as included in the contract price paid per ton for "HOT MIX ASPHALT (TYPE A) and no additional compensation will be allowed therefor.

### **10-1.70 LIQUID ANTISTRIP TREATMENT**

#### **GENERAL**

##### **Summary**

This work includes treating asphalt binder with liquid antistrip (LAS) treatment to bond the asphalt binder to aggregate in hot mix asphalt (HMA).

##### **Submittals**

For LAS, submit with the proposed job mix formula (JMF) submittal under Section 39, "Hot Mix Asphalt," of the Standard Specifications:

1. Materials Safety Data Sheet (MSDS)
2. One 1-pint sample
3. Infrared analysis including copy of absorption spectra

Submit a certified copy of test results and a MSDS for each LAS lot.

Submit a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for each LAS shipment. With each certificate also submit:

1. Your signature and printed name
2. Shipment number
3. Material type
4. Material specific gravity
5. Refinery
6. Consignee
7. Destination
8. Quantity
9. Contact or purchase order number
10. Shipment Date

Submit proportions for LAS as part of the JMF submittal specified in Section 39-1.03, "Hot Mix Asphalt Mix Design Requirements," of the Standard Specifications. If you change the brand or type of LAS, submit a new JMF.

For each job site delivery of LAS, submit one 1/2-pint sample to the Transportation Laboratory. Submit shipping documents to the Engineer. Label each LAS sampling container with:

1. LAS type
2. Application rate
3. Sample date
4. Contract number

At the end of each day's production shift, submit production data in electronic and printed media. Present data on electronic media in tab delimited format. Use line feed carriage return with one separate record per line for each production data set. Allow sufficient fields for the specified data. Include data titles at least once per report. For each mixing operation type, submit in order:

1. Batch Mixing:
  - 1.1. Production date
  - 1.2. Time of batch completion
  - 1.3. Mix size and type
  - 1.4. Each ingredient's weight
  - 1.5. Asphalt binder content as percentage of dry aggregate weight
  - 1.6. LAS content as percentage of asphalt binder weight
2. Continuous Mixing:
  - 2.1. Production date
  - 2.2. Data capture time
  - 2.3. Mix size and type
  - 2.4. Flow rate of wet aggregate collected directly from the aggregate weigh belt
  - 2.5. Aggregate moisture content as percentage of dry aggregate weight
  - 2.6. Flow rate of asphalt binder collected from the asphalt binder meter
  - 2.7. Flow rate of LAS collected from the LAS meter
  - 2.8. Asphalt binder content as percentage of dry aggregate weight calculated from:
    - 2.8.1. Aggregate weigh belt output
    - 2.8.2. Aggregate moisture input
    - 2.8.3. Asphalt binder meter output
  - 2.9. LAS content as percentage of asphalt binder weight calculated from:
    - 2.9.1. Asphalt binder meter output
    - 2.9.2. LAS meter output

### **Quality Control and Assurance**

For continuous mixing and batch mixing operations, sample asphalt binder before adding LAS. For continuous mixing operations, sample combined asphalt binder and LAS after the static mixer.

The Engineer orders proportioning operations stopped for any of the following if you:

1. Do not submit data
2. Submit incomplete, untimely, or incorrectly formatted data
3. Do not take corrective actions
4. Take late or unsuccessful corrective actions
5. Do not stop production when proportioning tolerances are exceeded

6. Use malfunctioning or failed proportioning devices

If you stop production, notify the Engineer of any corrective actions taken before resuming.

### **MATERIALS**

LAS-treated asphalt binder must comply with Section 39, "Hot Mix Asphalt," of the Standard Specifications. LAS does not substitute for asphalt binder.

LAS total amine value must be 325 minimum when tested under ASTM D 2074.

Use only 1 LAS type or brand at a time. Do not mix LAS types or brands.

Store and mix LAS under the manufacturer's recommendations.

### **CONSTRUCTION**

LAS must be between 0.5 and 1.0 percent by weight of asphalt binder.

If 3 consecutive sets of recorded production data show actual delivered LAS weight is more than  $\pm 1$  percent of the approved mix design LAS weight, stop production and take corrective action.

If a set of recorded production data shows actual delivered LAS weight is more than  $\pm 2$  percent of the approved mix design LAS weight, stop production. If the LAS weight exceeds 1.2 percent of the asphalt binder weight, do not use the HMA represented by that data.

The continuous mixing plant controller proportioning the HMA must produce a production data log. The log consists of a series of data sets captured at 10-minute intervals throughout daily production. The data must be a production activity register and not a summation. The material represented by the data is the amount produced 5 minutes before and 5 minutes after the capture time. For the duration of the contract, collected data must be stored by the plant controller or a computer's memory at the plant.

### **MEASUREMENT AND PAYMENT**

Full compensation for LAS is included in the contract price paid per ton for "HOT MIX ASPHALT (TYPE A)" and no additional compensation will be allowed therefor.

## **10-1.71 PLACE HOT MIX ASPHALT (MISCELLANEOUS AREAS)**

### **GENERAL**

#### **Summary**

This work includes producing hot mix asphalt (HMA) and placing it on miscellaneous areas.

Comply with Section 39, "Hot Mix Asphalt," of the Standard Specifications.

## **MEASUREMENT AND PAYMENT**

“PLACE HOT MIX ASPHALT (MISCELLANEOUS AREA)” will be paid for by the square yard and is limited to the areas listed on the plans and is in addition to the contract items for the materials involved.

“OVERSIDE DRAIN”, “HMA LINED DITCH”, and “DRIVEWAY” will be measured as the in-place compacted area and paid for by the square yard in the manner specified in Section 39, “Hot Mix Asphalt,” of the Standard Specifications, in addition to the price paid for material involved under the contract price per ton to “HOT MIX ASPHALT (TYPE A)”

Full compensation for tack coat for miscellaneous areas is considered as included in the contract price paid per ton for the hot mix asphalt used in miscellaneous areas and no separate payment will be made therefor.

### **10-1.72 PLACE HMA DIKE**

HMA dikes shall be installed at the locations shown on the project plans and shall conform to the provision in Section 39, “Hot Mix Asphalt,” of the Standard Specification and these Special Provisions.

The asphalt binder for asphalt dikes shall be Performance Grade PG 70-10 and shall conform to the provision in Section 92, “Asphalt,” of the Standard Specifications.

## **MEASUREMENT AND PAYMENT**

“PLACE HOT MIX ASPHALT DIKE (TYPE A),” “PLACE HOT MIX ASPHALT DIKE (TYPE C),” “PLACE HOT MIX ASPHALT DIKE (TYPE E),” and “PLACE HOT MIX ASPHALT DIKE (TYPE F)” will be measured and paid by linear foot (measured horizontally) in the manner specified in Section 39, “Hot Mix Asphalt”, of the Standard Specifications, in addition to the price paid for material involved under the contract price per ton for “HOT MIX ASPHALT (TYPE A)”.

### **10-1.73 PAYMENT ADJUSTMENTS FOR PRICE INDEX FLUCTUATIONS GENERAL**

#### **Summary**

1

This section applies to asphalt contained in materials for pavement structural sections and pavement surface treatments such as hot mix asphalt (HMA), tack coat, asphaltic emulsions, bituminous seals, asphalt binders, and modified asphalt binders placed in the work. This section does not apply if you opted out of payment adjustment for price index fluctuations at the time of bid.

The Engineer adjusts payment if the California Statewide Crude Oil Price Index for the month the material is placed is more than 5 percent higher or lower than the price index at the time of bid.

The California Statewide Crude Oil Price Index is determined each month on or about the 1st business day of the month by the Department using the average of the

posted prices in effect for the previous month as posted by Chevron, ExxonMobil, and ConocoPhillips for the Buena Vista, Huntington Beach, and Midway Sunset fields.

If a company discontinues posting its prices for a field, the Department determines the index from the remaining posted prices. The Department may include additional fields to determine the index.

For the California Statewide Crude Oil Price Index, go to:

<http://www.dot.ca.gov/hq/construc/crudeoilindex/>

If the adjustment is a decrease in payment, the Department deducts the amount from the monthly progress payment.

The Department includes payment adjustments for price index fluctuations when making adjustments under Section 4-1.03B, "Increased or Decreased Quantities," of the Standard Specifications.

If you do not complete the work within the contract time, payment adjustments during the overrun period are determined using the California Statewide Crude Oil Price Index in effect for the month in which the overrun period began.

If the price index at the time of placement increases:

1. 50 percent or more over the price index at bid opening, notify the Engineer.
2. 100 percent or more over the price index at bid opening, do not furnish material containing asphalt until the Engineer authorizes you to proceed with that work. The Department may decrease Bid item quantities, eliminate Bid items, or terminate the contract.

## **Submittals**

Before placing material containing asphalt, submit the current sales and use tax rate in effect in the tax jurisdiction where the material is to be placed.

Submit certified weight slips for HMA, tack coat, asphaltic emulsions, and modified asphalt binders, including those materials not paid for by weight, as specified in Section 9-1.01, "Measurement of Quantities," of the Standard Specifications. For slurry seals, submit certified weight slips separately for the asphaltic emulsion.

## **ASPHALT QUANTITIES**

### **General**

Interpret the term "ton" as "tonne" for projects using metric units.

### **Hot Mix Asphalt**

The Engineer calculates the quantity of asphalt in HMA using the following formula:

$$Q_h = HMATT \times [X_a / (100 + X_a)]$$

where:

$Q_h =$	quantity in tons of asphalt used in HMA
$HMATT$	HMA total tons placed
$=$	
$X_a =$	theoretical asphalt content from job mix formula expressed as percentage of the weight of dry aggregate

### Rubberized Hot Mix Asphalt

The Engineer calculates the quantity of asphalt in rubberized HMA (RHMA) using the following formula:

$$Q_{rh} = RHMATT \times 0.80 \times [X_{arb} / (100 + X_{arb})]$$

where:

$Q_{rh} =$	quantity in tons of asphalt in asphalt rubber binder used in RHMA
$RHMATT$	RHMA total tons placed
$=$	
$X_{arb} =$	theoretical asphalt rubber binder content from the job mix formula expressed as percentage of the weight of dry aggregate

### Modified Asphalt Binder in Hot Mix Asphalt

The Engineer calculates the quantity of asphalt in modified asphalt binder using the following formula:

$$Q_{mh} = MHMATT \times [(100 - X_{am}) / 100] \times [X_{mab} / (100 + X_{mab})]$$

where:

$Q_{mh} =$	quantity in tons of asphalt in modified asphalt binder used in HMA
$MHMATT$	modified asphalt binder HMA total tons placed
$=$	
$X_{am} =$	specified percentage of asphalt modifier
$X_{mab} =$	theoretical modified asphalt binder content from the job mix formula expressed as percentage of the weight of dry aggregate

### Hot Mix Asphalt Containing Reclaimed Asphalt Pavement (RAP)

The Engineer calculates the quantity of asphalt in HMA containing RAP using the following formulas:

$$Q_{rap} = HMATT \times [X_{aa} / (100 + X_{aa})]$$

where:

$$X_{aa} = X_{ta} - [(100 - X_{new}) \times (X_{ra} / 100)]$$

and

$Q_{rap} =$	quantity in tons of asphalt used in HMA containing RAP
$HMATT$	HMA total tons placed
$=$	
$X_{aa} =$	asphalt content of HMA adjusted to account for the asphalt content in RAP expressed as percentage of the weight of dry aggregate
$X_{ta} =$	total asphalt content of HMA expressed as percentage of the weight of dry aggregate
$X_{new} =$	theoretical percentage of new aggregate in the HMA containing RAP determined from RAP percentage in the job mix formula
$X_{ra} =$	asphalt content of RAP expressed as percentage

### Tack Coat

The Engineer calculates the quantity of asphalt in tack coat ( $Q_{tc}$ ) as either:

1. Asphalt binder using the asphalt binder total tons placed as tack coat
2. Asphaltic emulsion by applying the formula in "Asphaltic Emulsion" to the asphaltic emulsion total tons placed as tack coat

### Asphaltic Emulsion

The Engineer calculates the quantity of asphalt in asphaltic emulsions, including fog seals and tack coat, using the following formula:

$$Q_e = AETT \times (X_e / 100)$$

where:

$Q_e =$	quantity in tons of asphalt used in asphaltic emulsions
$AETT$	undiluted asphaltic emulsions total tons placed
$=$	
$X_e =$	minimum percent residue specified in Section 94, "Asphaltic Emulsions," of the Standard Specifications based on the type of emulsion used

You may, as an option, determine " $X_e$ " by submitting actual daily test results for asphalt residue for the asphaltic emulsion used. If you choose this option, you must:

1. Take 1 sample every 200 tons but not less than 1 sample per day in the presence of the Engineer from the delivery truck, at midload from a sampling tap or thief, and in the following order:
  - 1.1. Draw and discard the 1st gallon
  - 1.2. Take two separate 1/2-gallon samples
2. Submit 1st sample at the time of sampling
3. Provide 2nd sample within 3 business days of sampling to an independent testing laboratory that participates in the AASHTO Proficiency Sample Program

- Submit test results from independent testing laboratory within 10 business days of sample date

### **Slurry Seal**

The Engineer calculates the quantity of asphalt in slurry seals (Q<sub>ss</sub>) by applying the formula in "Asphaltic Emulsion" to the actual quantity of asphaltic emulsion used in producing the slurry seal mix.

### **Modified Asphalt Binder**

The Engineer calculates the quantity of asphalt in modified asphalt binder using the following formula:

$$Q_{mab} = MABTT \times [(100 - X_{am}) / 100]$$

where:

Q <sub>mab</sub>	=	quantity in tons of asphalt used in modified asphalt binder
MABTT	=	modified asphalt binder total tons placed
X <sub>am</sub>	=	specified percentage of asphalt modifier

### **Other Materials**

For other materials containing asphalt not covered above, the Engineer determines the quantity of asphalt (Q<sub>o</sub>).

### **PAYMENT ADJUSTMENTS**

The Engineer includes payment adjustments for price index fluctuations in progress pay estimates. If material containing asphalt is placed within 2 months during 1 estimate period, the Engineer calculates 2 separate adjustments. Each adjustment is calculated using the price index for the month in which the quantity of material containing asphalt subject to adjustment is placed in the work. The sum of the 2 adjustments is used for increasing or decreasing payment in the progress pay estimate.

The Engineer calculates each payment adjustment as follows:

$$PA = Q_t \times A$$

where:

PA = Payment adjustment in dollars for asphalt contained in materials placed in the work for a given month.

Q<sub>t</sub> = Sum of all quantities of asphalt-contained materials in pavement structural sections and pavement surface treatments placed (Q<sub>h</sub> + Q<sub>rh</sub> + Q<sub>mh</sub> + Q<sub>rap</sub> + Q<sub>tc</sub> + Q<sub>e</sub> + Q<sub>ss</sub> + Q<sub>mab</sub> + Q<sub>o</sub>).

A = Adjustment in dollars per ton of asphalt used to produce materials placed in the work rounded to the nearest \$0.01.

For US Customary projects, use:

$A = [(l_u / l_b) - 1.05] \times l_b \times [1 + (T / 100)]$  for an increase in the crude oil price index exceeding 5 percent

$A = [(l_u / l_b) - 0.95] \times l_b \times [1 + (T / 100)]$  for a decrease in the crude oil price index exceeding 5 percent

For metric projects, use:

$A = 1.1023 \times [(l_u / l_b) - 1.05] \times l_b \times [1 + (T / 100)]$  for an increase in the crude oil price index exceeding 5 percent

$A = 1.1023 \times [(l_u / l_b) - 0.95] \times l_b \times [1 + (T / 100)]$  for a decrease in the crude oil price index exceeding 5 percent

$l_u$  = California Statewide Crude Oil Price Index for the month in which the quantity of asphalt subject to adjustment was placed in the work.

$l_b$  = California Statewide Crude Oil Price Index for the month in which the bid opening for the project occurred

$T$  = Sales and use tax rate, expressed as a percent, currently in effect in the tax jurisdiction where the material is placed. If the tax rate information is not submitted timely, the statewide sales and use tax rate is used in the payment adjustment calculations until the tax rate information is submitted.

## **10-1.74 PILING**

### **GENERAL**

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

Unless otherwise specified, welding of any work performed in conformance with the provisions in Section 49, "Piling," of the Standard Specifications, shall be in conformance with the requirements in AWS D1.1.

Attention is directed to "Supplemental Project Information," "Precast Concrete Quality Control," and "Welding" of these Special Provisions.

Difficult pile installation is anticipated due to the variable consistencies of the sandy layers.

Alternative "X" type piles shall have a dimension,  $T$ , not less than 14 inches at Nipomo Creek Bridge.

When a calculated nominal driving resistance is shown on the plans for piling, that value shall be utilized in lieu of nominal resistance in Section 49, "Piling," of the Standard Specifications, the plans, and these Special Provisions.

### **Redriving**

Piles that do not attain the required bearing value when the pile tip has reached the specified tip elevation shall be allowed to stand for a "set period" without driving. The "set period" shall be at least 24 hours unless bearing has been obtained sooner. After the required "set period" has elapsed, 2 piles or 10 percent of such piles in a footing, whichever is greater, shall be redriven. The Engineer will designate which piles are to be redriven. Redriving shall consist of operating the driving hammer at full rated energy on the pile and then measuring the bearing value of the pile.

If the required bearing value has been attained for each pile designated to be redriven, then the remaining piles in that footing shall be considered satisfactory and further driving will not be required. If redriving said designated piles demonstrates that the required bearing value has not been attained, all piles in that footing shall be redriven until the required bearing value has been reached.

Full compensation for redriving and for conforming to the requirements for "set period" and any delays in connection therewith shall be considered as included in the contract unit price paid for driving the piles involved and no separate payment will be made therefor.

## **STEEL PIPE PILING**

### **GENERAL**

#### **Summary**

Steel pipe piling shall consist of unfilled steel pipe piling, steel shells for open and closed ended cast-in-steel-shell concrete piling, and permanent steel casing for cast-in-drilled-hole concrete piling. Steel pipe piling shall conform to the provisions in Section 49-5, "Steel Piles," of the Standard Specifications and these Special Provisions.

All steel pipe piling for this project shall be designated as Class R steel pipe piling.

#### **Submittals**

Steel pipe piling qualification audits shall be submitted in conformance with the provisions in "Steel Pipe Piling Qualification Audit" of these Special Provisions.

A Certificate of Compliance demonstrating material traceability shall be furnished in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications, and shall be signed by the facility's authorized Quality Control Representative. The Quality Control Representative shall be on record with the Department's Office of Structural Materials. The Certificate of Compliance shall include:

1. A statement that all materials and workmanship incorporated in the work and all required tests and inspections of this work have been performed in conformance with the details shown on the plans and these Special Provisions.
2. An attached certified mill test report (MTR) for each heat number of steel pipe piles being furnished.
3. The carbon equivalency (CE) calculated as  $CE = C + (Mn+Si)/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15$ . The CE shall be 0.45% maximum and may be shown on the MTR.

The Contractor shall submit a TL-38 Inspection Request form at least:

1. 48 hours before performing any field welding of steel pipe piling.

The TL-38 Inspection Request form is available at:

<http://www.dot.ca.gov/hq/esc/Translab/OSM/smbforms.htm>

Working drawings shall be submitted to the Engineer before attaching handling devices to steel pipe piling. Working drawings shall include locations, handling and fitting device details, and connection details. Attachments shall not be made to steel pipe piling until the working drawings are approved in writing by the Engineer. The Contractor shall allow the Engineer 7 days for review.

## **MATERIALS**

### **General**

The provisions of "Welding Quality Control" of these Special Provisions shall not apply to longitudinal, skelp end, or spiral seam welds in steel pipe piling.

Circumferential welds shall conform to "Welding Quality Control" of these Special Provisions and the following:

1. Circumferential welds shall be complete joint penetration welds conforming to AWS D1.1.
2. Welds shall be located at least 12 inches away from a skelp end weld.
3. Backing rings shall conform to the following:
  - 3.1. The minimum thickness shall be 1/4 inch and the backing ring shall be continuous.
  - 3.2. Splices in the backing ring shall be made by complete joint penetration welds. These welds shall be completed and inspected, including any required nondestructive testing, before final insertion into a pipe end.
  - 3.3. The attachment of backing rings to pipe ends shall be done using the minimum size and spacing of tack welds that will securely hold the backing ring in place. Tack welding shall be done in the root area of the weld splice. Cracked tack welds shall be removed and replaced before subsequent weld passes.
  - 3.4. The gap between the backing ring and the steel pipe piling wall shall not be greater than 5/64 inch. One localized portion of the backing ring fit-up, that is equal to or less than a length that is 20 percent of the outside circumference of the pipe, as determined by the Engineer, may be offset by a gap equal to or less than 1/4 inch, provided that this localized portion is first seal welded using shielded metal arc E7016 or E7018 electrodes. This localized portion shall be marked so that it can be referenced during any required NDT.
  - 3.5. Backing rings shall have sufficient width so that the backing ring will not interfere with the interpretation of the NDT.
4. For steel pipe with an outside diameter greater than 42 inches and with a wall thickness greater than 1 inch, the root opening tolerances may be increased to a maximum of 3/16 inch.

5. For welding limited to fit-up and attaching backing rings and handling devices, the preheat and interpass temperature shall be in conformance with the requirements in AWS D1.1, Section 3.5, "Minimum Preheat and Interpass Temperature Requirements," and with Table 3.2, Category C.

All steel pipe piling shall be capable of meeting the fit-up requirements of AWS D1.1, Section 5.22.3.1, "Girth Weld Alignment (Tubular)," when the material is spliced utilizing a girth weld.

For the purposes of welding and prequalification of base metal, steel pipe piling designated as ASTM A 252 shall be treated as ASTM A 572, Grade 50, or ASTM A 709, Grade 50, in conformance with the requirements in AWS D1.1, Table 3.1.

Butt welded seams subsequently formed, including skelp end welds, shall be 100 percent ultrasonically tested in the final formed and welded condition. The acceptance criteria for UT shall conform to API 5L for API-licensed facilities or AWS D1.1 for cyclically loaded nontubular connections for welds subject to tensile stress.

Except for tack welding, gas metal arc welding (GMAW) shall not be used for the welding of steel pipe piling. When GMAW is used for tack welding, the filler metal shall not be deposited by short circuiting transfer.

The dimensional tolerances of steel pipe piling shall conform to the following:

1. Outside diameter:  $\pm 0.75\%$  of the specified outside diameter
2. Wall thickness:  $-5\%$ ,  $+10\%$  of the specified nominal wall thickness
3. Straightness:  $\pm 1.0\%$  over the length of the pipe

Except for steel pipe piling marked with the API monogram, each length of steel pipe piling shall be marked as follows:

1. Name and location of the piling manufacturer
2. State Contract number (Class N piling only)
3. Heat number
4. Welding process
5. Outer diameter, nominal wall thickness, minimum wall thickness, and length
6. Year piling was produced
7. Marked as specified below for each class of steel pipe piling. Only Caltrans audited facilities are approved to mark piling for use on this project.

### **Class R Steel Pipe Piling**

Class R steel pipe piling shall conform to one of the following:

1. Manufactured, welded, tested, and inspected in conformance with API 5L, minimum Grade X52, PSL1, and the following:
  - 1.1. Steel pipe piling shall be manufactured by a facility licensed to apply the API monogram.
  - 1.2. Hydrostatic testing, flattening tests, and the API monogram will not be required.
  - 1.3. Each length shall be marked "Caltrans Class R - API."
2. Manufactured in conformance with ASTM A 252, Grade 3, and the following:

- 2.1. Arc welding processes shall conform to AWS D1.1.
- 2.2. Groove welds using submerged arc welding from both sides without backgouging will require a procedure qualification record witnessed by the Engineer.
- 2.3. Underfill will not be allowed.
- 2.4. For electric resistance welded pipe, the outer diameter flash shall be removed to a maximum of 1/32 inch.
- 2.5. The weld reinforcement shall not exceed 1/8 inch.
- 2.6. The weighing of individual pipe will not be required as specified in ASTM A 252.
- 2.7. Each length shall be marked "Caltrans Class R - A 252."

## **CONSTRUCTION**

### **General**

Steel pipe piling may be re-tapped to prevent pile set-up provided the field welded splice remains at least 3 feet above the work platform until that splice is approved in writing by the Engineer.

Welds used to attach handling devices to steel pipe piling shall be aligned parallel to the axis of the pile and shall conform to the requirements for field welding specified herein. Permanent bolted connections shall be corrosion resistant.

### **Field Welding**

Field welding of steel pipe piling is defined as welding performed after the material has been transported from an audited facility.

Field welding shall conform to the requirements for circumferential welds as specified in "Materials" of this section and the following:

1. Welds made in the horizontal position where the longitudinal pipe axis is vertical shall be single-bevel groove welds.
2. The minimum preheat and interpass temperature for splice welding and for making repairs shall be 150 °F, regardless of the pipe pile wall thickness or steel grade. In the event welding is disrupted, preheating to 150 °F shall occur before welding is resumed.
3. Welds shall not be water quenched. Welds shall be allowed to cool unassisted to ambient temperature.

## **MEASUREMENT AND PAYMENT (PILING)**

Measurement and payment for the various types and classes of piles shall conform to the provisions in Sections 49-6.01, "Measurement," and 49-6.02, "Payment," of the Standard Specifications and these Special Provisions.

"FURNISH PILING (CLASS 140) (ALTERNATIVE W)," "FURNISH PILING (CLASS 200) (ALTERNATIVE X)," and "FURNISH PILING (18" OCTAGONAL)" will be measured and paid by linear foot in the manner specified in Section 49, "Piling", of the Standard Specifications.

“DRIVE PILE (CLASS 140) (ALTERNATIVE X),” “DRIVE PILING (CLASS 200) (ALTERNATIVE X),” and “DRIVE PILING (18” OCTAGONAL)” will be measured and paid by the unit price in the manner specified in Section 49, “Piling”, of the Standard Specifications.

Full compensation for conforming to the provisions in "Steel Pipe Piling" of these Special Provisions shall be considered as included in the contract prices paid for the various items of work involved, and no additional compensation will be allowed therefor.

#### **10-1.75 PRESTRESSING CONCRETE**

Prestressing concrete shall conform to the provisions in Section 50, "Prestressing Concrete," of the Standard Specifications and these Special Provisions.

The number of working drawings to be submitted for initial review shall be 6 sets.

The details shown on the plans for cast-in-place prestressed box girder bridges are based on a bonded full length draped tendon prestressing system. For these bridges the Contractor may, in conformance with the provisions in Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications, propose an alternative prestressing system utilizing bonded partial length tendons provided the proposed system and associated details meet the following requirements:

- A. The proposed system and details shall provide moment and shear resistances at least equal to those used for the design of the structure shown on the plans.
- B. The concrete strength shall not be less than that shown on the plans.
- C. Not less than 35 percent of the total prestressing force at any section shall be provided by full length draped tendons.
- D. Anchorage blocks for partial length tendons shall be located so that the blocks will not interfere with the placement of the utility facilities shown on the plans or of any future utilities to be placed through openings shown on the plans.
- E. Temporary prestressing tendons, if used, shall be detensioned, and the temporary ducts shall be filled with grout before completion of the work. Temporary tendons shall be either removed or fully encased in grout before completion of the work.
- F. All details of the proposed system, including supporting checked calculations, shall be included in the drawings submitted in conformance with the provisions in Section 50-1.02, "Drawings," of the Standard Specifications.

Moments and shears for loads used in the design shown on the plans will be made available to the Contractor upon written request to the Engineer.

#### **PAYMENT**

“PRESTRESSING CAST-IN-PLACE CONCRETE” will be paid for on a lump sum basis in the manner specified in Section 50, “Prestressing Concrete,” of the Standard Specifications.

## 10-1.76 TIEDOWN ANCHORS

Tiedown anchors in retaining wall footings; consisting of steel bar or strand tendons with anchorage assemblies that are grouted in cored, formed, and drilled holes; shall conform to the provisions in Section 50, "Prestressing Concrete," of the Standard Specifications, these Special Provisions, and the details shown on the plans.

Whenever "member" is referred to in Section 50, "Prestressing Concrete," of the Standard Specifications, it shall be considered to mean tiedown anchor.

Difficult tiedown installation is anticipated due to the presence of caving sand and high ground water.

The Contractor shall determine the bond length necessary to meet acceptance criteria specified herein.

The submittal of reduced prints of corrected original tracings will not be required for tiedown anchor installations.

The Contractor may submit, in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications, working drawings and calculations for furnishing an alternative number of tiedown anchors that provides the same vertical component and distribution of design force as provided by the planned tiedown anchors. Alternative footing details shall be furnished, for approval by the Engineer, if the number of tiedown anchors is changed. The working drawings and calculations shall be signed by an engineer who is registered as a Civil Engineer in the State of California.

Alternative details for the anchorage enclosure device may be submitted to the Engineer for approval if necessary to accommodate the anchorage assembly being used.

### **MATERIALS**

When calculating the minimum cross sectional area of steel bars or strands, the ultimate strength,  $f_{pu}$ , of 150 kips per square inch for prestressing steel shall be used.

The steel tube and bearing plate of the anchorage assembly and the anchorage enclosure assembly shall conform to the provisions of Section 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications. The steel tube and bearing plate and the anchorage enclosure shall be galvanized after fabrication.

The permanent bearing plate of the tiedown anchor shall effectively distribute the design force (T) uniformly to the top of the footing. The size and thickness of the bearing plate shall be such that the footing concrete bearing stress does not exceed 2400 pounds per square inch and the bending stress does not exceed  $0.9 f_y$  for steel.

Grout shall conform to the provisions in Section 50-1.09, "Bonding and Grouting," of the Standard Specifications. The grout will not be required to pass through a screen with a 0.07-inch maximum clear opening prior to being introduced into the grout pump. Fine aggregate may be added to the grout mixture of cement and water

outside of the grouted sheathing in drilled holes that are 8 inches or greater in diameter, but only to the extent that the cement content of the grout is not less than 645 pounds per cubic yard of grout. Fine aggregate, if used, shall conform to the provisions in Section 90-2, "Materials," and Section 90-3, "Aggregate Gradings," of the Standard Specifications.

When a bond breaker is shown on the plans near the bearing plate, the bond breaker shall be a 1/4-inch premolded joint filler conforming to the provisions in Section 51-1.12C, "Premolded Expansion Joint Fillers," of the Standard Specifications.

Smooth and corrugated plastic sheathing, including joints, shall be watertight. Polyvinyl chloride (PVC) sheathing shall conform to ASTM Designation: D 1784, Class 13464-B. High density polyethylene (HDPE) sheathing shall have a density between  $940 \text{ kg/m}^3$  and  $960 \text{ kg/m}^3$  as measured in accordance with ASTM Designation: D 792, A-2. Corrugated plastic sheathing shall be PVC or HDPE.

The transition between the corrugated plastic sheathing and the anchorage assembly shall be an approved detail that allows stressing to the design force without evidence of distress in the corrugated plastic sheathing.

Additional requirements for tiedowns with bar type tendons are as follows:

- A. Corrugated sheathing for bar tendons shall have a nominal wall thickness of 40 mils.

Additional requirements for tiedowns with strand type tendons are as follows:

- A. Corrugated HDPE sheathing for strands shall have a nominal wall thickness of 60 mils. Corrugated PVC sheathing for strands shall have a nominal wall thickness of 40 mils.
- B. The individual strands of a tendon, except for the bonded length, shall be fully coated with corrosion inhibiting grease and then encapsulated by a smooth polypropylene or HDPE sheath. Polypropylene sheathing shall have a density between  $900 \text{ kg/m}^3$  and  $910 \text{ kg/m}^3$ . The minimum sheath wall thickness shall be 40 mils. The corrosion inhibiting grease shall fill all space between strand wires and shall encapsulate the strand giving an encasement diameter at least 5 mils greater than the diameter of the bare strand. The sheath shall be hot melt extruded onto the strand or shall be shop applied by an approved method that assures that all spaces between the sheath and the strand and between the strand wires are filled with corrosion inhibiting grease.
- C. The corrosion inhibiting grease shall provide a continuous nonbrittle film of corrosion protection to the prestressing steel and lubrication between the strand and the sheathing, shall resist flow from the sheathing, shall be chemically stable and nonreactive with the prestressing steel, sheathing material, and concrete, and shall be organic with appropriate polar, moisture displacing, and corrosion inhibiting additives.
- D. The corrosion inhibiting grease shall have the physical properties listed in Table 3.2.1 of the Post Tensioning Manual, Fifth Edition, by the Post Tensioning Institute with the following revisions:
  - a. Test 5., Corrosion Test. The environment shall always be considered as corrosive for the purposes of determining the proper test criterium.

- b. Test 6.b., Water Soluble Ions, Nitrates, ppm maximum. The test method shall be ASTM D-3867.
  - c. Test 8.a., C[om]patibility with Sheathing, Hardness and volume change of polymer exposure to grease, 40 days @ 150°F. The test method shall be ASTM D-4289, except that ASTM D-792 shall be used to determine density.
- E. At least 40 days before use, a sample from the lot to be used and test results shall be provided for the corrosion inhibiting grease.

## **CONSTRUCTION**

Tiedown anchors shall be installed in accordance with the manufacturer's recommendations. In case of a conflict between the manufacturer's recommendations and these Special Provisions, these Special Provisions shall prevail.

Water and grout from tiedown anchor construction operations shall not be permitted to fall on public traffic, to flow across shoulders or lanes occupied by public traffic, or to flow into landscaping, gutters, or other drainage facilities. Excessive amounts of water shall not be used in any of the drilling and the tiedown anchor installation procedures.

The holes drilled in the foundation materials shall be drilled to a depth sufficient to provide the necessary bond length beyond the minimum unbonded length shown on the plans. The diameter of the hole shall be large enough to provide a minimum of one inch grout cover over the corrugated plastic sheathing for the full-length of the tendon. Centralizers shall be used full-length of the tendon.

Tiedown anchor holes in foundation material shall be drilled by either the rotary or percussion drilling method.

Prior to installing each tiedown anchor into the anchor hole, the anchor shall be clean and free of oil, grease, dirt, or other extraneous substance.

The transition between the corrugated plastic sheathing and the anchorage assembly shall be an approved detail that allows stressing to the design force without evidence of distress in the corrugated plastic sheathing.

Tiedown anchor steel shall be protected prior to completion of all grouting against rust, corrosion, and physical damage in conformance with the provisions in Section 50, "Prestressing Concrete," of the Standard Specifications. In addition, there shall be no evidence of distress in the plastic sheathing or crushing of the grout within the sheathing.

Pregrouting shall occur at least 48 hours before placing the tendon in the drilled hole.

Tiedown anchor grout placed in the drilled hole shall be placed using grout tubes.

Grout for all stages shall be injected at the low end of the void being filled and shall be expelled at the high end until there is no evidence of entrapped air, water, or diluted grout.

After initial grouting, the tiedown anchor shall remain undisturbed until the grout has reached a strength sufficient to provide anchorage during load testing.

Secondary grouting shall be completed after the tiedown anchor has been locked off at the required load.

Bars for multiple bar tendons shall be stressed simultaneously.

Additional requirements for tiedowns with bar type tendons are as follows:

- A. The bar tendons in the unbonded area shall be sheathed with smooth plastic that extends into the steel tube of the permanent tiedown anchorage assembly, as shown on the plans. For this portion of smooth sheathing there is no minimum wall thickness and the sheathing shall be either PVC or HDPE.
- B. In addition, bar tendons shall be sheathed full-length with corrugated plastic. The annular space between the bar and the corrugated sheathing shall be pregrouted prior to placing the tendons in the drilled hole.
- C. There shall be a seal between the smooth sheathing and the corrugated sheathing at the top and bottom of the length of smooth sheathing.
- D. For bar tendons, the initial grout in the drilled hole may be placed before or after insertion of the bar tendons.
- E. For drilled holes 6 inches in diameter or less, the initial grouting outside of the corrugated plastic sheathing shall extend to 2 feet below the end of the steel tube of the anchorage assembly. For drilled holes greater than 6 inches in diameter the initial grouting outside of the corrugated plastic sheathing shall be within the limits of the bonded length.

Additional requirements for tiedowns with strand type tendons are as follows:

- A. Strand tendons shall be sheathed with corrugated plastic. The individual strands within the bonded length shall be separated by spaces so that the entire surface of each strand is bonded in the grout.
- B. At the Contractor's option, the strands may be pregrouted in the corrugated plastic sheathing within the bond length. If the corrugated sheathing is pregrouted before placing the tendon in the drilled hole, the corrugated sheathing shall lap the smooth sheathing on the strands by 2 feet and be completely filled with grout at the time of pregrouting. If the corrugated sheathing is not pregrouted within the full length of the bonded length before placing the tendon in the drilled hole, the corrugated sheathing shall extend the full length of the tendon and shall be grouted after placing the tendon in the drilled hole except for a minimum length of 2 feet at the bottom of the tendon that shall be pregrouted before placing the tendon in the drilled hole. The annulus between the strands and the corrugated sheathing shall be grouted prior to placing the initial grout in the drilled hole.
- C. Grout shall not be placed in the drilled hole until the strand tendons are installed complete in place in the drilled hole.

## **Testing**

All tiedowns shall be load tested by either a performance test or a proof test. The magnitude of applied test loads shall be determined with a calibrated pressure gauge or a load cell. Movements of the end of the tiedown anchor, relative to an

independent fixed reference point, shall be measured and recorded to the nearest 0.001-inch at each load increment during the load tests. The Contractor shall perform the measuring and recording.

At the completion of testing tiedown anchors, or when requested by the Engineer, the Contractor shall furnish to the Engineer complete test results for each tiedown anchor tested. Data for each test shall list key personnel, test loading equipment, tiedown anchor location, hole diameter, method of drilling, and bonded and unbonded length of tiedown anchor. Test data shall also list quantity of grout and grout pressure used within the bonded length of the tiedown anchor, amount of ground water encountered, and the time and dates of drilling, tiedown anchor installation, grouting, and testing. The tiedown anchor end movements at each increment of load or at each increment of time during the load hold period of the loading schedule shall be included in the test data.

Load testing shall be performed against temporary bearing yokes that bear directly against the permanent bearing plate. Tiedown anchors shall not be stressed against new footing concrete until the concrete has attained a compressive strength of 2600 pounds per square inch. Temporary yokes shall remain the property of the Contractor.

A minimum of 10% of tiedown anchors shall be performance tested. The Engineer shall determine the location of the tiedown anchors to be performance tested.

The performance test or proof test shall be conducted by measuring the test load applied to the tiedown anchor and recording the tiedown anchor end movement (measured at the end of the tiedown anchor) during incremental loading and unloading the tiedown anchor in accordance with the loading schedule. The test load shall be held constant for 10 minutes. During the load hold, the movement of the end of the tiedown anchor shall be measured at 1, 2, 3, 4, 5, 6, and 10 minutes. If the total recorded movement between one minute and 10 minutes exceeds 0.04—inch, the test load shall be held for an additional 50 minutes. Total movement shall be measured at 15, 20, 25, 30, 45, and 60 minutes. If the load is held for 60 minutes, a creep curve showing the creep movement between one minute and 60 minutes shall be plotted as a function of the logarithm of time.

## LOADING SCHEDULES

PERFORMANCE TEST		PROOF TEST
	(CONT'D)	
AL	AL	AL
0.25T	0.25T	0.25T
AL	0.50T	0.50T
0.25T	0.75T	0.75T
0.50T	1.00T	1.00T
AL	1.25T	1.25T
0.25T	AL	1.50T (TEST LOAD)
0.50T	0.25T	AL
0.75T	0.50T	
AL	0.75T	
0.25T	1.00T	
0.50T	1.25T	
0.75T	1.50T (TEST LOAD)	
1.00T (CONT'D)	AL	
T = Design force for the anchor shown on the plans		
AL = Alignment load		

For performance and proof tests, each increment of load shall be applied in less than one minute and held for at least one minute but not more than 2 minutes or as specified above. The observation period for the load hold shall start when the pump begins to apply the last increment of load.

The jacking equipment, including the tiedown anchor movement measuring system, shall be stable during all phases of the tiedown anchor loading operations.

All tiedown anchors not performance tested shall be proof tested. If 1.5 times the design force cannot be obtained, the tiedown anchor shall be replaced. Tiedown anchors shall not be retested unless the tiedown bond length is postgrouted after the unacceptable test.

A performance tested or proof tested tiedown anchor shall conform to the following acceptance criteria:

- A. The measured elastic movement of the end of the tiedown tendon exceeds 0.80 of the theoretical elongation of the unbonded length plus the jacking length at the maximum test load; and
- B. The creep movement of the end of the tiedown anchor, between one and 10 minutes, is less than 0.04-inch.

### Lock-off

After successful testing of the tiedown anchors, the tiedown anchors shall be locked off at a force equal to 1.00T. The lock-off force is the load on the jacks that is maintained while the tiedown anchor head or anchor nuts on the tiedown anchor are permanently set. Immediately after lock-off, a lift-off test shall be performed to demonstrate that the specified lock-off force was obtained. Adjustments in the shim thickness shall be made if required to achieve the specified lock-off force.

For strand tendons, the permanent wedges shall be fully set in the tiedown anchor head while the tendon is stressed to the test load of 1.0T, and then locked off at the lock-off force by removal of the shims or other appropriate means.

After lock-off, the grout shall be extended to the secondary grout level shown on the plans. At least 24 hours after the secondary grout has set, the remaining void in the steel tube and bearing plate shall be filled with grout. Grout shall be injected at the low end and expelled at the high end until there is no evidence of entrapped air or water. A minimum grout head of 2 feet shall be maintained until the grout has set.

The tiedown anchor head or anchor nuts shall be enclosed with a grouted anchorage enclosure device. After grouting the steel tube, the bearing plate surface shall be cleaned, sealant placed, and the anchorage enclosure bolted in place. After bolting the anchorage enclosure in place, the void in the anchorage enclosure shall be filled with grout by injecting grout at the low end of the void and venting at the high end. Any holes in the top of the anchorage enclosure used for grout placement shall be cleaned and sealed with sealant. Sealant shall be a non-sag polysulfide or polyurethane sealing compound conforming to requirements in ASTM Designation: C 920.

#### **MEASUREMENT AND PAYMENT**

No payment will be made for tiedown anchors that do not pass the specified testing requirements.

Tiedown anchors will be measured and paid for by the unit, and the number for payment will be determined by the requirements of the details shown on the plans. No change in the number of tiedown anchors to be paid for will be made because of the use by the Contractor of an alternative number of tiedown anchors.

The contract unit price paid for "TIEDOWN ANCHOR" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the tiedown anchors (including testing), complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.77 STRUCTURE APPROACH SLABS (TYPE N)**

#### **GENERAL**

##### **Summary**

This work includes constructing reinforced concrete approach slabs, structure approach drainage systems, and treated permeable base.

Reinforced concrete approach slabs must comply with Section 51, "Concrete Structures," of the Standard Specifications.

##### **Submittals**

Furnish a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for the geocomposite drain certifying that the drain complies with these Special Provisions. The Certificate of Compliance must be accompanied by a flow capability graph for the geocomposite drain showing flow rates and the externally applied pressures and hydraulic gradients. The flow capability graph must be stamped with the verification of an independent testing laboratory.

Notify the Engineer of the type of treated permeable base to be furnished at least 30 days before the start of placement. Once you have notified the Engineer of the selection, the type to be furnished must not be changed without a prior written request to do so and approval thereof by the Engineer.

7. Use for Type N(45D) and Type N(30D).

## **MATERIALS**

### **Concrete**

Concrete for structure approach slabs must contain not less than 675 pounds of cementitious material per cubic yard and must either:

1. Cure for not less than 5 days before opening to public traffic, or
2. Comply with "Rapid Strength Concrete for Structures" of these Special Provisions.

### **Drainage Pads**

Concrete for use in drainage pads must be minor concrete, except the concrete must contain not less than 505 pounds of cementitious material per cubic yard.

### **Geocomposite Drain**

Geocomposite drain must consist of a manufactured core not less than 0.25 inch thick nor more than 2 inches thick with one or both sides covered with a layer of filter fabric that will provide a drainage void. The drain must produce a flow rate through the drainage void of at least 2 gallons per minute per foot of width at a hydraulic gradient of 1.0 and a minimum externally applied pressure of 3,500 psf.

The manufactured core must be one of the following:

1. Preformed grid of embossed plastic
2. Mat of random shapes of plastic fibers
3. Drainage net consisting of a uniform pattern of polymeric strands forming 2 sets of continuous flow channels
4. System of plastic pillars and interconnections forming a semirigid mat

The core material and filter fabric must be capable of maintaining the drainage void for the entire height of geocomposite drain. Filter fabric must be integrally bonded to the side of the core material with the drainage void.

### **Filter Fabric**

Filter fabric must comply with the specifications for Class A filter fabric in Section 88-1.02, "Filtration," of the Standard Specifications.

### **Treated Permeable Base**

Treated permeable base under structure approach slabs must be an asphalt treated permeable base or a cement treated permeable base as specified in Section 29, "Treated Permeable Bases," of the Standard Specifications.

### **Miscellaneous Materials**

Hardboard and expanded polystyrene must comply with Section 51-1.12D, "Sheet Packing, Preformed Pads, and Board Fillers," of the Standard Specifications.

## **CONSTRUCTION**

### **Geocomposite Drain**

Install the geocomposite drain with the drainage void and the filter fabric facing the embankment. The fabric facing the embankment side must overlap a minimum of 3 inches at all joints and wrap around the exterior edges a minimum of 3 inches beyond the exterior edge. If additional fabric is needed to provide overlap at joints and wraparound at edges, the added fabric must overlap at least 6 inches and be attached to the fabric on the geocomposite drain.

Place core material manufactured from impermeable plastic sheeting having non-connecting corrugations with the corrugations approximately perpendicular to the drainage collection system.

If the fabric on the geocomposite drain is torn or punctured, replace the damaged section completely or repair it by placing a piece of fabric that is large enough to cover the damaged area and provide a 6-inch overlap.

If asphalt treated permeable base is placed around the slotted plastic pipe at the bottom of the geocomposite drain, it must be placed at a temperature of not less than 180 °F nor more than 230 °F.

### **Filter Fabric**

Place filter fabric immediately after grading and compacting the subgrade to receive the filter fabric.

Align, handle, and place filter fabric in a wrinkle-free manner under the manufacturer's recommendations.

Adjacent borders of the filter fabric must be overlapped from 12 inches to 18 inches or stitched. The preceding roll must overlap the following roll in the direction the material is being spread or must be stitched. When the fabric is joined by stitching, it

must be stitched with yarn of a contrasting color. The size and composition of the yarn must be as recommended by the fabric manufacturer. The number of stitches per 1 inch of seam must be 5 to 7.

Equipment or vehicles must not be operated or driven directly on the filter fabric.

### **Treated Permeable Base**

Construct treated permeable base under Section 29, "Treated Permeable Bases," of the Standard Specifications and these Special Provisions.

Place asphalt treated permeable base at a temperature of not less than 200 °F nor more than 250 °F. Do not use material stored in excess of 2 hours in the work.

Asphalt treated permeable base may be spread in 1 layer. Compact with a vibrating shoe type compactor or a roller weighing at least 1.5 tons but not more than 5 tons. Begin compacting base as soon as the mixture has cooled sufficiently to support the weight of the equipment without undue displacement.

Cement treated permeable base may be spread in 1 layer. Compact base with a vibrating shoe type compactor or with a steel-drum roller weighing at least 1.5 tons but not more than 5 tons. Compaction must begin within one-half hour of spreading and must consist of 2 complete coverages of the cement treated permeable base.

### **Finishing Approach Slabs**

Finish and treat the top surface of approach slabs under Section 51-1.17, "Finishing Bridge Decks," of the Standard Specifications. Edges of slabs must be edger finished.

Cure approach slabs with pigmented curing compound (1) under the specifications for curing structures in Section 90-7.01B, "Curing Compound Method," of the Standard Specifications.

### **MEASUREMENT AND PAYMENT**

"STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N)" will be measured and paid for by the cubic yard in conformance with the provisions in Section 51-1.22, "Measurement," and Section 51-1.23, "Payment," of the Standard Specifications and these Special Provisions.

Full compensation for the structure approach drainage system including geocomposite drain, plastic pipe, and drainage pads, treated permeable base, and filter fabric, shall be considered as included in the contract price paid per cubic yard for "STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N)", and no additional compensation will be allowed therefor.

## **10-1.78 CONCRETE STRUCTURES**

Portland cement concrete structures shall conform to the provisions in Section 51, "Concrete Structures," of the Standard Specifications and these Special Provisions.

Attention is directed to "Precast Concrete Quality Control" of these Special Provisions.

Shotcrete shall not be used as an alternative construction method for reinforced concrete members unless otherwise specified.

Neoprene strip shall be furnished and installed at abutment shear keys and abutment backwall joint protection in conformance with the details shown on the plans, the provisions in the Standard Specifications, and these Special Provisions.

Furnishing and installing neoprene strip shall conform to the requirements for strip waterstops as provided in Section 51-1.145, "Strip Waterstops," of the Standard Specifications, except that the protective board will not be required.

Vertical, horizontal, radial, or normal dimensions shown on the Typical Section in the plans are for zero percent cross slope. At the Contractor's option, the Typical Section of superelevated concrete box girder structures with (1) sloping exterior girders, (2) a straight uninterrupted cross slope between edges of deck, and (3) a single profile grade line, may be rotated around the profile grade line in superelevation areas. The horizontal distances between the profile grade line and the edges of deck shall remain unchanged. The planned girder widths and slab thicknesses shall remain unchanged and the interior girder stems shall remain vertical at the planned locations.

## **FALSEWORK**

Falsework shall conform to the provisions in Section 51, "Concrete Structures," of the Standard Specifications and these Special Provisions.

Temporary crash cushion modules, as shown on the plans and conforming to the provisions in "Temporary Crash Cushion Module" of these Special Provisions, shall be installed at the approach end of temporary railings which are located less than 15 feet from the edge of a traffic lane. For 2-way traffic openings, temporary crash cushion modules shall be installed at the departing end of temporary railings which are located less than 6 feet from the edge of a traffic lane.

The Contractor's engineer who signs the falsework drawings shall also certify in writing that the falsework is constructed in conformance with the approved drawings and the contract specifications prior to placing concrete. This certification shall include performing any testing necessary to verify the ability of the falsework members to sustain the stresses required by the falsework design. The engineer who signs the drawings may designate a representative to perform this certification. Where falsework contains openings for railroads, vehicular traffic, or pedestrians, the designated representative shall be qualified to perform this work, shall have at least 3 years of combined experience in falsework design or supervising falsework construction, and shall be registered as a Civil Engineer in the State of California. For other falsework, the designated representative shall be qualified to perform this work and shall have at least 3 years of combined experience in falsework design or supervising falsework construction. The Contractor shall certify the experience of the designated representative in writing and provide supporting documentation demonstrating the required experience if requested by the Engineer.

## **Welding and Nondestructive Testing**

Welding of steel members, except for previously welded splices and except for when fillet welds are used where load demands are less than or equal to 1,000 pounds per inch for each 1/8 inch of fillet weld, shall conform to AWS D1.1 or other recognized welding standard. The welding standard to be utilized shall be specified by the Contractor on the working drawings. Previously welded splices for falsework members are defined as splices made prior to the member being shipped to the project site.

Splices made by field welding of steel beams at the project site shall undergo nondestructive testing (NDT). At the option of the Contractor, either ultrasonic testing (UT) or radiographic testing (RT) shall be used as the method of NDT for each field weld and any repair made to a previously welded splice in a steel beam. Testing shall be performed at locations selected by the Contractor. The length of a splice weld where NDT is to be performed, shall be a cumulative weld length equal to 25 percent of the original splice weld length. The cover pass shall be ground smooth at the locations to be tested. The acceptance criteria shall conform to the requirements of AWS D1.1, Section 6, for cyclically loaded nontubular connections subject to tensile stress. If repairs are required in a portion of the weld, additional NDT shall be performed on the repaired sections. The NDT method chosen shall be used for an entire splice evaluation including any required repairs.

For all field welded splices, the Contractor shall furnish to the Engineer a letter of certification which certifies that all welding and NDT, including visual inspection, are in conformance with the specifications and the welding standard shown on the approved working drawings. This letter of certification shall be signed by an engineer who is registered as a Civil Engineer in the State of California and shall be provided prior to placing any concrete for which the falsework is being erected to support.

For previously welded splices, the Contractor shall determine and perform all necessary testing and inspection required to certify the ability of the falsework members to sustain the stresses required by the falsework design. This welding certification shall (1) itemize the testing and inspection methods used, (2) include the tracking and identifying documents for previously welded members, (3) be signed by an engineer who is registered as a Civil Engineer in the State of California, (4) and shall be provided prior to erecting the members.

## **COST REDUCTION INCENTIVE PROPOSALS FOR CAST-IN-PLACE PRESTRESSED BOX GIRDER BRIDGES**

Except as provided herein, cast-in-place prestressed box girder bridges shall be constructed in conformance with the details shown on the plans and the provisions in Section 50, "Prestressing Concrete," and Section 51, "Concrete Structures," of the Standard Specifications.

If the Contractor submits cost reduction incentive proposals for cast-in-place prestressed box girder bridges, the proposals shall be in conformance with the provisions in Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications and these Special Provisions.

The Engineer may reject any proposal which, in the Engineer's judgment, may not produce a structure which is at least equivalent to the planned structure.

At the time the cost reduction incentive proposal (CRIP) is submitted to the Engineer, the Contractor shall also submit 4 sets of the proposed revisions to the contract plans, design calculations, and calculations from an independent checker for all changes involved in the proposal, including revisions in camber, predicted deck profile at each construction stage, and falsework requirements to the Offices of Structure Design, Documents Unit, P.O. Box 942874, Sacramento, CA 94274-0001 (1801 30th Street, Sacramento, CA 95816), telephone (916) 227-8230. When notified in writing by the Engineer, the Contractor shall submit 12 sets of the CRIP plan revisions and calculations to the Offices of Structure Design for final approval and use during construction. The calculations shall verify that all requirements are satisfied. The CRIP plans and calculations shall be signed by an engineer who is registered as a Civil Engineer in the State of California.

The CRIP plans shall be either 11" x 17", or 22" x 34" in size. Each CRIP plan sheet and calculation sheet shall include the assigned designations for the contract number, bridge number, full name of the structure as shown on the contract plans, and District-County-Route-Post Mile. Each CRIP plan sheet shall be numbered in the lower right hand corner and shall contain a blank space in the upper right hand corner for future contract sheet numbers.

Within 3 weeks after final approval of the CRIP plan sheets, one set of the corrected good quality prints on 20-pound (minimum) bond paper, 22" x 34" in size, of all CRIP plan sheets prepared by the Contractor for each CRIP shall be furnished to the Offices of Structure Design, Documents Unit.

Each CRIP shall be submitted prior to completion of 25 percent of the contract working days and sufficiently in advance of the start of the work that is proposed to be revised by the CRIP to allow time for review by the Engineer and correction by the Contractor of the CRIP plans and calculations without delaying the work. The Contractor shall allow a minimum of 6 weeks for the review of a CRIP. In the event that several CRIPs are submitted simultaneously, or an additional CRIP is submitted for review before the review of a previously submitted CRIP has been completed, the Contractor shall designate the sequence in which the CRIPs are to be reviewed. In this event, the time to be provided for the review of any proposal in the sequence shall be not less than the review time specified herein for that proposal, plus 2 weeks for each CRIP of higher priority which is still under review.

Should the review not be complete by the date specified in the Contractor's CRIP, or such other date as the Engineer and Contractor may subsequently have agreed to in writing and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in review of CRIP plans and calculations, an extension of time commensurate with the delay in completion of the work thus caused will be granted as provided in Section 8-1.07, "Liquidated Damages," of the Standard Specifications except that the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications shall not apply.

Permits and approvals required of the State have been obtained for the structures shown on the plans. Proposals which result in a deviation in configuration may require new permits or approvals. The Contractor shall be responsible for obtaining

the new permits and approvals before the Engineer will reach a decision on the proposal. Delays in obtaining permits and approvals will not be reason for granting an extension of contract time.

All proposed modifications shall be designed in conformance with the bridge design specifications and procedures currently employed by the Department. The proposal shall include all related, dependent or incidental changes to the structure and other work affected by the proposal. The proposal will be considered only when all aspects of the design changes are included for the entire structure. Changes, such as but not limited to, additional reinforcement and changes in location of reinforcement, necessary to implement the CRIP after approval by the Engineer, shall be made at the Contractor's expense.

Modifications may be proposed in (1) the thickness of girder stems and deck slabs, (2) the number of girders, (3) the deck overhang dimensions as specified herein, (4) the amount and location of reinforcing steel, (5) the amount and location of prestressing force in the superstructure, and (6) the number of hinges, except that the number of hinges shall not be increased. The strength of the concrete used may be increased but the strength employed for design or analysis shall not exceed 6,000 psi.

Modifications proposed to the minimum amount of prestressing force which must be provided by full length draped tendons are subject to the provisions in "Prestressing Concrete" of these Special Provisions.

No modifications will be permitted in (1) the foundation type, (2) the span lengths or (3) the exterior dimensions of columns or bridge superstructure, except that the overhang dimension from face of exterior girder to the outside edge of roadway deck may be uniformly increased or decreased by 25 percent on each side of the box girder section. Fixed connections at the tops and bottoms of columns shown on the plans shall not be eliminated.

The Contractor shall be responsible for determining construction camber and obtaining the final profile grade as shown on the plans.

The Contractor shall reimburse the County for the actual cost of investigating CRIPs for cast-in-place prestressed box girder bridges submitted by the Contractor. The Department will deduct this cost from any moneys due, or that may become due the Contractor under the contract, regardless of whether or not the proposal is approved or rejected.

### **SLIDING BEARINGS**

Sliding bearings consisting of elastomeric bearing pads lubricated with grease and covered with sheet metal shall conform to the following requirements:

- A. Grease shall conform to the requirements of Society of Automotive Engineers AS 8660. A uniform film of grease shall be applied to the upper surface of the pads prior to placing the sheet metal.
- B. Sheet metal shall be commercial quality galvanized sheet steel. The sheet metal shall be smooth and free of kinks, bends, or burrs.

C. Construction methods and procedures shall prevent grout or concrete seepage into the sliding bearing assembly.

#### **ELASTOMERIC BEARING PADS**

Elastomeric bearing pads shall conform to the provisions in Section 51-1.12H, "Elastomeric Bearing Pads," of the Standard Specifications.

#### **MEASUREMENT AND PAYMENT**

Structural concrete will be measured by the cubic yard in the manner specified in Section 51-1.22, "Measurement," of the Standard Specifications.

Full compensation for public notification and airborne monitoring for deck crack treatment shall be considered as included in the contract price paid per cubic yard for "STRUCTURAL CONCRETE, BRIDGE," and no additional compensation will be allowed therefor.

The contract price paid per cubic yard for "STRUCTURAL CONCRETE, BRIDGE FOOTING" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the bridge footings, complete in place, including any necessary excavation and backfill as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price paid per cubic yard for "STRUCTURAL CONCRETE, BRIDGE" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the concrete work, complete in place, including any necessary excavation and backfill as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price paid per cubic yard for "STRUCTURAL CONCRETE, RETAINING WALL" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing retaining walls, complete in place, including any necessary excavation and backfill as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

"MINOR CONCRETE (MINOR STRUCTURE)", shall be paid for by the cubic yard in the manner specified in Section 51, "Concrete Structures", of the Standard Specifications.

The contract price paid per cubic yard for "PCC, CONTRASTING SURFACE TREATMENT" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing the concrete work, complete in place, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

## **10-1.79 PRECAST DRAINAGE INLET**

### **GENERAL**

#### **Summary**

This work includes furnishing and installing precast drainage inlets (TYPE GO) as an option to cast-in-place inlets.

Precast drainage inlet must comply with Section 51, "Concrete Structures," of the Standard Specifications and these Special Provisions.

#### **Definitions**

**Pipe:** Any shaped sealed conduit that conveys water into a drainage inlet under this section.

#### **Submittals**

If oval or circular shape cross sections are to be provided, submit plans and calculations 10 days before installation demonstrating that inlet components comply with Bridge Design Practice-Section 6, "Underground Structures." Plans must be signed by an engineer who is registered as a civil engineer or structural engineer in the State of California.

If field repairs are required, submit field repair procedures and patching materials 10 days before making repairs.

#### **Quality Control and Assurance**

#### **Tolerances**

Wall and slab thicknesses must not be less than dimensions shown on the plans by more than 5 percent or 3/16 inch, whichever is greater.

Reinforcement position must not vary more than 1/2 inch from position shown on the plans.

### **MATERIALS**

Precast drainage inlets must comply with rectangular horizontal cross sections shown on the plans. If oval or circular shape cross-sections are furnished, they must comply with ASSHTO M 199 or ASTM C 478.

Non-shrink grout must be packaged and dry. Combined materials must comply with ASTM C 1107.

Basin or inlet floors poured in the field must be minor concrete under Section 90-10, "Minor Concrete," of the Standard Specifications.

Joint sealant must comply with ASTM C 990 for butyl rubber sealants. Joint primer must be type recommended by joint seal manufacturer.

Sand bedding must comply with Section 19-3.025B, "Culvert Beddings," of the Standard Specifications.

Bonding agent must comply with ASTM C 1059, Type II (Non-redispersable).

Resilient connectors must comply with ASTM C 923.

The top 18" of drainage inlet within the Caltrans Right of Way shall be cast-in-place, and shall not be precast.

Drainage inlets within the County Right of Way may at the option of the Contractor, be all precast units.

## **CONSTRUCTION**

Non-shrink grout must be mixed to smooth consistency under grout manufacturer's instructions.

Precast drainage inlets must comply with reinforcement shown on the plans.

Install the type of precast drainage inlet openings shown on the plans for pipes, slotted drains, grated line drains or other sealed conduits penetrating inlet wall. Center pipe in the opening so that the gap around the outside of pipe is uniform dimension. Unless indicated otherwise on the plans, fill gap between pipe and drainage inlet wall opening with non-shrink grout. Where culverts or storm drain systems are shown on the plans to be watertight, seal gap between pipe and drainage inlet wall opening with resilient connectors.

Align precast drainage inlets as shown on the plans.

Keyed joints must be "matched fit" to ensure uniform alignment of wall sections and lids. Seal all keyed joint locations including walls, basin floor, and lid with preformed joint sealant made of butyl rubber material. Upper lid/wall joint may be sealed with grout instead of butyl rubber material. Clean joint surface before installing sealant. Use primer when moisture is present on joint surfaces. Use size and width of sealant recommended by sealant manufacturer for type of keyed joint furnished. Set joints together with sealant to create a uniform bearing surface without pressure points. Joint surfaces must be free of spalls, cracks, or fractures, and any imperfections that adversely affect joint function.

Flat precast drainage inlet floors must have field cast topping with 4:1 (horizontal:vertical) slope toward outlet pipe. Field cast topping must be 2-inch minimum thickness. Use bonding agent when placing field cast topping layer. Before applying bonding agent, clean surface of all loose debris, dust, oil, dirt, etc. Apply bonding agent under manufacturer's instructions. Key at inlet floor level is not required when floor is precast integrally with inlet wall.

## **Defects**

Rejection Criteria: In addition to requirements of Section 6, "Control of Materials," precast drainage inlet may be rejected if it exhibits any of the following defects as determined by the Engineer:

1. Fractures or cracks passing through wall exceeding 1/16 inch in width
2. Non-repairable honeycombed or open texture (spalls) areas greater than 6 square inches in area
3. Does not comply with reinforcement tolerances or required cross sectional area
4. Wall or lid is less than minimum thickness
5. Internal dimensions that are less than design dimensions by 1 percent or 1/2 inch whichever is greater
6. Any significant defect affecting performance, structural integrity, or both

### **Repairs**

Repair precast drainage inlet sections to correct handling damage or manufacturing imperfections. Repairs do not void requirements of these Special Provisions. The County does not pay for repairs.

### **MEASUREMENT AND PAYMENT**

The contract unit price paid for "MINOR STRUCTURE (PRECAST DRAINAGE INLET TYPE GO)" shall include full compensation for furnishing all labor, materials, tools, equipment and incidental for doing all the work involved in precast storm drain inlets, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The top 18" of precast storm drain inlets, using cast-in-place concrete within Caltrans Right of Way shall be considered as included in contract price per cubic yard paid for "MINOR CONCRETE (MINOR STRUCTURE)" and no additional compensation will be allowed therefor.

Full compensation for grout, sand bedding, butyl rubber joint sealant, resilient connectors, and bonding agent is included in the contract unit price paid each paid for precast drainage inlet and no additional compensation will be allowed therefor.

### **10-1.80 ANTI-GRAFFITI COATING**

This work includes applying anti-graffiti coating to concrete surfaces.

Comply with Section 59-6, "Painting Concrete," of the Standard Specifications.

Submit manufacturer's application and removal instructions 7 days before starting work.

### **MATERIALS**

Anti-graffiti coating must:

1. Be a nontoxic, sacrificial, nonflammable, water-based coating designed for protecting concrete from graffiti

2. Be compatible with the concrete surface treatment
3. Have a clear matte finish when dry
4. Be removable with a hot pressure washer

## **CONSTRUCTION**

Cure new concrete surfaces under Section 90-7.03, "Curing Structures," of the Standard Specifications. Test concrete surfaces for acceptance of coating under the manufacturer's recommendations before coating. Areas that resist accepting coating must be cleaned and retested.

Apply anti-graffiti coating under the manufacturer's recommendations in at least 2 even coats.

## **MEASUREMENT AND PAYMENT:**

The contract price paid per square foot for "ANTI-GRAFFITI COATING" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and applying anti-graffiti coating to concrete surfaces, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.81 ARCHITECTURAL TEXTURE**

Architectural texture for concrete surfaces shall conform to the details shown on the plans, the provisions in Section 51, "Concrete Structures," of the Standard Specifications, and these Special Provisions.

Architectural textures listed below are required at concrete surfaces shown on the plans:

- A. As shown on the Art Work Plans.

The architectural texture shall simulate a formed relief constructed to the dimensions and shapes shown on the plans. Corners at the intersection of plane surfaces shall be sharp and crisp without easing or rounding. A Class 1 surface finish shall be applied to the architectural texture. The smooth form finish shown on the plans shall be steel trowel type.

## **TEST PANEL**

A test panel for each type of architectural texture, at least 4' x 4' in size shall be successfully completed at a location approved by the Engineer before beginning work on architectural textures. In addition and prior to the test panel requirement for formed relief texture detailed working drawings shall be submitted for approval in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. The test panel shall be constructed and finished with the materials, tools, equipment, and methods to be used in constructing the architectural texture. If ordered by the Engineer, additional test panels shall be constructed and finished until the specified finish, texture, and color are obtained, as determined by the Engineer. The completed test panels, following review and acceptance by the

District Landscaped Architect will be approved in writing by the Engineer and shall be supported in a vertical position and left at the construction site for viewing.

The test panel approved by the Engineer shall be used as the standard of comparison in determining acceptability of architectural texture for concrete-surfaces.

Attention is directed to the anti-graffiti coatings to be applied to the formed relief textures for additional requirements for the test panels.

The Contractor shall construct a mock-up panel for the formed relief texture at a location approved by the Engineer. The Contractor's personnel responsible for constructing the mock-up shall be the same personnel to construct the concrete textures. A full size mock-up of the formed relief texture designated on the plans to be modeled shall be submitted for approval. Area of concrete texture to be provided in mock-up shall conform to the details as shown on the plans. The mock-up panels shall be constructed and finished with the materials, tools, equipment and methods to be used in constructing the concrete textures in the actual 3 dimensional configuration of the construction. The mock-up panels shall include all the form liner edge conditions to be encountered in the final construction. This shall include the interface edge between the form finish traverse and longitudinal form liner panel edges and the finish and the hand textured concrete texture edges. There shall be no visible edge variation

As ordered by the Engineer, additional mock-ups shall be constructed and finished until the specified finish and texture are obtained, as determined by the Engineer.

The mock-ups shall include proposed sample repairs of defects if the defects are repairable. The Contractor shall submit two mock-ups of similar defects with one repaired and the other unrepaired for comparison. The Engineer will determine the extent of the defects that can be repaired based on the sample repairs methods approved on the mock-up. The mock-up approved by the Engineer shall be used as the standard of comparison in determining those defects that are allowed to be repaired, the acceptability of the repair method, and the acceptability of concrete texture. Defects that can not be repaired, in the opinion of the Engineer, shall be replaced.

## **FORM LINERS**

Form liners shall be used for textured concrete surfaces and shall be installed in conformance with the manufacturer's recommendations, unless other methods of forming textured concrete surfaces are approved by the Engineer. Form liners shall be manufactured from an elastomeric material or a semi-elastomeric polyurethane material by a manufacturer of commercially available concrete form liners. No substitution of other types of formliner material will be allowed. Form liners shall leave crisp, sharp definition of the architectural surface. Recurring textural configurations exhibited by repeating, recognizable shadow patterns shall be prevented by proper casting of form liner patterns. Textured concrete surfaces with such recurring textural configurations shall be reworked to remove such patterns as approved by the Engineer or the concrete shall be replaced.

Form liners shall have the following properties:

Description	ASTM Designation:	Range
Elastomeric material		
Shore A hardness	D 2240	20 to 65
Tensile strength (psi)	D 412	130 to 900
Semi-elastomeric polyurethane		
Shore D hardness	D 2240	55 to 65
Tensile strength (psi)	D 2370	2600 minimum

Cuts and tears in form liners shall be sealed and repaired in conformance with the manufacturer's recommendations. Form liners that are delaminated from the form shall not be used. Form liners with deformations to the manufactured surface caused by improper storage practices or any other reason shall not be used.

Form liners shall extend the full length of texturing with transverse joints at 8 foot minimum spacing. Small pieces of form liners shall not be used. Grooves shall be aligned straight and true. Grooves shall match at joints between form liners. Joints in the direction of grooves in grooved patterns shall be located only in the depressed portion of the textured concrete. Adjoining liners shall be butted together without distortion, open cracks, or offsets at the joints. Joints between liners shall be cleaned before each use to remove any mortar in the joint.

Adhesives shall be compatible with the form liner material and with concrete. Adhesives shall be approved by the liner manufacturer. Adhesives shall not cause swelling of the liner material.

### **RELEASING FORM LINERS**

Products and application procedures for form release agents shall be approved by the form liner manufacturer. Release agents shall not cause swelling of the liner material or delamination from the forms. Release agents shall not stain the concrete or react with the liner material. For reliefs simulating fractured concrete or wood grain surfaces the application method shall include the scrubbing method using a natural bristle scrub brush in the direction of grooves or grain. The release agent shall coat the liner with a thin film. Following application of form release agent, the liner surfaces shall be cleaned of excess amounts of agent using compressed air. Buildup of form release agent caused by the reuse of a liner shall be removed at least every 5 uses.

Form liners shall release without leaving particles or pieces of liner material on the concrete and without pulling or breaking concrete from the textured surface. The concrete surfaces exposed by removing forms shall be protected from damage.

## **CURING**

Concrete surfaces with architectural texture shall be cured only by the forms-in-place or water methods. Seals and curing compounds shall not be used.

## **MEASUREMENT AND PAYMENT**

Architectural texture for retaining walls, concrete barriers (Type 732 MOD), and slope paving (concrete) will be measured for by the square foot.

The contract price paid per square foot for "ARCHITECTURAL TEXTURE" for retaining walls, concrete barriers (Type 732 MOD), and slope paving (concrete) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing architectural texture of smooth form as steel trowel, heavy sandblasting, fluted rib and other texture shown on the plans, complete in place, including stamped reliefs and test panels, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.82 SEALING JOINTS**

Joints in concrete bridge decks and joints between concrete structures and concrete approach slabs must be sealed in conformance with the details shown on the plans, the provisions in Section 51, "Concrete Structures," of the Standard Specifications, and these Special Provisions.

When ordered by the Engineer, a joint seal larger than called for by the Movement Rating shown on the plans must be furnished and installed. Payment to the Contractor for furnishing the larger seal and for saw cutting the increment of additional depth of groove required will be determined as provided in Section 4-1.03, "Changes," of the Standard Specifications.

The contract price paid per linear foot for "JOINT SEAL (TYPE B-MR 1)", and "JOINT SEAL (MR 2)", includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and applying joint seal coating to concrete surfaces, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.83 REINFORCEMENT**

Reinforcement shall conform to the provisions in Section 52, "Reinforcement," of the Standard Specifications and these Special Provisions.

The provisions in "Welding Quality Control" of these Special Provisions do not apply to resistance butt welding.

## **MEASUREMENT AND PAYMENT**

“BAR REINFORCING STEEL (BRIDGE)” and “BAR REINFORCING STEEL (RETAINING WALL)” will be measured and paid for by the pound based on the calculated weight in the manner specified in Section 52, “Reinforcement,” of the Standard Specifications.

### **10-1.84 STEEL STRUCTURES**

Construction of steel structures shall conform to the provisions in Section 55, "Steel Structures," of the Standard Specifications and these Special Provisions.

Attention is directed to "Welding" of these Special Provisions.

High-strength fastener assemblies and other bolts attached to structural steel with nuts and washers shall be zinc coated. When direct tension indicators are used in these assemblies, the direct tension indicator and all components of the fastener assembly shall be zinc coated by the mechanical deposition process.

#### **ROTATIONAL CAPACITY TESTING PRIOR TO SHIPMENT TO JOB SITE**

Rotational capacity tests shall be performed on all lots of high-strength fastener assemblies prior to shipment of these lots to the project site. Zinc-coated assemblies shall be tested after all fabrication, coating, and lubrication of components has been completed. One hardened washer shall be used under each nut for the tests.

The requirements of this section do not apply to high-strength cap screws or high-strength bolts used for slip base plates.

Each combination of bolt production lot, nut lot, and washer lot shall be tested as an assembly.

A rotational capacity lot number shall be assigned to each combination of lots tested. Each shipping unit of fastener assemblies shall be plainly marked with the rotational capacity lot number.

Two fastener assemblies from each rotational capacity lot shall be tested.

The following equipment, procedure, and acceptance criteria shall be used to perform rotational capacity tests on and determine acceptance of long bolts. Fasteners are considered to be long bolts when full nut thread engagement can be achieved when installed in a bolt tension measuring device:

##### **A. Long Bolt Test Equipment:**

1. Calibrated bolt tension measuring device with adequate tension capacity for the bolts being tested.
2. Calibrated dial or digital torque wrench. Other suitable tools will be required for performing Steps 7 and 8 of the Long Bolt Test Procedure. A torque multiplier may be required for large diameter bolts.
3. Spacer washers or bushings. When spacer washers or bushings are required, they shall have the same inside diameter and equal or larger

outside diameter as the appropriate hardened washers conforming to the requirements in ASTM Designation: F 436.

4. Steel beam or member, such as a girder flange or cross frame, to which the bolt tension measuring device will be attached. The device shall be accessible from the ground.

**B Long Bolt Test Procedure:**

1. Measure the bolt length. The bolt length is defined as the distance from the end of the threaded portion of the shank to the underside of the bolt head.
2. Install the nut on the bolt so that 3 to 5 full threads of the bolt are located between the bearing face of the nut and the underside of the bolt head. Measure and record the thread stickout of the bolt. Thread stickout is determined by measuring the distance from the outer face of the nut to the end of the threaded portion of the shank.
3. Insert the bolt into the bolt tension measuring device and install the required number of washers, and additional spacers as needed, directly beneath the nut to produce the thread stickout measured in Step 2 of this procedure.
4. Tighten the nut using a hand wrench to a snug-tight condition. The snug tension shall not be less than the Table A value but may exceed the Table A value by a maximum of 2 kips.

Table A

High-Strength Fastener Assembly Tension Values to Approximate Snug-Tight Condition	
Bolt Diameter (inches)	Snug Tension (kips)
1/2	1
5/8	2
3/4	3
7/8	4
1	5
1-1/8	6
1-1/4	7
1-3/8	9
1-1/2	10

5. Match-mark the assembly by placing a heavy reference start line on the face plate of the bolt tension measuring device which aligns with (1) a mark placed on one corner of the nut and (2) a radial line placed across the flat on the end of the bolt or on the exposed portions of the threads of tension control bolts. Place an additional mark on the outside of the socket that overlays the mark on the nut corner such that this mark will be visible while turning the nut. Make an additional mark on the face plate, either 2/3 of a turn, one turn, or 1-1/3 turn clockwise from the heavy reference start line, depending on the bolt length being tested as shown in Table B.

Table B

Required Nut Rotation for Rotational Capacity Tests <sup>(a) (b)</sup>	
Bolt Length (measured in Step 1)	Required Rotation (turn)
4 bolt diameters or less	2/3
Greater than 4 bolt diameters but no more than 8 bolt diameters	1
Greater than 8 bolt diameters, but no more than 12 bolt diameters <sup>(c)</sup>	1-1/3

(a) Nut rotation is relative to bolt, regardless of the element (nut or bolt) being turned. For bolts installed by 1/2 turn and less, the tolerance shall be plus or minus 30 degrees; for bolts installed by 2/3 turn and more, the tolerance shall be plus or minus 45 degrees.

(b) Applicable only to connections in which all material within grip of the bolt is steel.

(c) When bolt length exceeds 12 diameters, the required rotation shall be determined by actual tests in a suitable tension device simulating the actual conditions.

6. Turn the nut to achieve the applicable minimum bolt tension value listed in Table C. After reaching this tension, record the moving torque, in foot-pounds, required to turn the nut, and also record the corresponding bolt tension value in pounds. Torque shall be measured with the nut in motion. Calculate the value, T, where  $T = [(the\ measured\ tension\ in\ pounds) \times (the\ bolt\ diameter\ in\ inches) / 48]$ .

Table C

Minimum Tension Values for High-Strength Fastener Assemblies	
Bolt Diameter (inches)	Minimum Tension (kips)
1/2	12
5/8	19
3/4	28
7/8	39
1	51
1-1/8	56
1-1/4	71
1-3/8	85
1-1/2	103

7. Turn the nut further to increase bolt tension until the rotation listed in Table B is reached. The rotation is measured from the heavy reference line made on the face plate after the bolt was snug-tight. Record this bolt tension.
  8. Loosen and remove the nut and examine the threads on both the nut and bolt.
- C. Long Bolt Acceptance Criteria:
1. An assembly shall pass the following requirements to be acceptable: (1) the measured moving torque (Step 6) shall be less than or equal to the calculated value, T (Step 6), (2) the bolt tension measured in Step 7 shall be greater than or equal to the applicable turn test tension value listed in Table D, (3) the

nut shall be able to be removed from the bolt without signs of thread stripping or galling after the required rotation in Step 7 has been achieved, (4) the bolt does not shear from torsion or fail during the test, and (5) the assembly does not seize before the final rotation in Step 7 is reached. Elongation of the bolt in the threaded region between the bearing face of the nut and the underside of the bolt head is expected and will not be considered a failure. Both fastener assemblies tested from one rotational capacity lot shall pass for the rotational capacity lot to be acceptable.

Table D

Turn Test Tension Values	
Bolt Diameter (inches)	Turn Test Tension (kips)
1/2	14
5/8	22
3/4	32
7/8	45
1	59
1-1/8	64
1-1/4	82
1-3/8	98
1-1/2	118

The following equipment, procedure, and acceptance criteria shall be used to perform rotational capacity tests on and determine acceptance of short bolts. Fasteners are considered to be short bolts when full nut thread engagement cannot be achieved when installed in a bolt tension measuring device:

A. Short Bolt Test Equipment:

1. Calibrated dial or digital torque wrench. Other suitable tools will be required for performing Steps 7 and 8 of the Short Bolt Test Procedure. A torque multiplier may be required for large diameter bolts.
2. Spud wrench or equivalent.
3. Spacer washers or bushings. When spacer washers or bushings are required, they shall have the same inside diameter and equal or larger outside diameter as the appropriate hardened washers conforming to the requirements in ASTM Designation: F 436.
4. Steel plate or girder with a hole to install bolt. The hole size shall be 1/16 inch greater than the nominal diameter of the bolt to be tested. The grip length, including any plates, washers, and additional spacers as needed, shall provide the proper number of threads within the grip, as required in Step 2 of the Short Bolt Test Procedure.

B. Short Bolt Test Procedure:

1. Measure the bolt length. The bolt length is defined as the distance from the end of the threaded portion of the shank to the underside of the bolt head.
2. Install the nut on the bolt so that 3 to 5 full threads of the bolt are located between the bearing face of the nut and the underside of the bolt head. Measure and record the thread stickout of the bolt. Thread stickout is determined by measuring the distance from the outer face of the nut to the end of the threaded portion of the shank.

3. Install the bolt into a hole on the plate or girder and install the required number of washers and additional spacers as needed between the bearing face of the nut and the underside of the bolt head to produce the thread stickout measured in Step 2 of this procedure.
4. Tighten the nut using a hand wrench to a snug-tight condition. The snug condition shall be the full manual effort applied to the end of a 12-inch long wrench. This applied torque shall not exceed 20 percent of the maximum allowable torque in Table E.

Table E

Maximum Allowable Torque for High-Strength Fastener Assemblies	
Bolt Diameter (inches)	Torque (ft-lb)
1/2	145
5/8	285
3/4	500
7/8	820
1	1220
1-1/8	1500
1-1/4	2130
1-3/8	2800
1-1/2	3700

5. Match-mark the assembly by placing a heavy reference start line on the steel plate or girder which aligns with (1) a mark placed on one corner of the nut and (2) a radial line placed across the flat on the end of the bolt or on the exposed portions of the threads of tension control bolts. Place an additional mark on the outside of the socket that overlays the mark on the nut corner such that this mark will be visible while turning the nut. Make 2 additional small marks on the steel plate or girder, one 1/3 of a turn and one 2/3 of a turn clockwise from the heavy reference start line on the steel plate or girder.
6. Using the torque wrench, tighten the nut to the rotation value listed in Table F. The rotation is measured from the heavy reference line described in Step 5 made after the bolt was snug-tight. A second wrench shall be used to prevent rotation of the bolt head during tightening. Measure and record the moving torque after this rotation has been reached. The torque shall be measured with the nut in motion.

Table F

Nut Rotation Required for Turn-of-Nut Installation <sup>(a), (b)</sup>	
Bolt Length (measured in Step 1)	Required Rotation (turn)
4 bolt diameters or less	1/3

(a) Nut rotation is relative to bolt, regardless of the element (nut or bolt) being turned. For bolts installed by 1/2 turn and less, the tolerance shall be plus or minus 30 degrees.

(b) Applicable only to connections in which all material within grip of the bolt is steel.

7. Tighten the nut further to the 2/3-turn mark as indicated in Table G. The rotation is measured from the heavy reference start line made on the plate or girder when the bolt was snug-tight. Verify that the radial line on the bolt end or on the exposed portions of the threads of tension control bolts is still in alignment with the start line.

Table G

Required Nut Rotation for Rotational Capacity Test	
Bolt Length (measured in Step 1)	Required Rotation (turn)
4 bolt diameters or less	2/3

8. Loosen and remove the nut and examine the threads on both the nut and bolt.
- C. Short Bolt Acceptance Criteria:
1. An assembly shall pass the following requirements to be acceptable: (1) the measured moving torque from Step 6 shall be less than or equal to the maximum allowable torque from Table E, (2) the nut shall be able to be removed from the bolt without signs of thread stripping or galling after the required rotation in Step 7 has been achieved, (3) the bolt does not shear from torsion or fail during the test, and (4) the assembly shall not seize before the final rotation in Step 7 is reached. Elongation of the bolt in the threaded region between the bearing face of the nut and the underside of the bolt head will not be considered a failure. Both fastener assemblies tested from one rotational capacity lot shall pass for the rotational capacity lot to be acceptable.

**INSTALLATION TENSION TESTING AND ROTATIONAL CAPACITY TESTING AFTER ARRIVAL ON THE JOB SITE**

Installation tension tests and rotational capacity tests on high-strength fastener assemblies shall be performed by the Contractor prior to acceptance or installation and after arrival of the fastener assemblies on the project site. Installation tension tests and rotational capacity tests shall be performed at the job site, in the presence of the Engineer, on each rotational capacity lot of fastener assemblies.

The requirements of this section do not apply to high-strength cap screws or high-strength bolts used for slip base plates.

Installation tension tests shall be performed on 3 representative fastener assemblies in conformance with the provisions in Section 8, "Installation," of the RCSC Specification. For short bolts, Section 8.2, "Pretensioned Joints," of the RCSC Specification shall be replaced by the "Pre-Installation Testing Procedures," of the "Structural Bolting Handbook," published by the Steel Structures Technology Center, Incorporated.

The rotational capacity tests shall be performed in conformance with the requirements for rotational capacity tests in "Rotational Capacity Testing Prior to Shipment to Job Site" of these Special Provisions.

At the Contractor's expense, additional installation tension tests, tests required to determine job inspecting torque, and rotational capacity tests shall be performed by the Contractor on each rotational capacity lot, in the presence of the Engineer, if:

1. Any fastener is not used within 3 months after arrival on the job site,
2. Fasteners are improperly handled, stored, or subjected to inclement weather prior to final tightening,
3. Significant changes are noted in original surface condition of threads, washers, or nut lubricant, or
4. The Contractor's required inspection is not performed within 48 hours after all fasteners in a joint have been tensioned.

Failure of a job-site installation tension test or a rotational capacity test will be cause for rejection of unused fasteners that are part of the rotational capacity lot.

When direct tension indicators are used, installation verification tests shall be performed in conformance with Appendix Section X1.4 of ASTM Designation: F 959, except that bolts shall be initially tensioned to a value 5 percent greater than the minimum required bolt tension.

## **SURFACE PREPARATION**

For all bolted connections, the new contact shall be cleaned and coated before assembly in conformance with the provisions for cleaning and painting structural steel of these Special Provisions.

## **SEALING**

When zinc-coated tension control bolts are used, the sheared end of each fastener shall be completely sealed with non-silicone type sealing compound conforming to the provisions in Federal Specification TT-S-230, Type II. The sealant shall be gray in color and shall have a minimum thickness of 50 mils. The sealant shall be applied to a clean sheared surface on the same day that the splined end is sheared off.

## **WELDING**

Table 2.2 of AWS D1.5 is superseded by the following table:

Base Metal Thickness of the Thicker Part Joined, inches	Minimum Effective Partial Joint Penetration Groove Weld Size*, inches
Over 1/4 to 1/2 inclusive	3/16
Over 1/2 to 3/4 inclusive	1/4
Over 3/4 to 1-1/2 inclusive	5/16
Over 1-1/2 to 2-1/4 inclusive	3/8
Over 2-1/4 to 6 inclusive	1/2
Over 6	5/8

\* Except the weld size need not exceed the thickness of the thinner part

Dimensional details and workmanship for welded joints in tubular and pipe connections shall conform to the provisions in Part A, "Common Requirements of Nontubular and Tubular Connections," and Part D, "Specific Requirements for Tubular Connections," in Section 2 of AWS D1.1.

The requirement of conformance with AWS D1.5 shall not apply to work conforming to Section 56-1, "Overhead Sign Structures," or Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications.

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

#### **10-1.85 SIGN STRUCTURES**

Sign structures and foundations for overhead signs shall conform to the provisions in Section 56-1, "Overhead Sign Structures," of the Standard Specifications, "Steel Structures" of these Special Provisions, and these Special Provisions.

Before commencing fabrication of sign structures, the Contractor shall submit 2 sets of working drawings to the Engineer in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. The working drawings shall include sign panel dimensions, span lengths, post heights, anchorage layouts, proposed splice locations, a snugging and tensioning pattern for anchor bolts and high-strength bolted connections, and details for permanent steel anchor bolt templates. The working drawings shall be supplemented with a written quality control program that includes methods, equipment, and personnel necessary to satisfy the requirements specified herein.

Working drawings shall be 22" x 34" or 11" x 17" in size and each drawing and calculation sheet shall include the assigned designations for the sign structure type and reference as shown on the contract plans, District-County-Route-Post Mile, and contract number.

The Engineer shall have 30 days to review the sign structure working drawings after a complete submittal has been received. No fabrication or installation of sign structures shall be performed until the working drawings are approved in writing by the Engineer.

Should the Engineer fail to complete the review within the time allowance and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or

interfered with by reason of the delay in reviewing the sign structure working drawings, the delay will be considered a right of way delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

Steel bolts not designated on the plans as high strength (HS) or stainless steel shall be for general applications and shall conform to the requirements in ASTM Designation: A 307.

A permanent steel template shall be used to maintain the proper anchor bolt spacing.

One top nut, one leveling nut, and 2 washers shall be provided for the upper threaded portion of each anchor bolt.

Flatness of surfaces for the following shall conform to the requirements in ASTM Designation: A 6/A 6M:

1. Base plates that are to come in contact with concrete, grout, or washers and leveling nuts
2. Plates in high-strength bolted connections

No holes shall be made in members unless the holes are shown on the plans or are approved in writing by the Engineer.

Longitudinal seam welds shall have 60 percent minimum penetration, except that within 6 inches of circumferential welds, longitudinal seam welds shall be complete joint penetration (CJP) groove welds. In addition, longitudinal seam welds on structures having telescopic pole segment splices shall be CJP groove welds on the female end for a length on each end equal to the designated slip fit splice length plus 6 inches.

Steel members used for overhead sign structures shall receive nondestructive testing (NDT) in conformance with AWS D1.1 and the following:

1.

Weld Location	Weld Type	Minimum Required NDT
Splice welds around the perimeter of tubular sections, poles, and arms.	CJP groove weld with backing ring	100% UT <sup>a</sup> or RT <sup>b</sup>
Longitudinal seam welds	CJP or PJP <sup>c</sup> groove weld	Random 25% MT <sup>d</sup>
Longitudinal seam welds within 6 inches of a circumferential splice.	CJP groove weld	100% UT or RT
Welds attaching base plates, flange plates, or pole or mast arm plates, to poles or arm tubes.	CJP groove weld with backing ring and reinforcing fillet	t > 3/16 inch: 100% UT and MT t < 3/16 inch: 100% MT after root weld pass and final weld pass t = pole or arm thickness
	External (top) fillet weld for socket-type connections	100% MT

- a ultrasonic testing
- b radiographic testing
- c partial joint penetration
- d magnetic particle testing

2. The acceptance and repair criteria for UT of welded joints where any of the members are less than 5/16 inch thick or where tubular sections are less than 13 inches in diameter shall conform to the requirements in AWS D1.1, Section 6.13.3.1. A written procedure approved by the Engineer shall be used when performing this UT. These written procedures shall conform to the requirements in AWS D1.1, Annex K. The acceptance and repair criteria for other welded joints receiving UT shall conform to the requirements in AWS D1.1, Section 6, Table 6.3 for cyclically loaded nontubular connections.
3. The acceptance and repair criteria for radiographic or real time image testing shall conform to the requirements of AWS D1.1 for tensile stress welds.
4. For longitudinal seam welds, the random locations for NDT will be selected by the Engineer. The cover pass shall be ground smooth at the locations to be tested. If repairs are required in a portion of a tested weld, the repaired portion shall receive NDT, and additional NDT shall be performed on untested portions of the weld. The additional NDT shall be performed on 25 percent of that longitudinal seam weld. After this additional NDT is performed and if more repairs are required, then that entire longitudinal seam weld shall receive NDT.

Circumferential welds and base plate to post welds may be repaired only one time without written permission from the Engineer.

All ferrous metal parts of tubular sign structures shall be galvanized and shall not be painted.

Full compensation for furnishing anchor bolt templates and for testing of welds shall be considered as included in the contract price paid per pound for furnish sign structure, and no additional compensation will be allowed therefor.

## **MEASUREMENT AND PAYMENT**

The contract price paid per pound for "FURNISH SIGN STRUCTURE (BRIDGE MOUNTED WITH WALKWAY)" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing the sign structure, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price paid per pound for "INSTALL SIGN STRUCTURE (BRIDGE MOUNTED WITH WALKWAY)" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing the sign structure, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price paid per pound for "FURNISH SIGN STRUCTURE (TRUSS)" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing the sign structure, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price paid per pound for "INSTALL SIGN STRUCTURE (TRUSS)" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing the sign structure, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price paid per linear foot for "60" CAST-IN-DRILLED-HOLE-CONCRETE PILE (SIGN FOUNDATION) includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing sign foundation, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.86 ROADSIDE SIGNS**

Roadside signs shall be furnished and installed at the locations shown on the plans or where designated by the Engineer and in conformance with the provisions in Section 56-2, "Roadside Signs," of the Standard Specifications and these Special Provisions.

The Contractor shall furnish roadside sign panels in conformance with the provisions in "Furnish Sign" of these Special Provisions.

Wood posts shall be pressure treated after fabrication in conformance with the provisions in Section 58, "Preservative Treatment of Lumber, Timber and Piling," of the Standard Specifications and AWPAs Use Category System: UC4A, Commodity Specification A or B.

## **MEASUREMENT AND PAYMENT**

“ROADSIDE SIGN – ONE POST” and “ROADSIDE SIGN – TWO POST” will be measured and paid for by the unit installed in the manner specified in Section 56-2, “Roadside signs,” of the Standard Specifications

Type N (CA), Type P (CA), and Type R (CA) marker panels mounted on a post with a roadside sign shall be considered to be sign panels and will not be paid for as markers.

#### **10-1.87 FURNISH SIGN**

Signs shall be fabricated and furnished in accordance with details shown on the plans, the Traffic Sign Specifications, and these Special Provisions.

Traffic Sign Specifications for California sign codes are available for review at:

<http://www.dot.ca.gov/hq/traffops/signtech/signdel/specs.htm>

Traffic Sign Specifications for signs referenced with Federal MUTCD sign codes can be found in Standard Highway Signs Book, administered by the Federal Highway Administration, which is available for review at:

[http://mutcd.fhwa.dot.gov/ser-shs\\_millennium.htm](http://mutcd.fhwa.dot.gov/ser-shs_millennium.htm)

Information on cross-referencing California sign codes with the Federal MUTCD sign codes is available at:

<http://www.dot.ca.gov/hq/traffops/signtech/signdel/specs.htm>

Temporary or permanent signs shall be free from blemishes that may affect the serviceability and detract from the general sign color and appearance when viewing during daytime and nighttime from a distance of 25 feet. The face of each finished sign shall be uniform, flat, smooth, and free of defects, scratches, wrinkles, gel, hard spots, streaks, extrusion marks, and air bubbles. The front, back, and edges of the sign panels shall be free of router chatter marks, burns, sharp edges, loose rivets, delaminated skins, excessive adhesive over spray and aluminum marks.

#### **QUALITY CONTROL FOR SIGNS**

The requirements of "Quality Control for Signs" in this section shall not apply to construction area signs.

No later than 14 days before sign fabrication, the Contractor shall submit a written copy of the quality control plan for signs to the Engineer for review. The Engineer will have 10 days to review the quality control plan. Sign fabrication shall not begin until the Engineer approves the Contractor's quality control plan in writing. The Contractor shall submit to the Engineer at least 3 copies of the approved quality control plan. The quality control plan shall include, but not be limited to the following requirements:

- A. Identification of the party responsible for quality control of signs,
- B. Basis of acceptance for incoming raw materials at the fabrication facility,
- C. Type, method and frequency of quality control testing at the fabrication facility,

- D. List (by manufacturer and product name) of process colors, protective overlay film, retroreflective sheeting and black non-reflective film,
- E. Recommended cleaning procedure for each product, and
- F. Method of packaging, transport and storage for signs.

No legend shall be installed at the project site. Legend shall include letters, numerals, tildes, bars, arrows, route shields, symbols, logos, borders, artwork, and miscellaneous characters. The style, font, size, and spacing of the legend shall conform to the Standard Alphabets published in the FHWA Standard Highway Signs Book. The legend shall be oriented in the same direction in accordance with the manufacturer's orientation marks found on the retroreflective sheeting.

On multiple panel signs, legend shall be placed across joints without affecting the size, shape, spacing, and appearance of the legend. Background and legend shall be wrapped around interior edges of formed panel signs as shown on plans to prevent delamination.

The following notation shall be placed on the lower right side of the back of each sign where the notation will not be blocked by the sign post or frame:

- A. PROPERTY OF STATE OF CALIFORNIA,
- B. Name of the sign manufacturer,
- C. Month and year of fabrication,
- D. Type of retroreflective sheeting, and
- E. Manufacturer's identification and lot number of retroreflective sheeting.

The above notation shall be applied directly to the aluminum sign panels in 1/4-inch upper case letters and numerals by die-stamp and applied by similar method to the fiberglass reinforced plastic signs. Painting, screening, or engraving the notation will not be allowed. The notation shall be applied without damaging the finish of the sign.

Signs with a protective overlay film shall be marked with a dot of 3/8 inch in diameter. The dot placed on white border shall be black, while the dot placed on black border shall be white. The dot shall be placed on the lower border of the sign before application of the protective overlay film and shall not be placed over the legend and bolt holes. The application method and exact location of the dot shall be determined by the manufacturer of the signs.

For sign panels that have a minor dimension of 48 inches or less, no splice will be allowed in the retroreflective sheet except for the splice produced during the manufacturing of the retroreflective sheeting. For sign panels that have a minor dimension greater than 48 inches, only one horizontal splice will be allowed in the retroreflective sheeting.

Unless specified by the manufacturer of the retroreflective sheeting, splices in retroreflective sheeting shall overlap by a minimum of one inch. Splices shall not be placed within 2 inches from edges of the panels. Except at the horizontal borders, the splices shall overlap in the direction from top to bottom of the sign to prevent moisture penetration. The retroreflective sheeting at the overlap shall not exhibit a color difference under the incident and reflected light.

Signs exhibiting a significant color difference between daytime and nighttime shall be replaced immediately.

Repairing sign panels will not be allowed except when approved by the Engineer.

The Department will inspect signs at the Contractor's facility and delivery location, and in accordance with Section 6, "Control of Materials," of the Standard Specifications. The Engineer will inspect signs for damage and defects before and after installation.

Regardless of kind, size, type, or whether delivered by the Contractor or by a common carrier, signs shall be protected by thorough wrapping, tarping, or other methods to ensure that signs are not damaged by weather conditions and during transit. Signs shall be dry during transit and shipped on palettes, in crates, or tier racks. Padding and protective materials shall be placed between signs as appropriate. Finished sign panels shall be transported and stored by method that protects the face of signs from damage. The Contractor shall replace wet, damaged, and defective signs.

Signs shall be stored in dry environment at all times. Signs shall not rest directly on the ground or become wet during storage. Signs, whether stored indoor or outdoor, shall be free standing. In areas of high heat and humidity signs shall be stored in enclosed climate-controlled trailers or containers. Signs shall be stored indoor if duration of the storage will exceed 30 days.

Screen processed signs shall be protected, transported and stored as recommended by the manufacturer of the retroreflective sheeting.

When requested, the Contractor shall provide the Engineer test samples of signs and materials used at various stages of production. Sign samples shall be 12" x 12" in size with applied background, letter or numeral, and border strip.

The Contractor shall assume the costs and responsibilities resulting from the use of patented materials, equipment, devices, and processes for the Contractor's work.

### **SHEET ALUMINUM**

Alloy and temper designations for sheet aluminum shall be in accordance with ASTM Designation: B 209.

The Contractor shall furnish the Engineer a Certificate of Compliance in conformance with Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for the sheet aluminum.

Sheet aluminum shall be pretreated in accordance to ASTM Designation: B 449. Surface of the sheet aluminum shall be cleaned, deoxidized, and coated with a light and tightly adherent chromate conversion coating free of powdery residue. The conversion coating shall be Class 2 with a weight between 10 milligrams per square foot and 35 milligrams per square foot, and an average weight of 25 milligrams per square foot. Following the cleaning and coating process, the sheet aluminum shall be protected from exposure to grease, oils, dust, and contaminants.

Sheet aluminum shall be free of buckles, warps, dents, cockles, burrs, and defects resulting from fabrication.

Base plate for standard route marker shall be die cut.

## **RETROREFLECTIVE SHEETING**

The Contractor shall furnish retroreflective sheeting for sign background and legend in conformance with ASTM Designation: D 4956 and "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions.

Retroreflective sheeting shall be applied to sign panels as recommended by the retroreflective sheeting manufacturer without stretching, tearing, and damage.

Class 1, 3, or 4 adhesive backing shall be used for Type II, III, IV, VII, VIII, and IX retroreflective sheeting. Class 2 adhesive backing may also be used for Type II retroreflective sheeting. The adhesive backing shall be pressure sensitive and fungus resistant.

When the color of the retroreflective sheeting determined from instrumental testing is in dispute, the Engineer's visual test will govern.

## **PROCESS COLOR AND FILM**

The Contractor shall furnish and apply screened process color, non-reflective opaque black film, and protective overlay film of the type, kind, and product that are approved by the manufacturer of the retroreflective sheeting.

The Contractor shall furnish the Engineer a Certificate of Compliance in accordance to Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for the screened process color, non-reflective opaque black film, and protective overlay film.

The surface of the screened process color shall be flat and smooth. When the screened process colors determined from the instrumental testing in accordance to ASTM Designation: D 4956 are in dispute, the Engineer's visual test will govern.

The Contractor shall provide patterns, layouts, and set-ups necessary for the screened process.

The Contractor may use green, red, blue, and brown reverse-screened process colors for background and non-reflective opaque black film or black screened process color for legend. The coefficient of retroreflection for reverse-screened process colors on white retroreflective sheeting shall not be less than 70 percent of the coefficient of retroreflection specified in ASTM Designation: D 4956.

The screened process colors and non-reflective opaque black film shall have the same outdoor weatherability as that of the retroreflective sheeting.

After curing, screened process colors shall withstand removal when tested by applying 3M Company Scotch Brand Cellophane Tape No. 600 or equivalent tape over the color and removing with one quick motion at 90° angle.

## **SINGLE SHEET ALUMINUM SIGN**

Single sheet aluminum signs shall be fabricated and furnished with or without frame. The Contractor shall furnish the sheet aluminum in accordance to "Sheet Aluminum" of these Special Provisions. Single sheet aluminum signs shall be fabricated from sheet aluminum alloy 6061-T6 or 5052-H38.

Single Sheet aluminum signs shall not have a vertical splice in the sheet aluminum. For signs with depth greater than 48 inches, one horizontal splice will be allowed in the sheet aluminum.

Framing for single sheet aluminum signs shall consist of aluminum channel or rectangular aluminum tubing. The framing shall have a length tolerance of  $\pm 1/8$  inch. The face sheet shall be affixed to the frame with rivets of 3/16-inch diameter. Rivets shall be placed within the web of channels and shall not be placed less than 1/2 inch from edges of the sign panels. Rivets shall be made of aluminum alloy 5052 and shall be anodized or treated with conversion coating to prevent corrosion. The exposed portion of rivets on the face of signs shall be the same color as the background or legend where the rivets are placed.

Finished signs shall be flat within a tolerance of  $\pm 1/32$  inch per linear foot when measured across the plane of the sign in all directions. The finished signs shall have an overall tolerance within  $\pm 1/8$  inch of the detailed dimensions.

Aluminum channels or rectangular aluminum tubings shall be welded together with the inert gas shielded-arc welding process using E4043 aluminum electrode filler wires as shown on the plans. Width of the filler shall be equal to wall thickness of smallest welded channel or tubing.

## **FIBERGLASS REINFORCED PLASTIC PANEL SIGN**

The Contractor shall furnish fiberglass reinforced plastic panel sign in accordance with ASTM Designation: D 3841 and "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions.

Fiberglass reinforced plastic shall be acrylic modified and ultraviolet stabilized for outdoor weatherability. The plastic shall contain additives designed to suppress fire ignition and flame propagation. When tested in accordance with the requirements in the ASTM Designation: D 635, the extent of burning shall not exceed one inch.

Fiberglass reinforced plastic shall be stabilized to prevent the release solvents and monomers. The front and back surfaces of the laminate shall be clean and free of constituents and releasing agents that can interfere with the bonding of retroreflective sheeting.

The fiberglass reinforced plastic panel sign shall be weather resistant Grade II thermoset polyester laminate.

The fiberglass reinforced plastic panels shall be minimum 0.135-inch thick. Finished fiberglass reinforced plastic panel signs shall be flat within a tolerance of  $\pm 1/32$  inch per linear foot when measured across the plane of the sign in all directions. The

finished signs shall have an overall tolerance within  $\pm 1/8$  inch of the specified dimensions.

Color of fiberglass reinforced plastic panels shall be uniform gray within Munsel color range of N7.5 to N8.5.

Fiberglass reinforced plastic panels shall be cut from a single piece of laminate. Bolt holes shall be predrilled. The predrilled bolt holes, panel edges, and the front and back surfaces of the panels shall be true and smooth. The panel surfaces shall be free of visible cracks, pinholes, foreign inclusions, warping and wrinkles that can affect performance and serviceability.

### **LAMINATED PANEL SIGN**

Laminated panel signs shall consist of two sheet aluminum laminated to a honeycomb core and extruded aluminum frame to produce flat and rigid panels of one-inch or 2-1/2-inch nominal thickness.

The face of laminated panel signs shall be fabricated from sheet aluminum alloy 6061-T6 or 5052-H32 of 0.063-inch thickness. The back of laminated panel signs shall be fabricated from sheet aluminum alloy 3003-H14 of 0.040-inch thickness. The Contractor shall furnish sheet aluminum as provided in "Sheet Aluminum" of these Special Provisions.

The core material shall be phenolic impregnated kraft paper honeycomb and fungus resistant in accordance to Military Specification MIL-D-5272. The honeycomb cell size shall be 1/2 inch. Weight of the kraft paper shall be 80 pounds and impregnated minimum 18 percent by weight.

A laminating adhesive that can produce a resilient oil and water-resistant bond shall be used to adhere the extruded aluminum frame and the honeycomb core to the sheet aluminum. Edge and interior delamination occur when a 0.010-inch thick feeler gauge of 1/2 inch in length can be inserted into a depth of more than 1/2 inch between the extruded aluminum frame and the sheet aluminum. Laminated panel sign with delamination will be rejected.

Laminated panels shall be able to resist a wind load of 33 pounds per square foot for the following simple span lengths with a bending safety factor of 1.25:

Panel Type	Nominal Panel Thickness	Simple Span Length
A	one inch	9 feet 0 inch
B	one inch	9 feet 0 inch
	2-1/2 inch	14 feet 6 inches
H	2-1/2 inch	14 feet 6 inches

The tensile strength of laminated panels shall be at least 20 pounds per square inch when tested in accordance with the following modification and with ASTM Designations: C 297 and C 481, Cycle B after aging. Instead of spraying with hot water, the specimen shall be totally immersed in 158° F hot water. When requested by the Engineer or the Transportation Laboratory, at least one test sample of

12" x 12" in size shall be taken for every 2,000 square feet of the panel production cycle or of the total factory production order, whichever occurs first.

Rivets used to secure the sheet aluminum to the perimeter frame shall be fabricated from aluminum alloy 5052 and anodized or treated with a conversion coating to prevent corrosion. Size of the aluminum rivets shall be 3/16 inch in diameter and placed at the corners of the laminated panels. Color of the exposed portion of the rivets shall be the same color as the sign background or legend on which the rivets are placed. Rivets or stainless steel screws shall be placed in holes drilled during fabrication in the perimeter frame.

On laminated multiple panel signs, a closure H-Section shall be placed in the top channel of the bottom panel. Perimeter frame of adjoining panel shall accommodate the closure H-Section in the closed position.

For signs with a depth of 5 feet 0 inch or less, the laminated panels shall be fabricated with no horizontal joints, splices or seams. For signs with a depth of greater than 5 feet 0 inch, the laminated panels may be fabricated in two panels.

The face of laminated panels shall be flat with a tolerance of  $\pm 3/32$  inch per linear foot when measured across the plane of each panel in all directions. Where laminated panels adjoin, the gap between adjoining edges from one corner to the other corner shall not deviate by more than 1/32 inch. Non-adjoining edges from one corner to the other corner shall not deviate by more than 1/8 inch from a straight plane. The front and back sheet aluminum shall be flush with the perimeter frame. The panel edges shall be smooth.

Laminated panel signs shall be within +1/8 inch or -1/2 inch of the detailed dimensions. The difference in length between adjoining panels of multiple panel signs shall not be greater than 1/2 inch.

Roadside laminated panel signs shall be Type B or Type H. Type B panels shall have a nominal thickness of one inch or 2-1/2 inches. Type H panels shall have a nominal thickness of 2-1/2 inches.

The perimeter frame of Type B panels shall consist of extruded channel edges. The interior and exterior sides of the channels, except the sides touching the face and back sheet aluminum, shall be welded at the joint. Sealant shall be placed at the corners of the perimeter frame to prevent moisture penetration.

Each side of the vertical tube spacers of Type B panels shall be welded to the perimeter frame, except the sides touching the front and back sheet aluminum.

The perimeter frame of Type H panels shall consist of extruded channel edges on the vertical sides and consist of extruded tube channel edges on the horizontal sides. The perimeter frame shall be connected by self-tapping hex head stainless steel screws. Sealant shall be placed at the corners of the perimeter frame to prevent moisture penetration.

For Type H panels with a length of 17 feet or longer, centerline panel tube shall be placed along the horizontal centerline of the panel. The ends of the centerline panel tube shall be firmly affixed to the perimeter frame.

Each side of the vertical tube spacers of Type H panels shall be welded to the perimeter frame and the centerline panel tube, except the sides touching the front and back sheet aluminum.

The Contractor shall furnish mounting hardware for roadside laminated panel signs, such as closure H-sections, lags, bolts, nuts, and washers.

Overhead laminated panel signs shall be Type A and have a nominal thickness of one inch.

For overhead laminated signs with a length of 24 feet or less, the laminated panels shall be fabricated with no vertical joints, splices or seams. For signs with a length of greater than 24 feet, the length of each adjoining panel shall be as determined by the Engineer or as shown on the plans.

The perimeter frame of Type A overhead laminated panels shall be connected by self-tapping hex head stainless steel screws. Sealant shall be placed at the corners of the perimeter frame to prevent moisture penetration. The perimeter frame of Type A panels shall consist of extruded channel edges on the vertical sides and consist of modified "H" section extrusion on the horizontal sides. The modified "H" section extrusion acts as an integral retainer track for affixing the bolts to provide blind fastening of panels to the structure support.

The Contractor shall furnish mounting hardware for overhead laminated panel signs, such as closure H-sections, clamps, bolts, nuts, and washers. The clamps shall be cast aluminum alloy with a minimum tensile strength of 25 kips per square inch. Bolt torque used for installing clamps shall not exceed 100 inch-pounds.

### **FORMED PANEL SIGN**

Formed panel signs shall be fabricated from one continuous sheet aluminum alloy 5052-H32 of 0.063-inch thickness. The Contractor shall furnish sheet aluminum as provided in "Sheet Aluminum" of these Special Provisions.

The aluminum frame shall be affixed to the panel with aluminum rivets through the face of the sign panels. Color of the exposed portion of the rivets shall be the same color as the sign background or legend on which the rivets are placed.

The face of finished formed panel sign shall be flat with a tolerance of 1/8 inch per linear foot when measured across the plane of each panel in all directions.

The Contractor shall furnish mounting hardware for roadside and overhead formed panel signs. Hardware for the overhead formed panel signs shall include bolts, nuts, and washers.

The length and depth of the overhead formed panel signs shall be within  $\pm 1/16$  inch of the detailed dimension.

The formed edges of the overhead panel signs shall be square. The mounting holes shall be straight and perpendicular to the front and back surfaces of the formed

edges at the spacing shown on the plans. Holes that are improperly spaced and placed at the wrong angle will be rejected.

#### **MEASUREMENT AND PAYMENT**

The contract price each paid for "FURNISH FORMED PANEL SIGN (OVERHEAD)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in fabricating and furnishing the signs, including removable sign panel frame and fastening hardware, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Full compensation for furnishing and installing protective overlay on signs shall be considered as included in the contract price paid per square foot for furnish sign of the various types and no separate payment will be made therefor.

The contract price each paid for "INSTALL FORMED PANEL SIGN (OVERHEAD)" shall include full compensations for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing formed panel signs (overhead) complete in place, as shown on the plans, as specified in the Standard Specifications, and these Special Provisions, and as directed by the Engineer.

#### **10-1.88 ALTERNATIVE PIPE**

Alternative pipe culverts must comply with Section 62, "Alternative Culverts," of the Standard Specifications.

#### **MEASUREMENT AND PAYMENT**

Culverts will be measured by the slope length designated by the Engineer.

The contract unit price per linear foot paid for "24" ALTERNATIVE PIPE CULVERT," "36" ALTERNATIVE PIPE CULVERT," "48" ALTERNATIVE PIPE CULVERT," "54" ALTERNATIVE PIPE CULVERT," and "60" ALTERNATIVE PIPE CULVERT" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved installing alternative pipe culverts, including excavation, backfill, and pipe installations, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.89 PLASTIC PIPE**

Plastic pipe shall conform to the provisions in Section 64, "Plastic Pipe," of the Standard Specifications and these Special Provisions.

#### **MEASUREMENT AND PAYMENT**

Plastic pipe will be measured by the slope length designated by the Engineer in the manner specified in Section 64, "Plastic Pipe," of the Standard Specifications.

The contract unit price per linear foot paid for "12" PLASTIC PIPE" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved installing 12" plastic pipe, including excavation, backfill, and pipe installations, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.90 REINFORCED CONCRETE PIPE**

Reinforced concrete pipe shall conform to the provisions in Section 65, "Reinforced Concrete Pipe," of the Standard Specifications and these Special Provisions.

##### **GENERAL**

Where embankment will not be placed over the top of the pipe, a relative compaction of not less than 85 percent shall be required below the pipe spring line for pipe installed using Method 1 backfill in trench, as shown on Standard Plan A62D. Where the pipe is to be placed under the traveled way, a relative compaction of not less than 90 percent shall be required unless the minimum distance between the top of the pipe and the pavement surface is the greater of 4 feet or one half of the outside diameter of the pipe.

Except as otherwise designated by classification on the plans or in the specifications, joints for culvert and drainage pipes shall conform to the plans or specifications for standard joints.

##### **MATERIALS**

The concrete for reinforced concrete pipe shall contain not less than 470 pounds of cementitious material per cubic yard and have a water-cementitious material ratio that does not exceed 0.40 by weight. Supplementary cementitious material is optional. Reinforcement shall have a minimum cover of 1 inch.

Special reinforced concrete pipe, having concrete cover over the steel reinforcement greater than the cover specified in AASHTO Designation: M 170, shall conform to the provisions in Section 65-1.02, "Materials," and Section 65-1.02A, "Circular Reinforced Concrete Pipe," of the Standard Specifications, except the width of crack produced by the D-load test specified in AASHTO Designation: M 170 shall be the width determined by the following formula:

$$b = \frac{t - 3/8d}{t - 3/8d - C} \times 0.01 \text{ inch}$$

Where:

- b = Width of crack to be produced in lieu of the 0.01-inch crack specified in AASHTO Designation: M 170
- t = Wall thickness of pipe, inches
- d = Effective depth of the section to be tested, feet
- C = Concrete cover over steel reinforcement in excess of cover specified in AASHTO Designation: M 170

Reinforced concrete pipe that is to be hydrostatically tested shall be strength tested by the 3-edge bearing method to a maximum D-load of 10 percent greater than the 0.01-inch cracking D-load specified in AASHTO Designation: M 170 or to the actual D-load required to produce a 0.01-inch crack, whichever is the lesser.

Special oval shaped reinforced concrete pipe, having concrete cover over the steel reinforcement greater than the cover specified in AASHTO Designation: M 207, shall conform to the provisions in Section 65-1.02, "Materials," and Section 65-1.02B, "Oval Shaped Reinforced Concrete Pipe," of the Standard Specifications, except the width of crack produced by the D-load test specified in AASHTO Designation: M 207 shall be the width determined by the following formula:

$$b = \frac{t - 3/8d}{t - 3/8d - C} \times 0.01 \text{ inch}$$

Where:

- b = Width of crack to be produced in lieu of the 0.01-inch crack specified in AASHTO Designation: M 207
- t = Wall thickness of pipe, inches
- d = Effective depth of the section to be tested, feet
- C = Concrete cover over steel reinforcement in excess of cover specified in AASHTO Designation: M 207

Oval shaped reinforced concrete pipe that is to be hydrostatically tested shall be strength tested by the 3-edge bearing method to a maximum D-load of 10 percent greater than the 0.01-inch cracking D-load specified in AASHTO Designation: M 207 or to the actual D-load required to produce a 0.01-inch crack, whichever is the lesser.

## **MEASUREMENT AND PAYMENT**

The County does not pay any additional cost for use of optional supplementary cementitious material.

The County does not pay any additional cost for excess concrete cover over steel reinforcement

Concrete pipe will be measured by the slope length in feet designated by the Engineer in the manner specified in Section 65, "Reinforced Concrete Pipe," of the Standard Specifications.

The contract unit price per linear foot paid for "18" REINFORCED CONCRETE PIPE" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved installing 18" reinforced concrete pipe, including excavation, backfill, and pipe installations, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract unit price per linear foot paid for "18" REINFORCED CONCRETE PIPE (CLASS 4)" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved installing 18" reinforced concrete pipe class 4, including excavation, backfill, concrete collar, and pipe

installations, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract unit price per linear foot paid for "24" REINFORCED CONCRETE PIPE" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved installing 24" reinforced concrete pipe, including excavation, backfill, and pipe installations, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract unit price per linear foot paid for "36" REINFORCED CONCRETE PIPE (CLASS 4)" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved installing 36" reinforced concrete pipe class 4, including excavation, backfill, and pipe installations, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.91 CORRUGATED STEEL PIPE**

Corrugated steel pipe culverts shall conform to the provisions in Section 66, "Corrugated Metal Pipe," of the Standard Specifications and these Special Provisions.

Attention is directed to "Earthwork" and "Controlled Low Strength Material" of these Special Provisions regarding structure backfill for pipe culverts.

Corrugated steel pipe shall be fabricated from zinc-coated steel sheet.

Timber bulkheads shall be constructed and placed across the ends of unconnected corrugated metal pipe as shown on the plans. Wood for timber bulkheads shall be construction heart grade redwood at least one inch thick. Full compensation for constructing and placing timber bulkheads shall be considered as included in the contract price paid per linear foot for the size of corrugated metal pipe involved and no separate payment will be made therefor.

#### **MEASUREMENT AND PAYMENT**

Pipe reducers will be measured and paid for by the linear foot as the corrugated metal pipe of the larger diameter connected to the reducer.

Steel pipe will be measured by the slope length in feet designated by the Engineer in the manner specified in Section 66, "Corrugated Steel Pipe," of the Standard Specifications.

The contract price per linear foot paid for "6" CORRUGATED STEEL PIPE WITH DD JOINT" and "36" CORRUGATED STEEL PIPE" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in installing corrugated steel pipe, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.83 WELDED STEEL PIPE CASING (BRIDGE)**

Welded steel pipe casings through bridges and under approach slabs shall be of the size shown and shall conform to the provisions in Section 70, "Miscellaneous Facilities," of the Standard Specifications and these Special Provisions.

Unless otherwise shown on the project plans, casings shall be installed at each abutment, and casings shall be extended to the greater of: (1) 5 feet beyond the approach slab, (2) 5 feet beyond the end of the adjacent wingwall, or (3) 20 feet beyond the abutment.

#### **WORKING DRAWINGS**

Working drawings for temporary support of casing pipe at the abutments shall be submitted for approval in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings" of the Standard Specifications.

#### **MATERIALS**

##### **Casing pipe**

Casing pipe shall be welded steel pipe conforming to the provisions in Section 70-1.02B, "Welded Steel Pipe," of the Standard Specifications, except that the pipe shall be treated in accordance with the following requirements, prior to shipping. Exterior surfaces of welded steel pipe shall be cleaned and coated in conformance with the requirements in ANSI/AWWA C213 or at the option of the Contractor, cleaned, primed, and coated in accordance with specifications of ANSI/AWWA C214.

##### **Pipe wrapping tape**

Wrapping tapes for pipe in contact with the ground shall be a pressure sensitive polyvinyl chloride or polyethylene tape having thickness of 50 mils, minimum.

##### **Pipe hanger assembly**

Pipe hanger assembly shall consist of concrete clevis plate or embedded steel welded linked eye rods, adjustable steel yoke, cast iron pipe roller, steel roller rod, and hex nuts. All parts shall be galvanized. The pipe hanger assembly shall be suitable for the type and size of pipe installed and shall be as shown on the plans.

All steel cover plates, steel hangers, anchor bolts, pipe clamps, nuts and bolts, and other fittings shall be suitable for the type and size of the welded steel pipe casing and conform to the provisions in Section 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications.

##### **Concrete pipe supports**

Concrete pipe supports shall consist of either a precast or cast-in-place concrete pipe cradle, galvanized steel pipe clamp, 2 anchor bolts, and where shown on the plans, a stainless steel pipe protection shield.

Concrete pipe supports and pipe stops shall conform to the dimensions shown on the plans and shall be constructed minor concrete conforming to the provisions in Section 90-10, "Minor Concrete," of the Standard Specifications,, commercial quality wire mesh, and reinforcement. The concrete pipe supports and pipe stops shall be moist cured for not less than 3 days.

### **Epoxy adhesive**

Epoxy adhesive shall conform to the provisions in Section 95,"Epoxy" of the Standard Specifications and one of the following:

1. Section 95-2.01, "Binder (Adhesive), Epoxy Resin Base" for load bearing applications.
2. Section 95-2.04, "Rapid Set Epoxy Adhesive for Pavement Markers"
3. Section 95-2.05, "Standard Set Epoxy Adhesive for Pavement Markers"

### **CONSTRUCTION**

If a blockout is provided in the bridge abutment wall for casing pipe, the space between the casing pipe and bridge abutment wall shall be filled with mortar conforming to the provisions in Section 51-1.135, "Mortar," of the Standard Specifications.

Openings for utilities through bridge superstructure concrete shall either be formed or shall consist of pipe sleeves.

### **Wrapping and coating pipe**

Damaged coating on steel pipe casing in contact with earth shall be wrapped as follows:

- A. Pipe to be wrapped shall be thoroughly cleaned and primed as recommended by the tape manufacturer.
- B. Tapes shall be tightly applied with 1/2 uniform lap, free from wrinkles and voids to provide not less than a 100-mil thickness.
- C. Field joints and fittings for wrapped pipe shall be covered by double wrapping 50-mil thick tape. Wrapping at joints shall extend a minimum of 6 inches over adjacent pipe coverings. Width of tape for wrapping fittings shall not exceed 2 inches. Adequate tension shall be applied so tape will conform closely to contours of joint.

Where a welded steel pipe casing passes through the abutment wall, the welded steel pipe casing shall be additionally wrapped with 2 layers of 15-pound asphalt-felt building paper, securely taped or wired in place.

## **MEASUREMENT AND PAYMENT**

"20" WELDED STEEL PIPE CASING (BRIDGE)" shall be measured and paid for by the linear foot in the manner specified in Section 70, "Miscellaneous Facilities," of the Standard Specifications.

### **10-1.92 FLUME DOWNDRAINS**

Flume downdrains shall conform to the provisions in Section 69, "Overside Drains," of the Standard Specifications and these Special Provisions.

Entrance tapers and flume downdrains shall be fabricated from zinc coated steel sheet.

At the option of the Contractor, tapered inlets and flume downdrains shall be fabricated of corrugated steel or corrugated aluminum.

Corrugated steel or corrugated aluminum tapered inlets and flume downdrains, whichever is furnished, will be paid for at the contract unit price for tapered inlets and at the contract price per linear foot for flume downdrains of the sizes shown in the Engineer's Estimate.

## **MEASUREMENT AND PAYMENT**

The contract price per linear foot paid for "FLUME DOWNDRAIN" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in installing flume downdrains, including hot mix asphalt, flume, hardware, tapered inlets, and anchor assemblies, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.93 INLET DEPRESSION**

This work consists of constructing inlet depressions around drainage inlets.

Portland cement concrete used in the construction of inlet depressions placed in the shoulder areas of roadways shall conform to the requirements for portland concrete cement shoulders in Section 51, "Concrete Structures," of the Standard Specifications.

Where portland cement concrete pavement is to be placed around or next to inlet depressions, the inlet depressions shall not be constructed to final grade until after the pavement has been constructed adjacent to the inlet depression.

Portland cement concrete for inlet depression shall be placed on prepared base material compacted to not less than 95 percent relative compaction. After placement to the lines and grades shown on the plans, the surface shall be finished with a float and troweled smooth. Concrete adjacent to isolation joints shall be finished with an edger. The surface of the concrete shall then be broom finished to create a surface having a coefficient of friction of not less than 0.30 as determined by California Test

342. If water is necessary, the water shall be applied to the surface immediately in advance of the brooming. The concrete shall be cured as provided in Section 90-7.02, "Curing Pavement," of the Standard Specifications.

Portland cement concrete used in the construction of inlet depressions outside of shoulder areas shall conform to the requirements in Section 73-1.06, "Sidewalk, Gutter Depression, Island Paving, Curb Ramp (Wheelchair Ramp) and Driveway Construction" of the Standard Specifications.

#### **MEASUREMENT AND PAYMENT**

Full compensation for forming and constructing inlet depressions, including any necessary soil compaction or disposal of forming materials shall be considered as included in the contract price paid per cubic yard for "MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)" and no additional compensation will be allowed therefor.

#### **10-1.94 CABLE ANCHORAGE SYSTEM**

Cable anchorage systems for pipe downdrains shall be installed as shown on the plans and in conformance with the provisions in Section 69-1.02C, "Anchor Assemblies," of the Standard Specifications and these Special Provisions.

Cables, welded steel eyes, steel rods, turnbuckles, thimbles, cable clamps, and anchor plates shall conform to the provisions for similar materials in Section 83-1.02B, "Metal Beam Guard Railing," of the Standard Specifications.

Steel pipes shall conform to the provisions for similar materials in Section 56-1.02E, "Pipe Posts," of the Standard Specifications.

Concrete anchors shall be constructed of Class 4 concrete conforming to the provisions in Section 90-1.01, "Description," of the Standard Specifications.

#### **MEASUREMENT AND PAYMENT**

Full compensation for the cable anchorage systems shall be considered as included in the contract price paid per linear foot for the size and type of pipe downdrain involved and no additional compensation will be allowed therefor.

#### **10-1.95 MISCELLANEOUS FACILITIES**

Alternative Flared End Sections and Concrete Flared End Sections, shall conform to the provisions in Section 70, "Miscellaneous Facilities," of the Standard Specifications, and these Special Provisions.

#### **MEASUREMENT AND PAYMENT**

The contract unit price each paid for "18" CONCRETE FLARED END SECTION, "24" CONCRETE FLARED END SECTION," and "36" CONCRETE FLARED END SECTION," shall include full compensation for furnishing all labor, materials,

equipment and incidentals involved in installing concrete flared end sections including, excavation, backfill, complete in place, as shown on the plans, as specified in the Standard Specification and these Special Provisions, and as directed by the Engineer.

The contract unit price each paid for "24" ALTERNATIVE FLARED END SECTION" shall include full compensation for furnishing all labor, materials, equipment and incidentals involved in installing concrete 24" alternative flared end sections, including, excavation, and backfill, complete in place, as shown on the plans, as specified in the Standard Specification and these Special Provisions, and as directed by the Engineer.

#### **10-1.96 ROCK SLOPE PROTECTION**

Slope protection shall be placed or constructed in conformance with the provisions in Section 72, "Slope Protection," of the Standard Specifications and these Special Provisions.

Rock slope protection fabric must be Class 8 and shall conform to the provisions in Section 88, "Engineering Fabrics," and Section 72, "Slope Protection," of the Standard Specifications.

Rock slope protection (RSP) shall be installed at the locations shown on the project plans and shall conform to Section 8-1.04,"Engineering Fabric," of this special provision.

Rock slope protection shall be ¼ ton placed per Method B of the Standard Specifications, and as shown on the plans.

#### **MEASUREMENT AND PAYMENT**

The contract unit price per cubic yard paid for "ROCK SLOPE PROTECTION (1/4 TON, METHOD B)" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, for doing all the work involved in installing rock slope protection including, excavation, placement of rocks, and backfilling footing trenches, complete in place, as shown on the plans, and as specified in the Standard Specifications, and these Special Provisions, and as directed by the Engineer.

Rock slope protection fabric shall be considered as included in the contract price per cubic yard paid for "ROCK SLOPE PROTECTION (1/4 TON, METHOD B)" and no additional compensation will be allowed therefor.

RSP fabric shall be considered as included in the contract price paid for for "ROCK SLOPE PROTECTION (1/4 TON, METHOD B)" and no additional compensation will be allowed therefor.

#### **10-1.97 SLOPE PAVING**

Slopes under the ends of bridges, and where shown on the plans, shall be paved in conformance with the provisions in Section 72-6, "Slope Paving," of the Standard Specifications and these Special Provisions.

The location of construction joints shall be subject to the approval of the Engineer. Placement of slope paving shall be scheduled so that the work, including placement, finishing, and application of curing, is completed in any section bounded by permissible construction joints on the same day that the work is started in that section.

Areas of slope paving shown on the plans to have a stamped relief pattern shall be scored by use of pre-manufactured concrete stamp. The concrete stamp shall be capable of providing the relief pattern shown on the plans, and to the correct size and depth of relief shown. The Contractor shall provide the Engineer with a sample of the relief stamp for approval prior to construction.

Concrete curing compounds shall not be used on slope paving having architectural stamped relief patterns. The Contractor shall use water method only to cure concrete in these areas of slope paving.

Prior to placing the permanent slope paving, the Contractor shall construct a test panel at least 4' x 6' at the site for approval by the Engineer. The test panel shall be constructed of the same materials as are proposed for the permanent work and shall be finished and cured as specified for the permanent work. Additional test panels shall be constructed as necessary until a panel is produced which conforms to the requirements herein, before constructing other slope paving.

#### **MEASUREMENT AND PAYMENT**

The contract price per square foot paid for "SLOPE PAVING (CONCRETE)" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, for doing all the work involved in installing slope paving (concrete), complete in place, as shown on the plans, and as specified in the Standard Specifications, and these Special Provisions, and as directed by the Engineer.

Full compensation for architectural texture on the Slope Paving shall be considered as separate pay item in the contract price paid per square foot for "ARCHITECTURAL TEXTURE".

#### **10-1.98 MISCELLANEOUS CONCRETE CONSTRUCTION**

Concrete Cross Gutters. Concrete Gutters, and Type A2-6 Curbs, PCC Lined Ditch, Inlet Depression Aprons, and Farm Equipment Crossing shall conform to the provisions in Section 73, "Concrete Curbs and Sidewalks," of the Standard Specifications and these Special Provisions.

Concrete cross gutters shall be in conformance with the County of San Luis Obispo's Standard Drawing D-5 and these Special Provisions.

## MEASUREMENT AND PAYMENT

"MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)" shall be paid for at the contract unit price per cubic yard in the manner specified in Section 73, "Concrete Curbs and Sidewalks," of the Standard Specifications.

"Concrete Cross Gutters" shall be considered as included in the contract unit price per cubic yard paid for "MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)", and no additional compensation will be allowed therefor.

"Concrete Gutters" shall be considered as included in the contract unit price per cubic yard paid for "MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)", and no additional compensation will be allowed therefor.

"Type A2-6 Curbs" shall be considered as included in the contract unit price per cubic yard paid for "MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)", and no additional compensation will be allowed therefor.

"PCC Lined Ditch" shall be considered as included in the contract unit price per cubic yard paid for "MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)", and no additional compensation will be allowed therefor.

"Inlet Depression Aprons" shall be considered as included in the contract unit price per cubic yard paid for "MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)", and no additional compensation will be allowed therefor.

"Farm Equipment Crossing" shall be considered as included in the contract unit price per cubic yard paid for "MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)", and no additional compensation will be allowed therefor.

### 10-1.99 MINOR CONCRETE (TEXTURED PAVING)

Aggregate for minor concrete (textured paving) shall conform to the grading specified for fine aggregate in Section 90-3.03, "Fine Aggregate Grading," of the Standard Specifications. Aggregate for grout shall conform to the following grading:

Sieve Sizes	Percentage Passing
No. 4	100
No. 8	90 - 100
No. 16	60 - 100
No. 30	35 - 70
No. 50	15 - 35
No. 100	2 - 15

A sample of sufficient size, of each type and color of the textured paving, to demonstrate the textured paving, including color hardener, curing and finishing compounds, for both grouted and ungrouted finishes, shall be submitted to the Engineer for written approval.

Welded wire fabric, of the size and type shown on the plans and conforming to the provisions in Section 52, "Reinforcement," of the Standard Specifications, shall be placed in the textured paving areas as shown on the plans.

Aggregate base shall be Class 2 and shall conform to the provisions in Section 26, "Aggregate Bases," of the Standard Specifications.

The respective pattern types and colors of concrete for textured paving shall be placed at the locations shown on the plans, struck off and compacted until a layer of mortar is brought to the surface. The concrete shall be screeded to the required grade and cross section and floated to a uniform surface.

Floor color hardener shall be applied to the plastic surface of the concrete by the "dry-shake" method using a minimum of 60 pounds of hardener per 100 square feet. Hardener shall be applied in 2 applications, shall be wood-floated after each application, and shall be trowelled only after the final floating. The resultant color of the floor hardener shall closely conform to the colors specified on the plans for the respective areas.

The forming tools for the textured paving shall be applied to form the patterned surfaces while the concrete is still in the plastic stage of set.

Textured paving areas shall be cured by the curing compound method. The curing compound shall be curing compound (6) conforming to the provisions in Section 90-7.01B, "Curing Compound Method," of the Standard Specifications.

The textured paving shall be grouted in the sidewalk areas shown on the plans. The grout shall be placed after initial curing of that portion of the textured paving. The grout shall be spread over the textured concrete surface and consolidated by methods recommended by the grout manufacturer and approved by the Engineer. Surplus grout shall be removed by a squeegee and damp burlap rag or by other approved methods before the curing seal is applied to the grouted areas.

Curing seal and other deleterious substances shall be removed from the impressions in the textured areas, to receive the grout, before the grout is placed. Cleaning and removal methods shall not stain or discolor those portions of the textured paving to remain exposed after grouting. Methods of cleaning the impressions in textured areas to be grouted shall be approved by the Engineer.

#### **MEASUREMENT AND PAYMENT**

For payment purposes, the area in square feet of "MINOR CONCRETE (TEXTURED PAVING)" will be determined from horizontal measurements of the finished textured paving.

The contract price paid per square foot for "MINOR CONCRETE (TEXTURED PAVING)" shall include full compensation for furnishing all labor, materials (including welded wire fabric, where required, and aggregate base), tools, equipment, and incidentals, and for doing all the work involved in constructing textured paving, including grouted areas, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.100 MISCELLANEOUS IRON AND STEEL**

Miscellaneous iron and steel shall conform to the provisions in Section 75, "Miscellaneous Metal," of the Standard Specifications and these Special Provisions.

#### **MEASUREMENT AND PAYMENT**

"MISCELLANEOUS IRON AND STEEL" will be measured and paid for per pound in the manner specified in Section 75, "Miscellaneous Metals" of the Standard Specifications.

### **10-1.101 BRIDGE DECK DRAINAGE SYSTEM**

Bridge deck drainage systems shall conform to the provisions for miscellaneous bridge metal in Section 75, "Miscellaneous Metal," of the Standard Specifications and these Special Provisions.

Self-tapping screws used for sleeve connections shall be hex-head stainless steel, installed in holes drilled to fit the self-tapping screws, conforming to the requirements of ASTM Designation: A 276, Type 304.

At the Contractor's option, fiberglass pipes and fittings with the same diameter and minimum bend radius as those shown on the plans may be substituted for welded steel pipe in deck drain systems.

Fiberglass pipe and fittings shall conform to the requirements in ASTM Designation: D 2996, and shall have a minimum short-term rupture strength of 30,000 psi. The adhesive type recommended by the manufacturer shall be used for joining pipe and fittings. Fiberglass pipe not enclosed in a box girder cell or encased in concrete shall be manufactured from ultraviolet-resistant resin pigmented with concrete-gray color, or be coated with a concrete-gray resin-rich exterior coating. Paint shall not be used. Fiberglass pipe treated with ultraviolet protection shall withstand a minimum of 2,500 hours of accelerated weathering when tested in conformance with the requirements in ASTM Designation: G 154. Lamps shall be UV-B (313 nm wavelength). The resting cycle shall be 4 hours of ultraviolet exposure at 140° F, and then 4 hours of condensate exposure at 120° F. After testing, the surface of the pipe shall exhibit no fiber exposure, crazing, or checking, and only a slight chalking or color change.

Support spacing for fiberglass pipe shall be the same as shown on the plans for welded steel pipe. Pipe supports shall have a width of not less than 1.5 inches.

A Certificate of Compliance for fiberglass pipe and fittings shall be furnished to the Engineer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The Certificate of Compliance shall include all laboratory test results conforming to the provisions specified herein.

For drainage piping NPS 8 or smaller, the Contractor shall have the option of substituting polyvinyl chloride (PVC) plastic pipe and fittings with the same diameter and minimum bend radius as shown on the plans for welded steel pipe, which is:

- A. Enclosed in a box girder cell and exposed for a length not greater than 20 feet within the cell, or
- B. Encased in concrete.

The PVC plastic pipe and fittings shall be Schedule 40 conforming to the requirements of ASTM Designations: D 1785. The maximum support spacing for PVC plastic pipe shall be 6 feet.

Couplings used to connect PVC plastic pipe or fiberglass pipe to steel shall be threaded or flanged. The sleeve connections shown on the plans shall not be used for either PVC plastic pipe or fiberglass pipe.

If PVC plastic pipe or fiberglass pipe is substituted for welded steel pipe, the quantity of drainage piping will be computed on the basis of the dimensions and details shown on the plans, and no change in the quantities to be paid for will be made because of the use of PVC plastic pipe or fiberglass pipe.

#### **MEASUREMENT AND PAYMENT**

"BRIDGE DECK DRAINAGE SYSTEM" will be measured and paid for by the pound in the manner specified for miscellaneous metal (bridge) in Section 75-1.06, "Measurement," and Section 75-1.07, "Payment," of the Standard Specifications.

#### **10-1.102 TYPE BW FENCE AND GATE**

Type BW fence shall conform to the provisions in Section 80, "Fences," of the Standard Specifications and these Special Provisions.

The fence material shall be fastened to posts to match in kind the existing post materials.

Gateways of unframed wire mesh or barbed wire fencing, attached to end posts, shall be constructed as shown on the plans.

Fence materials and end post bracing details for gateways shall conform to the requirements for the type of fence in which the gateway is constructed. End bars shall conform to the requirements of line posts, except for length.

Vertical stays for gateways shall be pretwisted, 9.5-gage (0.141-inch diameter) galvanized wire. Vertical stays shall be evenly spaced between end bars at 66-inch maximum intervals.

Wire loops shall be fabricated from 6-gage (0.192-inch diameter), galvanized wire.

The chain for the latching device shall be commercial quality short link steel coil chain. The latching bar for the latching device shall be commercial quality steel pipe. Bolts and nuts for attaching the chain to the end posts and latching bar shall be commercial quality and galvanized.

#### **MEASUREMENT AND PAYMENT**

“FENCE (TYPE BW, 5 STRAND, METAL POSTS)” will be measured and paid for by the linear foot in the manner specified in Section 80, “Fences,” of the Standard Specifications.

“DOUBLE GATE” will be measured and paid for by the unit in the manner specified in Section 80, “Fences,” of the Standard Specifications.

#### **10-1.103 CHAIN LINK FENCE**

Chain link fence shall be Type CL-6 and shall conform to the provisions in Section 80, "Fences," of the Standard Specifications.

Type CL-6 chain link fencing shall be installed per the details and at the locations shown on the plans.

#### **PAYMENT**

Chain link fence will be measured by the linear foot in the manner specified in Section 80, “Fences,” of the Standard Specifications.

The contract price per linear foot paid for “CHAIN LINK FENCE (TYPE CL-6)” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved installing type CL-6 chain link fencing including, posts and post footings, chain link fabric fencing and gates as required with all hardware incidental to installation, complete in place, as shown on the plans, and in conformance with Standard Specifications, these Special Provisions, and as directed by the Engineer.

#### **10-1.104 SURVEY MONUMENTS**

Survey monuments shall be constructed in conformance with the provisions in Section 81, "Monuments," of the Standard Specifications and these Special Provisions.

Concrete shall be Class 3 or minor concrete at the option of the Contractor.

The cast steel and gray cast iron frames and covers, including hardware, shall conform to the provisions in Section 55-2, "Materials," of the Standard Specifications.

Monuments within the County Right of Way shall be in conformance with the County's Standard Plans.

#### **MEASUREMENT AND PAYMENT**

The contract unit price paid for “SURVEY MONUMENT”, shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the monuments, complete in place, including box, frame and covers, excavation, and disposal of excavated materials, aggregate base, and concrete collars, as shown on the plans, and as specified in the

Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.105 OBJECT MARKERS AND DELINEATORS**

Markers and delineators shall conform to the provisions in Section 82, "Markers and Delineators," of the Standard Specifications and these Special Provisions.

Markers and delineators on flexible posts shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions. Flexible posts shall be made from a flexible white plastic which shall be resistant to impact, ultraviolet light, ozone, and hydrocarbons. Flexible posts shall resist stiffening with age and shall be free of burns, discoloration, contamination, and other objectionable marks or defects which affect appearance or serviceability.

Retroreflective sheeting for metal and flexible target plates shall be the retroreflective sheeting designated for channelizers, markers, and delineators conforming to the requirements in ASTM Designation: D 4956-95 and in conformance with the provisions in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions.

#### **MEASUREMENT AND PAYMENT**

"OBJECT MARKER" shall be measured and paid for by the unit in the manner as specified in Section 82, "Markers and Delineators" of the Standard Specifications.

"DELINEATOR (CLASS 1)" shall be measured and paid for by the unit in the manner as specified in Section 82, "Markers and Delineators" of the Standard Specifications.

#### **10-1.106 CABLE RAILING**

Cable railing shall conform to the provisions in Section 83-1, "Railings," of the Standard Specifications and these Special Provisions.

#### **MEASUREMENT AND PAYMENT**

"CABLE RAILING" shall be measured and paid for by the linear foot in the manner specified in Section 83, "Railing" of the Standard Specifications.

#### **10-1.107 METAL BEAM GUARD RAILING**

Metal beam guard railing shall be constructed in conformance with the provisions in Section 83-1, "Railings," of the Standard Specifications and these Special Provisions.

Attention is directed to "Order of Work" of these Special Provisions.

Line posts shall be steel. Blocks shall be wood.

## **MEASUREMENT AND PAYMENT**

“METAL BEAM GUARD RAILING (STEEL POST) shall be measured and paid for by the linear foot in the manner as specified in Section 83, “Railings and Barriers” of the Standard Specifications.

### **10-1.108 THRIE BEAM BARRIER**

Thrie beam barrier shall conform to the provisions in Section 83-2, "Barriers," of the Standard Specifications and these Special Provisions.

Attention is directed to "Order of Work" of these Special Provisions.

Rail elements, terminal sections, terminal connectors, and return caps shall conform to the requirements of Type 2 thrie beam guard railing as shown in AASHTO Designation: M 180.

## **MEASUREMENT AND PAYMENT**

“SINGLE THRIE BEAM BARRIER” shall be measured and paid for by the linear foot in the manner as specified in Section 83, “Railings and Barriers” of the Standard Specifications.

“DOUBLE THRIE BEAM BARRIER” shall be measured and paid for by the linear foot in the manner specified in Section 83, “Railings and Barriers” of the Standard Specifications.

### **10-1.109 TRANSITION RAILING (TYPE WB)**

Transition railing (Type WB) shall be furnished and installed in conformance with details shown on the plans, the provisions in Section 83-2, "Barriers," of the Standard Specifications and these Special Provisions.

The 10-gage rail elements shall conform to the requirements of Class B, Type 1 thrie beam guard railing as shown in AASHTO Designation: M 180. End caps shall conform to the requirements of Class A, Type 1 thrie beam guard railing as shown in AASHTO Designation: M 180.

The 10-gage rail elements shall conform to Class B, Type 2 thrie beam guard railing as shown in AASHTO Designation: M 180. Other rail elements including end caps shall conform to the requirements of Class A, Type 2 thrie beam guard railing as shown in AASHTO Designation: M 180.

Surplus excavated material remaining after the transitional railing (Type WB) has been constructed shall be disposed of in a uniform manner along the adjacent roadway where designated by the Engineer.

## **MEASUREMENT AND PAYMENT**

The contract price paid per linear foot for "TRANSITION RAILING (TYPE WB)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing transition railing (Type WB), complete in place, including drilling holes for wood posts, driving posts, backfill, and disposal of surplus material, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.110 TRANSITION RAILING (TYPE STB)**

Transition railing (Type STB) shall be furnished and installed in conformance with details shown on the plans, the provisions in Section 83-2, "Barriers," of the Standard Specifications and these Special Provisions.

The 10-gage rail elements shall conform to the requirements of Class B, Type 1 thrie beam guard railing as shown in AASHTO Designation: M 180. End caps shall conform to the requirements of Class A, Type 1 thrie beam guard railing as shown in AASHTO Designation: M 180.

The 10-gage rail elements shall conform to Class B, Type 2 thrie beam guard railing as shown in AASHTO Designation: M 180. Other rail elements including end caps shall conform to the requirements of Class A, Type 2 thrie beam guard railing as shown in AASHTO Designation: M 180.

Surplus excavated material remaining after the transitional railing (Type STB) has been constructed shall be disposed of in a uniform manner along the adjacent roadway where designated by the Engineer.

#### **MEASUREMENT AND PAYMENT**

The contract price paid per linear foot for "TRANSITION RAILING (TYPE STB)" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing transition railing (Type STB), complete in place, including drilling holes for wood posts, driving posts, backfill, and disposal of surplus material, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.111 ALTERNATIVE IN-LINE TERMINAL SYSTEM**

Alternative in-line terminal system shall be furnished and installed as shown on the plans and in conformance with these Special Provisions.

The allowable alternatives for an in-line terminal system shall consist of one of the following or a Department approved equal.

B. TERMINAL SYSTEM (TYPE ET) - Terminal system (Type ET) shall be an ET-2000 PLUS (4-tube system) extruder terminal as manufactured by Trinity Industries, Inc., and shall include items detailed for terminal system (Type ET) shown on the plans. The ET-2000 PLUS (4-tube system) extruder terminal can be obtained

from the manufacturer, Trinity Industries, Inc., P.O. Box 99, 950 West 400S, Centerville, UT 84014, telephone (800) 772-7976.

The Contractor shall provide the Engineer with a Certificate of Compliance from the manufacturer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The Certificate of Compliance shall certify that the terminal systems furnished conform to the contract plans and specifications, conform to the prequalified design and material requirements, and were manufactured in conformance with the approved quality control program.

Terminal systems shall be installed in conformance with the manufacturer's installation instructions and these requirements. Each terminal system installed shall be identified by painting the type of terminal system in neat black letters and figures 2 inches high on the backside of the rail element between system posts numbers 4 and 5.

For terminal system (Type ET) the steel foundation tubes with soil plates attached shall be, at the Contractor's option, either driven, with or without pilot holes, or placed in drilled holes. Space around the steel foundation tubes shall be backfilled with selected earth, free of rock, placed in layers approximately 4 inches thick and each layer shall be moistened and thoroughly compacted. The wood terminal posts shall be inserted into the steel foundation tubes by hand and shall not be driven. Before the wood terminal posts are inserted, the inside surfaces of the steel foundation tubes to receive the wood posts shall be coated with a grease which will not melt or run at a temperature of 149° F or less. The edges of the wood terminal posts may be slightly rounded to facilitate insertion of the post into the steel foundation tubes.

Surplus excavated material remaining after the terminal system has been installed shall be disposed of in a uniform manner along the adjacent roadway where designated by the Engineer.

## **MEASUREMENT AND PAYMENT**

The contract unit price paid for "ALTERNATIVE IN LINE TERMINAL SYSTEM" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing terminal systems type ET, complete in place, including excavation, backfill and disposal of surplus material, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-1.112 ALTERNATIVE FLARED TERMINAL SYSTEM**

Alternative flared terminal system shall be furnished and installed as shown on the plans and in conformance with these Special Provisions.

The allowable alternatives for a flared terminal system shall consist of one of the following or a Department approved equal.

B. TERMINAL SYSTEM (TYPE SRT) - Terminal system (Type SRT) shall be an SRT-350 Slotted Rail Terminal (8-post system) as manufactured by Trinity Industries, Inc., and shall include items detailed for terminal system (Type SRT)

shown on the plans. The SRT-350 Slotted Rail Terminal (8-post system) can be obtained from the manufacturer, Trinity Industries, Inc., P.O. Box 99, 950 West 400S, Centerville, UT 84014, telephone (800) 772-7976.

The Contractor shall provide the Engineer with a Certificate of Compliance from the manufacturer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The Certificate of Compliance shall certify that the terminal systems furnished conform to the contract plans and specifications, conform to the prequalified design and material requirements, and were manufactured in conformance with the approved quality control program.

Terminal systems shall be installed in conformance with the manufacturer's installation instructions and these requirements. Each terminal system installed shall be identified by painting the type of terminal system in neat black letters and figures 2 inches high on the backside of the rail element between system posts numbers 4 and 5.

For terminal system (Type SRT), the steel foundation tubes with soil plates attached shall be, at the Contractor's option, either driven, with or without pilot holes, or placed in drilled holes. Space around the steel foundation tubes shall be backfilled with selected earth, free of rock, placed in layers approximately 4 inches thick and each layer shall be moistened and thoroughly compacted. The wood terminal posts shall be inserted into the steel foundation tubes by hand and shall not be driven. Before the wood terminal posts are inserted, the inside surfaces of the steel foundation tubes to receive the wood posts shall be coated with a grease which will not melt or run at a temperature of 149° F or less. The edges of the wood terminal posts may be slightly rounded to facilitate insertion of the post into the steel foundation tubes.

Surplus excavated material remaining after the terminal system has been installed shall be disposed of in a uniform manner along the adjacent roadway where designated by the Engineer.

#### **MEASUREMENT AND PAYMENT**

The contract unit price per each paid for "ALTERNATIVE FLARED TERMINAL SYSTEM" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing terminal system (Type SRT), complete in place, including excavation, backfill and disposal of surplus material, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.113 METAL RAILING END ANCHOR ASSEMBLY**

This work includes installing metal railing end anchor assembly (Type SFT).

Metal railing end anchor assembly (Type SFT) shall be installed at locations as shown on plans in conformance to provision in Section 83, "Railings and Barriers," of the Standard Specifications and these Special Provisions.

#### **MEASUREMENT AND PAYMENT**

“METAL RAILING END ANCHOR ASSEMBLY (TYPE SFT)” will be measured and paid by units determined from actual count in the manner as specified in Section 83, “Railings and Barriers,” of the Standard Specifications

#### **10-1.114 METAL BRIDGE RAILING**

Tubular handrailing shall conform to the provisions in Section 83-1, "Railings," of the Standard Specifications and these Special Provisions.

##### **MEASUREMENT AND PAYMENT**

“TUBULAR HANDRAILING” shall be measured and paid for by the linear foot in the manner as specified in Section 83, “Railing and Barriers” of the Standard Specifications.

#### **10-1.115 CONCRETE BARRIER**

Concrete barriers shall conform to the provisions in Section 83-2, "Barriers," of the Standard Specifications and these Special Provisions.

##### **MEASUREMENT AND PAYMENT**

The contract unit price per linear foot paid for “CONCRETE BARRIERS (TYPE 736A)”, shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, for doing all the work involved in installing Concrete Barriers Type 60C, including, forming and pouring concrete, reinforcements, and finishes, complete in place, as shown on the plans, and as specified in the Standard Specifications, and these Special Provisions, and as directed by the Engineer.

The contract unit price per linear foot paid for “CONCRETE BARRIERS (TYPE 60D)”, shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, for doing all the work involved in installing Concrete Barriers Type 60D, including, forming and pouring concrete, reinforcements, and finishes, complete in place, as shown on the plans, and as specified in the Standard Specifications, and these Special Provisions, and as directed by the Engineer.

The contract unit price per linear foot paid for “CONCRETE BARRIERS (TYPE 732)”, shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, for doing all the work involved in installing Concrete Barriers Type 732, including, forming and pouring concrete, reinforcements, and finishes, complete in place, as shown on the plans, and as specified in the Standard Specifications, and these Special Provisions, and as directed by the Engineer.

The contract unit price per linear foot paid for “CONCRETE BARRIERS (TYPE 732 MODIFIED)”, shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, for doing all the work involved in installing Concrete Barriers Type 732 MODIFIED, forming and pouring concrete, reinforcements, and finishes, complete in place, as shown on the plans, and as specified in the Standard Specifications, and these Special Provisions, and as directed by the Engineer.

Payment for architectural texture on the Concrete Barrier Type 732 MODIFIED, shall be considered as separate pay item in the contract price paid for "ARCHITECTURAL TEXTURE", and no separate payment will be made therefor.

#### **10-1.116 THERMOPLASTIC PAVEMENT MARKING**

Thermoplastic pavement markings shall be applied in conformance with the provisions in Section 84, "Traffic Stripes and Pavement Markings," of the Standard Specifications and these Special Provisions.

Thermoplastic material shall be free of lead and chromium, and shall conform to the requirements in State Specification PTH-02ALKYD.

Retroreflectivity of the thermoplastic pavement markings shall conform to the requirements in ASTM Designation: D 6359-99. White thermoplastic traffic stripes and pavement markings shall have a minimum initial retroreflectivity of  $250 \text{ mcd m}^{-2} \text{ lx}^{-1}$ . Yellow thermoplastic traffic stripes and pavement markings shall have a minimum initial retroreflectivity of  $150 \text{ mcd m}^{-2} \text{ lx}^{-1}$ .

Thermoplastic pavement markings shall be free of runs, bubbles, craters, drag marks, stretch marks, and debris.

At the option of the Contractor, permanent pavement marking tape conforming to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions may be placed instead of the thermoplastic traffic stripes and pavement markings specified herein. Permanent tape, if used, shall be installed in conformance with the manufacturer's specifications.

If permanent tape is placed instead of thermoplastic pavement markings, the tape will be measured and paid for by the linear foot as thermoplastic traffic stripe and by the square foot as thermoplastic pavement marking.

#### **MEASUREMENT AND PAYMENT**

The contract price paid per square foot for "THERMOPLASTIC PAVEMENT MARKING" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in applying thermoplastic pavement markings including, layout work, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price paid per each location for "BIOFILTRATION STRIP SHOULDER MARKINGS" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in applying thermoplastic pavement markings including, layout work, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price paid per each location for "REPAINT AERIAL PATROL MARKINGS" shall include full compensation for furnishing all labor, materials, tools,

equipment and incidentals, and for doing all the work involved in applying thermoplastic pavement markings including, layout work, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

**10-1.117 DRAINAGE INLET MARKER**

**GENERAL**

**Summary**

This work includes installing drainage inlet markers.

Use only the type of drainage inlet marker shown on the project plans. If the project plans do not show a specific type, choose one type from the following list:

1. Thermoplastic
2. Metal medallion
3. Plastic medallion
4. Stamped concrete

**Submittals**

If you are using a prefabricated drainage inlet marker such as thermoplastic, metal medallion, or plastic medallion, submit a sample of marker at least 5 business days before installation.

If you are using a concrete stamp for the drainage inlet marker, submit a sample of the stamp at least 5 business days before concrete activities start.

Submit a Certificate of Compliance as specified in Section 6-1.07, "Certificates of Compliance" of the Standard Specifications for prefabricated drainage inlet marker.

**MATERIALS**

Thermoplastic drainage inlet marker must:

1. Be free of lead and chromium
2. Comply with the following:

Property	Specifications	Requirements
Thickness, inches	Measured	0.080-0.160
Legend color (non-reflective)	Observed	Blue or Green
Background color (non-reflective)	AASHTO M 249	White
Skid Resistance	ASTM E 303	60 BPN

Metal drainage inlet marker must:

1. Be commercial grade stainless steel, aluminum, brass, or bronze
2. Be stamped from sheet metal or cast
3. Comply with the following:

Property	Specifications	Requirements
Thickness of metal, inches	Measured	0.055-0.138
Height of marker, inches	Measured	0.055-0.138
Skid Resistance	ASTM E 303	60 BPN

4. If metal marker is colored, it must comply with the following:

Property	Specifications	Requirements
Legend color (non-reflective)	Observed	Blue or Green
Background color (non-reflective)	Observed	White or bare metal

Plastic drainage inlet marker must:

1. Contain ultraviolet inhibitors
2. Comply with the following:

Property	Specifications	Requirements
Thickness, inches	Measured	0.025-0.060
Thickness (with dome), inches	Measured	0.055-0.120
Legend color (non-reflective)	Observed	Blue or Green
Background color (non-reflective)	Observed	White
Weathering Resistance	ASTM D1435	1 year without yellowing, fogging, or pitting

## CONSTRUCTION

Install prefabricated drainage inlet markers by:

1. Mechanically cleaning and preparing the surface
2. Attaching the prefabricated drainage inlet markers to the surface with adhesives, fasteners, or heat as recommended by the manufacturer

Install stamped concrete drainage inlet markers by:

1. Imprinting uncured concrete with an approved drainage inlet marker concrete stamp
2. Producing stamped concrete surfaces that are free from blemishes

## MEASUREMENT AND PAYMENT

Drainage inlet marker is measured as units determined from actual count in place.

The contract price unit paid per each for "DRAINAGE INLET MARKER" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing drainage inlet markers, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.118 PAINT TRAFFIC STRIPE**

Painted traffic stripes (traffic lines) shall be applied in conformance with the provisions in Section 84, "Traffic Stripes and Pavement Markings," of the Standard Specifications and these Special Provisions.

Traffic stripe shall conform to the requirements in State Specification No. PTWB-01.

The color of the painted traffic stripes shall conform to the requirements in ASTM Designation: D 6628-01.

Retroreflectivity of the paint traffic stripes and pavement markings shall conform to the requirements in ASTM Designation: D 6359-99. White painted traffic stripes and pavement markings shall have a minimum initial retroreflectivity of  $250 \text{ mcd m}^{-2} \text{ lx}^{-1}$ . Yellow painted traffic stripes and pavement markings shall have a minimum initial retroreflectivity of  $150 \text{ mcd m}^{-2} \text{ lx}^{-1}$ .

At the option of the Contractor, permanent traffic striping tape conforming to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions may be placed instead of painted traffic stripes. Permanent tape, if used, shall be placed in conformance with the manufacturer's specifications.

If permanent tape is placed instead of painted traffic stripes, the tape will be measured and paid for by the linear foot as paint traffic stripe of the number of coats designated in the Engineer's Estimate.

#### **MEASUREMENT AND PAYMENT**

The contract price paid per linear foot for "PAINT TRAFFIC STRIPE (2-COAT) shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in applying painted traffic stripes (regardless of the number, widths, and patterns of individual stripes involved in each traffic stripe) including establishing alignment for stripes, and layout work, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

#### **10-1.119 PAVEMENT MARKERS**

Pavement markers shall be placed in conformance with the provisions in Section 85, "Pavement Markers," of the Standard Specifications and these Special Provisions.

The Contractor shall furnish the Engineer certificates of compliance for the pavement markers in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

Retroreflective pavement markers shall be marked as abrasion resistant on the body of the markers.

### **MEASUREMENT AND PAYMENT**

The contract price per each paid for “PAVEMENT MARKER (NON-REFLECTIVE)” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in applying pavement markers (non-reflective) including establishing alignment for markers, and layout work, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract price per each paid for “PAVEMENT MARKER (RETROREFLECTIVE)” shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in applying pavement markers (retroreflective) including establishing alignment for markers, and layout work, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

## **SECTION 10-2 HIGHWAY PLANTING AND IRRIGATION SYSTEMS**

### **10-2.01 GENERAL**

The work performed in connection with highway planting and irrigation systems shall conform to the provisions in Section 20, "Erosion Control and Highway Planting," of the Standard Specifications and these Special Provisions.

#### **PROGRESS INSPECTIONS**

Progress inspections will be performed by the Engineer for completed highway planting and irrigation system work at designated stages during the life of the contract.

Progress inspections will not relieve the Contractor of responsibility for installation in conformance with the Special Provisions, plans and Standard Specifications. Work within an area shall not progress beyond each stage until the inspection has been completed, corrective work has been performed, and the work is approved, unless otherwise permitted by the Engineer.

The requirements for progress inspections will not preclude additional inspections of work by the Engineer at other times during the life of the contract.

The Contractor shall notify the Engineer, in writing, at least 4 working days prior to completion of the work for each stage of an area and shall allow a minimum of 3 working days for the inspection.

Progress inspections will be performed at the following stages of work:

- A. During pressure testing of the pipelines on the supply side of control valves.
- B. During testing of low voltage conductors.
- C. Before planting begins and after completion of the work specified for planting in Section 20-4.03, "Preparing Planting Areas," of the Standard Specifications.
- D. Before plant establishment work begins and after completion of the work specified for planting in Section 20-4.05, "Planting," of the Standard Specifications.
- E. At intervals of one

#### **COST BREAK-DOWN**

The Contractor shall furnish the Engineer a cost break-down for the contract lump sum items of highway planting and irrigation system. Cost break-down tables shall be submitted to the Engineer for approval within 15 working days after the contract has been approved. Cost break-down tables will be approved, in writing, by the Engineer before any partial payment will be made for the applicable items of highway planting and irrigation system involved.

Attention is directed to "Time-Related Overhead" of these Special Provisions regarding compensation for time-related overhead.

Cost break-downs shall be completed and furnished in the format shown in the samples of the cost break-downs included in this section. Line item descriptions of work shown in the samples are the minimum to be submitted. Additional line item descriptions of work may be designated by the Contractor. If the Contractor elects to designate additional line item descriptions of work, the quantity, value and amount for those line items shall be completed in the same manner as for the unit descriptions shown in the samples. The line items and quantities given in the samples are to show the manner of preparing the cost break-downs to be furnished by the Contractor.

The Contractor shall determine the quantities required to complete the work shown on the plans. The quantities and their values shall be included in the cost break-downs submitted to the Engineer for approval. The Contractor shall be responsible for the accuracy of the quantities and values used in the cost break-downs submitted for approval.

The sum of the amounts for the line items of work listed in each cost break-down table for highway planting and for irrigation system work shall be equal to the contract lump sum price bid for "HIGHWAY PLANTING" and "IRRIGATION SYSTEM", respectively. Overhead and profit, except for time-related overhead, shall be included in each individual line item of work listed in a cost break-down table.

No adjustment in compensation will be made in the contract lump sum prices paid for highway planting and irrigation system due to differences between the quantities shown in the cost break-downs furnished by the Contractor and the quantities required to complete the work as shown on the plans and as specified in these Special Provisions.

Individual line item values in the approved cost break-down tables will be used to determine partial payments during the progress of the work and as the basis for calculating an adjustment in compensation for the contract lump sum items of highway planting and irrigation system due to changes in line items of work ordered by the Engineer. When the total of ordered changes to line items of work increases or decreases the lump sum price bid for either Highway Planting or Irrigation System by more than 25 percent, the adjustment in compensation for the applicable lump sum item will be determined in the same manner specified for increases and decreases in the total pay quantity of an item of work in Section 4-1.03B, "Increased or Decreased Quantities," of the Standard Specifications.

**HIGHWAY PLANTING COST BREAK-DOWN**

**Contract No.** \_\_\_\_\_

UNIT DESCRIPTION	UNIT	APPROXIMATE QUANTITY	VALUE	AMOUNT
TREE – 5 GAL. (incl. staking, root protector, foliage protector, 4 cf. mulch)	EA	203		
SHRUB – 1 GAL. (incl. 2 cf. mulch)	EA	184		
MULCH	CF	1.108		
FERTILIZER PACKET	EA	590		

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

**IRRIGATION SYSTEM COST BREAK-DOWN**

**Contract No.** \_\_\_\_\_

UNIT DESCRIPTION	UNIT	APPROXIMATE QUANTITY	VALUE	AMOUNT
CAM COUPLER ASSEMBLY	EA	2		
FILTER ASSEMBLY UNIT	EA	2		
BALL VALVE	EA	6		
PRESSURE REGULATING VALVE				
PIPE – PVC SCH.40, 3/4" (incl. trench & backfill)	EA	2		
	LF	4,000		
PIPE – PVC SCH.40, 1" (incl. trench & backfill)	LF	480		
PIPE – PVC SCH.40, 1-1/4" (incl. trench & backfill)	LF	360		
	LF	130		
PIPE – PVC SCH.40, 1-1/2" (incl. trench & backfill)	LF	120		
PIPE – GALV. STEEL, 1"	LF	2,700		
PIPE – DRIPLINE, 1/2"	EA	108		
BUBBLER	EA	189		
DRIP EMITTER				

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

**10-2.02 (BLANK)**

**10-2.03 (BLANK)**

**10-2.04 HIGHWAY PLANTING**

The work performed in connection with highway planting shall conform to the provisions in Section 20-4, "Highway Planting," of the Standard Specifications and these Special Provisions.

**HIGHWAY PLANTING MATERIALS**

**Commercial Fertilizer (Packets)**

Commercial fertilizer (packet) shall be slow or controlled release and shall be in a biodegradable packet form. The packet shall gradually release nutrients over a 12-month period. Each packet shall have a weight of 10 g ± 1 g and shall have the following guaranteed chemical analysis:

Ingredient	Percentage
Nitrogen	20
Phosphoric Acid	10
Water Soluble Potash	5

Apply or place commercial fertilizer (granular and slow release) and iron sulfate at the time of planting and at the rates shown on the Plant List.

Place commercial fertilizer packets in the backfill of each plant at the time of planting and at the rate shown on the Plant List to within 6 inches to 8 inches of the soil surface and approximately one inch from the roots. When more than one fertilizer packet is required per plant, the packets must be distributed evenly around the root ball.

Root protectors must conform to the provisions in "Root Protectors" of these Special Provisions.

Attention is directed to "Irrigation Systems Functional Test" of these Special Provisions regarding functional tests of the irrigation systems. Do not perform planting in an area until the functional test has been completed for the irrigation system serving that area.

### **ROOT PROTECTOR**

Root protectors shall be installed in conformance with the details shown on the plans, the provisions in Section 20-2.13B, "Root Protector," and Section 20-4, "Highway Planting," of the Standard Specifications and these Special Provisions.

Full compensation for root protectors shall be considered as included in the contract unit prices paid for the various plants involved and no additional compensation will be allowed therefor.

### **BROADCAST SEEDING**

#### **GENERAL**

##### **Summary**

This work includes mowing weeds, scarifying the soil, furnishing and incorporating commercial fertilizer, organic fertilizer, and hand broadcasting native maritime chaparral seed to seeding areas shown on the plans.

Pesticides must not be used on maritime chaparral seeding areas after the seed has been applied.

The Engineer will designate the ground location of all maritime chaparral seeding 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 indicate the various seeding locations.

**MATERIALS**

**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 consist of the following:

<b>Seed</b>		
Botanical Name (Common Name)	Percent Germination (Minimum)	Pounds Pure Live Seed Per Acre (Slope Measurement)
Ceanothus cuneatus var. fascicularis	80	Note 4
Salvia mellifera	80	Note 4
Rhamnus californica ssp. Californica	80	Note 4
Adenostoma fasciculatum	80	Note 4
Prunus ilicifolia ssp. Ilicifolia	80	Note 4
Ceanothus impressus var. nipomoensis	80	Note 4
Mimulus aurantiacus	80	Note 4
Achillea millefolium	80	Note 4
Castilleja exserta	80	Note 4

Notes:

Applicable when numbers below are shown after a Botanical Name/(Common Name) above:

<sup>1</sup>Seed produced in California only.

<sup>2</sup>Seed source from \_\_\_\_\_ County only.

<sup>3</sup>Seed source from above/below the \_\_\_\_\_ foot elevation level.

<sup>4</sup>Apply at suppliers recommended rate

**Seed Sampling Supplies**

At the time of seed sampling, provide the Engineer a glassine lined bag and custody seal tag for each seed lot sample.

## **CONSTRUCTION**

### **Site Preparation**

Immediately prior to applying maritime chaparral seed to Type 2 seeding areas, trash and debris must be removed, and weeds must be mowed as close to the ground as possible. Removal of mowed material will not be required.

After mowing and just prior to seed application, maritime chaparral seeding areas must be scarified to a minimum depth of one inch.

### **Application**

Seed for maritime chaparral seeding must be applied at the seed suppliers recommended rate.

## **PAYMENT**

The contract lump sum price paid for "HIGHWAY PLANTING" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing highway planting, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-2.05 PLANT ESTABLISHMENT WORK**

The plant establishment period shall be Type 1 and shall be 730 working days.

During the plant establishment period, the plants shall be watered utilizing the Remote Irrigation Control System (RICS) software program. A watering schedule shall be submitted to the Engineer for use during the plant establishment period.

Weeds outside of mulched areas, plant basins, ground cover, the median, and paved areas shall be controlled by mowing. At locations where proposed planting areas are 12 feet or more from the edges of existing plantings to remain and from shoulders, dikes, curbs, sidewalks, fences, and walls, the mowing limit shall be 6 feet beyond the outer limits of the proposed planting area.

Weeds within median areas, pavement, curbs, sidewalk, and other surfaced areas shall be controlled by killing.

Except as specified in these Special Provisions, disposal of mowed material will not be required unless ordered by the Engineer. Disposal of mowed material, as directed by the Engineer, will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

At the option of the Contractor, plants of a larger container size than those originally specified may be used for replacement plants during the first 125 working days of the plant establishment period.

After 125 working days of the plant establishment period have been completed, replacement of plants, except for ground cover plants, shall be one-gallon size for seedlings, pot and liner size plants; 5-gallon size for one-gallon size plants; 15-gallon size for 5-gallon size plants; and other plant replacement plants shall be the same size as originally specified.

During the plant establishment period, if plants become restricted by foliage protectors, the tops of foliage protectors shall be removed. Foliage protectors shall be completely removed, including the support stakes, within 15 working days prior to completion of the plant establishment period.

Wye strainers shall be cleaned at least 15 days prior to the completion of the plant establishment period.

Previously installed filters shall be removed, cleaned and reinstalled at least 15 days prior to the completion of the plant establishment period.

The final inspection shall be performed in conformance with the provisions in Section 5-1.13, "Final Inspection," of the Standard Specifications and shall be completed a minimum of 20 working days before the estimated completion of the contract.

Turf areas shall be mowed in conformance with the provisions in "Turf (Sod)" of these Special Provisions.

## **PAYMENT**

The contract lump sum price paid for "PLANT ESTABLISHMENT" includes full compensation for mowing and trimming turf (sod) and disposing of mowed and trimmed material during the plant establishment period, furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in plant establishment, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

### **10-2.06 IRRIGATION SYSTEMS**

Irrigation systems shall be furnished and installed in conformance with the provisions in Section 20-5, "Irrigation Systems," of the Standard Specifications, except materials containing asbestos fibers shall not be used.

Method A pressure testing shall conform to the provisions in Section 20-5.03H(1), "Method A", of the Standard Specifications, except leaks that develop in the tested portion of the system shall be located and repaired after each test period when a drop of more than 5 pounds per square inch is indicated by the pressure gage. After the leaks have been repaired, the one hour pressure test shall be repeated and additional repairs made until the drop in pressure is 5 pounds per square inch or less.

Pipe supply lines shall be pressure tested in conformance with the provisions in Section 20-5.03H, "Pressure Testing," of the Standard Specifications, except the

pipe (supply line) on the discharge side of the control valve shall be tested by Method B as specified in Section 20-5.03H(2), "Method B," of the Standard Specifications.

## **PIPE**

### **Plastic Pipe**

Plastic pipe supply lines must be polyvinyl chloride (PVC) 1120 or 1220 pressure rated pipe with the minimum pressure rating (PR) shown on the plans.

Plastic pipe supply lines and fittings that are 3 inches or larger in diameter on the supply side of control valves must be the rubber ring gasket type, except when pressure rating (PR) 315 plastic pipe supply line is required.

Plastic pipe supply lines less than 3 inches in diameter must have solvent cemented type joints. Primers must be used on the solvent cemented type joints.

Plastic pipe supply lines (main) must have a minimum cover of 1.5 feet.

Plastic pipe (irrigation lines) must be installed not less than 18 inches below the finished grade, measured to the top of the pipe.

Fittings for plastic pipe supply lines with a pressure rating (PR) of 315 must be Schedule 80.

### **SPRINKLER (TYPE D)**

Type D sprinklers shall be plastic, nonadjustable, pressure compensating emitters with automatic flushing action. Emitter shall be regulated by dual silicone diaphragms. Emitters shall have the flow rate and operating pressure range shown on the plans.

Emitters shall be installed as shown on the plans and in conformance with the manufacturer's written instructions. Two copies of the written instructions shall be furnished to the Engineer prior to installation.

Emitters shall be equipped with a single barb which shall be inserted into a shrub nut. Shrub nuts shall be installed on a threaded polyvinyl chloride (PVC) riser as shown on the plans.

Flexible tubing for the emitters shall be virgin polyethylene plastic containing 2 percent to 3 percent carbon black. The size of the tubing shall be as recommended by the manufacturer of the emitter.

Discharge ends of tubing shall be held in place, within the basin and approximately 2 inches above grade, by plastic or metal stakes. Stakes shall be as recommended by the manufacturer of the emitter.

### **PRESSURE REDUCING VALVE**

Pressure reducing valves shall consist of pressure reducing valves, pressure gages, valve boxes with wire mesh and gravel or crushed rock, fittings, and pipe as shown on the plans.

Pressure reducing valves shall be the spring diaphragm type, manufactured of bronze or cast iron construction, hydraulically operated and pilot controlled, and shall have flanged or threaded pipe connections. Pressure reducing valves with threaded connections shall be installed with unions on the inlet side of the valves. Pressure reducing valves shall not have internal filter screens.

Pressure gages for pressure reducing valves shall be hermetically sealed with neoprene and shall have watertight polycarbonate cases and covers with molded clear polycarbonate windows. Gages shall be 2 inches in diameter, calibrated from 0 psi to 160 psi, and have black aluminum pointers that contrast with gage faces and have brass stems. Internal gage parts shall be brass and phosphor bronze.

### **FINAL IRRIGATION SYSTEM CHECK**

A final check of existing and new irrigation facilities shall be performed not more than 40 working days and not less than 30 working days prior to acceptance of the contract.

The length of watering cycles using potable water measured by water meters for the final check of irrigation facilities will be determined by the Engineer.

Remote control valves connected to existing and new irrigation controllers shall be checked for automatic performance when the controllers are in automatic mode.

Unsatisfactory performance of irrigation facilities installed or modified by the Contractor shall be repaired and rechecked at the Contractor's expense until satisfactory performance is obtained, as determined by the Engineer.

Repair or replacement of existing irrigation facilities due to unsatisfactory performance shall conform to the provisions in "Existing Highway Irrigation Facilities" of these Special Provisions.

Nothing in this section "Final Irrigation System Check" shall relieve the Contractor of full responsibility for making good or repairing defective work or materials found before the formal written acceptance of the entire contract by the Director.

Full compensation for checking the irrigation systems prior to the acceptance of the contract shall be considered as included in the contract lump sum price paid for "Highway Planting" work and no additional compensation will be allowed therefor.

### **PAYMENT**

The contract lump sum price paid for "IRRIGATION SYSTEM" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing irrigation system, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

## **SECTION 10-3. ELECTRICAL SYSTEMS**

### **10-3.01 DESCRIPTION**

Installing lighting shall conform to the provisions in Section 86, "Electrical Systems," of the Standard Specifications and these Special Provisions.

Lighting equipment is included in the following structure:

Willow Road Undercrossing Bridge No. 49-D2524R

### **10-3.02 COST BREAK-DOWN**

Cost break-downs shall conform to the provisions in Section 86-1.03, "Cost Break-Down," of the Standard Specifications and these Special Provisions.

The Engineer shall be furnished a cost break-down for each contract lump sum item of work described in this Section 10-3.

The cost break-down shall be submitted to the Engineer for approval within 15 days after the contract has been approved. The cost break-down shall be approved, in writing, by the Engineer before any partial payment for the items of electrical work will be made.

### **10-3.03 CAST-IN-DRILLED-HOLE CONCRETE PILE FOUNDATIONS**

#### **GENERAL**

#### **Summary**

This work includes constructing cast-in-drilled-hole concrete pile foundations for lighting standards.

Comply with Section 86-2.03, "Foundations," of the Standard Specifications.

#### **MATERIALS**

Concrete must contain not less than 590 pounds of cementitious material per cubic yard.

#### **CONSTRUCTION**

For standards located in sidewalk areas, the pile foundation must be:

1. Placed to final sidewalk grade before the sidewalk is placed
2. Square for the top 4 inches

## **PAYMENT**

Payment for cast-in-drilled-hole concrete pile foundations shall conform to the provisions in Section 86-8, "Payment," of the Standard Specifications.

### **10-3.04 STANDARDS, STEEL PEDESTALS, AND POSTS**

Standards, steel pedestals, and posts for traffic signal and lighting standards shall conform to the provisions in Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications, "Steel Structures" of these Special Provisions, and the following requirements.

Steel bolts not designated on the plans as high-strength (HS) or stainless steel shall be for general applications and shall conform to the requirements in ASTM Designation: A 307.

Anchor bolts shall conform to the requirements in ASTM Designation: F 1554, Grade 36. High-strength (HS) anchor bolts shall conform to the requirements in ASTM Designation: F 1554, Grade 105.

Handhole reinforcement rings for standards, steel pedestals, and posts shall be continuous around the handholes.

### **10-3.05 CONDUIT**

Conduit to be installed underground shall be Type 3 unless otherwise specified.

The conduit in a foundation and between a foundation and the nearest pull box shall be Type 1.

When a standard coupling cannot be used for joining Type 1 conduit, a UL-listed threaded union coupling conforming to the provisions in Section 86-2.05C, "Installation," of the Standard Specifications, or a concrete-tight split coupling, or concrete-tight set screw coupling shall be used.

When Type 3 conduit is placed in a trench (not in pavement or under portland cement concrete sidewalk), after the bedding material is placed and the conduit is installed, the trench shall be backfilled to not less than 4 inches above the conduit with minor concrete conforming to the provisions in Section 90-10, "Minor Concrete," of the Standard Specifications, except the concrete shall contain not less than 421 pounds of cementitious material per cubic yard. The remaining trench shall be backfilled to finished grade with backfill material.

Conduit runs shown on the plans to be located behind curbs may be installed in the street, within 3 feet of, and parallel with the face of the curb, by the trenching in pavement method in conformance with the provisions in Section 86-2.05C, "Installation," of the Standard Specifications. Pull boxes shall be located behind the curb or at the locations shown on the plans.

After conductors have been installed, the ends of conduits terminating in pull boxes, and service equipment enclosures shall be sealed with an approved type of sealing compound.

At other locations where conduit is required to be installed under pavement and if a delay to vehicles will not exceed 5 minutes, conduit may be installed by the "Trenching in Pavement Method."

#### **10-3.06 PULL BOXES**

Grout shall be placed in the bottom of pull boxes.

Electrical pull boxes for future use shown on the plans shall be in conformance with these Special Provisions.

Full compensation for installing "PULL BOXES FOR FUTURE USE" of this section shall be considered as included in the contract prices paid for Lighting and no additional compensation will be allowed therefor.

Pull boxes for circuits labeled "COUNTY" on the plans shall not have the Caltrans cover marking. The covers shall be marked "COUNTY"

#### **10-3.07 CONDUCTORS, CABLES, AND WIRING**

Splices shall be insulated by "Method B".

Conductors shall be wrapped around projecting end of conduit in pull boxes, as shown on the plans. Cables shall be secured to the projecting end of conduit in pull boxes to prevent pulling of cables without removing the securing device.

#### **10-3.08 SERVICE**

Service equipment enclosures shall be the aluminum type.

Circuit breakers shall be the cable-in/cable-out type, mounted on non-energized clips. All circuit breakers shall be mounted vertically with the up position of the handle being the "ON" position.

#### **10-3.09 NUMBERING ELECTRICAL EQUIPMENT**

The numbers shall be placed on the equipment using the stencil method.

## 10-3.10 LIGHT EMITTING DIODE LUMINAIRE

### GENERAL

#### Definitions

**CALiPER:** Commercially Available LED Product Evaluation and Reporting. A US DOE program for the testing and monitoring of commercially available LED luminaires and lights.

**correlated color temperature:** A visible light characteristic of comparing a light source to a theoretical heated black body radiator. Measured in Kelvin.

**footcandle:** Unit of illuminance; a measurement of light.

**IP:** International Protection rating, sometimes referred to as ingress protection, that delineates the level at which foreign objects and water can intrude inside a device.

**NVLAP:** National Voluntary Laboratory Accreditation Program under the US DOE to accredit independent testing laboratories to qualify.

**power factor:** Ratio of the real power component to the total, complex, power component.

**surge protection device:** A subsystem or component that can protect the unit against short duration voltage and current surges.

**Transportation Electrical Equipment Specifications:** A package of standard specifications for transportation related electrical equipment to be used on State Highways. This document is compiled by the Department.

**total harmonic distortion:** Amount of higher frequency power on the power line.

#### Submittals

Submit test units to the Department after the manufacturer's testing is completed. Include the manufacturer's testing data.

Product submittals must be accompanied by:

1. Product specification sheets or other documentation that includes the designed parameters as detailed in the specification. The parameters include:
  - 1.1. Maximum power in watts
  - 1.2. Maximum designed junction temperature
  - 1.3. Heat sink area in square inches
  - 1.4. Designed junction to ambient thermal resistance calculation with thermal resistance components clearly defined
  - 1.5. L70 in hours when extrapolated for the average nighttime operating temperature
2. IES LM-79 and IES LM-80 compliant test reports from a CALiPER-qualified or NVLAP-approved testing laboratory for the specific model submitted.
3. Initial and depreciated isofootcandle charts showing the specified minimum illuminance curve for that particular application. The charts must be calibrated to feet and show a 40 by 40 foot grid. The depreciated isofootcandle curve must be calculated at the minimum operational life.
4. Test report showing surge protection device (SPD) performance as tested under ANSI/IEEE C62.41.

## **Quality Control and Assurance**

The luminaires must be manufactured under the manufacturer's quality assurance program. The program must include (1) production quality assurance and (2) design quality assurance.

Production quality assurance must include statistically-controlled routine tests to ensure minimum performance levels of the modules built to meet this specification and a documented process for resolving problems. The process and test results documentation must be kept on file for a minimum of 7 years.

Design quality assurance must be performed by the manufacturer or an independent testing lab hired by the manufacturer on new luminaire designs and when a major design change is implemented on an existing design. A major design change is defined as a design change, electrical or physical, that (1) changes any of the performance characteristics of the luminaire, (2) results in a different circuit configuration for the power supply, or (3) changes the layout of the individual LEDs in the module. Submit 2 units for each design for design qualification testing.

The sample luminaires must be energized for a minimum of 24 hours, at 100 percent on-time duty cycle, at a temperature of +70 °F before performing any design qualification testing.

Any failure of the luminaire that renders the unit non-compliant with the specification after burn in must be rejected.

The luminaire must be tested under California Test No. 678 and as specified. Luminaire performance must be judged against the specified minimum illuminance in the specified pattern for a particular application. The luminaire lighting performance must be adjusted, depreciated, for the minimum operating life. The performance must be adjusted, depreciated, by using the LED manufacturer's data or the data from the LM-80 test report, whichever results in a higher level of lumen depreciation.

The luminaire is compliant photometrically, if the initial minimum illuminance level is achieved in 100 percent of the area of the specified lighting pattern, the depreciated minimum illuminance is maintained in at least 95 percent of the area of the specified lighting pattern, and the minimum length of the depreciated isofootcandle curve is equal or greater than the length of the specified isofootcandle curve.

The Department may perform random sample testing on all shipments. Testing will be completed within 30 days after delivery to the Transportation Laboratory. Luminaires will be tested under California Test No. 678 and as specified. All parameters of the specification may be tested on the shipment sample.

## **Warranty**

The manufacturer must provide a written warranty (1) for the performance of the luminaire for a minimum of 120 months and (2) against defects in materials and workmanship for the luminaires for 72 months after acceptance of the luminaires. Replacement luminaires must be provided promptly after receipt of failed luminaires at your expense. The State pays for shipping the failed luminaires to you. All

warranty documentation must be submitted to the Transportation Laboratory before random sample testing. Deliver replacement luminaires to State Maintenance Electrical Shop at 50 Higuera Street, San Luis Obispo, CA 93401

## **MATERIALS**

### **General**

The luminaire consists of an assembly that uses LEDs as the light source. In addition, a complete luminaire consists of a housing, an LED array, and an electronic driver (power supply). The luminaire must comply with the following requirements:

1. UL listed under UL 1598 for luminaires or an equivalent standard from a recognized testing laboratory
2. Have a minimum operational life is 63,000 hours
3. Expected to operate at an average operating time of 11.5 hours per night
4. Designed to operate at an average nighttime operating temperature of 70 °F
5. Have an operating temperature range from -40 °F to +130 °F.
6. Expected to operate above 100 °F, but not expected to comply with photometric requirements
7. Defined by the following application:

Application	Roadway 1	Roadway 2
Replaces	200 Watt HPS mounted at 34 ft	310 Watt HPS mounted at 40 ft.

The individual LEDs must be connected such that a catastrophic loss or a failure of 1 LED will not result in the loss of the entire luminaire.

The housing must be fabricated from materials that are designed to withstand a 3000-hour salt spray test under ASTM B 117. Each refractor or lens must be made from UV-inhibited high impact plastic such as acrylic or polycarbonate and be resistant to scratching. Polymeric materials of enclosures containing either the power supply or electronic components of the luminaire must be made of UL94VO flame retardant materials. The lenses of the luminaire are excluded from this requirement. Paint or powder coating of the housing must comply with Section 86, "Electrical Systems," of the Standard Specifications.

### **Luminaire Identification**

Each luminaire must have the following identification permanently marked inside the unit and outside of its packaging box:

1. Manufacturer's name
2. Trademark
3. Model number
4. Serial number
5. Date of manufacture (month-year)
6. Lot number

The rated voltage in watts and rated power in volt-ampere must be permanently marked inside each unit.

## Electrical

The luminaire must operate from a 60 Hz  $\pm 3$  Hz AC line over a voltage ranging from 95 to 250 V(ac). The fluctuations of line voltage must have no visible effect on the luminous output. The standard operating voltages are 120 and 240 V(ac). The power factor of the luminaire must be 0.90 or greater. Total harmonic distortion (current and voltage) induced into an AC power line by a luminaire must not exceed 20 percent. The maximum power consumption allowed for the luminaire depends on the application and is as shown in the following table:

Application	Roadway 1	Roadway 2
Maximum Wattage, W	165	235

## Surge Suppression and Electromagnetic Interference

The luminaire on-board circuitry must include an SPD to withstand high repetition noise transients as a result of utility line switching, nearby lightning strikes, and other interference. The SPD must protect the luminaire from damage and failure for transient peak voltages of 10 kV or less and for transient peak currents of 5 kA or less. SPD must conform to UL 1449 or UL 1283, depending of the components used in the design. SPD performance must be tested under ANSI/IEEE C62.41 for Category A (standard) and D (additional) waveforms. The luminaires and associated on-board circuitry must meet Class A emission limits under FCC Title 47, Subpart B, Section 15 regulations concerning the emission of electronic noise.

## Compatibility

The luminaire must be operationally compatible with currently used lighting control systems and photoelectric controls.

## Photometric Requirements

The illuminance must not decrease by more than 30 percent over the minimum operating life or L70 must be at least the minimum operating life. The measurements must be calibrated to standard photopic calibrations. The minimum maintained illuminance is listed in the table below and is measured as a point:

Application	Roadway 1	Roadway 2
Mounting Height (ft)	34	40
Minimum Maintained Illuminance (fc)	0.15	0.20
Isofootcandle Curve	Pattern defined by ellipse with equation : $\frac{(x^2)}{(6724)} + \frac{(y-20)^2}{(2756.25)} = 1.$ x direction is perpendicular to the roadway, y direction is transverse to roadway, luminaire is offset from center of pattern by 20 feet to the "houseside" of pattern.	Same

The luminaire must have a correlated color temperature range of 4,000 to 6,500 K. The color rendition index must be 70 or greater.

The luminaire must not allow more than:

1. 10 percent of the rated lumens to project above 80 degrees from vertical
2. 2.5 percent of the rated lumens to project above 90 degrees from vertical

### Thermal Management

The thermal management of the heat generated by the LEDs must be of sufficient capacity to assure proper operation of the luminaire over the minimum operation life. The LED manufacturer's maximum junction temperature for the minimum operation life must not be exceeded. The maximum allowed junction temperature is 105 °C.

The junction-to-ambient thermal resistance must be 35 °C per watt or less. Thermal management must be passive by design. The use of fans or other mechanical devices is not allowed. The minimum heat sink surface area is 3.5 sq in per watt. The heat sink material must be aluminum or other material of equal or lower thermal resistance.

The luminaire must contain circuitry that will automatically reduce the power to the LEDs to 50 percent of normal operating power or to a level that will insure that the maximum junction temperature is not exceeded, when the ambient outside air temperature is 100 °F or greater.

### Physical and Mechanical Requirements

The luminaire must be a single, self-contained device, not requiring on-site assembly for installation. The power supply for the luminaire is integral to the unit. The maximum weight of the luminaire must be 35 lbs. The maximum effective projected area when viewed from either side or either end must be 1.4 sq ft.. The housing must be a light or medium gray with a flat or semi-gloss sheen.

Each housing must be provided with a slip fitter capable of mounting on a 2 inch pipe tenon. This slip fitter must fit on mast arms from 1-5/8 to 2-3/8 in (O.D.) The slip fitter must be capable of being adjusted a minimum of  $\pm 5$  degrees from the axis of the tenon in a minimum of five steps: +5, +2.5, 0, -2.5, -5. The clamping brackets of the slip fitter must not bottom out on the housing bosses when adjusted within the designed angular range. No part of the slip fitter mounting brackets on the luminaires must develop a permanent set in excess of 1/32 in. when the 2 or 4, 3/8 in. diameter cap screws used for mounting are tightened to 10 ft-lb. Two sets of cap screws may be supplied to allow for the slip fitter to be mounted on any pipe tenon in the acceptable range without the cap screws bottoming out in the threaded holes.

The assembly and manufacturing process for the LED luminaire must be designed to assure all internal components are adequately supported to withstand mechanical shock and vibration from high winds and other sources. Luminaires to be mounted on horizontal mast arms, when tested under California Test 611 must be capable of withstanding the following cyclic loadings in units of acceleration of gravity, G:

1. Vertical plane at a minimum peak acceleration level of 3.0 G peak-to-peak sinusoidal loading (same as 1.5 G peak) with the internal ballast removed, for a minimum of 2 million cycles without failure of any luminaire parts
2. Horizontal plane perpendicular to the direction of the mast arm at a minimum peak acceleration level of 1.5 G peak-to-peak sinusoidal loading (same as 0.75 G peak) with the internal ballast installed, for a minimum of 2 million cycles without failure of any luminaire parts
3. Vertical plane at a minimum peak acceleration level of 1.0 G peak-to-peak sinusoidal loading (same as 0.5 G peak) with the internal ballast installed, for a minimum of 2 million cycles without failure of any luminaire parts.

The housing must be designed to prevent the buildup of water on the top of the housing. Exposed heat sink fins must be oriented to allow the water to freely run off the luminaire and carry dust and other accumulated debris away from the unit. The optical assembly of the luminaire must be protected against dust and moisture intrusion per the minimum requirements of IP-66. The electronics/power supply enclosure must be protected per the minimum requirements of IP-43.

Each mounted luminaire may be furnished with or without a photoelectric unit receptacle. If a photoelectric unit receptacle is included, a rain tight shorting cap must be provided and installed. The receptacle must comply with Section 86-6.08B(1), "Photoelectric Unit," of the Standard Specifications. If the luminaire housing is provided with a hole for the receptacle, the hole must be closed, covered, and sealed with weatherproof material in a permanent manner.

When the components are mounted on a down-opening door, the door must be hinged and secured to the luminaire housing separately from the refractor or flat lens frame. The door must be secured to the housing in a manner to prevent its accidental opening.

Field wires connected to the luminaire must terminate on a barrier type terminal block secured to the housing. The terminal screws must be captive and equipped with wire grips for conductors up to No. 6. Each terminal position must be clearly identified.

The circuit board and power supply must be contained inside the luminaire. Circuit boards must conform to Chapter 1, Section 6 of the "Transportation Electrical Equipment Specifications".

Electrolytic capacitors used in the power supplies must be rated for -40 to 220 °F long life, greater than 5000 hours, and operated at no more than 70 percent of its rated voltage and current.

### **10-3.11 PHOTOELECTRIC CONTROLS**

Contactors shall be the mechanical armature type.

### **10-3.12 PAYMENT**

The contract lump sum price paid for "LIGHTING AND SIGN ILLUMINATION (OVERHEAD SIGN)" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing overhead sign, lighting and sign illumination, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract lump sum price paid for "LIGHTING (LOCATION 1) (SYSTEM NO. 1)" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing lighting, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract lump sum price paid for "LIGHTING (LOCATION 1) (SYSTEM NO. 2)" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing lighting, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The contract lump sum price paid for "LIGHTING (LOCATION 1) (SYSTEM NO. 3)" includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing lighting, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Roadway lighting on the project shall be considered as included in the contract lump sum price paid for "LIGHTING AND SIGN ILLUMINATION (OVERHEAD SIGN)."

Full compensation for hauling and stockpiling electrical materials shall be considered as included in the contract price paid for the item requiring the material to be salvaged and no additional compensation will be allowed therefor.

If any of the fabrication sites for the materials listed are located more than 300 air line miles from both Sacramento and Los Angeles, additional shop inspection expenses will be sustained by the State. Whereas it is and will be impractical and difficult to determine the actual increase in these expenses, it is agreed that payment

to the Contractor for furnishing these listed materials from each fabrication site located more than 300 air line miles from both Sacramento and Los Angeles will be reduced \$2,000:

1. Service equipment enclosures

**SECTION 10-4.**  
**NIPOMO COMMUNITY SERVICES DISTRICT WATERLINE EXTENSION**

10-4.01 Order of Work:

The Engineer reserves the right to direct the order of work in the interest of maintaining water service to the NCSD customers. The Engineer shall give the Contractor 48 hours notice of any such directed order of work. No direction from the Engineer regarding the order of work will entitle the Contractor to additional compensation or adjustment of the Contract Times.

The delineated Order of Work does not preclude concurrent work activities. The Contractor's schedule of work shall be reviewed and accepted by the Engineer.

In general, the following summarize the recommended sequence of major waterline work activities to be accomplished:

1. Prepare and submit all submittals as described in Section 10-4.03B to the Engineer.
2. Pothole to ascertain the size, quantity, materials, and horizontal and vertical locations of all existing utilities, including but not limited to connection points, water lines, storm drains, gas lines, telephone lines, electrical lines, and other such utilities where there are utility crossings or potential conflicts between proposed facilities and existing facilities.
3. Construct new water system improvements (except connections to the existing system) after successful completion of roadway subgrade, all in accordance with the Plans and Specifications. The water system shall be successfully flushed, tested, and disinfected prior to making connections to the existing system.
4. Prepare and distribute Notifications to businesses and adjacent residences affected by the waterline construction as required in these Contract Documents. Notifications shall be "hand-delivered" a minimum of three working days prior to construction activities that affect water service to NCSD customers.
5. Furnish and deliver all materials to the project site that are required to construct the connections to the existing system at least 24-hours in advance of the system shutdown.
6. Construct the new waterline piping connections to the existing system in accordance with the plans and specifications in the following sequence:
  - a) Willow Road, Station 325+73.95 LT 17.0
  - b) Hetrick Road, 8" Waterline Cap (Abandonment)

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefore.

- 10-4.01A Cooperation: Attention is directed to Section 7-1.14, "Cooperation," of the Standard Specifications and these Special Provisions.

Work that may be occurring by others within the project limits, which is not project related, shall not be interrupted by the Contractor to the fullest extent possible. The Contractor shall coordinate with others working within the project limits.

Other projects may be ongoing within and near the project site during the Contract period. The Contractor shall coordinate the work with the other Contractors, utility companies, etc., such that all projects can be diligently pursued to their completion. Interfacing work shall be shown on the Contractor's Schedule. The Contractor shall include time for others to perform work within and near the project site and this shall be reflected in the schedule as well. Delays due to interfacing with concurrent projects are considered avoidable and no compensation will be made therefore. The Contractor shall be responsible for obtaining plans for concurrent work when available. The Contractor shall include in the bid all costs for coordination, scheduling, meetings and delays that result from interfacing with concurrent work.

The following project is anticipated to be in progress during this contract:

Willow Road Phase I Improvements

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefore.

- 10-4.02 Submittals:

Contractor shall provide product data for pipe, pipe fittings, pipe-joining details, pipe accessories, and all other appurtenances that are being supplied to complete the water system. Shop drawings, catalog data, and manufacturer's technical data showing complete information on material composition, physical properties, and dimensions of new pipe and fittings. Include manufacturer's recommendations for handling, storage of pipe, installation, and repair of damaged pipe and fittings. Manufacturer's installation instructions that indicate special procedures required to install specified products shall be provided. Manufacturer's Certificates shall be provided that certifies products meet or exceed specified requirements. Technician certifications of specialty labor personnel shall be provided to certify qualifications of those performing work on the project.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefore.

- 10-4.02A Requests for Information:

In the event that the Contractor, subcontractor or supplier, at any time, determines that some portion of the drawings, specifications, or other Contract Documents requires clarification or interpretation by the NCSD, the Contractor shall submit a Request for Information in writing to the Engineer. Requests for Information may only be submitted by the Contractor and shall only be submitted on an acceptable Request for Information Form to be provided by the Engineer. The Contractor shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed from the Engineer. In the Request for

Information the Contractor shall set forth their own interpretation or understanding of the requirement along with reasons why they have reached such an understanding.

The Engineer will review all Requests for Information to determine whether they are Requests for Information within the meaning of this term. If the Engineer determines that the document is not a Request for Information it will be returned to the Contractor, unreviewed as to content, for resubmittal on the proper form and in the proper manner.

Responses to Requests for Information will be issued within five (5) working days of receipt of the request from the Contractor unless the Engineer determines that a longer period of time is necessary to provide an adequate response. If a longer period of time is determined necessary by the Engineer, the Engineer will, within five (5) working days of receipt of the request notify the Contractor of the anticipated response time. The five (5) working days referred to herein will start on the date stamped received "In From Contractor" by the Engineer and ends on the date stamped "Out to Contractor" by the Engineer. If the Contractor submits a Request for Information on an activity with five (5) working days or less of float on the current project schedule, the Contractor shall not be entitled to any time extension due to the time it takes the Engineer to respond to the request provided that the Engineer responds within the five (5) working days set forth above.

Responses from the Engineer will not change any requirement of the Contract Documents unless so noted by the Engineer in the response to the Request for Information. In the event the Contractor believes that a response to a Request for Information will cause a change to the requirements of the Contract Documents, the Contractor shall immediately give written notice to the Engineer stating that the Contractor considers the response to be a Change Order. Failure to give such written notice within forty eight (48) hours shall waive the Contractor's right to seek additional time or cost under these Contract Documents.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefore.

10-4.02B Shop Drawings:

Attention is directed to Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. When required by any special provision or technical specification included in these Contract Documents, the Contractor shall transmit to the Engineer technical submittals, shop drawings or samples, including supporting catalogue cuts, manufacturer's literature, sketches or drawings, calculations, and other pertinent data, in sufficient detail to enable the Engineer to review the information and determine that the Contractor clearly understands the requirements of the Contract Documents. Such submittals shall not be identified as Requests for Information.

Wherever shop drawings are called for in the Contract Documents, or where required by the Engineer, the Contractor shall furnish to the Engineer for review five (5) prints of each shop drawing. The term "shop drawing" as used herein shall be understood to include, but not be limited to, material specifications, detail design calculations, fabrication and installation drawings, lists, graphs and operating instructions.

Unless otherwise required, shop drawings shall be submitted at a time sufficiently early to allow review of it by the Engineer, and to accommodate the rate of construction progress required under the Contract.

All shop drawing submittals shall be accompanied by a transmittal form using the NCSD standard format. Any shop drawing submittal not accompanied by such a form, or where all applicable items on the form are not completed, will be returned for resubmittal. The Contractor may authorize a material or equipment supplier to deal directly with the Engineer with regard to shop drawings; however, ultimate responsibility for the accuracy and completeness of the information contained in the submittal shall remain with the Contractor.

A separate transmittal form shall be used for each specific item or class of material or equipment for which a submittal is required. Transmittal of shop drawings on various items using a single transmittal form will be permitted only when the items taken together constitute a manufacturer's "package" or are so functionally related that expediency indicates review of the group or package as a whole.

Unless noted otherwise in these Contract Documents, the Engineer will have fifteen (15) calendar days from date of receipt in which to review and respond to each shop drawing or resubmittal of a shop drawing.

It is considered reasonable that the Contractor shall make a complete and acceptable submittal to the Engineer by the second submission of drawings. The County reserves the right to withhold funds due the Contractor to cover additional costs of the Engineer's review beyond the second submission.

- If two (2) prints of the drawing are returned to the Contractor marked "NO EXCEPTIONS TAKEN," formal revision of said drawing would not be required.
- If two (2) prints of the drawing are returned to the Contractor marked "MAKE CORRECTIONS NOTED," formal revision of said drawings will not be required.
- If two (2) print of the drawing is returned to the Contractor marked "AMEND - RESUBMIT," the Contractor shall revise said drawing and shall resubmit six (6) copies of the revised drawing to the Engineer.
- If two (2) prints of the drawing is returned to the Contractor marked "REJECTED - RESUBMIT," the Contractor shall resubmit six (6) new copies of the drawing to the Engineer.

Fabrication of an item shall not be commenced before the Engineer has reviewed the pertinent shop drawings and returned copies to the Contractor marked either "NO EXCEPTIONS TAKEN," or "MAKE CORRECTIONS NOTED." Revisions indicated on shop drawings shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis of claims for extra work. The Contractor shall have no claim for damages or extension of time due to any delay resulting from the Contractor's having to make the required revisions to shop drawings unless review by the Engineer of said drawings is delayed beyond a reasonable period of time and unless the Contractor can establish that the Engineer's delay in review actually resulted in a delay to the critical path of the Contractor's construction schedule. The review of such drawings by the

Engineer will be limited to checking for general conformance with the requirements of the Contract Documents, and shall in no way relieve the Contractor of responsibility for errors or omissions contained therein, nor shall such review operate to waive or modify any provision contained in the Contract Documents. Fabricating dimensions, quantities of material, applicable code requirements, and other contract requirements shall be the Contractor's responsibility.

No Work represented by required shop drawings should be purchased or commenced until the applicable submittal has been returned marked "NO EXCEPTIONS TAKEN" or "MAKE CORECTIONS NOTED". The Work shall conform to the approved shop drawings and all other requirements of the Contract Documents. The Contractor shall not proceed with any related Work which may be affected by the Work covered under shop drawings until the applicable shop drawings have been approved, particularly where piping, machinery, and equipment and the required arrangements and clearances are involved.

Except where the preparation of a shop drawing is dependent upon the approval of a prior shop drawing, all shop drawings pertaining to the same class or portion of the Work shall be submitted simultaneously.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation with be allowed therefore.

10-4.03 Trench Safety:

The Contractor, prior to beginning any trench or structure excavation 5 feet deep or over, shall submit to the Engineer and shall be in receipt of the Engineer's written acceptance of the Contractor's 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.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation with be allowed therefore.

10-4.04 Existing Highway Facilities:

It is the Contractor's responsibility to protect all existing facilities including, but not limited to, underground utilities, curbs, gutter, sidewalk, paving and any other features not indicated for demolition. Any damaged facilities shall be repaired or replaced to the satisfaction of the owner of said facilities at the Contractor's expense, without additional compensation.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation with be allowed therefore.

10-4.05 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 or 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 the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefore.

10-4.06 Field Measurements:

Prior to the fabrication of materials, the Contractor shall pothole and inspect pipeline connections with existing facilities to verify that measurements, materials, and elevations are as indicated on the Drawings. Measurements shown on the Drawings are from record information; namely, record drawings. Contractor shall verify that measurements and dimensions for each pipe reach is as indicated on the Drawings prior to commencing the pipe installation activities.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefore.

10-4.07 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 and service connections within the limits of the work. 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.

Attention is directed to the requirement that the Contractor shall pothole each underground utility line and buried roadway facility within the proximity of the waterline work and confirm if their placement is where suspected. If the utilities and service connections differ from those shown on the Plans, the Contractor shall notify the Engineer immediately in writing. Within 10 working days, the Engineer may

make 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.

The Contractor shall notify the 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 any underground pipeline, conduit, duct, wire, or other structure.

All costs of potholing shall be borne by the Contractor. The Contractor shall place temporary paving at the pothole locations in accordance with the requirements and to the full satisfaction of the agency having jurisdictional authority over said streets. The Contractor shall maintain the temporary paving to the satisfaction of the Engineer until the actual pipeline construction occurs.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefore.

#### 10-4.08 Cross-Connection Control Requirements

Cross-connections of any type that permit a backflow condition from any source or system other than that of the NCSD's potable water mains are prohibited. A connection constituting a potential or actual backflow hazard is not permissible unless a backflow device or air gap, which is approved by the California State Department of Health Services and complies with Title 17 of the California State Administrative Code, is installed. Such an installation shall at all times be subject to inspection and regulation by the NCSD and San Luis Obispo County Public Health Department for the purpose of avoiding possibility of backflow.

The NCSD will not provide any water service to any premises or continue to serve water unless the public water supply is protected as required by State and County regulations.

Backflow preventive devices shall be approved by the County and shall be installed by and maintained at the expense of the water user.

The County will test such devices. The owner of the property shall overhaul or replace backflow preventers if they are found defective.

Service of water to any premises may be discontinued by the NCSD if a backflow prevention device required by the County is not installed; if any defect is found in an installed backflow preventative device has been removed or bypassed; or if unprotected cross-connections exist on the premises; and service will not be restored until such conditions or defect are corrected.

Regulations Relating to Cross-Connections, California Administrative Code – Title 17 – Public Health

Manual of Cross-Connection Control Procedures and Practices, State of California, Department of Health Services.

Water users which have multiple water systems shall abide by the requirements specified in Title 17 for marking safe and unsafe water lines, and have a designated water supervisor, if required by the NCSD.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefore.

10-4.09 Pipeline and Trench Earthwork:

Work in connection with pipeline and trench earthwork shall include but not be limited to any or all of the following described operations: clearing; excavation of all classes and of whatever substance encountered; backfilling; fine grading; preparation for right-of-way; subgrade for pipe and structures; and paving and performing any other similar, incidental, or appurtenant earthwork operation which may be necessary to properly complete the work indicated.

The Contractor shall notify the 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 any underground pipeline, conduit, duct, wire, or other structure.

Trench Safety

Attention is directed to Section 7-1.01E, "Trench Safety" of the Standard Specifications and these Special Provisions. Contractor shall submit a detailed plan in advance of any trench excavation work as part of this contract showing the design of shoring, bracing, sloping or other provisions for worker protection from the potential hazard of caving ground resulting from excavation of any trench or trenches over five (5) feet in depth. The detailed plan must be prepared by a registered civil engineer or structural engineer if the design varies from the shoring system standards required by the Construction Safety Orders. Payment for compliance with the requirements of "Trench Safety" shall be considered as included in the contract items of work involved and no separate payment will be made therefor.

Excavation for Pipe Trenches

Trenches for pipelines shall be excavated to the lines and grades shown on the Plans, as provided in the Specifications, and as approved by the Engineer.

Trench Width

The overall trench width shall not be more than 16 inches nor less than 12 inches wider than the largest outside diameter of the pipe to be laid therein, measured at a point 12 inches above the top of the pipe. Excavating and retrenching shall be true to line so that a clear space of not more than 8 inches or less than 6 inches in width is provided on each side of the largest outside diameter of the pipe in place. For the purpose of this article, the largest outside diameter shall be the outside diameter of the bell, on bell and spigot pipe, and outside diameter of coupling for sleeve coupling pipe.

Where the trench width, measured at a point 6 inches above the top of the bell or sleeve of the pipe is wider than the maximum set forth above, the trench area around the pipe shall be reworked to restore a trench condition and provide load factor acceptable to the Engineer. The reworking may result in one or more of the following

operations, subject to the approval of the Engineer: (1) Shaping the bottom of the trench to fit the pipe; (2) Placing sand around the pipe and to a point 6 inches above the top of the pipe; (3) Lowering the grade of the pipe until the trench condition can be met; (4) Installing a concrete cradle for the pipe; and (5) Providing concrete encasement for the pipe to a point 3 inches above the top of the pipe.

Limit of Excavation

Except by special permission of the Engineer, the maximum length of open trench shall not exceed 600 feet in the aggregate at any one location including excavation, construction, pipe laying and backfilling. In addition, at locations where access may be somewhat limited, requiring rerouting of traffic unnecessarily, the Engineer may reduce the maximum length of open trench permitted.

Trench Bottom for Pipe

The trench bottom shall be graded to provide a smooth, firm foundation at every point throughout the length of the pipe.

The trench shall be excavated to the established grade line of the outside bottom of the pipe. The bottom of the trench shall then be scarified to a minimum depth of 6 inches below the bottom of the pipe and uniformly graded to produce a firm but yielding subgrade which will provide uniform support of the pipe along the full length of each section. The bedding material so prepared throughout a minimum depth of 6 inches shall meet the requirements of NCSD Earthwork Section A-6 as shown immediately below in these specifications.

1/2" minus sand is to be used for Pipe Bedding and Pipe Zone material; it shall be free from foreign materials such as rocks, sticks, vegetation, etc., and shall meet the following gradation:

Sieve Size	Percentage Passing (By Weight)
3/8-inch	100
No. 4	75 – 100
No. 30	12 – 50
No. 100	5 – 20
No. 200	0 - 10

If it becomes necessary to excavate below the established grade line in order to remove boulders or other interfering objects, the voids shall be filled with material meeting these pipe-bedding requirements densified in the manner specified for bedding materials.

Where excavation is in rock, hardpan, shale, or other similar hard and unyielding materials, the trench shall be excavated to a depth at least 6 inches below the established grade line of the outside bottom of the pipe and filled with material as

specified above to grade line. The subgrade shall then be completed as previously stated. The material so placed shall be compacted to 90% relative compaction.

When excavation is in soft, unstable or excessively wet material which is unsuitable as a foundation for the pipe, such material shall be removed as directed by the Engineer and replaced with aggregate (see table below) to a depth approximately 3 inches below the grade line. The subgrade shall then be completed to the underside of the pipe using trench side native material if suitable, or imported sand if so directed by the Engineer.

Gradation – ASTM D 448 (No. 67)

Sieve Size	Percentage Passing (By Weight)
1 inch	100
3/4-inch	90 – 100
3/8 inch	20 – 55
No. 4	0 – 10
No. 8	0 - 5

At each joint in the pipe, the bottom of the trench shall be recessed in such a manner as to relieve the bell of the pipe or the pipe coupling of all load and to ensure continuous bearing along the pipe barrel upon the bedding material.

**Trench Backfill**

All trenches shall be backfilled after pipe, fittings and appurtenances have been installed. A 2-inch layer of sand shall be placed above pipe, fittings, and appurtenances before backfilling commences. Whenever a relative compaction requirement value is specified, it shall be a percentage of the maximum density as determined hereafter. Optimum moisture content and maximum density shall be determined in accordance with ASTM D 1557 and density of soil in place shall be determined using the methods approved by the Engineer.

All wood and waste material shall be removed from excavation preparatory to backfilling. Backfill material shall be approved in all cases by the Engineer and shall be free of trash, wood, large rock, or other objectionable debris. Backfilling shall include the refilling and compaction of the fill in trenches of excavations up to the subgrade of the street or to the existing ground surface.

**Pipe Bedding**

The pipe shall be carefully bedded during initial pipe zone backfill operations by hand placing, slicing with a shovel and tamping or “walking in” the material under the lower sector of the pipe to produce firm support for the full length of the barrel with full bearing on said bottom segment of the pipe equal to a minimum of 1/2 of the outside diameter of the barrel or 12-inches, whichever is greater.

#### Procedure at Pipe Zone

Subsequent backfill in the pipe zone shall consist of placing material as required in these specifications simultaneously on each side of the pipe for the full width of the trench and compacting said material to a relative compaction of 90% within the limits of the pipe zone. The pipe zone begins at the bottom of the pipe barrel and extends to a horizontal plane 12 inches above the top of the outside diameter of the pipe.

The pipe shall be carefully bedded by hand, placing and compacting clean sand as provided herein from the pipe foundation and/or subgrade to the springline of the pipe prior to backfilling above the pipe within the "pipe zone". Clean sand shall be used for the pipe bedding.

The pipe bedding, using clean sand as defined in the table above, shall be compacted by approved methods to a relative compaction of 90%. The pipe bedding backfill shall be brought to optimum moisture content and shall be placed in layers not exceeding 6 inches in thickness and each layer shall be solidly tamped with the proper tools so as not to injure, damage or disturb the pipe. Backfilling shall be carried on simultaneously on each side of the pipe to assure proper protection of the pipe. Water settling for compaction may be approved by the Engineer in the event the foundation and bedding materials are sufficiently granular and sandy in nature that the required compaction will be obtained.

Where pipe is shallow and the pipe zone extends too close to the finished surface, the pipe zone and trench zone shall be backfilled with 2-sack sand-cement slurry as indicated on the plans.

#### Procedure Above Pipe Zone

The remaining portion of the trench (i.e. Trench Zone) shall be backfilled, compacted and/or consolidated by approved methods to obtain a relative compaction of 95% in accordance with SLO County Standard U-4. Backfilling may be done with material meeting the structural material defined by SLO County Standards except that no oil cake, bituminous pavement, recycled concrete, rock or other lumpy material shall be used in the backfill, unless these materials are scattered and do not exceed 3 inches in any dimension. Material of perishable, spongy, or otherwise improper nature shall not be used in backfilling and no material greater than 3 inches in any dimension shall be placed within 1 foot of any pipe or structure.

#### Excess Excavated Material

All surplus excavated material not required for backfill shall become property of the Contractor and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

#### Imported Pipe Backfill Material

Whenever the excavated material is not suitable for backfill, as determined by the Engineer, the Contractor shall arrange for and furnish suitable imported material.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefore.

10-4.10 Polyvinyl Chloride (PVC) Pipe:

All PVC pipe up to 12 inches diameter shall be in accordance with the requirements of AWWA Standard C900, PR235, DR 18 for use in potable water service.

Size:

Pipe size shall be as called out on the plans.

Joints:

Only elastomeric gasket jointed PVC pipe shall be used. Either the integral bell design or the separate sleeve-type coupling joint may be used. Gaskets shall meet the requirement of AWWA C900. Oil resistant gaskets may be required in some instances by the Engineer. PVC pipe may not be used in areas subject to contamination by petroleum distillates.

Markings:

Each standard length of PVC, pipe and coupling if separate sleeve-type couplings are used, shall be marked with the nominal diameter, the OD base (cast iron pipe OD base is required), the material code (PVC 1120), the dimension ratio (DR) number, AWWA C900, the manufacturer's name, and seal of the testing agency that verified the suitability of the pipe material for potable water service.

If pipe is stored at a project site, it shall not be stacked higher than four feet and no weight shall be placed on bells or couplings. Stored pipe shall be covered to protect it from ultraviolet light (sun's rays). PVC pipe with noticeable color changes resulting from exposure to ultraviolet light may be rejected at the discretion of the Engineer.

Fittings:

Fittings shall be manufactured of ductile iron conforming to the requirements of AWWA C110, 350 psi pressure rating. All fittings shall be cement-mortar lined in accordance with AWWA C104.

Ductile iron fittings conforming to AWWA C153 ("compact fittings") may be used where restrained joint fittings and pipe are used to resist thrust instead of concrete thrust blocks, subject to approval by the Engineer. "Compact fittings", if used, shall be cement mortar lined in accordance with AWWA C104.

Fittings shall be rubber ring, hub end, suitable for direct connection to the mating PVC pipe except when connecting to a valve. Valves and fittings shall be flanged together.

Flanges shall conform to the bolt circle and bolt hole dimensions for flanges in AWWA C110. Gaskets for flanged joints shall be full-face, cut from 1/8-inch thick rubber with bolt holes prepunched.

Nuts and bolts for bolting flanged joints shall be standard hexagonal head machine bolts and hexagonal nuts conforming to the requirements of ASTM A307, Grade B. All buried flanged-end fittings shall be bolted with cadmium-plated steel nuts and bolts. All bolts shall be lubricated with graphite and oil. Flanged faces shall be wire brushed and cleaned prior to joining each flange.

All buried fittings and valves shall be wrapped in polyethylene film per Section 10-4.14 of these specifications.

Installation:

Trenching, bedding of PVC pipe, and backfilling of trenches shall conform to Section 10-4.10 of these specifications.

Unless a separate sleeve-type coupling jointed pipe is used, the manufacturer of which recommends deflecting pipe at the joints to follow a curved alignment, deviations from a straight pipeline alignment shall be made only by use of cast iron fittings, or pipe couplings with Engineer approval. Joining of pipe shall be in accordance with the manufacturer's printed instructions, which shall be furnished to the Engineer. Fittings shall be supported independently of the pipe. Five-foot lengths of pipe shall be used in and out of each fitting and valve and wherever pipe passes through a rigid structure.

Concrete thrust blocks shall be installed at the locations and in accordance with the Plans and shall consist of concrete containing not less than six sacks of portland cement per cubic yard. Concrete thrust blocks shall be placed between the undisturbed ground and the fittings to be anchored. The bearing area against undisturbed soil shall be as shown on the Plans. The concrete shall be so placed that the pipe joints and fittings will be accessible to repairs.

Insulated tracer wire shall be placed above all PVC pipe and service laterals, tracer wire shall be 12-gauge minimum. Bring tracer wire up in valve boxes, meter boxes, etc. Coil wire in box with sufficient length to extend two feet above finish grade.

At times when pipe laying is not in progress, the open end of pipes shall be closed by a vermin-proof plug secured so as to discourage tampering by children.

The Engineer shall be given not less than twenty-four hours notice before any connection is to be made to any existing main, and all necessary Encroachment Permits, Rights-of-Entry, etc., shall first be obtained.

TO VERIFY THE NECESSARY FITTINGS REQUIRED TO TIE INTO EXISTING WATER MAINS, CONTRACTOR SHALL EXCAVATE THE TIE-IN LOCATION IN THE PRESENCE OF A REPRESENTATIVE FROM THE NCSD. CONTRACTOR SHALL PERFORM THE TIE-INS IN ACCORDANCE TO NCSD STANDARDS AND SPECIFICATIONS AND AT THE DIRECTION OF THE ENGINEER AND NCSD.

In general, shutdowns in residential and commercial areas shall be made at times when there will be the least interruption of service. Connections shall be made only after complete and satisfactory preparation and notification of affected persons for such work has been made, in order that the shutdown may be as short as possible. All shutdowns by the Contractor shall be approved in advance by the Engineer and NCSD.

**In general, shutdowns to the existing system shall be limited in duration to 4 hours and shall occur between the hours of 10 p.m. and 2:00 a.m. The Contractor will be required to complete the connection work within this timeframe.** The NCSD will be responsible for all water main valve operations.

Flushing, Hydrostatic Testing and Disinfection of Potable Water Lines:

Installed pipe shall be flushed, tested and disinfected in accordance with AWWA M23, AWWA C651 and Section 10-4.20 of these specifications.

Unless otherwise specified, water for testing will be furnished by NCSD at the Contractor's expense. The Contractor shall make all necessary provisions for conveying the water from the NCSD's designated source to the points of use.

Release of water from pipelines, after testing has been completed, shall be performed as reviewed by the Engineer.

All testing operations shall be performed in the presence of the Engineer and a representative of the NCSD.

Temporary valves, plugs, bulkheads, and other air pressure testing and water control equipment and materials shall be provided by the Contractor subject to the Engineer's review. No materials shall be used which will be injurious to pipeline structure and future function. Air test gages shall be laboratory-calibrated annually test gages and shall be recalibrated by a certified laboratory at the Contractor's expense prior to the leakage test, only if required by the Engineer.

Measurement and Payment:

"12-IN Diameter PVC C900 PC235 DR18 WATER MAIN" shall be measured by the linear foot (measured horizontally) of water pipeline installed. The County will not release retention until the pipeline has passed pressure, leakage and bacteriological testing.

The contract price paid per linear foot for "12-IN Diameter PVC C900 PC235 DR18 WATER MAIN" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in furnishing and installing the water pipeline, complete in place, including trenching, excavation, groundwater dewatering, construction water, shoring, safety, bedding, pipe, standard pipe fittings, tees, crosses, elbows, end caps and blind flanges for abandoned pipe segments, restraints, nuts, bolts, gaskets, tracer wire, warning tape, plastic wrap, linings and coatings, disposal of removed pipe, pipe zone backfill, trench backfill, compaction, thrust blocks, sand-cement slurry encasement in shallow areas, flushing, disinfection, pressure and leakage testing, appurtenances, miscellaneous concrete, and cleanup as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and no additional compensation will be allowed therefore.

10-4.11 Resilient Seat Gate Valves:

These specifications designate the requirements for the manufacture and installation of resilient seat gate valves.

Materials and Workmanship

Resilient seat gate valves shall conform to the requirements of AWWA C-509 and the requirements set forth herein.

Resilient seat gate valves, unless otherwise indicated, shall be the same size as the main in which they are installed and shall be connected to ductile iron fittings by flanges or mechanical joints as shown on the plans. All valves shall be non-rising

stem, counterclockwise opening. Valves shall have the same type ends as the pipe or fitting on which they are installed. Valves are to have 2-inch-square cast-iron operating nuts. Valves shall be marked with raised lettering cast on the body indicating manufacture and working pressure. Minimum water working pressure to be 200 psig.

Valves shall be iron bodied, bronze mounted, with modified wedge disc or parallel-faced disk with replaceable resilient seats. The bronze stem nut shall be solid bronze conforming to ASTM B-62 (4-6% zinc). The bronze stem shall be cast bronze or forged bronze bar stock containing a maximum of 2% zinc. Valves shall be manufactured by Mueller, Clow or approved equivalent.

#### Interior and Exterior Coatings

The interior of the valve body and wedge shall be coated at the place of manufacture. Surfaces shall be sandblasted in accordance with SSPC-SP-5 (white metal blast cleaning). Interior coating shall consist of two coats of epoxy resin, Keysite 740 or equal, applied to a minimum total dry-film thickness of 10 mils. The exterior of valves shall be coated with epoxy at the place of manufacture.

#### Valve Boxes

Valve box assemblies shall conform to the requirements shown on the NCSD Standard Detail for Valve Boxes W-7.

#### Flanged Valves

Valves with flanged ends shall be bolted with cadmium plated steel machine bolts and nuts conforming to ASTM A-307, Grade B. All bolt threads shall be lubricated with graphite and oil prior to installation. Flange faces shall be wire brushed and cleaned prior to joining each flange. Gaskets shall be full-face, 1/8-inch neoprene (durometer 60-80) with prepunched bolt holes.

#### Mechanical Jointed Valves

Valves with mechanical joint ends shall conform to the requirements of AWWA C111. Gaskets shall conform to AWWA C111 with duck tips and backs.

#### Plastic Film Wrap

All buried valves and fittings shall be completely encapsulated with a 10-mil wrap of polyethylene film as set forth in Section 10-4.14 of these specifications.

#### Measurement and Payment:

“12-IN RESILIENT WEDGE GATE VALVE ASSEMBLY” shall be measured by each valve installed. The County will not release retention until the pipeline has passed pressure, leakage and bacteriological testing.

The contract price paid per each “12-IN RESILIENT WEDGE GATE VALVE ASSEMBLY” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in furnishing and installing the assembly, complete in place, including trenching, excavation, groundwater dewatering, shoring, construction water, bedding, safety, air release/vacuum release valves, valves, valve canisters, precast concrete valve boxes, valve extensions and risers, covers and lids, pipe, standard pipe fittings, tees, elbows, fitting and pipe joint restraints, nuts, bolts, gaskets, tracer wire, plastic wrap, warning tape, linings and coatings, pipe zone backfill, trench backfill, compaction,

thrust blocks, disinfection, pressure and leakage testing, appurtenances, site restoration, miscellaneous concrete, and cleanup as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and no additional compensation will be allowed therefore.

10-4.12 Plastic Film Wrap of Valves, Flanges, and Other Fittings:

This specification designates the requirements for the manufacture and installation of polyethylene plastic wrap around all valves, flanges, and other fittings when buried underground.

Materials

The polyethylene film shall be of virgin polyethylene and shall meet the requirements of ASTM D 1248 for Type I, Class A, Grade E-1 and shall have a flow rate not exceeding 0.4 grams/minute per ASTM D 1238.

The polyethylene film shall be 10 mils in thickness. The length shall be sufficient to firmly attach the film to the pipe on either side of the valve, flange or fitting. The following minimum flat sheet widths shall be used for the specified valve sizes:

<b>Nominal Valve or Flange Size (Inches)</b>	<b>Minimum Flat Sheet Width (Inches)</b>
6	24
8	24
10	30
12	36
16 and Larger	48

Tape for securing the polyethylene wrap shall be 2-inch-wide adhesive tape, such as Polyken 900 (polyethylene), Scotchwrap 5 (polyvinyl), or approved equal. The tape shall be such that the adhesive will bond securely to both metal surfaces and polyethylene film.

Installation

The valves shall be wrapped by passing the flat sheet of film under the valve bottom and bringing the ends up around the body to the stem and securing it in place with 2-inch strips of the plastic adhesive tape. The polyethylene shall be secured around the valve stem in such a manner as to leave the stem free to operate. The film shall be brought completely around the flanges and secured to the pipe with plastic adhesive tape on either side of the valve, flange or fitting.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefore.

10-4.13 Water Services:

Water services shall be installed at the locations shown on the Plans using the type of materials, valves, and appurtenances as shown on the NCSD Standard Details and by reference shall be included with these specifications. The water services shall be terminated at an angle meter stop at the locations shown on the NCSD Standard Details.

Water Meters

Water meters shall be installed by the NCSD (refer to NCSD Standard Detail W-3).

Meter Boxes

Concrete meter boxes shall be purchased and installed by the Contractor for each meter connection as shown in NCSD Standard Detail W-3.

Materials

Schedule 80 PVC or copper tubing shall be used for all services. Angle meter stop, corporation stop, and customer valve shall be ball type. Angle meter stops and customer valves shall be lockable. Water service materials are listed below, and are also indicated on the appropriate standard detail. Alternate equivalent materials may only be used with written approval from the Engineer.

Service Saddles

For AC/DI PIPE

1" – 2" FIP TAP W/BRZ BODY AND BRZ STRAPS  
JAMES JONES PART # J979  
FORD PART # 202B

For PVC C900 PIPE

1" – 2" FIP TAP W/BRZ BODY AND SS STRAPS  
JAMES JONES PART # J969  
FORD PART # 202BS

Corp Stops – Ball Type

1"- 2" MIP X CTS COMPRESSION BALL CORP  
JAMES JONES PART # J1535  
FORD PART #FB1100

1" – 2" MIP X PVC COMPRESSION BALL CORP  
JAMES JONES PART #J1977  
FORD PART # FB1102

Angle Meter Stops – Ball Type

1" CTS X MCN COMPRESSION ANGLE BALL VALVE  
JAMES JONES PART# J1963W  
FORD PART # BA43-W

1-1/2" – 2" CTS COMPRESSION X METER FLG BALL VALVE  
JAMES JONES PART # J1975W  
FORD PART # BFA43-W

1" PVC COMPRESSION X MCN ANGLE BALL VALVE  
JAMES JONES PART #J4211W  
FORD PART # NOT AVAILABLE

1-1/2" – 2" PVC COMPRESSION X METER FLANGE  
JAMES JONES PART # J1979W  
FORD PART # NOT AVAILABLE

Customer Ball Valve

1" FIP X MCN BALL VALVE W/LEVER HANDLE

JAMES JONE PART # J1908W

FORD PART # B13-W

1-1/2" - 2" FIP X METER FLANGE BALL VALVE W/LEVER HANDLE

JAMES JONES PART # J1913W

FORD PART # BF13-W

Measurement and Payment:

"1-IN WATER SERVICE LATERAL AND METER ASSEMBLY" shall be measured by each water service installed. The County will not release retention until the pipeline has passed pressure, leakage and bacteriological testing.

The contract price paid per each "1-IN WATER SERVICE LATERAL AND METER ASSEMBLY" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in furnishing and installing the water service lateral and meter assembly, complete in place, including trenching, excavation, groundwater dewatering, shoring, safety, construction water, pipe, saddles, valves, standard pipe fittings, tees, elbows, restraints, nuts, bolts, gaskets, tracer wire, plastic wrap, warning tape, linings and coatings, gravel base, meter boxes, pipe zone backfill, trench backfill, compaction, disinfection, pressure and leakage testing, appurtenances, site restoration, miscellaneous concrete, and cleanup as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and no additional compensation will be allowed therefor.

10-4.14 Fire Hydrant Assembly

Fire hydrant assemblies and future hydrant laterals shall be installed at the locations shown on the Plans using the type of materials, valves, and appurtenances as shown on the NCSD Standard Details, which by reference shall be included with these specifications.

Measurement and Payment:

"FIRE HYDRANT ASSEMBLY" and "STUBBED FUTURE FIRE HYDRANT LATERALS" shall be measured by each hydrant installed. The County will not release retention until the pipeline has passed pressure, leakage and bacteriological testing.

The contract price paid per each "FIRE HYDRANT ASSEMBLY" and "STUBBED FUTURE FIRE HYDRANT LATERALS" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in furnishing and installing the hydrant assembly and hydrant lateral, complete in place, including trenching, excavation, groundwater dewatering, shoring, construction water, bedding, safety, hydrants (where specified), precast concrete valve boxes, valve extensions and risers, covers and lids, pipe, standard pipe fittings, tees, end-caps (where specified), elbows, fitting and pipe joint restraints, nuts and bolts, tracer wire, plastic wrap, warning tape, linings and coatings, pipe zone backfill, trench backfill, compaction, thrust blocks, disinfection, pressure and leakage testing, appurtenances, site restoration, miscellaneous concrete, and cleanup as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and no additional compensation will be allowed therefore.

10-4.15 Air Release/Vacuum Release Assembly

Air release/vacuum release assemblies shall be installed at the locations shown on the Plans using the type of materials, valves, and appurtenances as shown on the NCSD Standard Details, which by reference shall be included with these specifications.

Measurement and Payment:

“2-IN AIR RELEASE/VACUUM RELEASE VALVE ASSEMBLY” shall be measured by each valve assembly installed. The County will not release retention until the pipeline has passed pressure, leakage and bacteriological testing.

The contract price paid per each “2-IN AIR RELEASE/VACUUM RELEASE VALVE ASSEMBLY” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in furnishing and installing the assembly, complete in place, including trenching, excavation, groundwater dewatering, shoring, construction water, bedding, safety, air release/vacuum release valves, valves, valve canisters, precast concrete valve boxes, valve extensions and risers, covers and lids, pipe, standard pipe fittings, tees, elbows, fitting and pipe joint restraints, nuts, bolts, gaskets, tracer wire, plastic wrap, warning tape, linings and coatings, pipe zone backfill, trench backfill, compaction, thrust blocks, disinfection, pressure and leakage testing, appurtenances, site restoration, miscellaneous concrete, and cleanup as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and no additional compensation will be allowed therefore.

10-4.16 Adjust Water Valve Cover to Grade

This work consists of the Contractor providing all the labor, materials, tools, equipment and incidentals required for adjusting water valve covers to grade in conformance with the NCSD standard drawings, the plans, and these specifications.

Water valve covers shall be adjusted after the final pavement surface is constructed. It is the Contractor’s responsibility to maintain accurate locations of all temporary covers in order to properly locate them after final pavement has been placed.

Measurement and Payment:

“ADJUST WATER VALVE COVER TO GRADE” shall be measured by each water valve cover adjusted.

The contract price paid per each “ADJUST WATER VALVE COVER TO GRADE” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in adjusting the water valve covers to grade, complete in place, including saw-cutting, excavating, compacting, loading, hauling, disposal, placing, finishing, and cleanup as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and no additional compensation will be allowed therefor.

10-4.17 Flushing, Testing and Disinfection of Water Pipe:

After completion of the pipeline installation, the line shall be tested under a hydrostatic pressure test of at least 150 psi, as measured at the low point of the pipeline, for a period of not less than 4 hours for each section of pipe tested. The pressure shall be maintained by restoring the test pressure whenever it falls 5 psi. At

the conclusion of the 4 hours, the test pressure shall be restored and all water used during the tests shall be accurately measured to determine the actual leakage.

The Contractor shall provide suitable calibrated tanks for measurement of leakage and shall furnish the necessary bulkheads, piping, calibrated gauges, pumps, power, labor and other means, and shall do everything necessary for filling the pipeline and for obtaining and maintaining the required water pressure.

The Contractor, at his own expense, shall do all excavating necessary to locate and repair leaks or other defects which may develop under test, including removal of backfill already placed. The Contractor shall make all repairs necessary to secure the required water tightness and shall replace excavated material, following which the test shall be repeated until the pipe is found satisfactory.

The maximum allowable leakage volume for rubber-gasketed pipe is defined by the formula.

$$L = [HND(P)^{1/2}] / C$$

Where:

- L = allowable leakage (gallons)
- H = specified test period (hours)
- N = number of rubber-gasketed joints in the pipe tested
- D = diameter of the pipe (inches)
- P = Specified test pressure (psig)
- C = 7,400

<b>Allowable Leakage per 50 Joints for 4 Hour Test Duration</b>					
<b>Test Pressure</b>	<b>Nominal Pipe Diameter, in.</b>				
	<b>4</b>	<b>6</b>	<b>8</b>	<b>10</b>	
<b>200</b>	1.53	2.29	3.06	3.82	
<b>175</b>	1.43	2.15	2.86	3.58	
<b>150</b>	1.32	1.99	2.65	3.31	

Regardless of the rate of leakage, all detectable leaks shall be repaired.

Disinfection of Water Lines

After pressure testing and prior to acceptance of the work, the entire pipeline, including all valves, fittings, hydrants and other accessories shall be disinfected in accordance with AWWA C651 – Continuous-Feed Method and as follows (Tablet Method will not be allowed):

Chlorine residual shall be determined in accordance with the method specified in the Appendix to AWWA C651 with amounts of sufficient chlorine to produce a dosage of 40-50 ppm and a residual of not less than 5 ppm after 24 hours. The Contractor shall provide and keep chlorine residual testing and indicating apparatus available on the site during the disinfection period.

During the chlorination process, all valves and accessories shall be operated. After chlorination, the water shall be flushed from the line at its extremities until the replacement water tests are equal, chemically and bacteriologically, to those of the permanent supply.

Following the flushing of the line, the Contractor shall retain a qualified laboratory to perform a bacteriological test. Such a test shall meet the California Department of Health Services requirements for domestic water purposes prior to acceptance by the Engineer and NCSD for integration and use in the system. The cost of the test(s) shall be born by the Contractor.

The new water main shall be kept physically disconnected from the active distribution system until satisfactory completion of the bacteriological test. See AWWA C651 Section 4.8.

Full compensation for conforming to the requirements of this section shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation with be allowed therefore.