

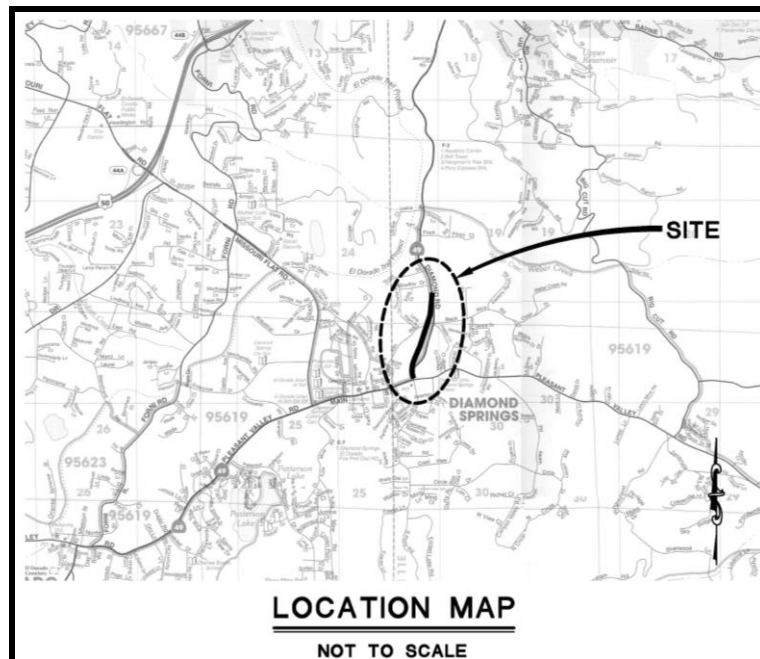
**COUNTY OF EL DORADO, CALIFORNIA  
COMMUNITY DEVELOPMENT SERVICES  
DEPARTMENT OF TRANSPORTATION**

**CONTRACT DOCUMENTS**

INCLUDING  
NOTICE TO BIDDERS, SPECIAL PROVISIONS,  
PROPOSAL, AND AGREEMENT  
FOR

**DIAMOND SPRINGS PARKWAY - PHASE 1A -  
SR-49 REALIGNMENT**

CIP No. 72375, CONTRACT No. 2720



FOR USE WITH  
STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION,  
2015 STANDARD SPECIFICATIONS AND STANDARD PLANS

**BID OPENING DATE: JANUARY 25, 2019**

**COUNTY OF EL DORADO, CALIFORNIA  
COMMUNITY DEVELOPMENT SERVICES  
DEPARTMENT OF TRANSPORTATION**

**CONTRACT DOCUMENTS**

INCLUDING  
NOTICE TO BIDDERS, SPECIAL PROVISIONS,  
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FOR

**DIAMOND SPRINGS PARKWAY - PHASE 1A -  
SR-49 REALIGNMENT**

CIP No. 72375, CONTRACT No. 2720

The various portions of the Contract Documents have been prepared under the direction of the following licensed Civil Engineer, in accordance with California Business and Professions Code § 6735.



---

Dustin W. Harrington  
Registered Civil Engineer No. 71517



**County of El Dorado, State of California  
Community Development Services  
Department of Transportation**

**Diamond Springs Parkway - Phase 1A - SR-49 Realignment**  
CIP No. 72375, Contract No. 2720

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**COUNTY OF EL DORADO, CALIFORNIA  
COMMUNITY DEVELOPMENT SERVICES  
DEPARTMENT OF TRANSPORTATION**

**NOTICE TO BIDDERS**

**NOTICE IS HEREBY GIVEN** by the County of El Dorado, State of California, that sealed bids for Work in accordance with the Project Plans (Plans) and Contract Documents designated:

**DIAMOND SPRINGS PARKWAY - PHASE 1A - SR-49 REALIGNMENT  
CIP No. 72375, Contract No. 2720**

Will be received by the County of El Dorado, Community Development Services, Department of Transportation at the front counter of 2850 Fairlane Court, Building C, Placerville, California, until **January 25, 2019 at 2:00 P.M.**, at which time bids will be publicly opened and read by the Department of Transportation.

No Bid may be withdrawn after the time established for receiving bids or before the award and execution of the Contract, unless the award is delayed for a period exceeding sixty (60) calendar days. Bids must be executed in accordance with the instructions given and forms provided in the Contract Documents furnished by the Department of Transportation through Quest Construction Data Network (Quest). **The Proposal including the Bidder's Security, Form 590, and Payee Data Record shall be submitted in a sealed envelope clearly marked:**

**"PROPOSAL FOR DIAMOND SPRINGS PARKWAY - PHASE 1A - SR-49 REALIGNMENT"  
CIP No. 72375, Contract No. 2720  
TO BE OPENED AT 2:00 P.M. ON JANUARY 25, 2019**

**LOCATION/DESCRIPTION OF THE WORK:** The Project is located along Highway 49, in the community of Diamond Springs, approximately 3 miles south of the City of Placerville in the County of El Dorado. The Work to be done is shown on the Plans, and generally consists of, but is not limited to:

- A. Realignment and widening of State Route 49 (SR-49) from the intersection of Pleasant Valley Road to 2,000 feet north of Lime Kiln Road/Black Rice Road. Roadway improvements on SR-49 include roadway excavation, HMA paving and dike, concrete curb, gutter, and sidewalk, signing and striping, permanent and temporary fence removal and construction, drainage improvements, signal modifications, retaining wall, and underground utility construction. Other items or details not mentioned above, that are required by the plans, Standard Plans, Standard Specifications, or these Special Provisions must be performed, constructed or installed.
- B. Bids are required for the entire Work described herein.
- C. The Contract time is TWO-HUNDRED FIFTY (250) WORKING DAYS.
- D. For bonding purposes the anticipated Project cost is less than \$9,000,000.
- E. A pre-bid meeting is scheduled for this Project on **January 16, 2019 at 2:00 P.M.** at the County of El Dorado Department of Transportation, 2441 Headington Road, Placerville, CA. The meeting will be held in the downstairs conference room. Attendance at the pre-bid meeting is not mandatory.
- F. This Project is being formally bid in accordance with Public Contract Code 22032 and County of El Dorado Ordinance Code section 3.14.040.

**OBTAINING OR VIEWING CONTRACT DOCUMENTS:** The Contract Documents, including the Project Plans, may be viewed and/or downloaded from the Quest website at <http://www.questcdn.com>. Interested parties may also access the Quest website by clicking on the link next to the Project Name or entering the Quest Project # on

Diamond Springs Parkway – Phase 1A – SR-49 Realignment  
**CIP No. 72375, Contract No. 2720**  
December 18, 2018

County of El Dorado  
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the Department of Transportation's website at <http://www.edcgov.us/Government/DOT/pages/BidsHome.aspx>.

Interested parties may view the Contract Documents, including the Project Plans, on the Quest website at no charge. The digital Contract Documents, including the Project Plans, may be downloaded for \$15.00 by inputting the Quest Project #4859146 on the websites' Project Search page. Please contact QuestCDN.com at (952) 233-1632 or [info@questcdn.com](mailto:info@questcdn.com) for assistance in free membership, registration, downloading, and working with this digital project information.

**To be included on the planholders list, receive notification of addenda, and to be eligible to bid interested parties must download the Contract Documents, including the Project Plans, from Quest. Those downloading the Contract Documents, including the Project Plans, assume responsibility and risk for completeness of the downloaded Contract Documents.**

The Contract Documents, including the Project Plans, may be examined in person at the Department of Transportation's office at 2850 Fairlane Court, Placerville CA. However, the Department of Transportation will no longer sell paper copies of the Contract Documents.

The cross sections and the following Supplemental Project Information/Information Handout will be provided in pdf format as part of the Contract Documents on Quest's website to all planholders who acquire the Contract Documents digitally through Quest:

- Geotechnical Engineering Study & Supplement Geotechnical Memorandum
- Joint Trench Composite Drawings and Form B
- Cross Sections
- Revised Standard Plans

**CONTRACTORS LICENSE CLASSIFICATION:** Bidders must be properly licensed to perform the Work pursuant to the Contractors' State License Law (Business and Professions Code Section 7000 et seq.) and must possess a **CLASS A** license or equivalent combination of Classes required by the categories and type of Work included in the Contract Documents and Plans at the time bids are submitted, and must maintain a valid license through completion and acceptance of the Work, including the guarantee and acceptance period. Failure of the successful Bidder to obtain proper adequate licensing will constitute a failure to execute the Contract and will result in the forfeiture of the Bidder's security.

**BUSINESS LICENSE:** The County Business License Ordinance provides that it is unlawful for any person to furnish supplies or services, or transact any kind of business in the unincorporated territory of the County of El Dorado without possessing a County business license unless exempt under County Ordinance Code Section 5.08.070. The Bidder to whom an award is made must comply with all of the requirements of the County Business License Ordinance, where applicable, prior to beginning Work under this Contract and at all times during the term of this Contract.

**CONTRACTOR REGISTRATION:** No contractor or subcontractor may bid on any public works project, be listed in a bid proposal for any public works project, or engage in the performance of any contract for public work unless registered with the Department of Industrial Relations pursuant to Labor Code sections 1725.5 and 1771.1.

An inadvertent error in listing a subcontractor who is not registered pursuant to Section 1725.5 in a bid proposal shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive if the requirements of Labor Code section 1771.1 are met.

**SUBCONTRACTOR LIST:** Each Proposal must have listed therein the name, contractor's license number, DIR number, and address of each subcontractor to whom the bidder proposes to subcontract portions of the Work in an amount in excess of 0.5% of the total bid 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 must also describe in the Subcontractor List the Work to be performed by each subcontractor listed. The Work to be performed by the subcontractor must be shown by listing the bid item number, bid item description, and portion

of the Work to be performed by the subcontractor in the form of a percentage (not to exceed 100%) calculated by dividing the Work to be performed by the subcontractor by the respective bid item amount(s) (not by the total bid price).

The percentage of each bid item subcontracted may be submitted with the Bidder's bid or sent via email or fax to Brian Franklin, County of El Dorado Department of Transportation, email- [Brian.Franklin@edcgov.us](mailto:Brian.Franklin@edcgov.us), Fax-(530) 626-0387 by 4:00 p.m. on the first business day after the bid opening. The email or fax must contain the name of each subcontractor submitted with the Bidder's bid along with the bid item number, the bid item description, and the percentage of each bid item subcontracted, as described above. At the time bids are submitted, all listed subcontractors must be properly licensed to perform their designated portion of the Work. The bidder's attention is directed to other provisions of the Act related to the imposition of penalties for failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions.

An inadvertent error in listing the California Contractor license number on the Subcontractor List will not be grounds for filing a bid protest or grounds for considering the bid non-responsive if the Bidder submits the corrected contractor's license number to Brian Franklin via fax or email as noted above within 24 hours after the bid opening, provided the corrected contractor's license number corresponds to the submitted name and location for that subcontractor.

**DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION:** The County of El Dorado affirms that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation.

Bidder will take all necessary affirmative steps to assure that minority firms, women's business enterprises and labor surplus area firms are used when possible.

**NONDISCRIMINATION:** Comply with Chapter 5 of Division 4 of Title 2, California Code of Regulations and the following.

**NOTICE OF REQUIREMENT FOR NONDISCRIMINATION PROGRAM  
(GOVERNMENT CODE SECTION 12990)**

Comply with Section 7-1.021(2), "Nondiscrimination," of the Standard Specifications, which is applicable to all nonexempt State contracts and subcontracts, and to the "Standard California Nondiscrimination Construction Contract Specifications" set forth therein. The specifications are applicable to all nonexempt State construction contracts and subcontracts of \$5,000 or more.

Comply with the fair employment practices provisions in the *Draft Agreement* contained in these Contract Documents that will apply to this Contract.

**PREVAILING WAGE REQUIREMENTS:** Contractor's attention is directed to the requirements of Division 2 Part 7, Chapter 1 of the California Labor Code, including but not limited to Sections 1773, 1773.1, 1773.2, 1773.6, and 1773.7. The general prevailing rate of wages in the county in which the Work is to be done has been determined by the Director of the California Department of Industrial Relations. Interested parties can obtain the current wage information by submitting their requests to the Department of Industrial Relations, Division of Labor Statistics and Research, PO Box 420603, San Francisco CA 94142-0603, Telephone (415) 703-4708 or by referring to the website at <http://www.dir.ca.gov/OPRL/PWD>. The rates at the time of the bid advertisement date of a project will remain in effect for the life of the project in accordance with the California Code of Regulations, as modified and effective January 27, 1997.

Copies of the general prevailing rate of wages in the county in which the Work is to be done are also on file at the Department of Transportation's principal office, and are available upon request.

In accordance with the provisions of Labor Code 1810, eight (8) hours of labor constitutes a legal day's work upon all work done hereunder, and Contractor and any subcontractor employed under this Contract must conform to and be bound by the provisions of Labor Code Sections 1810 through 1815.

Diamond Springs Parkway – Phase 1A – SR-49 Realignment  
**CIP No. 72375, Contract No. 2720**  
December 18, 2018

County of El Dorado  
**Notice to Bidders**  
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This Project is subject to the requirements of Title 8, Chapter 8, Subchapter 4.5 of the California Code of Regulations including the obligation to furnish certified payroll records directly to the Compliance Monitoring Unit under the Labor Commissioner within the Department of Industrial Relations Division of Labor Standards Enforcement in accordance with Section 16461.

**BID SECURITY:** A bid security must be provided with each bid. Bid security must be in an amount of not less than ten percent (10%) of the total amount of the Bid for bid and must be cash, a certified check or cashier's check drawn to the order of the County of El Dorado or a Bidder's Bond executed by a surety satisfactory to the County of El Dorado **on the form provided in the Proposal section of these Contract Documents.**

**BID PROTEST PROCEDURE:** The protest procedure is intended to handle and resolve disputes related to the bid award for this Project pursuant to 2 Code of Federal Regulations Part 200.318(k) and County of El Dorado policies and procedures. A protestor must exhaust all administrative remedies with the County of El Dorado before pursuing a protest with a Federal Agency. Reviews of protests by the Federal agency will be limited to:

1. Violations of Federal law or regulations and the standards of 2 Code of Federal Regulations Part 200.318(k). Violations of State of California or local law will be under the jurisdiction of the State of California or the County of El Dorado; and
2. Violation of the County of El Dorado's protest procedures for failure to review a complaint or protest. Protests received by the Federal agency other than those specified above will be referred to the County of El Dorado.

The protest procedure is an extension of the formal bid process and allows those who wish to protest the recommendation of an award after bid the opportunity to be heard.

**Policy:** Upon completion of the bid evaluation, the Department of Transportation will notify all bidders of the recommendation of award, the basis therefore, and the date and time on which the recommendation for award will be considered and acted upon by the Board of Supervisors. All bidders may attend the Board of Supervisors meeting at the time the agenda item is considered, address the Board of Supervisors, and be heard.

**Procedure:** If a bidder wishes to protest the award, this is the procedure:

1. The Department of Transportation will review the bids received in a timely fashion under the terms and conditions of the Notice to Bidders, and notify the bidders in writing, at the fax number designated in the Proposal, of its recommendation including for award or rejection of bids ("All Bidders Letter").
2. Within five (5) business days from the date of the "All Bidders Letter," the Bidder protesting the recommendation for award must submit a letter of protest to and must be received by the County of El Dorado, Department of Transportation, Attention Brian Franklin, 2850 Fairlane Court., Placerville, CA 95667, and state in detail the basis and reasons for the protest. The Bidder must provide facts to support the protest, including any evidence it wishes to be considered, together with the law, rule, regulation, or criteria on which the protest is based.
3. If the Department of Transportation finds the protest to be valid, it may modify its award recommendations and notify all bidders of that decision. If the Department of Transportation does not agree with the protest, or otherwise fails to resolve the protest, the Department of Transportation will notify the bid protestor and all interested parties of its decision and the date and time that the recommendation for award will be agendized for the Board of Supervisors' consideration and action. The Department of Transportation will also include in its report to the Board of Supervisors the details of the bid protest.
4. The Bidder may attend the Board of Supervisors meeting at which the recommendation and bid protest will be considered. The Board of Supervisors will take comment from the Bidder, staff, and members of the public who wish to speak on the item. In the event that the Bidder is not in attendance at that time, the bid protest may be dismissed by the Board of Supervisors without further consideration of the merits; and

The decision of the Board of Supervisors on the bid protest will be final.

**AWARD OF CONTRACT:** Bids will be considered for award by the Board of Supervisors. The County of El Dorado reserves the right after opening bids to reject any or all bids, to waive any irregularity in a bid, or to make award to the lowest responsive, responsible Bidder and reject all other bids, as it may best serve the interests of the County.

As a condition of award, the successful Bidder will be required to submit bonds and evidence of insurance prior to execution of the Agreement by the County. Failure to meet this requirement constitutes abandonment of the Bid by the Bidder and forfeiture of the Bidder's security. Award will then be made to the next lowest, responsive, responsible Bidder.

Office Engineer must receive all required documents within ten (10) business days of the date of the Notice of Award of Contract letter.

**ESCROW BID DOCUMENTS:** Refer to the special provisions in the Contract Documents entitled "Escrow Bid Documents" for the provisions requiring the successful bidder to submit in a sealed lockable container to the Department of Transportation all documentary information used to prepare its bid.

**RETAINAGE FROM PAYMENTS:** The Contractor may elect to receive one hundred percent (100%) of payments due under the Contract from time to time, without retention of any portion of the payment by the County, by depositing securities of equivalent value with the County in accordance with the provisions of Section 22300 of the Public Contract Code. Securities eligible for deposit hereunder are be limited to those listed in Section 16430 of the Government Code, or bank or savings and loan certificates of deposit.

**PROJECT ADMINISTRATION:** Submit all Requests for Information (RFI) during the bid period on the Quest website under the Quest #4859146 under "Project Q&A". If the response does not require an addendum, a response will be posted on the Quest website under the RFI under "Project Q&A". It is the bidders' responsibility to check this website under "Project Q&A" for responses to bidders' inquiries during the bid period. Addenda will be uploaded in pdf format to Quest's website and Quest will issue an automatic email notification to all planholders that have acquired the Contract Documents digitally through Quest. The list of planholders will be available on Quest's website under "View Planholders".

No oral responses to any questions concerning the content of the Contract Documents will be given. All responses will be in the form of written addenda to the Contract Documents or written responses to bidders' inquiries. Responses to bidders' inquiries and addenda will be posted on the Quest website as described above.

**BY ORDER OF** the Director of the Community Development Services, Department of Transportation, County of El Dorado, State of California.

Authorized by the Board of Supervisors on December 18, 2018, at Placerville, California.

By \_\_\_\_\_  
Rafael Martinez, Director  
Community Development Services  
Department of Transportation

# ORGANIZATION

Special provisions are under headings that correspond with the main-section headings of the *Standard Specifications*. A main-section heading is a heading shown in the table of contents of the *Standard Specifications*.

Each special provision begins with a revision clause that describes or introduces a revision to the *Standard Specifications* as revised by any revised standard specification.

Any paragraph added or deleted by a revision clause does not change the paragraph numbering of the *Standard Specifications* for any other reference to a paragraph of the *Standard Specifications*.

## STANDARD PLANS LIST

The standard plan sheets applicable to this Contract include those listed below. The applicable revised standard plans (RSPs) listed below are included in the supplemental project information.

### ABBREVIATIONS, LINES, SYMBOLS, AND LEGEND

A3A	Abbreviations (Sheet 1 of 3)
A3B	Abbreviations (Sheet 2 of 3)
A3C	Abbreviations (Sheet 3 of 3)
A10A	Legend - Lines and Symbols (Sheet 1 of 5)
RSP A10B	Legend - Lines and Symbols (Sheet 2 of 5)
A10C	Legend - Lines and Symbols (Sheet 3 of 5)
A10D	Legend - Lines and Symbols (Sheet 4 of 5)
A10E	Legend - Lines and Symbols (Sheet 5 of 5)

### PAVEMENT MARKERS, TRAFFIC LINES, AND PAVEMENT MARKINGS

RSP A20A	Pavement Markers and Traffic Lines - Typical Details
RSP A20B	Pavement Markers and Traffic Lines - Typical Details
RSP A20D	Pavement Markers and Traffic Lines - Typical Details
A24B	Pavement Markings - Arrows and Symbols
A24D	Pavement Markings - Words
A24E	Pavement Markings - Words, Limit and Yield Lines
A24F	Pavement Markings - Crosswalks

### EXCAVATION AND BACKFILL

A62A	Excavation and Backfill - Miscellaneous Details
A62B	Limits of Payment for Excavation and Backfill - Bridge Surcharge and Wall
A62D	Excavation and Backfill - Concrete Pipe Culverts
A62F	Excavation and Backfill - Metal and Plastic Culverts

### OBJECT MARKERS, DELINEATORS, CHANNELIZERS, AND BARRICADES

A73A	Object Markers
A73B	Markers
A73C	Delineators, Channelizers and Barricades

### CONCRETE BARRIER TYPE 60 SERIES

A76A	Concrete Barrier Type 60
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## FENCES

RSP A85	Chain Link Fence
RSP A85A	Chain Link Fence Details
A85B	Chain Link Fence Details
A86	Barbed Wire and Wire Mesh Fences
A86C	Barbed Wire and Wire Mesh Fence Details at Ditch Crossing
A86D	Barbed Wire and Wire Mesh Fence - Miscellaneous Details

**CURBS, DRIVEWAYS, DIKES, CURB RAMPS, AND ACCESSIBLE PARKING**

A87A	Curbs and Driveways
RSP A87B	Hot Mix Asphalt Dikes
RSP A88A	Curb Ramp Details

### DRAINAGE INLETS, PIPE INLETS AND GRATES

D71	Drainage Inlet Markers
RSP D73E	Precast Drainage Inlets - Types GO and GDO
RSP D73F	Precast Drainage Inlets Notes
RSP D73G	Precast Drainage Inlets Tables
RSP D74	Drainage Inlet Details
D75B	Concrete Pipe Inlets
D75C	Pipe Inlets - Ladder and Trash Rack Details
D77B	Grate Details No. 2

### GUTTER AND INLET DEPRESSIONS

D78A	Gutter Depressions
D78C	Inlet Depressions - Hot Mix Asphalt Shoulders

### PIPE DOWNDRAINS, ANCHORAGE SYSTEMS AND OVERSIDE DRAINS

D87B	Plastic Pipe Downdrain Details
D87D	Overside Drains

### FLARED END SECTIONS

D94A	Metal and Plastic Flared End Sections
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### PIPE COUPLING AND JOINT DETAILS

D97C	Corrugated Metal Pipe Coupling Details No. 3 - Helical and Universal Couplers
D97E	Corrugated Metal Pipe Coupling Details No. 5 - Standard Joint

### GABIONS AND UNDERDRAINS

D102	Underdrains
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### LANDSCAPE AND EROSION CONTROL

H52	Rolled Erosion Control Product
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**TEMPORARY CRASH CUSHIONS, RAILING AND TRAFFIC SCREEN**

T3A	Temporary Railing (Type K)
T3B	Temporary Railing (Type K)

### TEMPORARY TRAFFIC CONTROL SYSTEMS

RSP T9	Traffic Control System Tables for Lane and Ramp Closures
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T13	Traffic Control System for Lane Closure on Two Lane Conventional Highways TEMPORARY WATER POLLUTION CONTROL
T51	Temporary Water Pollution Control Details (Temporary Silt Fence)
T53	Temporary Water Pollution Control Details (Temporary Cover)
T54	Temporary Water Pollution Control Details (Temporary Erosion Control Blanket)
T58	Temporary Water Pollution Control Details (Temporary Construction Entrance)
T59	Temporary Water Pollution Control Details (Temporary Concrete Washout Facility)
T62	Temporary Water Pollution Control Details (Temporary Drainage Inlet Protection)
RSP T65	Temporary Water Pollution Control Details (Temporary High-Visibility Fence) BRIDGE DETAILS
RSP B0-3	Bridge Details RETAINING WALLS
RSP B3-1B	Retaining Wall Type 1 (Case 2)
B3-5	Retaining Wall Details No. 1
B3-6	Retaining Wall Details No. 2 CHAIN LINK RAILING, CABLE RAILING AND TUBULAR HAND RAILING
B11-47	Cable Railing SOUND WALLS
B15-1	Sound Wall Masonry Block on Footing Details (1)
B15-2	Sound Wall Masonry Block on Footing Details (2) ROADSIDE SIGNS
RS1	Roadside Signs - Typical Installation Details No. 1
RS2	Roadside Signs - Wood Post - Typical Installation Details No. 2
RS4	Roadside Signs - Typical Installation Details No. 4 OVERHEAD AND ROADSIDE SIGNS PANELS
S93	Framing Details for Framed Single Sheet Aluminum Signs, Rectangular Shape
S94	Roadside Framed Single Sheet Aluminum Signs, Rectangular Shape
S95	Roadside Single Sheet Aluminum Signs, Diamond Shape ELECTRICAL SYSTEMS - LEGEND AND ABBREVIATIONS
RSP ES-1A	Electrical Systems (Legend)
RSP ES-1B	Electrical Systems (Legend)
RSP ES-1C	Electrical Systems (Legend) ELECTRICAL SYSTEMS - TELEPHONE DEMARCATION CABINETS
RSP ES-3E	Electrical Systems (Telephone Demarcation Cabinet, Type B) ELECTRICAL SYSTEMS - SIGNAL HEADS, SIGNAL FACES AND MOUNTINGS
ES-4A	Electrical Systems (Signal Heads and Mountings)
ES-4B	Electrical Systems (Pedestrian Signal Heads)
RSP ES-4C	Electrical Systems (Signal Heads and Mountings)

RSP ES-4D	Electrical Systems (Signal Head Mounting)
ES-4E	Electrical Systems (Signal Heads and Optical Detector Mounting)
	<b>ELECTRICAL SYSTEMS - DETECTORS</b>
RSP ES-5A	Electrical Systems (Loop Detectors)
RSP ES-5B	Electrical Systems (Detectors)
ES-5C	Electrical Systems (Accessible Pedestrian Signal and Push Button Assemblies)
ES-5D	Electrical Systems (Curb and Shoulder Termination, Trench, and Handhole Details)
	<b>ELECTRICAL SYSTEMS - SIGNAL AND LIGHTING STANDARD, TYPE TS, AND PUSH BUTTON ASSEMBLY POST</b>
RSP ES-7A	Electrical Systems (Signal and Lighting Standard, Type TS, and Push Button Assembly Post)
	<b>ELECTRICAL SYSTEMS - SIGNAL AND LIGHTING STANDARDS</b>
RSP ES-7B	Electrical Systems (Signal and Lighting Standard, Type 1 and Equipment Identification Characters)
RSP ES-7F	Electrical Systems (Signal and Lighting Standard, Case 4 Signal Mast Arm Loading, Wind Velocity = 100 mph and Signal Mast Arm Lengths 25' to 45')
RSP ES-7G	Electrical Systems (Signal And Lighting Standard, Case 5 Signal Mast Arm Loading, Wind Velocity = 100 mph and Signal Mast Arm Lengths 50' to 55')
	<b>ELECTRICAL SYSTEMS - SIGNAL AND LIGHTING, MISCELLANEOUS ATTACHMENT</b>
ES-7R	Electrical Systems (Signal and Lighting, Miscellaneous Attachment)
	<b>ELECTRICAL SYSTEMS - PULL BOX</b>
RSP ES-8B	Electrical Systems (Traffic Pull Box)
	<b>ELECTRICAL SYSTEMS - ISOFOOTCANDLE CURVES AND FOUNDATION DETAILS</b>
RSP ES-11	Electrical Systems (Foundation Installations)
	<b>ELECTRICAL SYSTEMS - SPLICE INSULATION METHODS, FUSE RATING, KINKING AND BANDING DETAILS</b>
RSP ES-13A	Electrical Systems (Splicing Details)
	<b>ELECTRICAL SYSTEMS - CLOSED CIRCUIT TELEVISION POLE AND FOUNDATION DETAILS</b>
RSP ES-16B	Electrical Systems (Closed Circuit Television, 25' to 45' Pole)

**DIVISION I GENERAL PROVISIONS  
1 GENERAL**

Add to section 1-1.01:

**Nonstandard Bid Items and Applicable Sections**

Item Code	Item Description	Applicable Section
072007A	EXCAVATION SAFETY	7
129110A	TEMPORARY CRASH CUSHION (ABSORB 350)	12
149001A	PREPARE FUGITIVE DUST CONTROL	14
153249A	DEMOLISH EXISTING PRESSURE REDUCING STATION VAULT	77
202026A	REMOVE AND RELOCATE AIR RELEASE VALVE	77
208430A	INSTALL FIRE HYDRANT	77
208591A	12" GATE VALVE	77
208633A	1" AIR RELEASE VALVE	77
208635A	2" AIR RELEASE VALVE	77
208640A	4" BLOWOFF VALVE	77
475010A	RECONSTRUCT RETAINING WALL	47
641101A	1" PVC (SCHEDULE 80)	77
641101B	6" PVC SEWERLINE	77
641101C	8" PVC WATERLINE (C900 DR14))	77
665010A	12" DUCTILE IRON	77
702016A	8" TO 6" REDUCER	77
702016B	12" TO 8" REDUCER	77
707117A	DRAINAGE INLET	51
707217A	36" SEWER MANHOLE	77
707225A	STORM DRAIN MANHOLE	51
710136A	REMOVE WATERLINE	77
710252A	MODIFY EXISTING STORM DRAIN MANHOLE	15
730040A	MINOR CONCRETE (GUTTER) (RETAINING WALL)	73
731502A	MINOR CONCRETE (CONCRETE PAD)	73
800060A	FENCE (TYPE WOOD, 6 FOOT)	80
800100A	TEMPORARY FENCE (TYPE ESA)	80
800360A	CHAIN LINK FENCE (TYPE CL-6) (MOD)	80
870400A	MODIFY SIGNAL AND LIGHTING	87
995200A	WATER SERVICE	77
995200B	SEWER SERVICE	77

Add to the table in section 1-1.06:

Abbreviation	Meaning
AT&T	American Telephone & Telegraph Company
EID	El Dorado Irrigation District
PG&E	Pacific Gas and Electric Utility Company
USPS	United States Postal Service

Replace the corresponding definitions in section 1-1.07B with:

**Bid Item List:** List of bid items and the associated quantities. The Proposal Pay Items and Bid Price Schedule in the Proposal section is the Bid Item List. The verified Bid Item List is Exhibit A Contractor's Bid and Bid Price Schedule in the fully-executed contract for the project.

**Contract acceptance:** County Clerk/Recorder's recordation of the executed written Notice of Acceptance of a completed Contract.

**Department or Department of Transportation:** The Department of Transportation in the County of El Dorado or Department of Transportation as defined in St & Hwy Code § 20 and authorized in St & Hwy Code § 90; its authorized representatives.

**Engineer:** The Director of Transportation for County of El Dorado, or authorized representative (Resident Engineer) responsible for the Contract's administration; the Resident Engineer's authorized representatives.

**Federal-aid contract:** Contract that has a federal-aid project number on the cover of the book titled Contract Documents.

**Informal-bid contract:** Contract that is noted as informally bid in the *Notice to Bidders*.

**2. revised standard specifications:** New or revised standard specifications. These specifications are in a section titled *Revised Standard Specifications* of a book titled *Contract Documents including Notice to Bidders, Special Provisions, Proposal, and Contract*.

**3. special provisions:** Specifications specific to the project. These specifications are in a section titled *Special Provisions* of a book titled *Contract Documents including Notice to Bidders, Special Provisions, Proposal, and Contract*.

**State:** The State of California, including its agencies, departments, or divisions, whose conduct or action is related to the work, or County of El Dorado, a political subdivision of the State, and its Department of Transportation.

**Structure Design:** The Department of Transportation for County of El Dorado or Offices of Structure Design of the Department of Transportation.

**Add to section 1-1.07B:**

**Contract approval:** Execution of the Contract by the County of El Dorado.

**Contract award package:** The Notice of Award of Contract letter, two originals of the Agreement, Payment and Performance bond forms, and other forms the successful Bidder must complete for Contract Execution.

**Contract Documents:** See Article 2 "Contract Documents" of the Draft Agreement.

**County:** County of El Dorado, a political subdivision of the State of California.

**Laboratory:** The established laboratory of the County of El Dorado Department of Transportation or laboratories authorized by the Engineer to test materials and work involved in the contract.

**Office Engineer:** The Office Engineer in the County of El Dorado County Department of Transportation or, depending on context, Caltrans Office Engineer.

**Proposal:** The Proposal section of the Contract Documents book or the Bidder's bid.

**Delete "estimated cost" in section 1-1.07B.**



### Supplemental Project Information

Means	Description
Available as specified in the <i>Notice to Bidders</i>	Geotechnical Engineering Study, Supplemental Geotechnical Memorandum, Joint Trench Composite Drawings and Form B, Cross Sections, and Revised Standard Plans

**Replace “Bid Item List” in section 2-1.09 with:**

Proposal Pay Items and Bid Price Schedule.

**Replace the 2<sup>nd</sup> paragraph in section 2-1.10 with:**

The Subcontractor List in the Proposal must show the name, contractor’s license number, DIR registration number, address, and work portions to be performed by each subcontractor listed. The work portion to be performed must be shown by listing the bid item number, bid item description, and portion of the work to be performed by the subcontractor in the form of a percentage (not to exceed 100%) calculated by dividing the work to be performed by the subcontractor by the respective bid item amount(s) (not by the total bid price).

An inadvertent error in listing the California Contractor license number on the Subcontractor List will not be grounds for filing a bid protest or grounds for considering the bid non-responsive if the Bidder submits the corrected contractor’s license number to Brian Franklin via fax (530) 626-0387 or email [Brian.Franklin@edcgov.us](mailto:Brian.Franklin@edcgov.us) within 24 hours after the bid opening, provided the corrected contractor’s license number corresponds to the submitted name and location for that subcontractor.

**Add to section 2-1.12B(1):**

The Contractor must also carry out applicable requirements of 2 CFR Part 200.321 in the award and administration of this UNITED STATES DEPARTMENT OF TRANSPORTATION (USDOT)-assisted Contract. The applicable requirements of 2 CFR Part 200.321 are as follows:

1. *Contracting with small and minority firms, women's business enterprise and labor surplus area firms.*
  - a. Contractor will take all necessary affirmative steps to assure that minority firms, women's business enterprises, and labor surplus area firms are used when possible.
  - b. Affirmative steps must include:
    - i. Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
    - ii. Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
    - iii. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority business, and women's business enterprises;
    - iv. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority business, and women's business enterprises;

- v. Using the services and assistance of the Small Business Administration, and the Minority Business Development Agency of the Department of Commerce; and
- vi. Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in paragraphs (a)(2) (i) through (v) of this section.

The County encourages the Bidder to take affirmative steps to assure that minority firms, women's business enterprises and labor surplus area firms are used when opportunities exist.

**Replace section 2-1.15 "DISABLED VETERAN BUSINESS ENTERPRISES" with:**

**2-1.15 RESERVED**

**Replace section 2-1.27 "CALIFORNIA COMPANIES" with:**

**2-1.27 RESERVED**

**Replace section 2-1.33 with:**

Except as noted below, complete all pages of the Proposal in the Contract Documents book and submit the completed Proposal with the Bidder's Security as noted in the *Notice to Bidders*.

Submit the forms from the Proposal and form information at the times shown in the following table:

Contract type	Forms to be submitted at the time of bid	Forms to be submitted and received no later than 24 hours after bid opening <sup>a</sup>	Forms to be submitted and received no later than 4 p.m. on the 5th business day after bid opening <sup>a</sup>
All Contracts	All Proposal forms including Business name and address; bid item number and bid item description of subcontracted work on the Subcontractor List	<ul style="list-style-type: none"> <li>• Subcontractor name bid item number, bid item description shown on the Subcontractor List submitted with Proposal, and the percentage of each bid item<sup>b</sup></li> <li>Correction for incorrect Contractor License # on Subcontractor List submitted with Proposal</li> </ul>	--

<sup>a</sup>The percentage of each bid item and the 15-G and 15-H forms may be submitted at the time of bid.

<sup>b</sup>If the information is not submitted at the time of bid email or fax to Office Engineer, email-[Brian.Franklin@edcgov.us](mailto:Brian.Franklin@edcgov.us), Fax-(530) 626-0387. This after-bid submittal does not apply to an informal-bid contract. For an informal bid contract, submit the completed form at the time of bid.

<sup>c</sup>If not submitted at the time of bid, applicable only to the apparent low bidder, 2nd low bidder, and 3rd low bidder. Submit via email or fax to Office Engineer, email-[Brian.Franklin@edcgov.us](mailto:Brian.Franklin@edcgov.us), Fax-(530) 626-0387.



**Replace the 4<sup>th</sup> item of the 1<sup>st</sup> paragraph of section 2-1.34 with:**

- (a) Bidder's bond signed by an authorized representative of a surety insurer who is licensed in California. The authorized representative's signature must be notarized and authorization documentation must be provided.

**Delete the 5<sup>th</sup> item of the 1<sup>st</sup> paragraph and the 3<sup>rd</sup> paragraph of section 2-1.34.**

**Replace the last paragraph of section 2-1.34 with:**

If using a bidders bond, you must complete the Bidder's bond form included in in the Contract Documents following the Proposal and submit it with your proposal.

**Delete the 2<sup>nd</sup> paragraph of section 2-1.40.**

**Replace "Reserved" in section 2-1.44 with:**

**2-1.44 BID PROTEST PROCEDURE**

The protest procedure is intended to handle and resolve disputes related to the bid award for this project pursuant to County policies and procedures.

The protest procedure is an extension of the formal bid process and allows those who wish to protest the recommendation of an award after bid the opportunity to be heard.

**Policy:** Upon completion of the bid evaluation, the Department will notify all bidders of the recommendation of award, the basis therefore, and the date and time on which the recommendation for award will be considered and acted upon by the Board of Supervisors. All bidders may attend the Board of Supervisors meeting at the time the agenda item is considered, address the Board of Supervisors, and be heard.

**Procedure:** If you wish to protest the award, this is the procedure:

1. The Department will review the bids received in a timely fashion under the terms and conditions of the *Notice to Bidders*, and notify you in writing, at the fax number designated in the Proposal, of its recommendation including for award or rejection of bids ("All Bidders Letter").
2. Within five (5) business days from the date of the "All Bidders Letter," the Bidder protesting the recommendation for award must submit a letter of protest to and must be received by Office Engineer, Attention Brian Franklin, and state in detail the basis and reasons for the protest. The Bidder must provide facts to support the protest, including any evidence it wishes to be considered, together with the law, rule, regulation, or criteria on which the protest is based.
3. If the Department finds the protest to be valid, it may modify its award recommendations and notify all bidders of that decision. If the Department does not agree with the protest, or otherwise fails to resolve the protest, the Department will notify the bid protestor and all interested parties of its decision and the date and time that the recommendation for award will be agendized for the Board of Supervisors' consideration and action. The Department will also include in its report to the Board of Supervisors the details of the bid protest.
4. The Bidder may attend the Board of Supervisors meeting at which the recommendation and bid protest will be considered. The Board of Supervisors will take comment from the Bidder, staff, and members of the public who wish to speak on the item. If the Bidder is not in attendance at that time, the bid protest may be dismissed by the Board of Supervisors without further consideration of the merits; and

The decision of the Board of Supervisors on the bid protest will be final.



1. Payment bond to secure the claim payments of laborers, workers, mechanics, or materialmen providing goods, labor, or services under the Contract. This bond must be in a sum not less than one hundred percent (100%) of the total amount payable by the terms of the contract, naming the County as obligee and the State of California as additional obligee.
2. Performance bond to guarantee faithful performance of the Contract. This bond must be in a sum not less than one hundred percent (100%) of the total amount payable by the terms of the contract, naming the County as obligee and the State of California as additional obligee.

The Payment and Performance Bond forms are included with the Draft Agreement section of the Contract Documents book. The Department furnishes the successful Bidder bond forms with the Contract award package.

**Replace the 1<sup>st</sup> paragraph and the 1<sup>st</sup> item of the 2<sup>nd</sup> paragraph of section 3-1.06 with:**

For a federal-aid contract, the Contractor must be properly licensed as a contractor from contract award (Pub Cont Code § 20103.5) through completion and acceptance of the Work, including the guarantee period. Failure to obtain proper and adequate licensing for an award of a Contract constitutes a failure to execute the Contract and results in the forfeiture of the security of the bidder.

1. The Contractor must be properly licensed as a contractor from bid opening (Bus & Prof Code § 7028.15) through completion and acceptance of the Work, including the guarantee period. Failure to obtain proper and adequate licensing constitutes a failure to execute the Contract and results in the forfeiture of the security of the bidder.

**Replace section 3-1.11 with:**

### **3-1.11 COUNTY PAYEE DATA RECORD FORM**

Complete and sign the County *Payee Data Record* form included in the Contract award package.

**Replace section 3-1.18 with:**

### **3-1.18 CONTRACT EXECUTION**

The successful Bidder must sign the *Agreement*.

Deliver to Office Engineer:

- 1) Two Original Signed *Agreements*
- 2) Contract Bonds
- 3) Documents identified in section 3-1.07 and 7-1.06
- 4) County *Payee Data Record* form
- 5) California Form 590-Withholding Exemption Certificate
- 6) Documents identified in and marked as specified in section 3-1.14, if applicable.

Office Engineer must receive these documents within 10 business days of the date of the Notice of Award of Contract letter.

The Bidder's security may be forfeited for failure to execute the Contract, furnish any bond, or provide the required insurance documents within the time specified.

The Department does not provide hard copies of the Contract Documents, including the Project Plans to the successful bidder.

**Replace section 3-1.19 with:**

### **3-1.19 BIDDERS' SECURITIES (Pub Cont Code § 20129)**



- 3) California Department of Fish and Game Streambed Alteration Agreement (Notification No. 1600-2016-0217-R2), February 9, 2017.
- 4) State of California Encroachment Permit – before beginning work within state right of way obtain a no-cost State of California Encroachment permit from:

CALTRANS, DISTRICT 3  
 PERMIT ENGINEER  
 703 B Street  
 Marysville, CA 95901  
 (530) 741-4403

In accordance with section 9-1.03, full compensation for obtaining the State of California Encroachment Permit is included in the payment for the various items of work.

**Replace section 5-1.20B(4) with:**

Before procuring material, disposing of material, or otherwise using non-highway property, obtain a written agreement from the property owner.

**Add section 5-1.20B(5):**

The Department has obtained easements from:

APN	Temporary Construction Easement (TCE)	Slope and Drainage Easement (SDE)	Slope Easement	Public Utility Easement (PUE)
051-250-07			X	
051-250-08			X	
051-461-12				X
051-461-54	X			X
051-550-47				X
054-341-04			X	
054-342-23			X*	
054-342-15			X	
054-342-46	X			
054-342-38	X			
054-351-03	X			
054-351-04	X			
054-351-05	X			
054-351-07	X			
054-351-14	X			
054-411-46	X			
054-351-27	X			
054-351-28	X			
054-342-20	X			
051-250-04	X			X
051-461-37				X
054-351-19	X			X
054-351-18	X			X
054-351-32				X

051-250-12		X	X	X
051-250-46				X

\*Private Easement for driveway access

**5-1.20G Coordination With Schools**

You must provide written notice to the following schools at least one (1) week prior to the start of construction activities, any lane closures, detours, construction staging or any work that may affect traffic or pedestrians through the construction area:

**Herbert Green Middle School**  
 3781 Forni Road  
 Placerville, CA 95667  
 Principal: Leslie Redkey  
 (530) 622-4668 x 229

**Union Mine High School**  
 6530 Koki Lane  
 El Dorado, CA 95623  
 Principal: Paul Neville  
 (530) 621-4003 x 4120

Written notices must be approved by Engineer prior to being sent by Contractor. Submit notice 3 business days in advance of sending to Engineer for review and approval.

**Replace “Reserved” in section 5-1.20H with:**

**5-1.20H Coordination With Property Owners**

You must make every effort to communicate with adjacent property owners and tenants to inform them of required access for construction operations, and must give forty-eight (48) hours’ notice to the property owners and tenants when work is to be performed on their property.

Access to adjacent businesses must be maintained so that the businesses will remain open during all normal business hours.

You must comply with the following property owner requirements:

APN	Property Owner Requirement
051-250-07	1. Cut and cap existing irrigation lines in conflict with construction. Coordinate with property owner to reconfigure irrigation lines inside of property line. (If found)
051-250-08	1. Cut and cap existing irrigation lines in conflict with construction. Coordinate with property owner to reconfigure irrigation lines inside of property line. (If found)
054-342-37	1. Install temporary fencing along property as shown on the plans during construction. Remove temporary fencing at the end of construction. 2. Replace any impacted landscaping with like-kind plants. Relocate 5 irrigation boxes to the back of new sidewalk. Reconfigure irrigation lines and sprinkler heads as needed.
054-342-38	1. Install temporary fencing along property as shown on the plans during construction. Remove temporary fencing at the end of construction. 2. Replace any impacted landscaping with like-kind plants. Relocate 5 irrigation boxes to the back of new sidewalk. Reconfigure irrigation lines and sprinkler heads as needed.
051-461-37	1. Any trees removed that are 4-inches in diameter or greater will be cut and placed within the new property line for the property owner.
051-250-12	1. All existing fencing and gates to be removed will be left within the new property line for the property owner.

**Replace “RESERVED” in section 5-1.24 with:**

**5-1.24 COST PRINCIPLES**

Comply with the Federal Acquisition Regulations in Title 48, CFR, Part 31 et seq. as applicable, regarding allowable elements of cost for the Work to be performed under this Contract.

- A. You and your subcontractors must comply with 2 CFR Part 225 (formerly OMBA-87), Cost Principles for State, Local And Indian Tribal Governments; with Federal administrative procedures pursuant to 2 CFR, Part 200, Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments; and with Contract Cost Principles, 48 CFR, Federal Acquisition Regulations System, Chapter 1, Parts 31 et seq., insofar as those regulations may apply. This provision applies to every sub-recipient receiving funds as a Contractor or subcontractor under this Contract.
- B. Any expenditures for costs for which you have received payment or credit that are determined by subsequent audit to be unallowable under 2 CFR Part 225, 48 CFR, Parts 31 et seq. or 2 CFR, Part 200 are subject to repayment to County.
- C. Travel and per diem reimbursements, if applicable, and third-party contract reimbursements to subcontractors will be allowable as project costs only after you incur and pay for those costs.
- D. Notwithstanding any other provision of the Contract Documents to the contrary, payments for mileage, travel or subsistence expenses, if applicable, for your staff or your subcontractors claimed for reimbursement must not exceed the lesser of (1) the rates to be paid to County employees under the current Board of Supervisors Travel Policy in effect at the time the expenses are incurred; or (2) the rates authorized to be paid to rank and file State employees under current State Department of Personnel Administration (DPA) rules. If the rates claimed are in excess of those authorized DPA rates, you are responsible for the cost difference, and you must reimburse County for any overpayments inadvertently within thirty (30) days of County’s demand.
- E. You and your subcontractors must establish and maintain accounting systems and records that properly accumulate and segregate funds received under this Agreement by line item. Your and your subcontractor’s accounting systems must conform to Generally Accepted Accounting Principles (GAAP), must enable the determination of incurred costs at interim points of completion, and must provide support for reimbursement of payment vouchers or invoices.

**Add item 3 to the 1<sup>st</sup> paragraph of section 5-1.27B:**

- 1. Closure of all other pending matters under this Contract.

**Replace the opening phrase of the 2<sup>nd</sup> paragraph of section 5-1.27B with:**

For at least 4 years after the later of these, retain cost records, including records of:

**Replace Section 5-1.27C with:**

**5-1.27C Record Inspection, Copying, and Auditing**

Make your records available for inspection, copying, and auditing by FHWA, the United States Department of Transportation, the Comptroller General of the United States, the State, County or their duly authorized representatives for the same time frame specified under section 5-1.27 B. The records of subcontractors and suppliers must be made available for inspection, copying, and auditing by FHWA, the United States Department of Transportation, the Comptroller General of the United States, the State, County or their duly authorized representatives for the same period. Make records available for examination during normal business hours at your principal place of business in California, for audit during normal business hours at this place of business. Provide office space, photocopies and other assistance to enable audit or inspection representatives to conduct these audits or inspections.

Incorporate this provision in any subcontract entered into as a result of this Contract. Require subcontractors to agree to cooperate with the listed agencies by making all appropriate and relevant Project records available to those agencies for audit and copying.

**Replace section 5-1.27E with:**

**5-1.27E Change Order Bills**

Maintain separate records for change order work costs. Submit paper copy change order bills.

**Delete the 2<sup>nd</sup> and 3<sup>rd</sup> paragraphs of section 5-1.32:**

**Add to the end of section 5-1.32:**

Personal vehicles of your employees must not be parked on the traveled way or shoulders, including sections closed to traffic.

**Add to the 1<sup>st</sup> paragraph of the RSS for section 5-1.36C(1).**

Pothole all underground utilities prior to construction activities. Underground Service Alert Phone: 811

**El Dorado Irrigation District (EID)**

**Main # 24 hr: (530) 622-4513**

Tracey Eden-Bishop

(530) 642-4113

Fax (530) 642-4354

2890 Mosquito Road

Placerville, CA 95667

**Comcast**

Steve Abelia

(916) 830-6757

1242 National Drive

Sacramento, CA 95834

and

Dayne Wills (SEFNCO Communications,

Subcontractor to Comcast))

(925) 628-3462

8615 Elder Creek Road

Sacramento, CA 95828

**Pacific Gas and Electric Company**

**24 Hr # (800) 743-5000**

Brian Ritchie

(530) 621-7289

Cell (916) 532-4325

4636 Missouri Flat Road

Placerville, CA 95667

**AT&T**

**24 Hr # (866) 346-1168**

Astrid Willard

(916) 484-2388

2700 Watt Ave, Room 3473-11

Sacramento, CA 95821

**Add between the 2nd and 3rd paragraphs of the RSS for section 5-1.36C(3):**

Installation of the utilities shown in the following table requires coordination with your activities. Make the necessary arrangements with the utility company through the Engineer and submit a schedule:

1. Verified by a representative of the utility company
2. Allowing at least the time shown for the utility owner to complete its work



**Utility Relocation and Contractor-Arranged Time for the Relocation**

<b>Utility</b>	<b>Utility address</b>	<b>Location</b>	<b>Days</b>
PG&E (Joint Pole)	Lime Kiln Road W of State Route 49	'LK' Line 7+85 +/- (Rt)	20
PG&E (Joint Pole)	Property Owner Driveway NW of State Route 49	'SR' Line 16+80 +/- (Lt)	20
PG&E (Joint Trench Construction)	Existing State Route 49, Lime Kiln Road, Black Rice Road, and Happy Lane	'M' Line 4+50 To 20+00, 'LK' Line 5+00 To 10+00, 'BR' Line 10+00 To 30+00, 'SR' Line 27+00 to 39+00	220
Comcast (Joint Pole)	Lime Kiln Road W of State Route 49	'LK' Line 7+85 +/- (Rt)	5
Comcast (Joint Pole)	Property Owner Driveway NW of State Route 49	'SR' Line 16+80 +/- (Lt)	5
Comcast (Joint Trench Construction)	Existing State Route 49, Lime Kiln Road, Black Rice Road, and Happy Lane	'M' Line 4+50 To 20+00, 'LK' Line 5+00 To 10+00, 'BR' Line 10+00 To 30+00, 'SR' Line 27+00 to 39+00	120
AT&T (Joint Pole)	Lime Kiln Road W of State Route 49	'LK' Line 7+85 +/- (Rt)	5
AT&T (Joint Trench Construction)	Existing State Route 49, Lime Kiln Road, Black Rice Road, and Happy Lane	'M' Line 4+50 To 20+00, 'LK' Line 5+00 To 10+00, 'BR' Line 10+00 To 30+00, 'SR' Line 27+00 to 39+00	120

Work may be suspended for up to 8 months at the discretion of the Engineer in accordance with section 8-1.06 if determined that work cannot continue until portions, or all of the joint trench work by others is completed.

You may work around utilities during a suspension with approval of the Engineer and only if work does not interfere with construction of the joint trenches. Working days will not be counted if your work is completed during a suspension.

**Add to the end of the RSS for section 5-1.36F.**

All work associated with irrigation modifications must comply with section 20-2.

**Replace the 1<sup>st</sup> and 2<sup>nd</sup> sentence of the 2<sup>nd</sup> paragraph of section 5-1.46 with:**

When the Engineer determines that the work is complete, the Engineer recommends to the Board of Supervisors that the contract be accepted and the Notice of Acceptance be recorded to accept the contract. Immediately after the acceptance by the Board of Supervisors, you are relieved from:

\*\*\*\*\*

**6 CONTROL OF MATERIALS**



**Replace section 7-1.02C with:**

**7-1.02C Emissions Reduction**

Sign the Emissions Reduction Certification in Article 13 "Emissions Reduction" of the Agreement.

**Replace "Reserved" in section 7-1.02D with:**

**7-1.02D Reporting [2 CFR 200.328]**

In order to monitor the progress of projects funded in whole or in part by federal funds, federal agencies rely heavily on inspection data. Inspections by the County will be performed on a regular basis and data compiled in report form, as necessary. Supply reporting information to County when requested.

Incorporate this provision in any subcontract entered into as a result of this contract.

**Replace "Reserved" in section 7-1.02E with:**

**7-1.02E Copyrights [2 CFR 200.315]**

The USDOT reserves a royalty-free, non-exclusive, and irrevocable license to reproduce, publish or otherwise use, and to authorize others to use, for Federal Government proposes:

1. The copyright in any work developed under a grant, sub-grant, or contract under a grant or subgrant; and
2. Any rights of copyright to which a grantee, subgrantee or a contractor purchases ownership with grant support.

Incorporate this provision in any subcontract entered into as a result of this contract.

**Replace "Reserved" in section 7-1.02H with:**

**7-1.02H Rehabilitation Act of 1973 and American Disabilities Act of 1990**

Comply with:

- Section 504 of the Rehabilitation Act of 1973 (Rehabilitation Act) which prohibits discrimination on the basis of disability in federally assisted programs;
- The Americans with Disabilities Act (ADA) of 1990 which prohibits discrimination on the basis of disability irrespective of funding; and
- All applicable regulations and guidelines issued pursuant to both the Rehabilitation Act and the ADA.

Incorporate this provision in any subcontract entered into as a result of this contract.

**Add to the end of section 7-1.02I(2):**

You must comply and must require your subcontractors to comply with the Fair Employment Practices Addendum attached as Exhibit B to the Draft Agreement of these Contract Documents.

**Replace item 1 of the 2<sup>nd</sup> paragraph of section 7-1.02K(2) with:**

1. At the County of El Dorado County Department of Transportation's principal office, and are available upon request.

**Add to the end of section 7-1.02K(2):**

Comply with Division 2, Part 7, Chapter 1 of the California Labor Code.

This project is subject to the requirements of Title 8, Chapter 8, Subchapter 4.5 of the California Code of Regulations including the obligation to furnish certified payroll records directly to the Compliance Monitoring Unit under the Labor Commissioner within the Department of Industrial Relations Division of Labor Standards Enforcement in accordance with Section 16461.

Prior to the start of any work, post and maintain the following notice in a conspicuous location on the jobsite:

*“This public works project is subject to monitoring and investigative activities by the Compliance Monitoring Unit (CMU) of the Division of Labor Standards Enforcement, Department of Industrial Relations, State of California. This Notice is intended to provide information to all workers employed in the execution of the contract for public work and to all contractors and other persons having access to the job site to enable the CMU to ensure compliance with and enforcement of prevailing wage laws on public works projects.*

*The prevailing wage laws require that all workers be paid at least the minimum hourly wage as determined by the Director of Industrial Relations for the specific classification (or type of work) performed by workers on the project. These rates are listed on a separate job site posting of minimum prevailing rates required to be maintained by the public entity which awarded the public works contract. Complaints concerning nonpayment of the required minimum wage rates to workers on this project may be filed with the CMU at any office of the Division of Labor Standards Enforcement (DLSE).*

*Local Office Telephone Number: (916)-263-1811*

*Complaints should be filed in writing immediately upon discovery of any violations of the prevailing wage laws due to the short period of time following the completion of the project that the CMU may take legal action against those responsible.*

*Complaints should contain details about the violations alleged (for example, wrong rate paid, not all hours paid, overtime rate not paid for hours worked in excess of 8 per day or 40 per week, etc.) as well as the name of the employer, the public entity which awarded the public works contract, and the location and name of the project.*

*For general information concerning the prevailing wage laws and how to file a complaint concerning any violation of these prevailing wage laws, you may contact any DLSE office. Complaint forms are also available at the Department of Industrial Relations website found at: [www.dir.ca.gov/dlse/PublicWorks.html](http://www.dir.ca.gov/dlse/PublicWorks.html).”*

**Delete paragraphs 5 through 9 of section 7-1.02K(3).**

**Add to section 7-1.02K(3):**

Submit a copy of all payrolls weekly directly to the Compliance Monitoring Unit (CMU) within the Division of Labor Standards Enforcement of the Department of Industrial Relations, State of California. Submit copy of all payrolls within 10 days of any separate request by the CMU.

**Add to section 7-1.02K(4):**

It is County policy to encourage the employment and training of apprentices on public works contracts as may be allowed under local apprenticeship standards.

**Add to section 7-1.02K(6)(b):**

Interpret “signature” to mean signed and stamped by a registered professional engineer.

### **7-1.02K(6)(b)(i) Payment**

The Department pays for preparing and submitting protection system shop drawings and installing, maintaining, and removing sheeting, shoring and bracing, sloping the sides of excavations, or equivalent method for excavations 5 feet deep and greater. The Engineer has the discretion to reduce payment where the need for excavation protection is indicated on the Plans but not required in the field.

### **Replace "Reserved" in section 7-1.02K(6)(j)(iii) with:**

Section 7-1.02K(6)(j)(iii) includes specifications for handling, removing, and disposing of earth material containing lead.

Lead is present in earth material on the job site. Management of this material exposes workers to health hazards that must be addressed in your lead compliance plan. The average lead concentrations are below 1,000 mg/kg total lead and below 5 mg/L soluble lead. The material on the job site:

1. Is not a hazardous waste
2. Does not require disposal at a permitted landfill or solid waste disposal facility

Lead is typically found within the top 2 feet of material in unpaved areas of the highway. Reuse all of the excavated material on the right-of-way. Haul and place the surplus excavated material on the right-of-way at the north end of APN 051-250-12.

Handle the material under all applicable laws, rules, and regulations, including those of the following agencies:

1. Cal/OSHA
2. CA RWQCB, Region 5
3. CA Department of Toxic Substances Control

Manage the material as shown in the following table.

1. Stockpile all excavated earth material at an authorized location before reuse.
2. Reuse all earth material on the job site.

### **Replace "Reserved" in section 7-1.02M(2) with:**

Cooperate with local fire prevention authorities in eliminating hazardous fire conditions.

Obtain the phone numbers of the nearest fire suppression agency, California Department of Forestry and Fire Protection (Cal Fire) unit headquarters, United States Forest Service (USFS) ranger district office, and U.S. Department of Interior (USDI) BLM field office. Submit these phone numbers to the Engineer before the start of job site activities.

Immediately report to the nearest fire suppression agency fires occurring within the project limits.

Prevent project personnel from setting open fires that are not part of the work.

Prevent the escape of and extinguish fires caused directly or indirectly by job site activities.

Except for motor trucks, truck tractors, buses, and passenger vehicles, equip all hydrocarbon-fueled engines, both stationary and mobile including motorcycles, with spark arresters that meet USFS standards as specified in the *Forest Service Spark Arrester Guide*. Maintain the spark arresters in good operating condition. Spark arresters are not required by Cal Fire, the BLM, or the USFS on equipment powered by properly maintained exhaust-driven turbo-charged engines or equipped with scrubbers with properly maintained water levels. The *Forest Service Spark Arrester Guide* is available at the district offices.

Each toilet must have a metal ashtray at least 6 inches in diameter by 8 inches deep half-filled with sand and within easy reach of anyone using the facility.

Locate flammable materials at least 50 feet away from equipment service, parking, and gas and oil storage areas. Each small mobile or stationary engine site must be cleared of flammable material for a radius of at least 15 feet from the engine.

Each area to be cleared and grubbed must be cleared and kept clear of flammable material such as dry grass, weeds, brush, downed trees, oily rags and waste, paper, cartons, and plastic waste. Before clearing and grubbing, clear a fire break at the outer limits of the areas to be cleared and grubbed. Other fire breaks may be ordered and are change order work.

Furnish the following fire tools:

1. 1 shovel and 1 fully charged fire extinguisher UL rated at 4 B:C or more on each truck, personnel vehicle, tractor, grader, or other heavy equipment.
2. 1 shovel and 1 backpack 5-gallon water-filled tank with pump for each welder.
3. 1 shovel or 1 chemical pressurized fire extinguisher, fully charged, for each gasoline-powered tool, including chain saws, soil augers, and rock drills. The fire tools must always be within 25 feet from the point of operation of the power tool. Each fire extinguisher must be of the type and size required by the Pub Res Code § 4431 and 14 CA Code of Regs § 1234. Each shovel must be size O or larger and at least 46 inches long.

Furnish a pickup truck and driver for the sole purpose of fire control during working hours. The truck must be equipped with:

1. 10 shovels, 5 axes, 2 backpack 5-gallon water-filled tanks with pumps
2. 100-gallon tank of water with a gasoline motor powered pump and 100 feet of 3/4-inch hose on a reel.

In addition to being available at the site of the work, the truck and operator must patrol the area of construction from noon until at least 1/2 hour after job site activities have ended. If the fire danger rating is very high or extreme, the truck and operator must patrol the area of construction while work is being done and for at least 1/2 hour after job site activities have ended.

Cal Fire, USFS, and BLM have established the following adjective class ratings for 5 levels of fire danger for use in public information releases and fire protection signing: low, moderate, high, very high, extreme. Obtain the fire danger rating daily for the project area from the nearest Cal Fire unit headquarters, USFS ranger district office, or BLM field office.

Arrangements have been made with Cal Fire, USFS, and BLM to notify the Department when the fire danger rating is very high or extreme. This information will be furnished to the Engineer who will notify you for dissemination and action in the area affected. If a discrepancy between this notice and the fire danger rating obtained from the nearest office of either Cal Fire or USFS exists, you must conduct operations according to the higher of the two fire danger ratings.

If the fire danger rating reaches very high:

1. Falling of dead trees or snags must be discontinued.
2. No open burning is permitted and fires must be extinguished.
3. Welding must be discontinued except in an enclosed building or within an area cleared of flammable material for a radius of 15 feet.
4. Blasting must be discontinued.
5. Smoking is allowed only in automobiles and cabs of trucks equipped with an ashtray or in cleared areas immediately surrounded by a fire break unless prohibited by other authority.

6. Vehicular travel is restricted to cleared areas except in case of emergency.

If the fire danger rating reaches extreme, take the precautions specified for a very high fire danger rating except smoking is not allowed in an area immediately surrounded by a firebreak and work of a nature that could start a fire requires that properly equipped fire guards be assigned to such operation for the duration of the work.

The Engineer may suspend work wholly or in part due to hazardous fire conditions. The days during this suspension are non-working days.

If field and weather conditions become such that the determination of the fire danger rating is suspended, section 7-1.02M(2) will not be enforced for the period of the suspension of the determination of the fire danger rating. The Engineer will notify you of the dates of the suspension and resumption of the determination of the fire danger rating.

**Add to the end of section 7-1.04:**

Where 2 or more lanes in the same direction are adjacent to the area where the work is being performed, including shoulders, the adjacent lane must be closed under any of the following conditions:

1. Work is off the traveled way but within 6 feet of the edge of the traveled way, and the approach speed is greater than 45 miles per hour
2. Work is off the traveled way but within 3 feet of the edge of the traveled way, and the approach speed is less than 45 miles per hour

Closure of the adjacent traffic lane is not required when performing any of the following:

1. Working behind a barrier
2. Paving, grinding, or grooving
3. Installing, maintaining, or removing traffic control devices except Type K temporary railing

Do not reduce an open traffic lane width to less than 10 feet. When traffic cones or delineators are used for temporary edge delineation, the side of the base of the cones or delineators nearest to traffic is considered the edge of the traveled way.

**Replace section 7-1.05 with:**

**7-1.05 INDEMNIFICATION**

Comply with Article 5 "Indemnity" of the Agreement.

**Replace section 7-1.06 with:**

**7-1.06 INSURANCE**

**7-1.06A General Insurance Requirements**

County will not execute this Contract and you are not entitled to any rights, unless certificates of insurances, or other sufficient proof satisfactory to County of El Dorado Risk Management Division that the following provisions have been complied with, and these certificate(s) are filed with the County.

Without limiting your indemnification required by Article 5 "Indemnity" of the Draft Agreement, you must procure and maintain and must require any of your subcontractors to procure and maintain for the duration of the Contract, including the one-year guarantee period, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder and the results of that work by you, your agents, representatives, employees or subcontractors. Coverage must be at least as broad as:

Workers' Compensation as required by law in the State of California, with Statutory Limits, and Employer's Liability Insurance with a limit of no less than \$1,000,000 per accident for bodily injury or disease.

Explosion, Collapse and Underground coverage is required when the scope of work includes XCU exposures. For the purpose of this Contract, XCU coverage is required.

Commercial General Liability (CGL) Insurance and Umbrella or Excess Liability Insurance: Insurance Services Office (ISO) Form CG 00 01 covering CGL on an "occurrence" basis covering all operations by or on behalf of the Contractor providing insurance for bodily injury liability and property damage liability for the following limits and including coverage for: Premises, operations, and mobile equipment; personal injury, products and completed operations; broad form property damage including completed operations; explosion, collapse, and underground hazards; contractual liability. The limits of liability must be at least the amounts shown in the following table:

Total Bid	For Each Occurrence <sup>1</sup>	Aggregate for Products/Completed Operation	General Aggregate <sup>2</sup>	Umbrella or Excess Liability <sup>3</sup>
≤ \$1,000,000	\$2,000,000	\$4,000,000	\$4,000,000	\$5,000,000
> \$1,000,000 ≤ \$10,000,000	\$2,000,000	\$4,000,000	\$4,000,000	\$10,000,000
> \$10,000,000 ≤ \$25,000,000	\$2,000,000	\$4,000,000	\$4,000,000	\$15,000,000
> \$25,000,000	\$2,000,000	\$4,000,000	\$4,000,000	\$25,000,000

1. Combined single limit for bodily injury and property damage.  
2. This limit applies separately to your work under this contract.  
3. The umbrella or excess policy must contain a clause stating that it takes effect (drops down) if the primary limits are impaired or exhausted.  
\* See exclusion provisions for Small Business subcontractors in Section 7-1.06D(2).

- 1) Automobile Liability: ISO Form Number CA 00 01 covering any auto (Code 1), or if Contractor has no owned autos, hired, (Code 8) and non-owned autos (Code 9), with limit no less than \$1,000,000 per accident for bodily injury and property damage.
- 2) If you are a licensed professional and are performing professional services under this Contract, Professional Liability Insurance is required with a limit of liability of not less than One Million Dollars (\$1,000,000).

**7-1.06B Proof of Insurance Requirements**

Furnish proof of coverage satisfactory to the County of El Dorado Risk Management Division as evidence that the insurance required herein is being maintained. The insurance will be issued by an insurance company acceptable to the Risk Management Division, or be provided through partial or total self-insurance likewise acceptable to the Risk Management Division. Self-insurance programs and self-insured retentions in insurance policies are subject to separate annual review and approval by the County and the State of California.

If you use a self-insurance program or self-insured retention, you must provide the County and the State of California with the same protection from liability and defense of suits as would be afforded by first-dollar insurance. Execution of the Contract is your acknowledgement that you will be bound by all laws as if you were an insurer as defined under Insurance Code Section 23 and that the self-insurance program or self-insured retention will operate as insurance as defined under Insurance Code Section 22.

The County of El Dorado, its officers, officials, employees, and volunteers and the State of California, its officers, directors, agents (excluding agents who are design professionals), employees, and State Contractors doing work within the right-of-way limits, must be named as additional insured under the general liability and excess liability policies with respect to liability arising out of or connected with work or



operations performed by or on your behalf under this Contract. Coverage for such additional insured does not extend to liability:

- a. Arising from any defective or substandard condition of the roadway which existed at or before the time you started work, unless such condition has been changed by the work or scope of the work requires you to maintain existing roadway facilities and the claim arises from failure to maintain;
- b. For claims occurring after the work is completed and accepted unless these claims are directly related to alleged acts or omissions of you that occurred during the course of the work; or
- c. To the extent prohibited by Insurance Code Section 11580.04

Proof that the County and the State are named additional insureds must be made as follows: by providing to the County's Risk Management Division and separately to the State, with a certified copy, or other acceptable evidence, of an endorsement to your insurance policy naming the County and the State of California additional insureds. Additional insured coverage for the County and the State of California must be provided by a policy provision or by an endorsement providing coverage at least as broad as Additional Insured (Form B) endorsement form CG 2010, as published by the Insurance Services Office (ISO), or other form designated by the County or State of California. Deliver this form to the County with the executed Contract, bonds, and associated documents, and separately to the State, before issuance of the State's Encroachment Permit to you.

If you cannot provide an occurrence policy, provide insurance covering claims made as a result of performance of this Contract for not less than three (3) years following completion of performance of this Contract.

Any deductibles or self-insured retentions must be declared to and approved by the County. At the option of the County, either: the insurer must reduce or eliminate such deductibles or self-insured retentions as respects the County, its officers, officials, employees and volunteers; or you must procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses. You must require each of your subcontractors to procure and maintain commercial general liability insurance, umbrella or excess liability insurance, workers' compensation insurance and automobile liability insurance of the types and in the amounts specified above, or you must insure the activities of your subcontractors in your policy in like amounts. For each subcontractor, the "Total Bid" in the Table above will be interpreted as the total amount of work subcontracted to the subcontractor. You must also require each of your subcontractors to name you and the County of El Dorado and any other additional insured listed above as additional insureds. You must not require certified Small Business subcontractors to carry Liability Insurance that exceeds the limits in the table above. Notwithstanding the limits specified herein, at the option of the Contractor, the liability insurance limits for certified Small Business subcontractors of any tier may be less than those limits specified in the table. For Small Business subcontracts, "Total Bid" will be interpreted as the amount of subcontracted work to a certified Small Business.

#### **7-1.06C Insurance Notification Requirements**

You agree no cancellation or material change in any policy will become effective except upon prior written notice to the El Dorado County Community Development Services, Contract Services Unit, 2850 Fairlane Court, Placerville, CA 95667.

You agree that the insurance required herein will be in effect at all times during the term of this Contract. In the event said insurance coverage expires at any time or times during the term of this Contract, you must immediately provide a new certificate of insurance as evidence of the required insurance coverage. If you fail to keep in effect at all times insurance coverage as herein provided, County may, in addition to any other remedies it may have, terminate this Contract upon the occurrence of such event. New certificates of insurance are subject to the approval of the Risk Management Division.



**Replace the 3<sup>rd</sup> paragraph of section 8-1.02D(6) with:**

If you start work before Contract approval, the baseline schedule must have a data date of the 1st day you performed any work activity including submittals.

**Add items 1.3 and 1.4 to item 1 in section 8-1.02D(10):**

- 1.3. Submittal of schedule software
- 1.4. Completion of required schedule-software training

**Replace the 1<sup>st</sup> and last sentences of the 1<sup>st</sup> paragraph of section 8-1.03 with:**

Attend a pre-construction conference with key personnel, including all major superintendents for the work and if requested by the Engineer, major subcontractors. The pre-construction conference will be scheduled after the project is awarded and prior to the issuance of the Notice to Proceed. At this conference, submit in writing, signed by the officers of the corporation, if applicable, the names of two employees who will be the superintendents on the project. The second name serves as an alternate in the absence of the first designee. The superintendent must be on the site at all times that work is in progress.

With the exception of preparing and obtaining Department's authorization of the Storm Water Pollution Prevention Plan (SWPPP), or Water Pollution Control Program (WPCP), whichever is applicable, and preparing and obtaining Department's acceptance of the Critical Path Method (CPM) baseline schedule, any work performed in advance of the date stated in the Notice to Proceed is at your risk and as a volunteer. Submit a completed Subcontracting Request form, Exhibit 16-B of the Caltrans Local Assistance Procedures Manual (LAPM), or equivalent and obtain approval before beginning work on a subcontract. Comply with applicable parts of section 5-1.13B(1).

**Delete "Partnering" from the table in section 8-1.03.**

**Add to section 8-1.03:**

You must attend weekly meetings to discuss construction issues and scheduling.

**Replace section 8-1.04B with:**

The contract working days begin on the date stated in the Notice to Proceed. The contract working days for the project are two hundred fifty (250).

The Engineer will issue Notice to Proceed within 12 days of Contract approval.

Do not start job site activities until the Department authorizes or accepts your submittal for:

1. CPM baseline schedule
2. Notification DRA or DRB nominee and disclosure statement
3. Traffic Control Plan

Do not start jobsite activities until the Department authorizes your SWPPP submittal and obtains a Waste Discharge Identification Number (WDID).

You may enter the job site only to measure controlling field dimensions and locating utilities.

Do not start other job site activities until all the submittals from the above list are authorized or accepted and the following information is received by the Engineer:

1. *Notice of Materials To Be Used.*

2. Contingency plan for reopening closures to public traffic.
3. Written statement from the vendor that the order for the sign panels has been received and accepted by the vendor. The statement must show the dates that the materials will be shipped.
4. Written statement from the vendor that the order for electrical material has been received and accepted by the vendor. The statement must show the dates that the materials will be shipped.
5. Written statement from the vendor that the order for structural steel has been received and accepted by the vendor. The statement must show the dates that the materials will be shipped.

**Replace the 1<sup>st</sup> paragraph of section 8-1.05 with:**

Contract time starts on the day specified in section 8-1.04B.

Contract working hours are between the hours of 7:00 a.m. to 7:00 p.m. on weekdays, working hours are between the hours of 8:00 a.m. and 5:00 p.m. on weekends and federally recognized holidays unless otherwise authorized.

**Add to the end of section 8-1.06:**

The Engineer may suspend work due to environmental permit restrictions, inclement weather, and/or utility relocation work.

During the suspension, the Department pays for winterization costs or costs associated with water pollution control within the County's project area under section 9-1.04. The Department pays for any other contract work required to be performed within the County's project area during the suspension under the applicable bid item.

**Add to the end of section 8-1.10B:**

The Department will deduct damages of **TEN THOUSAND DOLLARS (\$10,000.00)** per day for failure to open Lime Kiln Road to public through-traffic at the end of the closure period. The Department will allow a maximum duration of eight (8) weeks closure period of Lime Kiln Road.

**Replace "Reserved" in section 8-1.10D with:**

**8-1.10D Director Days**

If the work is not completed within the working days, the Director may grant director days if it serves the Department's best interest.

By granting director days, the Director adds working days to the Contract. The Director may either grant enough days to eliminate the liquidated damages or fewer. In the latter case, the Department deducts liquidated damages for the remaining overrun in Contract time. The Director may deduct the Department's engineering, inspection, and overhead costs incurred during the period of extension granted as director days.

**Replace section 8-1.13 with:**

Refer to Article 10 "Termination By County for Cause" of the Agreement.

**Replace section 8-1.14 with:**

Refer to Article 9 "Termination By County for Convenience" of the Agreement.

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## 9 PAYMENT

### Add to end of section 9-1.03:

The Department pays 6 percent annual interest for the period of the retention for penalty withholds later determined not owed.

### Replace the last paragraph of section 9-1.03 with:

Pay your subcontractors within 7 days of receipt of each progress payment unless otherwise agreed to in writing (Bus & Prof Code § 7108.5). Violation of this section subjects you to the penalties, sanctions and other remedies of Bus and Prof § 7108.5. This section must not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to you in the event of a dispute involving late payment or nonpayment by you, deficient subcontract performance, or noncompliance by a subcontractor.

### Add to the end of section 9-1.16C:

The following items are eligible for progress payment even if they are not incorporated into the Work:

1. Construction Area Signs
2. Traffic Control System
3. Portable Changeable Message Sign
4. Job Site Management
5. Clearing and Grubbing
6. Mobilization
7. Temporary Crash Cushions
8. Temporary Railing
9. Joint Trench Conduit
10. Bar Reinforcing Steel
11. Alternative Pipe Culverts
12. Reinforced Concrete Pipes
13. Plastic Pipe Underdrains
14. Plastic Pipe Waterline
15. Rock Slope Protection Fabric
16. Gate Valves
17. Fences
18. Pavement Markers
19. Signal and Lighting Standards
20. Signal Heads and Mounting Brackets
21. Signal Cabinets
22. Sound Wall
23. Splice Vaults
24. Twisted Pair Cable

### Replace the last sentence of the 3<sup>rd</sup> paragraph of section 9-1.16E(2) with:

These amounts are shown on the *Pay Estimate*.

### Replace the last sentence of the 1<sup>st</sup> paragraph of section 9-1.16E(3) with:

The documents include QC plans, required forms, schedules, traffic control plans, water pollution control submittals, and dust control submittals.

**Add to the 1<sup>st</sup> paragraph of section 9-1.16E(3):**

If you fail to comply with water pollution control or dust control requirements, the Department withholds part of the progress payment.

**Replace the 2<sup>nd</sup> paragraph of section 9-1.16E(4) with:**

Stop notice information may be obtained from the Engineer.

**Replace section 9-1.16F with:**

**9-1.16F Retentions**

**9-1.16F(1) General**

The Department will retain 5% of the value of each progress payment (excluding mobilization payments) from each progress payment. After the Engineer determines that the Project is substantially complete, the Department may, at the Engineer's sole discretion, release half of all retention previously withheld and reduce any subsequent retentions withheld from subsequent progress payments to 2.5% of the value of any subsequent progress payments (excluding mobilization payments). The retained funds will be returned within thirty five (35) days after recordation of the Notice of Acceptance. (Pub Cont Code §9203)

You may elect to receive one hundred percent (100%) of payments due under the Contract from time to time, without retention of any portion of the payment by the County, by depositing securities of equivalent value with the County (Pub Cont Code 22300). Securities eligible for deposit hereunder are limited to those listed in Section 16430 of the Government Code, or bank or savings and loan certificates of deposit.

Funds retained from progress payments to ensure performance of the Contract that are eligible for payment into escrow or to an escrow agent pursuant to Section 22300 of the Public Contract Code do not include funds withheld or deducted from payment due to your failure to fulfill a contract requirement.

**9-1.16F(2) Prompt Payment of Retained Funds to Subcontractors**

Section 9-1.16F(1) describes retainage and release of retainage to you. You and/or your subcontractor must return all monies withheld in retention from subcontractors within 30 days after receiving payment of retainage. Violation of this section subjects you to the penalties, sanctions, and other remedies of Bus & Prof Code § 7108.5. This section must not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to you in the event of a dispute involving late payment or nonpayment by you, deficient subcontract performance, or noncompliance by a subcontractor.

**Replace section 9-1.22 with:**

**9-1.22 DISPUTES RESOLUTION**

As permitted by Public Contract Code section 20104, the County has elected to resolve any claims between you and the County pursuant to Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2 of the Public Contract Code. Sections 5-1.43 and 9-1.17 describe the contract claim procedure. The provisions of these sections constitute a non-judicial claim settlement procedure, and also step one of a two-step claim presentment procedure by agreement under Section 930.2 of the California Government Code. Specifically, step one is compliance with the contract claim procedure in accordance with the Contract Documents, including sections 5-1.43 and 9-1.17. Step two is the filing of a timely Government Code Section 910 et seq. claim in accordance with the California Government Code. Any such claim shall affirmatively indicate your prior compliance with the contract claim procedure and previous dispositions under sections 5-1.43 and 9-1.17. Any claim that fails to conform to the contract claim procedure required in step one may not be asserted in any subsequent Government Code Section 910 et seq. claim.



2. The wetland limits will be flagged and/ or signed to prevent the encroachment of construction personnel and equipment into any sensitive areas during Project work.
3. Animal exclusion fencing shall be checked once per week by construction personnel; trained by the County biologist to identify weaknesses and all compromised portions shall be repaired and/ or replaced immediately.
4. During Project activities, all trash that may attract predators shall be properly contained, removed from the work site, and disposed of regularly.
5. Following construction, all trash and construction debris shall be removed from work areas.

The County biologist will conduct a CRLF survey of the project site 48 hours before the onset of work activities and 24 hours prior to the onset of vegetation removal. If any life stage of CRLF is found, and these individuals are likely to be killed or injured by work activities, the County biologist will be allowed sufficient time, as determined by the Engineer, to move them from the site before work activities begin. The County biologist will relocate CRLF(s) the shortest distance possible to a location that contains suitable habitat and that will not be affected by activities associated with the proposed project. Payment for accommodating the relocation of CRLF to suitable habitat is included in the payment for the various items of work.

If vegetation removal and/or ground disturbing activities are scheduled between February 1 and October 1 then a breeding bird survey will be conducted no more than three (3) days prior to the start of construction by the County biologist. This will include surveys of the ground, herbaceous, shrub, and canopy vegetation. Concurrently, the County biologist will also survey for trees capable of supporting a sizeable bat maternity roost. The results of the nest survey will be submitted to CDFW by the County biologist before the start of work. The survey will be conducted within a minimum 1/4-mile radius of project activities.

If active nests or bat maternity roosts are found during the pre-construction survey, the nest will be mapped and photographed. A buffer or installation of appropriate barriers will be established between the project activities and the active nest or roost so that nesting activities are not interrupted. The construction-free buffer zone will be marked with flagging, stakes, or other means to mark the boundary. The buffer will be in effect throughout project activities or until the nest is no longer active. The size of the non-disturbance buffer and any other restrictions will be determined by the County biologist following completion of the survey and prior to the start of project activities. The buffer(s) will be determined based upon the life history of the individual species, including their sensitivity to noise, vibration, ambient levels of human activity and general disturbance, the current site conditions (screening vegetation, terrain, etc.) and the various project-related activities necessary to implement the project. No tree removal will occur within 250 feet of the active nest/roost unless approved by the County biologist. For trees removed that are located more than 250 feet but less than 500 feet from an active nest, the County biologist will need to be present to observe the nest/roost during tree removal.

If a lapse in project-related work of 15 days or longer occurs, another focused survey will need to be conducted before project work can be reinitiated.

If, during the course of carrying out the project, an active nest is identified or becomes established, that was not previously identified, the County biologist will be notified and consulted before construction may continue. The contractor is not allowed to destroy or disturb any active bird nest (Section 3503 Fish and Game Code) or any raptor nest (Section 3503.5) at any time.

The time period for completing the work within the area of the stream will be restricted to periods of dry weather and will be confined to the period of May 1 to October 15. Construction activities will be timed with awareness of precipitation forecasts and likely increases in stream flow. The work period within and adjacent to the stream will be restricted to periods of low rainfall (less than 1/4" per 24 hour period) and periods of dry weather (with less than a 20% chance of rain). All erosion control measures must be initiated prior to all storm events. Construction activities within the area of the stream must cease until all reasonable erosion control measures, inside and outside of the channel, have been implemented prior to all storm events. You will monitor the National Weather Service (NWS) 72-hour forecast for the project area. No work will occur during a dry-out period of 24 hours after rainfall of 1/2" or greater per 24-hour



period. Weather forecasts must be documented. Revegetation, restoration and erosion control work is not confined to this time period.

**Add to the end of the RSS for section 10-1.02B:**

Install loop detectors in the uppermost layer of the new pavement.

**Add to the end of section 10-1.02C(2):**

Protect any irrigation component to be relocated before performing any other construction activity in the area.

**Add to the beginning of section 10-1.02E:**

Construct the new pavement structure adjacent to the existing traveled way by successively excavating, preparing subgrade, placing base materials, and paving. Perform these activities concurrently after you start paving. Excavation within 8 feet of the existing traveled way must not precede the paving operation by more than 2 working days unless:

1. Authorized
2. Material is placed and compacted against the vertical cuts within 8 feet of the existing traveled way. During excavation, you may use native material for this purpose except you must use structural material once you start placing the pavement structure. Place the material to the top of the existing pavement and taper at a slope of 4:1 (horizontal:vertical) or flatter to the bottom of the excavation. Do not use treated base for the taper.

**Add section 10-1.02F:**

**10-1.02F Pre-Construction Drainage Patterns**

During construction maintain adequate drainage such that pre-construction drainage patterns are not compromised. The Engineer determines pre-construction drainage patterns.

**Replace "Reserved" in section 10-1.03 with:**

Refer to section 5-1.36C(3) for time constraints and arrangements necessary for underground utility relocations.

Do not complete work on State Route 49 ('M' Line) during construction of the joint trenches by others. Complete Stage 1A, 1B, and 1C prior to joint trench work by others on 'M' Line. Do not cold plane or place HMA on 'M' Line until construction of the joint trenches is completed by others.

Do not complete work on APN 054-342-20 during construction of the joint trenches by others. Complete initial roadway excavation and establish subgrade for the 'SR' Line and for the 'DWY 2' Line prior to joint trench work by others. Do not place aggregate base or HMA until construction of the joint trenches is completed by others for APN 054-342-20.

Do not complete work on Lime Kiln Road ('LK' Line) during construction of the joint trenches by others. Complete the initial roadway excavation along 'LK' Line and establish subgrade prior to joint trench work by others. Do not place aggregate base or HMA on 'LK' Line until construction of joint trenches is completed by others.

Do not complete work on Black Rice Road ('BR' Line) during construction of the joint trenches by others. Complete Stage 1A, 1B, and 1C prior to joint trench work by others. Do not cold plane, place aggregate base, or place HMA on 'BR' Line until construction of joint trenches is completed by others.



When authorized, removed and dispose of construction project funding signs upon completion of the work.

#### **12-2.04 PAYMENT**

Payment for all construction project funding signs is included in the payment for construction area signs.

**Replace Item 1.3 of the 1<sup>st</sup> paragraph of section 12-3.01A(3) with:**

- 1.3. Contract number, CIP number, Caltrans district, county, route and post mile of project limits or County Road name.

**Replace the 4<sup>th</sup> paragraph of section 12-3.03C with:**

Moving plastic traffic drums from location to location beyond what is shown on the plans is change order work.

**Replace "Reserved" in section 12-3.03D with:**

#### **12-3.03D Payment**

Plastic Drums as shown on the plans will be paid for through Traffic Control System.

**Replace the 4<sup>th</sup> paragraph of section 12-3.10C with:**

Moving barricades from location to location beyond what is shown on the plans is change order work.

**Replace "Reserved" in section 12-3.10D with:**

#### **12-3.10D Payment**

Barricades as shown on the plans will be paid for through Traffic Control System.

**Replace section 12-3.22 with:**

#### **12-3.22 TEMPORARY CRASH CUSHION (ABSORB 350)**

##### **12-3.22A General**

##### **12-3.22A(1) Summary**

Section 12-3.19 includes specifications for furnishing, installing, and maintaining temporary crash cushion (ABSORB 350) at each location shown.

If activities expose traffic to a fixed obstacle, protect the traffic from the obstacle with a temporary crash cushion (ABSORB 350). The crash cushion must be in place before opening traffic lanes adjacent to the obstacle

##### **12-3.22A(2) Definitions**

Not used.

##### **12-3.22A(3) Submittals**

Submit one copy of the manufacturer's plan and parts list.

Submit a Certificate of Compliance from the manufacturer. The Certificate of Compliance must certify that the crash cushion conforms to the contract plans and specifications, conforms to the pre-qualified design and material requirements, and was manufactured in conformance with the approved quality control program.

##### **12-3.22A(4) Quality Assurance**

Not used

### **12-3.22B Materials**

Temporary crash cushion must be an ABSORB-350, 6-element system, as manufactured by Barrier Systems, Inc., or equal as defined in Caltrans METS pre-qualified list of traffic control devices.

### **12-3.22C Construction**

Crash cushion must be installed in conformance with the manufacturer's installation instructions.

Temporary crash cushion (ABSORB 350) must be secured in place prior to commencing work for which the temporary crash cushion (ABSORB 350) is required.

Temporary crash cushions (ABSORB 350) must be maintained in place at each location, including times when work is not actively in progress. When no longer required, remove temporary crash cushions (ABSORB 350) from the site of the work. The Engineer determines when temporary crash cushions (ABSORB 350) are no longer required.

Immediately repair temporary crash cushion systems damaged due to your operations at your expense. When ordered by the Engineer, remove and replace temporary crash cushion systems damaged beyond repair due to your operations at your expense.

At the completion of the project, temporary crash cushion systems become your property and must be removed from the site of the work. Temporary crash cushion systems must not be installed in the permanent work.

### **12-3.22D Payment**

Temporary crash cushion (ABSORB 350) will be measured by the unit as determined from actual count in place in the completed work. A unit consists of 6 elements, the nose piece and the transition piece.

Repairing systems damaged by public traffic will be paid for as change order work. When ordered by the Engineer, immediately remove and replace temporary crash cushion (ABSORB 350) systems damaged beyond repair by public traffic, Temporary crash cushion (ABSORB 350) systems removed and replaced due to damage by public traffic will be measured and paid for as temporary crash cushion (ABSORB 350).

#### **Replace "Reserved" in section 12-3.32A(4) of the RSS dated 04-15-16 with:**

Approaching drivers must be able to read the entire message at least 2 times before passing the portable changeable message sign at the posted speed limit. Use more than 1 portable changeable message sign to comply with this requirement if necessary.

#### **Add to section 12-3.32C of the RSS dated 04-15-16:**

Place and operate PCMS in advance of any work affecting public traffic. Place and operate PCMS one week in advance of any lane closures, to inform the public of upcoming contract work and related delays.

Place PCMSs at the locations shown and in advance of the 1st warning sign for each:

1. Stationary lane closure
2. Shoulder closure
3. Speed reduction zone

Approaching drivers must be able to read the entire message at least 2 times before passing the portable changeable message sign at the posted speed limit. Use more than 1 portable changeable message sign to comply with this requirement if necessary.

**Replace "Reserved" in section 12-3.36 with:**

**12-3.36A General**

**12-3.36A(1) Summary**

Section 12-3.36 includes specifications for placing portable transverse rumble strips.

**12-3.36A(2) Definitions**

Not Used

**12-3.36A(3) Submittals**

Submit a copy of the manufacturer's instructions.

**12-3.36A(4) Quality Assurance**

Not Used

**12-3.36B Materials**

The strip must be either the RoadQuake 2 or the RoadQuake 2F Folding Temporary Portable Rumble Strip manufactured by Plastic Safety Systems, Inc. or approved equal. For information on obtaining the rumble strips manufactured by Plastic Safety Systems, Inc., contact:

CUSTOMER SERVICE  
PLASTIC SAFETY SYSTEMS, INC.  
2444 BALDWIN RD  
CLEVELAND, OH 44104

Telephone no.: (800) 662-6338 or (216) 231-8590

**12-3.36C Construction**

Place portable transverse rumble strips before closing the lane to traffic.

For a RoadQuake 2 rumble strip, securely connect the 3 sections under the manufacturer's instructions before placing them in the traffic lane.

Remove all portable transverse rumble strips and warning signs before opening the lane to traffic.

If the Engineer determines that the portable transverse rumble strips no longer provide audible and vibratory alerts, replace them.

**12-3.36D Payment**

Not Used

**Add to section 12-4.01A:**

Access to businesses must be maintained at all times. You must notify business owners and residents, a minimum of 72 hours prior to beginning any construction within 500 feet of their property.

**Add to section 12-4.02A(3)(a):**

You must submit a Traffic Control Plan for review and approval. Your Traffic Control Plan must address each type of temporary traffic control system that will be used. Your Traffic Control Plan must include detailed controls, including but not limited to flaggers, lane closures, PCMS boards, and signs, as applicable. Your Traffic Control Plan must include signing required on intersecting streets and driveways within the area that will require traffic control as required and must address traffic control related to access to driveways for all residences.

Submit your Traffic Control Plan as early as ten (10) working days after the receipt of the Notice of Award but no later than five (5) working days of receipt of Notice to Proceed. No work will start on County roads until the Traffic Control Plan is approved. Violation of the Traffic Control requirements is justification for the Engineer to stop work until the requirements are met.

**Replace “25 days to 125 days” in the 4th paragraph of section 12-4.02A(3)(b) with:**

15 days to 20 days

**Replace the last two paragraphs of section 12-4.02A(3)(b) with:**

Cancel closure requests at least 48 hours before the start time of the closure.

The Engineer may reschedule a closure cancelled due to unsuitable weather.

If a closure is not opened to traffic by the specified time, suspend work. No further closures are allowed until the Engineer has reviewed and authorized a work plan submitted by you that ensures that future closures will be opened to traffic by the specified time. Allow 2 business days for review of your proposed work plan. The Department does not compensate you for your losses due to the suspension of work resulting from the late opening of closures.

Notify the Engineer of delays in your activities caused by:

1. Your closure schedule request being denied although your requested closures are within the specified time frame allowed for closures. The Department does not compensate you for your losses due to amendments to the closure schedule that are not authorized.
2. Your authorized closure being denied.

If you are directed to remove a closure before the time designated in the authorized closure schedule, you will be compensated for the delay.

**Add between the 1st and 2nd paragraphs of section 12-4.02A(3)(c):**

Submit a contingency plan for each of the following activities:

1. Lime Kiln Road Closure
2. HMA paving
3. Roadway excavations encroaching on the traveled way not protected by Type K Railing.
4. Cold planing
5. Striping

**Add before the last paragraph of section 12-4.02A(3)(c):**

Based on the Engineer's review, additional materials, equipment, workers, or time to complete activities from that specified in the contingency plan may be required.

**Replace “3 business days” in the 1st sentence in the last paragraph of section 12-4.02A(3)(c) with:**

5 business days

**Add between the 4th and 5th paragraphs of section 12-4.02C(1):**

Not more than 1 stationary closure is allowed per direction of travel at one time.

**Add to the end of section 12-4.02C(1):**

Keep the full width of the traveled way open to traffic when no active construction activities are occurring in the traveled way or within 6 feet of the traveled way and on:

1. Friday after 3:00 p.m.
2. Saturday
3. Sunday
4. Designated holidays

**Add to the end of section 12-4.02C(3)(a):**

If work vehicles or equipment are parked on the shoulder within 6 feet of a traffic, close the shoulder area with fluorescent-orange traffic cones or portable delineators. Place the cones or delineators on a taper in advance of the parked vehicles or equipment and along the edge of the traveled way at 25-foot intervals to a point not less than 25 feet past the last vehicle or piece of equipment. Use at least 9 cones or delineators for the taper. Place advance warning signs as specified in section 12-4.02C(8).

Keep a minimum of 1 paved traffic lane at least 11 feet wide open for traffic.

Maintain at least 1 through traffic lane at all times on Black Rice Road and Happy Lane.

**Replace “Reserved” in section 12-4.02C(3)(b) with:**

During blasting, hauling, and slide removal excavation activities, you may close the road and stop traffic for periods not to exceed fifteen (15) minutes. After each closure, all accumulated traffic must pass through the work zone before another closure is allowed.

**Replace “Reserved” in section 12-4.02C(3)(f) with:**

Closure restrictions for designated holidays and special days are shown in the following table:

Lane Closure Restrictions For Designated Holidays										
Thu	Fri	Sat	Sun	Mon	Tues	Wed	Thu	Fri	Sat	Sun
x	H xx	xx	xx							
x	xx	H xx	xx							
	x	xx	H xx	xx						
	x	xx	xx	H xx	xxx					
				x	H xx					
					x	H xx				
						x	H xx	xx	xx	xx

Legend:

	Refer to lane requirement charts.
x	The full width of the traveled way must be open for use by traffic after 1500 hours.
xx	The full width of the traveled way must be open for use by traffic.
xxx	The full width of the traveled way must be open for use by traffic until 700 hours.
H	Designated holiday

**Replace “Reserved” in section 12-4.02C(3)(k) with:**

Comply with the requirements for the conventional highway lane closures shown in the following charts:

Chart No. 1 Conventional Highway Lane Requirements																									
County: El Dorado							Route/Direction: SR-49							Post Mile: 11.78/12.4											
Closure limits: Pleasant Valley Road to Bradley Drive																									
Hour	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mon–Thu	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Fri	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Sat	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Sun	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R

Legend:

R	Provide at least 1 through traffic lane not less than 11 feet in width for use by both directions of travel. (Reversing Control)
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REMARKS:

**Replace “Reserved” in section 12-4.02C(3)(l) with:**

Comply with the requirements for the complete closure on a conventional highway shown in the following chart:





The specifications in section 13 for water quality monitoring apply to but are not limited to the following work activities:

1. Construction of new ditch and filling of existing ditch north of Black Rice Road, east of SR-49.

The receiving water for this project is Weber Creek to the north and Martinez Creek to the south.

**Add to the end of section 13-1.01D(2):**

The Central Valley RWQCB has issued a Section 401 Water Quality Certification Permit for this project. A copy of this Section 401 Water Quality Certification Permit is included in Appendix B of these special provisions. You must comply with all requirements of this permit. You must maintain a copy of the permit at the project site and must make them available during construction.

**Add item 9 to the list in the last paragraph of section 13-1.03C:**

9. Inspect sanitary and septic waste storage and monitor disposal procedures weekly.

**Delete items 3, 7, and 8 in the list in the last paragraph of section 13-1.03C.**

**Add to end of section 13-1.03C:**

Inspect paved roads at job site access points for street sweeping daily if earthwork and other sediment- or debris-generating activities occur daily, weekly if the activities do not occur daily, or if the NWS predicts precipitation.

**Add to section 13-1.04:**

The costs associated with water quality sampling and analysis day, water quality monitoring report, water quality annual report, and any other costs necessary for compliance with the Section 401 Water Quality Certification permit will be paid for under job site management.

**Replace the 2<sup>nd</sup> paragraph of section 13-3.01A with:**

Prepare storm water pollution prevention plan includes preparing SWPPP, obtaining SWPPP authorization for the Engineer to obtain coverage under the Permit and a Waste Discharge Identification Number (WDID) from RWQCB, amending the SWPPP, preparing a Construction Site Monitoring Program, providing a WPC Manager, conducting WPC training, and monitoring, inspecting, and reporting on WPC practices at the job site.

**Add to section 13-3.01A:**

This project's risk level is 2.

Allow at least 4 weeks for the Engineer to obtain a Notice of Intent (NOI) permit from the RWQCB after your submittal of the SWPPP to the Engineer has been approved.

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) as amended by Order No. 2010-0014-DWQ and Order No. 2012 -0006-DWQ referred to herein as "Permit". The Permit may be viewed at the Web site for the State Water Resources Control Board, Board Decisions.

**Add between the 4th and 5th paragraphs of section 13-3.01C(2)(a):**

The Central Valley RWQCB will review the authorized SWPPP:

**Replace the 1<sup>st</sup> sentence of the 1<sup>st</sup> paragraph of section 13-3.01C(2)(a) with:**

Within 21 days after the date of the Notice of Award letter submit 3 copies of your SWPPP for review. Allow 7 days for the Department's review.

**Replace "15" in the 3<sup>rd</sup> paragraph of the 1<sup>st</sup> sentence of section 13-3.01C(2)(a) with "7".**

**Add to the 6th paragraph of section 13-3.01C(2)(a):**

The Engineer will not postpone issuance of the Notice to Proceed if your SWPPP submittal fails to meet the contract requirements requiring multiple submittals and reviews of your SWPPP.

**Replace Item 5 of the 2<sup>nd</sup> paragraph of section 13-3.01C(2)(a) with:**

5. Copy of County-furnished CEQA document and copy of permits obtained by the Department, including Fish & Wildlife permits, US Army Corps of Engineers permits, and RWQCB 401 certifications.

**Replace item 6 of the 7<sup>th</sup> paragraph in section 13-3.01C(2)(a) with:**

6. There is a Permit violation

**Add to the beginning of the 1<sup>st</sup> sentence of the 1<sup>st</sup> paragraph of section 13-3.01C(2)(b)(vi)(B):**

For Risk Level 2 and 3 projects,

**Replace section 13-3.01C(5) with:**

**13-3.01C(5) Reserved**

**Add to the end of section 13-3.01D(3)(a):**

The qualifying rain event daily average must not exceed the NAL for pH.

The qualifying rain event daily average must not exceed the NAL for turbidity.

**Add to section 13-3.03**

If the Engineer determines that resources sufficient to bring you into compliance with section 13 have not been allocated, the Engineer may redirect any of your resources available at the project site toward this effort. If the Engineer redirects resources due to your non-compliance with the provisions of section 13, the County will not be responsible for any delays to your schedule resulting from the reallocation, and no compensation will be made for these delays.

Install water pollution control (WPC) practices for erosion control and sediment control for areas under active construction. Limit active construction areas to the following as applicable:

1. By September 1 disturbed areas must not exceed the lesser of 50% of the total amount of area to be disturbed for the project or 10 acres
2. By September 15 disturbed areas must not exceed the lesser of 25% of the total amount of area to be disturbed for the project or 5 acres
3. By October 1 disturbed areas must not exceed the lesser of 10% of the total amount of area to be disturbed for the project or 2 acres
4. By October 15 disturbed areas must not exceed the lesser of 5% of the total amount of area to be disturbed for the project or 1 acres

During fall and winter do not exceed the specified amount of disturbance unless weather conditions permit and you request in writing and receive a waiver from the Engineer. Include in your request a contingency plan should weather conditions change.

**Replace “upon Contract acceptance” in item 2 of the 1<sup>st</sup> paragraph and item 3 of the 2<sup>nd</sup> paragraph of section 13-3.04 with:**

in the Proposed Final Pay Estimate

**Add to the 4<sup>th</sup> paragraph of section 13-3.04:**

3. \$400 for each stormwater sampling and analysis day per qualifying rain event

**Delete item 2 of the 2<sup>nd</sup> paragraph of section 13-3.04.**

**Add to section 13-3.04:**

The Department 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.

Unless the WPC practice is required under section 13-4, the Department pays for WPC practices under section 9-1.04, excluding travel and subsistence allowances paid to workers.

The Department does not pay for WPC practices that the Engineer determines are installed for the purposes of conveying runoff as part of maintaining adequate drainage described in Section 10-1.02. If you find it necessary to use WPC practices not specified to achieve compliance with local, state, and federal water pollution control regulations, then implementation, maintenance, and removal of the unspecified WPC practices will be at your expense.

The Department does not pay for the cleanup, repair, removal, disposal, or replacement of water pollution control practices due to improper installation or your negligence

The work to complete the final storm water annual report is excluded from section 5-1.46.

**Add to section 13-4.01A:**

Staging areas as well as fueling and maintenance activities must be a minimum of 100 feet from riparian or aquatic habitats.

Refueling of equipment within the floodplain or within 300 feet of the waterway is prohibited. If critical equipment must be refueled within 300 feet of the waterway, spill prevention and countermeasures must be implemented to avoid spills. Refueling areas must be provided with secondary containment including drip pans and/or placement of absorbent material. No hazardous materials, pesticides, fuels, lubricants, oils, hydraulic fluids, or other construction-related potentially hazardous substances can be stored within a floodplain or within 300 feet of a waterway. You must perform frequent inspections of construction equipment prior to utilizing it near surface waters to ensure leaks from the equipment are not occurring and are not a threat to water quality.

Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to the stream/pond must be positioned over drip pans. Stationary heavy equipment must have suitable containment to handle a catastrophic spill/leak.

You and all subcontractors, and employees will not dump any litter or construction debris within the stream, or where it may pass into the stream. All litter or construction debris resulting from the Project will be removed from the site and disposed of properly.

**Add to section 13-4.01C:**

Submit a spill prevention, containment and clean-up plan prior to the start of work. The plan must detail project elements, construction equipment types and location, access, staging and construction sequence. The plan must address procedures for a prompt and effective response to accidental spills and measures implemented to prevent spills.

**Add to the 4<sup>th</sup> paragraph of section 13-4.03A:**

The WPC manager must notify the Engineer immediately.

**Add to the beginning of the 1<sup>st</sup> paragraph of section 13-4.03B(4):**

The discharge of petroleum products, any construction materials, hazardous materials, pesticides, fuels, lubricants, oils, hydraulic fluids, raw cement, concrete or the washing thereof, asphalt, paint, coating material, drilling fluids, or other substances potentially hazardous to fish and wildlife resulting from or disturbed by project-related activities is prohibited and must be prevented from contaminating the soil and/or entering waters of the state.

**Replace “100” in the last paragraph of section 13-4.03C(1) with:**

300

**Add to section 13-4.03C(1):**

Vehicles may enter and exit the Work Area as necessary for project activities, but may not be parked overnight where mechanical fluid leaks may potentially enter the waters of the state.

Concrete must be completely cured before coming into contact with waters of the United States and waters of the state. Surface water that contacts wet concrete must be pumped out and disposed of at an appropriate off-site commercial facility, which is authorized to accept concrete wastes.

**Add to section 13-4.03C(2):**

Staging and storage areas for equipment, materials, fuels, lubricants and solvents, must be located outside of the stream channel and banks/pond margins.

**Add to section 13-4.03C(3):**

For location of roadway excavation stockpiles see Appendix D.

**Add to section 13-4.03D(1):**

Debris, soil, silt, bark, slash, sawdust, rubbish, creosote-treated wood, raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, wildlife, or riparian habitat resulting from the project related activities must be prevented from contaminating the soil and/or entering the stream.

**Replace “50” in the 3rd sentence in the 1st paragraph of section 13-4.03D(4) with:**

300

**Add to section 13-4.03E(3):**

All heavy equipment that will be entering the water must be cleaned of materials deleterious to aquatic life including oil, grease, hydraulic fluid, soil and other debris. Cleaning of equipment must take place outside

of the area adjacent to the watercourse where runoff may enter the stream or pond, and prior to entering the water.

**Add to section 13-4.03E(4):**

You will not fuel or maintain equipment within or near any stream channel or lake margin where petroleum products or other pollutants from the equipment may enter these areas.

**Replace “50” in the 1st and 2nd paragraphs of section 13-4.03E(8) with:**

300

**Add to section 13-4.03E(10):**

If any structure is cast in place, the area poured must be completely bermed and isolated to contain all and any wet cement, even if water is not present. The berm may be made of sandbags or dirt, but it must be lined with plastic to prevent any material from seeping past the berm. You must maintain the berm in place until the concrete is fully cured.

No concrete or any cement product may be poured if measurable rain is forecasted within 15 days. If any concrete is poured after October 15, a quick cure ingredient must be added to the concrete mix to ensure a faster set or drying time.

At all times when pouring concrete or working with wet concrete there must be a designated monitor to inspect the containment structures and ensure that no concrete or other debris enters into the channel outside of those structures.

**Add to the 3<sup>rd</sup> paragraph of Section 13-4.03F:**

8. 8 hours of predicted rain

**Delete the 1<sup>st</sup> sentence of section 13-5.04 and replace the 2<sup>nd</sup> paragraph of section 13-5.04 with:**

The Department pays for temporary soil stabilization for stockpiles under job site management. The Department pays for temporary soil stabilization for other than stockpiles under section 9-1.04 excluding travel and subsistence allowances paid to workers.

**Replace section 13-6.04 with:**

The Department pays for temporary sediment control under section 9-1.04 excluding travel and subsistence allowances paid to workers.

**Replace section 13-7.03D with:**

The Department pays for temporary tracking control under job site management.

**Replace section 13-9.04 with:**

The Department pays for temporary concrete washouts under job site management.

**Replace section 13-10.04 with:**

The Department pays for temporary linear sediment barriers for stockpiles under job site management.

The Department pays for temporary linear sediment barriers for other than stockpiles under section 9-1.04 excluding travel and subsistence allowances paid to workers.

AA

## 14 ENVIRONMENTAL STEWARDSHIP

### Add to the end of section 14-1.02:

Before starting job site activities, install Temporary Fence (Type ESA) to protect the ESA and mark its boundaries.

Limited access to the ESA is allowed for biological monitoring, water sampling, or release of encroaching wildlife. Notify the Engineer five (5) business days or less before the planned entry date. Any other access to the ESA is prohibited.

Access to an ESA other than that described is prohibited.

Temporary Fence (Type ESA) must comply with section 80.

Demarcation of the work area must consider and avoid vegetation to the greatest extent possible. Vegetation must not be removed or damaged beyond the work area, except for trimming with hand tools to the extent necessary to gain access to the work sites.

### Add to section 14-2.01:

If a potentially significant cultural resource is encountered during subsurface earthwork activities for the project, all construction activities within a 100-foot radius of the find will be stopped until a qualified archaeologist determines whether the resource requires further study. Potentially significant cultural resources consist of but are not limited to stone, bone, glass, ceramic, wood, or shell artifacts; fossils; or features including hearths, structural remains, or historic dumpsites.

Any previously undiscovered resources found during construction will be recorded on appropriate Department of Parks and Recreation (DPR) forms and evaluated for significance in terms of CEQA and Section 106 of the NHPA criteria by a qualified archeologist. If the resource is determined significant under CEQA or the NHPA, the archaeologist will prepare and implement a research design and archaeological data recovery plan that captures those categories of data for which the site is significant. The archaeologist will also perform appropriate technical analyses, prepare a comprehensive report and file it with the appropriate Information Center, and provide for the permanent curation of the recovered materials. Construction activities within the 100-foot radius may continue once all appropriate recovery measures have been completed.

In the event a fossil is discovered during any earthwork activities for the proposed project (including those occurring at depths of less than 10 feet), all excavations within 100 feet of the find will be temporarily halted or delayed until the discovery is examined by a qualified paleontologist, in accordance with Society of Vertebrate Paleontology standards. The paleontologist will determine the procedures to be followed before construction is allowed to resume at the location of the find. If the find is determined to be significant and the Engineer determines that avoidance is not feasible, the paleontologist will design and carry out a data recovery plan consistent with the Society of Vertebrate Paleontology standards. The plan will be incorporated into the project.

If human remains are encountered during earth-disturbing activities for the project, all work in the adjacent area must stop immediately, the Engineer, and the El Dorado County Coroner's office must be notified. If the remains are determined to be Native American in origin, the Native American Heritage

Commission must be notified and will identify the Most Likely Descendent, who will be consulted for recommendations for treatment of the discovered remains.

**Add to section 14-6.01:**

If any wildlife is encountered during the course of construction, said wildlife will be allowed to leave the construction area unharmed.

If during the course of project activity you encounter a species which is listed under the California Endangered Species Act as rare, threatened, or endangered, or which is designated a candidate for listing, work will be immediately suspended, the County biologist and Engineer notified, and conservation measures must be developed in agreement with the County biologist prior to re-initiating the activity.

**Add to section 14-6.02:**

**CRLF:** California Red-Legged Frog

**Add to the 1st paragraph of section 14-6.03A:**

This project is within or near habitat for the regulated species shown in the following table:

**Regulated Species**

California Red-Legged Frog
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**Add to section 14-6.03A:**

The County biologist will conduct a CRLF survey of the project site 48 hours before the onset of work activities and 24 hours prior to the onset of vegetation removal. If any life stage of CRLF is found, and these individuals are likely to be killed or injured by work activities, the County biologist will be allowed sufficient time, as determined by the Engineer, to move them from the site before work activities begin. The County biologist will relocate CRLF(s) the shortest distance possible to a location that contains suitable habitat and that will not be affected by activities associated with the proposed project. Payment for accommodating the relocation of CRLF to suitable habitat is included in the payment for the various items of work.

You are not authorized any act which results in the taking of a threatened, endangered or candidate species or any act, which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (F&G Code, §§2050-2097) or the Federal Endangered Species Act (16 U.S.C. §§1531-1544). "Take" is defined as hunt, pursue, catch, capture or kill or attempt to hunt, pursue, catch, capture, or kill. If there is potential for take of any listed species to occur, notify the Engineer and County biologist immediately.

**Add to section 14-6.03B:**

If vegetation removal and/or ground disturbing activities are scheduled between February 1 and October 1 then a breeding bird survey will be conducted no more than three (3) days prior to the start of construction by the County biologist. This will include surveys of the ground, herbaceous, shrub, and canopy vegetation. Concurrently, the County biologist will also survey for trees capable of supporting a sizeable bat maternity roost. The results of the nest survey will be submitted to CDFW by the County biologist before the start of work. The survey will be conducted within a minimum 1/4-mile radius of project activities.

If active nests or bat maternity roosts are found during the pre-construction survey, the nest will be mapped and photographed. A buffer or installation of appropriate barriers will be established between the project activities and the active nest or roost so that nesting activities are not interrupted. The



construction-free buffer zone will be marked with flagging, stakes, or other means to mark the boundary. The buffer will be in effect throughout project activities or until the nest is no longer active. The size of the non-disturbance buffer and any other restrictions will be determined by the County biologist following completion of the survey and prior to the start of project activities. The buffer(s) will be determined based upon the life history of the individual species, including their sensitivity to noise, vibration, ambient levels of human activity and general disturbance, the current site conditions (screening vegetation, terrain, etc.) and the various project-related activities necessary to implement the project. No tree removal will occur within 250 feet of the active nest/roost unless approved by the County biologist. For trees removed that are located more than 250 feet but less than 500 feet from an active nest, the County biologist will need to be present to observe the nest/roost during tree removal.

If a lapse in project-related work of 15 days or longer occurs, another focused survey will need to be conducted before project work can be reinitiated.

If, during the course of carrying out the project, an active nest is identified or becomes established, that was not previously identified, the County biologist will be notified and consulted before construction may continue. The contractor is not allowed to destroy or disturb any active bird nest (Section 3503 Fish and Game Code) or any raptor nest (Section 3503.5) at any time.

Sections 3503, 3503.5, and 3513 of the Fish and Game Code stipulate the following: Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by FGC or any regulation made pursuant thereto; Section 3503.5 states that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by FGC or any regulation adopted pursuant thereto; and Section 3513 states that it is unlawful to take or possess any migratory nongame bird except as provided by the rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Bird Treaty Act (MBTA).

**Replace the 2nd paragraph of section 14-6.03B with:**

The Department anticipates nesting or attempted nesting by migratory and nongame birds from February 1 to October 1.

**Replace section 14-8.02 with:**

The work is located in a Community Region with High Density Residential, Multi-Family Residential, Commercial, and Industrial land use designation.

The following table specifies the maximum allowable noise exposure for work within the community types and land use designations listed above.

<b>MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NONTRANSPORTATION NOISE SOURCES IN COMMUNITY REGIONS AND ADOPTED PLAN AREAS—CONSTRUCTION NOISE</b>			
<b>Land Use Designation</b> <sup>1</sup>	<b>Time Period</b>	<b>Noise Level (dB)</b>	
		<b>L<sub>eq</sub></b>	<b>L<sub>max</sub></b>
Higher-Density Residential (MFR, HDR, MDR)	7 am–7 pm	55	75
	7 pm–10 pm	50	65
	10 pm–7 am	45	60
Commercial and Public Facilities (C, R&D, PF)	7 am–7 pm	70	90
	7 pm–7 am	65	75
Industrial (I)	Any Time	80	90
<b>Note:</b> <sup>1</sup> Adopted Plan areas should refer to those land use designations that most closely correspond to the similar General Plan land use designations for similar development.			

The noise level requirements apply to the equipment on the job or related to the job measured at the affected building facade, including trucks, transit mixers or transient equipment that you may or may not own. Avoid the use of loud sound signals in favor of light warnings except those required by safety laws for the protection of personnel.

In the interest of the public safety and/or public convenience, the allowable noise levels may be waived.

Implement appropriate additional noise mitigation measures, including changing the location of stationary construction equipment, shutting off idling equipment, rescheduling your activity, notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationary construction noise sources such that noise from construction does not exceed the limits specified above. If the existing background noise levels exceed the values above, then the limit for construction noise may be increased from the background noise level by the same percentage that the background noise level exceeds the values above.

Locate fixed construction equipment such as compressors and generators at distances no less than 250 feet from sensitive receptors (including occupied residential property boundaries)

**Replace section 14-9.02 with:**

Comply with applicable State and County Air Quality Management District (AQMD) rules and regulations regarding reduction of construction related impacts on air quality, including the implementation of the following measures:

1. Use low-emission onsite mobile construction equipment.
2. Maintain equipment in tune per manufacturer's specifications.
3. Retard diesel engine injection timing by two to four degrees unless not recommended by manufacturer (due to lower emission output in-place).
4. Use reformulated low-emission diesel fuel.
5. Substitute electric and gasoline-powered equipment for diesel-powered equipment where feasible.
6. Use catalytic converters on gasoline-powered equipment.
7. Do not leave inactive construction equipment idling for prolonged periods (i.e., more than 2 minutes).
8. Support and encourage ridesharing and transit for the construction workers.
9. All construction vehicles and equipment shall be fitted with working mufflers.
10. Shroud or shield impact tools, and muffle or shield intake and exhaust ports on power construction equipment.
11. Obtain permission from the El Dorado County Air Quality Management District and the local fire agency prior to burning of wastes from land clearing. Only vegetative waste materials may be disposed of using an outdoor fire.

**Replace "Reserved" in section 14-9.04 with:**

**14-9.04 DUST CONTROL**

**14-9.04A General**

**14-9.04A(1) Summary**

Section 14-9.04 includes specifications relating to dust control.

Comply with Rules 223, 223-1, and 223-2 (Dust Rules) of the Rules and Regulations of the El Dorado County Air Quality Management District (AQMD).

Comply with Rules 224 (Cutback and Emulsified Asphalt Paving Materials) of the Rules and Regulations of the El Dorado County Air Quality Management District (AQMD).

Comply with Rules 215 pertaining to architectural coatings of the Rules and Regulations of the El Dorado County Air Quality Management District (AQMD).

The Dust Rules can be obtained from the AQMD, 330 Fair Lane, Placerville, CA, 95667, (530) 621-6662, and are available at AQMD's website.

The materials within the project limits are neither known nor suspected to contain naturally occurring asbestos and the project is not located within designated Naturally Occurring Asbestos Review Areas on the current El Dorado County Naturally Occurring Asbestos Review Area Map.

Compliance may include, but is not limited to, implementation of the following measures:

1. Application of water or suitable chemicals or other specified covering on material stockpiles, wrecking activity, excavation, grading, sweeping, clearing of land, solid waste disposal operations, or construction or demolition of buildings or structures (all exposed soil shall be kept visibly moist during grading).
2. Installation and use of hoods, fans and filters to enclose, collect, and clean the emissions of dusty materials.
3. Covering or wetting at all times when in motion of open-bodied trucks, trailers or other vehicles transporting materials, which create a nuisance by generating particulate matter in areas where the general public has access.
4. Application of asphalt, oil, water or suitable chemicals on dirt roads.
5. Paving of public or commercial parking surfaces.
6. Removal from paved streets and parking surfaces of earth or other material which has a tendency to become airborne.
7. Alternate means of control as approved by the AQMD.

#### **14-9.04A(2) Submittals**

Submit a site specific Fugitive Dust Control Plan / Fugitive Dust Plan (FDP) for all proposed work, meeting the requirements of the Dust Rules approved by AQMD, to the AQMD prior to start of any work. Provide the Engineer with four (4) copies of the AQMD approved FDP prior to starting any work that may generate dust. The FDP application can be found on AQMD's website at: [http://www.edcgov.us/Government/AirQualityManagement/Construction\\_Dust\\_Rules.aspx](http://www.edcgov.us/Government/AirQualityManagement/Construction_Dust_Rules.aspx).

Prepare an amendment to the FDP when there is a change in construction activities not included in the FDP, when the Contractor's activities violate a condition of AQMD, or when ordered by the Engineer.

Amendments must identify additional dust control practices or revised operations, including those areas or activities not identified in the initially approved FDP. Amendments to the FDP must be prepared and submitted for review and approval within a time approved by the Engineer. At a minimum, the FDP must be amended annually.

Keep one (1) copy of the approved FDP and approved amendments at the project site. Make the FDP available upon request by a representative of the AQMD, California Air Resource Board, United States Environmental Protection Agency, or Caltrans. Requests by the public must be directed to the Engineer.

Provide all notices to the AQMD and create and maintain all records as required by Dust Rules. Copies of all related records must be submitted to the Engineer within thirty (30) calendar days of completion of the work.

#### **14-9.04B Materials**

Not used.

#### **14-9.04C Construction**

Implement the measures contained in the FDP to control dust.

Control dust using measures that include the following:

1. Stabilize unpaved areas subject to vehicular traffic by keeping adequately wetted or covered with material that contains less than 0.25 percent asbestos.
2. The speed of vehicles and equipment traveling across unpaved areas must not be more than 15 mph unless the road surface and surrounding area is sufficiently stabilized to prevent vehicles and equipment going faster from causing dust that is visible from crossing job site limits.
3. Stockpiles and disturbed areas not subject to vehicular traffic must be located in the plan and stabilized by being kept adequately wetted or covered with plastic sheeting, bonded fiber matrix, erosion control blanket or other WPC measures approved by the Engineer.
4. Conduct activities so that no dirt or mud tracking is visible on any paved roadway open to the public.
5. Use rock track out pads and wheel wash stations at all points of egress from unpaved construction areas.
6. Use a dedicated water truck for each piece of earthmoving equipment (e.g., scrapers, dozers, excavators, loaders, haul trucks, backhoes, compactors, graders, etc),
7. Pre-wet excavations to depths of cuts.

Dust control measures that will be required to mitigate dust may impact your productivity during construction activities.

#### **14-9.04D Payment**

The Department does not pay for impacts to your productivity from mitigating dust from your activities.

If naturally occurring asbestos is found within the project limits, prepare an Asbestos Dust Mitigation Plan. Preparing an Asbestos Dust Mitigation Plan and its implementation is change order work.

Payment for preparing, obtaining approval for, revising, and amending the FDP, for AQMD FDP review fees, and for maintaining and submitting all dust control records is paid for under Prepare Fugitive Dust Plan. Payment for performing dust control is not paid for under Prepare Fugitive Dust Plan.

#### **Replace section 14-10.02 with:**

#### **14-10.02 SOLID WASTE DISPOSAL AND RECYCLING REPORT**

Prior to commencement of construction prepare and obtain County approval of Construction and Demolition Debris Recycling Report that complies with County Ordinance Chapter 8.43 "Construction and Demolition Debris Recycling Within El Dorado County" that demonstrates the diversion and recycling of salvageable and re-useable wood, metal, plastic, and paper products during construction.

#### **Add to section 14-11.01:**

Debris, soil, silt, bark, slash, sawdust, rubbish, creosote-treated wood, raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, wildlife, or riparian habitat resulting from the project related activities must be prevented from contaminating the soil and/or entering the stream.

#### **Add to section 14-12.01:**

Comply with the conditions of the permits included in Appendix B. A copy of the 401 Water Quality Certification must be provided to any consultants, contractors, and subcontractors working on the project. Copies of the 401 Water Quality Certification must remain at the project site for the duration of project construction and be made available for review by site personnel and agencies. All personnel performing



**Replace section 19-1.04 with:**

If removal of unsuitable material is described, removing unsuitable material is paid for as the type of excavation involved.

If removal of unsuitable material is not described, removing unsuitable material is paid for as the type of excavation involved, unless before removal activities, (1) removing the material is ordered as change order work or (2) you request the removal to be change order work.

If removal of a buried man-made object is described, payment for removing the object encountered in an excavation is included in the type of excavation involved.

If removal of a buried man-made object is not described, payment for removing a buried man-made object is included in the type of excavation involved, unless before removal activities, (1) removing the object is ordered as change order work or (2) you request the removal to be change order work.

**Replace the 2nd paragraph in section 19-2.01A with:**

Roadway excavation consists of all excavation and stockpiling involved in the grading and construction of the roadway except structure excavation and any excavation paid for as a separate bid item. For location of roadway excavation stockpiles see Appendix D.

**Add to section 19-2.04:**

The Department does not pay for an excavation in excess of the limits shown or authorized.

**Add to 2nd paragraph in section 19-2.04:**

4. Stockpiling roadway excavation material in stockpile locations shown in Appendix D.

**Replace "Reserved" in-section 19-4 with:**

**19-4.01 GENERAL**

**19-4.01A Summary**

Refer to the Geotechnical Reports provided as supplemental information to the Contract Documents. The conclusions and recommendations contained within the reports are based on limited study areas and may not be representative of the conditions you may encounter outside of the specific area of study. You are advised that in areas throughout the project site, hard, non-rippable rock exists that will require alternative excavation techniques, including the use of hydraulic rock breaking equipment, blasting, coring (for drilling operations), and/or chemical splitting agents.

Section 19-4 includes specifications for performing rock excavation with controlled blasting.

You may use hydraulic splitters, pneumatic hammers, controlled blasting, or other roadway excavation techniques authorized to fracture rock and construct stable final rock cut faces.

Comply with section 12.

Comply with federal, state, and local blasting regulations. Regulations containing specific Cal-OSHA requirements for blasting activities include 8 CA Code of Regs, Ch 4, Subchapter 7, Group 18, "Explosive Materials." Regulations for explosives containing percholate materials include 22 CA Code of Regs, Division 4.5, Ch 33, "Best Management Practices for Percholate Materials."

You are liable for damages resulting from blasting activities.

#### **19-4.01B Definitions**

**controlled blasting:** Use of explosives and blasting accessories in predetermined spaced and aligned drill holes to limit blast vibrations, noise from airblast overpressure, and flyrock.

**flyrock:** Rock that becomes airborne due to blasting.

**near field blasting:** Blasting within 30 feet of a critical structure.

#### **19-4.01C Submittals**

##### **19-4.01C(1) General**

Submit 3 copies of the blasting safety plan and each controlled blasting plan. After each plan is authorized, submit 3 additional copies of each authorized plan.

##### **19-4.01C(2) Blasting Safety Plan**

Submit a blasting safety plan. The plan must include:

1. References to applicable federal, state, and local codes and regulations
2. Copies of permits required for blasting activities
3. Business name, contractor license number, address, and telephone number of the blasting subcontractor
4. Proof of current liability insurance and bonding
5. Name, address, telephone number, copies of applicable licenses, and resume of:
  - 5.1. Blaster-in-charge
  - 5.2. Personnel responsible for controlled blast design, loading, and conducting the blasting operation
  - 5.3. Safety officer for blasting subcontractor
  - 5.4. Blast monitoring consultant
  - 5.5. Blasting consultant
6. Name, address, and telephone number of the local fire station and law enforcement agencies
7. Detailed description of:
  - 7.1. Location where explosives will be stored
  - 7.2. Security measures to protect and limit access to the explosives
  - 7.3. Transportation means for explosives
  - 7.4. List of personnel permitted to handle the explosives
8. Exclusion zone and limited-entry zone for nonblast related operations and personnel surrounding loading and blasting operations
9. Details of warning signals used to alert employees on the job site of an impending blast and to indicate the blast is completed and the area is safe to enter
10. How blasting operations will be conducted
11. Measures to protect blasting operations and personnel from lightning
12. Emergency evacuation procedures for areas where explosives may be present
13. How misfires will be recognized, handled, and resolved including:
  - 13.1. Who will be notified
  - 13.2. How blast zone will be secured until misfire is resolved
  - 13.3. Identification of equipment that may be needed to resolve misfires
14. Details of signs to be used around blasting zones including:
  - 14.1. Timing of when signs will be posted relative to a specific blast
  - 14.2. Name and telephone number of person responsible for placing signs
  - 14.3. Roadway signs for compliance with Chapter 6, Typical Application 2, of the California MUTCD.
15. Traffic control details for:
  - 15.1. Loading and blasting operations
  - 15.2. Misfire event or other blast related phenomenon that causes a transportation corridor to remain closed to the public

16. Description of possible noxious gas generation and details of safeguards to be used to protect employees, work zones adjacent to the shot, private property, and the public
17. Procedure to report and resolve complaints for blast related accidents
18. Copies of each MSDS and manufacturer data sheets of explosives, caps, primers, initiators, and other compounds

**19-4.01C(3) Controlled Blasting Plan**

Submit a controlled blasting plan for each blast. The plan must include details on how each blast will be controlled and the following:

1. Blast identification by numerical and chronological sequence
2. Location, referenced to stationing, offset distance, date, and time of blast
3. Drawings showing drill hole pattern, spacing, burden, and initiation sequence
4. Typical cross-sections through zone to be blasted
5. Groundwater level, if present, within the prism to be blasted
5. Initiation-sequence diagram showing the actual firing time of each delay
6. Type of material to be blasted
7. Number of drill holes
8. Diameter, depth, and spacing of holes
9. Height or length of stemming
10. Types and characteristics of explosives used, including explosive's density, relative strength, and date of manufacture
11. Type of caps and delay periods used and their date of manufacture
12. Total amount of explosives used
13. Total amount of explosives detonating within any 8 millisecond period
14. Powder factor (pounds of explosive per cubic yard of material blasted)
15. Method of firing
16. Direction and distance to nearest building or structure
17. Type and method of instrumentation
18. Location and placement of instruments
19. Measures to limit air noise and flyrock
20. Measures to limit overbreak
21. Name of blasting subcontractor
22. Name and signature of blaster-in-charge
23. Drawings showing spacing and proximity of shot guards to blast location

Changes to the controlled blasting plan made to adjust for site conditions must be submitted for review before implementing.

**19-4.01D Quality Control and Assurance**

**19-4.01D(1) General**

Not Used

**19-4.01D(2) Blaster-In-Charge**

Assign a blaster-in-charge responsible for supervising all blasting activities. The blaster-in-charge must have 10 years of experience in performing or supervising similar blasting activities and must be a licensed blaster.

**19-4.01D(3) Blast Monitoring Consultant**

Assign a blast monitoring consultant to monitor blasting generated vibrations and noise near buildings and structures that may be subject to damage. The monitoring consultant must be responsible for collecting and interpreting vibration and noise data. The blast monitoring consultant must:

1. Not be employed by the blasting contractor or other subcontractor on the project
2. Have a minimum of a 2-year Associate's Degree in science or engineering



3. Have at least 5 years of documented experience in collecting and interpreting ground vibrations and noise data

#### **19-4.01D(4) Blasting Consultant**

Assign a blasting consultant to oversee near field blasting activities. The blasting consultant must:

1. Be an engineer or geologist who is licensed in the State
2. Have 10 years of experience providing specialized blasting services in near field blasting
3. Not be employed by the blasting contractor, explosive manufacturer, or explosive distributor
4. Submit a resume of credentials and a list of projects worked on

#### **19-4.01D(5) Preblast Surveys**

At least 15 days before starting blasting activities, prepare a preblast survey of all buildings and structures within 330 feet of blasting activities and submit it with the controlled blasting plan. The preblast survey must include a written report, sketches, and photos or a videotape with date and time displayed on the image. The preblast survey must include:

1. Name of the person making the inspection
2. Name of property owner and occupants
3. Property address
4. Date and time of the inspection
5. Description of the structure or other improvement including culverts and bridges
6. Detailed description of existing condition of walls, ceiling, and floor of each interior room including attic and basement
7. Detailed description of existing condition of foundations, exterior walls, roofs, doors, windows, and porches
8. Detailed description of existing condition of garages, outbuildings, sidewalks, driveways, and swimming pools
9. Detailed listing of highway sign posts, light fixtures, and overhead power lines
10. Survey of wells or other private water supplies including total depth and existing water surface levels
11. Identification of sites conducting procedures, processes, or operations that may be sensitive to blasting activities
12. Scaled map or aerial photo showing the location of structures and properties surveyed and location of all proposed blasting sites

If blasting activities are suspended for a period of 45 days or more, perform another preblast survey and submit it at least 15 days before resuming blasting activities.

After blasting activities are completed, prepare and submit a postblast survey of the same buildings and structures as in the preblast survey. The postblast survey must include all items included in the preblast survey.

#### **19-4.01D(6) Vibration and Noise Monitoring**

Vibration levels must be kept below peak particle velocity of 2 inches per second at the nearest building or structure.

Noise from airblast overpressure levels must be kept below 128 dB (C-network or Linear network) at the nearest building.

Ground vibrations and noise created from blasting must be controlled by using properly designed delay sequencing and charge weights for shots.

Provide 3 seismographs to be available for deployment that are appropriate for controlled blasting activities and capable of:

1. Recording particle velocities for 3 mutually perpendicular components of vibration and instantaneous resultant peak vector sum in the range generally found with controlled blasting.
2. Continuously measuring, recording, and reporting vibrations along 3 primary axes.
3. Measuring and recording vibration frequencies ranging from 2 to 300 Hz.
4. Providing a printed record of each event showing a plot of peak particle velocity versus vibration frequencies.
5. Measuring and recording airblast noise levels. The noise transducer must be detachable from the main unit to allow placing at elevations with a clear line of sight between transducer and blast.

Record each blast shot using approved seismographs and prepare a vibration and noise monitoring report. The report must include:

1. Identification of instruments used
2. Name of blast monitoring consultant
3. Distance and direction of recording stations from blast area
4. Type of ground at recording station and material on which instrument sits
5. Maximum particle velocity in each component and resultant peak particle velocity of each shot
6. Copy of seismograph readings with date and signature of blast monitoring consultant
7. Noise levels recorded in dB (C-network or Linear network) units

#### **19-4.01D(7) Video Recording of Blasts**

Video-record each blast. The video-recording must be taken from a safe location with a clear view of the blast area, activities, and progression. Identify each video or section of video with an index to identify each blast. Submit a copy of each video in DVD-Video format.

#### **19-4.01D(8) Blasting Complaints**

Accurately document each complaint. Notify the Engineer immediately of a complaint received or at the start of the next day's work shift. Complaint documentation must include:

1. Name and address of complainant
2. Date, time, and nature of complaint
3. Dated photo or videotape of physical damage
4. Name of person receiving complaint
5. Record of complaint investigation conducted
6. Resolution of complaint

#### **19-4.01D(9) Postblast Reports**

Document each shot in a postblast report. The postblast report must include all data required in the controlled blasting plan for that shot and the following:

1. Description of site conditions, loading, and time of blast
2. Description of weather conditions at time of blast including wind direction and cloud cover
3. Drillers boring record
4. Copy of vibration and noise monitoring report
5. Copy of documented complaints arising from the blast

Submit the postblast report within 48 hours of the blast.

#### **19-4.02 MATERIALS**

Not Used

**19-4.03 CONSTRUCTION**

At least 7 days before starting or resuming blasting activities, notify occupants of the local buildings within 330 feet of the blasting area in writing. Verbally notify occupants of pending blasting activities on the day of blasting.

Do not perform blasts within 1,200 feet of concrete placed within 72 hours.

Before firing any blast, confirm that groundwater conditions are consistent with shot design and explosive type to be used.

Before firing any blast in areas where flyrock may result in personal injury or damage to property or the work, cover the rock to be blasted with blasting mats, soil, or other equally serviceable material to prevent flyrock.

If blasting causes flyrock, suspend blasting activities. The blasting consultant must review the site to determine the cause of the flyrock problem and provide an amendment to the controlled blasting plan that prevents flyrock.

Do not use drill cuttings as stemming in controlled blasting operations.

**19-4.04 PAYMENT**

Payment for rock excavation, including controlled blasting, is included in the payment for the bid item that necessitates the rock excavation.

**Add to section 19-7.04:**

The Department does not pay for imported borrow that is not used in the work.

The Department does not pay for disposal of surplus imported borrow.

**Delete the 3<sup>rd</sup> paragraph of section 19-9.02.**

^^

**21 EROSION CONTROL**

**Replace "Reserved" in section 21-1.02 with:**

You are prohibited from using erosion control materials potentially harmful to fish and wildlife species, such as mono-filament netting (erosion control matting) or similar material, within and adjacent to the work area. All fiber rolls, straw wattles, and/or hay bales utilized within and adjacent to the project site must be free of nonnative plant seed. Fiber rolls or erosion control mesh must be made of loose-weave mesh that is not fused at the intersections of the weave, such as jute, or coconut (coir) fiber, or other products without welded weaves. Non-welded weaves reduce entanglement risks to wildlife by allowing animals to push through the weave, which expands when spread.

**Add to section 21-2.02F:**

Seed must comply with the following:



Anti-Graffiti Coating must comply with Section 78-4.06.

Architectural treatments listed below are required at concrete surfaces shown on the plans:

1. Dry stack rock texture

The architectural treatment must be a texture simulating the appearance of a dry stack rock pattern matching the texture and colors of the architecturally finished bridge on State Route 50 in the City of Placerville at the intersection with Missouri Flat Road. Liners must be full size of the panel as drawn without vertical or horizontal joints. The pattern must follow a horizontal line and not follow the grade of the road. Corners at the intersection of plane surfaces must be sharp and crisp without easing or rounding. A Class 1 surface finish must be applied to the architectural treatment.

**51-8.01B Submittals**

**51-8.01B(1) Test Panel**

A test panel at least 4 ft x 4 ft in size must be successfully completed at a location approved by the Engineer before beginning work on architectural texture or painting concrete. The test panel will be constructed, finished, and painted with the materials, tools, equipment, personnel, and methods to be used in constructing, finishing, and painting the concrete surfaces. If ordered by the Engineer, additional test panels will be constructed and finished until the specified finish, texture, and color are obtained, as determined by the Engineer.

The test panel approved by the Engineer will be used as the standard for comparison in determining acceptability of the architectural texture and painting for concrete surfaces.

You must submit to the Engineer, not less than one week prior to initial application of the concrete coating to the test panel, a copy of the manufacturer's recommendations and written application instructions.

**51-8.02 MATERIALS**

**51-8.02A Form Liners**

Form liners will be used for textured concrete surfaces and must be installed in conformance with the manufacturer's recommendations, unless other methods of forming textured concrete surfaces are approved by the Engineer. Form liners must 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 form liner material will be allowed. Form liners must leave crisp, sharp definition of the architectural surface. Recurring textural configurations exhibited by repeating, recognizable shadow patterns must be prevented by proper casting of form liner patterns. Textured concrete surfaces with such recurring textural configurations will be reworked to remove such patterns as approved by the Engineer or the concrete will be replaced.

Form liners must have the following properties:

Description	ASTM Designation:	Range
Elastomeric material		
Shore A hardness	D 2240	20 to 65
Tensile strength (MPa)	D 412	0.9 to 6.2
Semi-elastomeric polyurethane		
Shore D hardness	D 2240	55 to 65
Tensile strength (MPa)	D 2370	18 minimum

**51-8.02B Prepare and Paint Concrete Surfaces**

The paint must be a light-stable, alkali-resistant, acrylic latex or acrylic latex copolymer emulsion, commercially manufactured for use as an exterior concrete coating.

Paint must comply with section 91-4.02B.

The paint must be formulated and applied so that the color of the coated concrete matches the architectural treatment of the bridge on State Route 50 in the City of Placerville at the intersection with Missouri Flat Road. A minimum of four colors will be used to capture the color variation from the darkest to the lightest shades.

**51-8.03 CONSTRUCTION**

**51-8.03A Form Liners**

Cuts and tears in form liners must be sealed and repaired in conformance with the manufacturer's recommendations. Form liners that are delaminated from the form will not be used. Form liners with deformations to the manufactured surface caused by improper storage practices or any other reason will not be used.

Form liners must extend the full length of texturing with transverse joints at 8 foot minimum spacing. Small pieces of form liners will not be used. Grooves must be aligned straight and true. Grooves must match at joints between form liners. Joints in the direction of grooves in grooved patterns must be located only in the depressed portion of the textured concrete. Adjoining liners must be butted together without distortion, open cracks or offsets at the joints. Joints between liners will be cleaned before each use to remove any mortar in the joint.

Adhesives must be compatible with the form liner material and with concrete. Adhesives must be approved by the liner manufacturer. Adhesives must not cause swelling of the liner material.

**51-8.03B Releasing Form Liners**

Products and application procedures for form release agents will be approved by the form liner manufacturer. Release agents must not cause swelling of the liner material or delamination from the forms. Release agents must not stain the concrete or react with the liner material. For reliefs simulating fractured concrete or wood grain surfaces the application method will include the scrubbing method using

a natural bristle scrub brush in the direction of grooves or grain. The release agent must coat the liner with a thin film. Following application of form release agent, the liner surfaces will be cleaned of excess amounts of agent using compressed air. Buildup of form release agent caused by the reuse of a liner will be removed at least every 5 uses.

Form liners must 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 must be protected from damage.

**51-8.03C Curing**

Concrete surfaces with architectural texture must be cured only by the forms-in-place or water methods. Seals and curing compounds will not be used.

**51-8.03D Prepare and Paint Concrete Surfaces**

**51-8.03D(1) Surface Preparation**

Curing concrete must comply with section 90-1.03B.

Concrete surfaces to be painted must be prepared in conformance with the requirements of SSPC-SP 13, "Surface Preparation of Concrete," of the Structural Steel Painting Council. After concrete surface preparation is complete, you will clean all concrete surfaces to be painted by water rinsing.

Water rinsing is defined as a pressurized water rinse with a minimum nozzle pressure of 1,160 psi. During rinsing, the tip of the pressure nozzle must be placed between 12 inches and 18 inches from the surface to be rinsed. The nozzle must have a maximum fan tip angle of 30°.

Unless otherwise specified, should 7 days elapse between paint applications, the painted surface must be water rinsed prior to the next paint application.

**51-8.03D(1) Painting Concrete**

Painting concrete must comply with section 78-4.03.

Repair any damaged areas in the same manner as the original surface preparation and paint application.

**51-8.04 PAYMENT**

Architectural treatment will be measured and paid for by the square foot.

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**56 OVERHEAD SIGN STRUCTURES, STANDARDS, AND POLES**

**Add to section 56-3.01C(1):**

The sign mounting hardware must be installed at the locations shown.

Set the Type 1 standards with the handhole on the downstream side of the pole in relation to traffic or as shown.

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Local infrastructure must comply with the latest version of El Dorado Irrigation District (EID) Water, Sewer and Recycled Water Design and Construction Standards, EID Standard Detail Drawings for Water, Sewer, and Recycled Water, and EID Technical Specifications.

The latest copy of the EID standards can be found at:

<http://www.eid.org/doing-business-with-eid/design-and-construction-standards>

**77-1.02 MATERIALS**

Not Used

**77-1.03 CONSTRUCTION**

Not Used

**77-1.04 PAYMENT**

Not Used

**77-2 EL DORADO IRRIGATION DISTRICT WATER SYSTEM**

**77-2.01 GENERAL**

**77-2.01A Summary**

Section 77-2 includes specifications for installing El Dorado Irrigation District (EID) water lines.

**77-2.01B Connection to Water Line, Scheduled Shutdown, and Temporary Service**

Notify the Engineer, EID, the Fire Department and any property owner at least 3 weeks before any water service shutdown for any tie-in water line work on the project.

Perform all tie-in work in the middle of week, Tuesday through Thursday during nighttime hours. Do not perform tie-in work during the months of July and August.

You must be fully prepared to complete the connection and will not stop work until the facilities are restored to service or until directed to do so by the Engineer or EID. All possible preparatory work must be completed to the satisfaction of EID prior to a connection.

Work onsite must be coordinated with property owners to avoid impacts to property owners.

**77-2.01C Demolish Existing Pressure Reducing Station Vault**

Section 77-2.01C includes specifications for demolishing existing Pressure Reducing Station Vault as shown.

Completely remove existing pressure reducing station to below grade, plug piping and fill with gravel. Salvage valves and deliver to EID’s construction yard at:

2890 Mosquito Road  
Placerville, CA 95667

**77-2.01D Relocate Water Meter**

Section 77-2.01D includes specifications for relocating Water Meter as shown.

Remove the existing water meter and install a new meter of like type at the location shown on plans. All new materials will be used for the relocation.

New saddle, compression fitting, tubing, meter stop, meter box, meter coupling, and crushed rock for connection is included in the payment for relocate water meter.

**77-2.01E Remove and Relocate Air Release Valve**

Section 77-2.01E includes specifications for removing and relocating Air Release Valves as shown.

Remove the existing air release valve and install a new valve of like type at the location shown on plans. Lateral pipe for valves must connect to existing valve laterals. A new service tap in the water main is not allowed. All new materials will be used for the relocation.

New valves, thrust blocks, concrete caps, valve cans, backfill, and pipe required for connection is included in the payment for remove and relocate air release valve.

**77-2.01F Install Hydrant**

Section 77-2.01F includes specifications for installing Hydrants as shown.

Furnish and install a hydrant in the location shown on the project plans.

Lateral pipe for hydrant must connect to hydrant lateral. All new materials will be used for the installation.

New thrust blocks, backfill, valves, and pipe required for connection of hydrant is included in the payment for install fire hydrant.

**77-2.01G Install Blow Off Valve, Air Release Valve, and Gate Valve**

Section 77-2.01G includes specifications for installing Blow Off Valves, Air Release Valves, and Gate Valves as shown.

Furnish and install a blow off valve, air release valve, or gate valve in the location shown on the project plans.

Lateral pipe for valves must connect to valve laterals. All new materials will be used for the installation.

New valves, thrust blocks, concrete caps, valve cans, backfill, and pipe required for connection is included in the payment for the various blowoff valve, air release valve, and gate valve items.

**77-2.01H Reducers**

Section 77-2.01H includes specifications for installing Reducers as shown.

Furnish and install a pipe reducer in the location shown on the project plans.

**77-2.01I Ductile Iron Pipe**

Section 77-2.01I includes specifications for installing Ductile Iron Pipe as shown.

Furnish and install pipe in the location shown on the project plans.

New fittings, joint materials, thrust blocks, end caps, backfill, and pipe required is included in the payment for ductile iron.

**77-2.01J Water Service**

Section 77-2.01J includes specifications for installing Water Service as shown.

See Section 77-2.01B for service shutdown and tie-in work.

New saddle, compression fitting, and tubing for connection is included in the payment for water service. Temporary water service connection to APN 054-342-20 is included in the payment for water service.







**Add to the RSS for section 86-1.02C(1):**

Provide a 2-year manufacturer's replacement warranty for the pull box and cover. The warranty period starts on the date of Contract acceptance.

Deliver replacement parts within 5 business days after you receive notification of a failed pull box, cover, or both to the Department's Maintenance Electrical Shop.

**Add to the RSS for section 86-1.02C(2):**

Before shipping pull boxes to the job site, submit a list of materials used to fabricate the pull boxes to the Engineer. Include:

1. Contract number
2. Manufacturer's name
3. Manufacturer's installation instructions
4. Your contact information

**Replace "Reserved" in the RSS for section 86-1.02F(2)(a) with:**

A Certificate of Compliance must be submitted by the manufacture with each type of cable to be used on a project.

**Add to the RSS for section 86-1.02J:**

Standards for traffic signals and lighting must be supplied only by fabricators who have successfully completed the Caltrans requirements for facilities audits. A current listing of approved fabricators is available at the following website in the latest Internet Audit listing file:

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

Standard, steel pedestal, and posts for traffic signal and lighting must conform to section 55, "Steel Structure," of the Standard Specifications and these special provisions.

**Replace the 1st sentence of the 15th paragraph of section 86-1.02P(2) of the RSS for section 86 with:**

The interior of the enclosure must accept cable-in/cable-out circuit breakers. The circuit breakers must be mounted on non-energized clips and vertically with the up position of the handle being the *ON* position.

**Add to the RSS for section 86-1.02R(4)(b):**

LED signal module must be manufactured for 12-inch circular.

**Add to the RSS for section 86-1.02S(3)(c):**

The manufacturer must provide a written warranty against defects in materials and workmanship for LED countdown PSF modules for a minimum period of 48 months after installation of LED countdown PSF modules. Replacement LED countdown PSF modules must be provided within 15 days after receipt of failed LED modules at your expense. The Department pays for shipping the failed modules to you. All warranty documentation must be submitted to the Engineer before installation. LED countdown PSF modules must be delivered to State Maintenance Electrical Shop at:

RTMC  
3165 Gold Valley Drive

Diamond Springs Parkway – Phase 1A – SR-49 Realignment  
**CIP No. 72375, Contract No. 2720**  
December 18, 2018

County of El Dorado  
**Special Provisions**  
SP-68

Rancho Cordova, CA 95742

Submit a 5-year manufacturer's warranty against defects in materials and workmanship for LED countdown PSF modules. The 5-year warranty period starts on the date of Contract acceptance. Furnish replacement modules within 15 days after receiving the failed modules. The Department does not pay for replacement modules. Deliver replacement modules to the Department's Maintenance Electrical Shop at:

RTMC  
3165 Gold Valley Drive  
Rancho Cordova, CA 95742

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### **87 ELECTRICAL SYSTEMS**

#### **Add to the RSS for section 87-1.01A:**

This traffic signal work must be performed at intersection of Pleasant Valley Road/SR-49 and Fowler Lane/SR-49. This work is shown on plan sheets labeled E.

Signal timing plan will be provided and programmed to controller by the Engineer of DOT Traffic Unit, Caltrans.

#### **Replace the 21st paragraph of section 87-1.03A of the RSS for section 87 with:**

The Department places identification characters on the electrical equipment.

#### **Add to the RSS for section 87-1.03B(1):**

All new conduits must include tracer wire and pull rope.

After conductors have been installed, the ends of the conduits terminating must be sealed with an authorized type of sealing compound.

#### **Add to the beginning of section 87-1.03B(3)(a) of the RSS for section 87:**

Use Type 3 conduit for underground installation.

#### **Replace the 3rd paragraph of section 87-1.03B(3)(a) of the RSS for section 87 with:**

Place a minimum of 2 inches of sand bedding in a trench before installing Type 2 or Type 3 conduit and 4 inches of minor concrete over the conduit before placing additional backfill material. The concrete must contain at least 421 pounds of cementitious material per cubic yard.

#### **Add to the RSS for section 87-1.03B(3)(b):**

The conduit in a foundation and between a foundation and the nearest pull box must be Type 3.

#### **Add to the RSS for section 87-1.03E(3):**

Prior to any work being performed on traffic signal foundations and concrete pads, the finished excavation or embankment side slopes must be completed and approved by the Engineer.

Prior to excavating for reinforced cast-in drilled-hole concrete pile foundations for traffic signal and lighting standard, you must review the pole locations in the field with the Engineer prior to excavating for



reinforced cast-in-drilled-hole concrete pile foundations for traffic signal and lighting standards. If a subcontractor performs the excavations, a representative of the subcontractor must participate in the review. The locations of the foundations must be reviewed for conflicts with existing utilities, consistency with other work performed under the contract, and alignment of the standards and attached equipment with traffic lanes, sidewalks, and crosswalks to be construed under the contract. You must not excavate signal pole's foundations without prior written approval of the Engineer.

You must provide reference points to the center of each foundation if stakes for foundations are disturbed during excavation.

Verify no conflicts exist between proposed foundation and existing utility, and that signal head locations will be positioned correctly in relationship to the lanes controlled prior to constructing foundation. If conflicting and questionable conditions are identified, inform the Engineer immediately so that corrections may be made prior to work being done.

**Replace the 1st paragraph of section 87-1.03F(2)(c)(ii) of the RSS for section 87 with:**

Install a Type B loop detector lead-in cable in conduit.

**Replace the 1st paragraph of section 87-1.03F(3)(c)(ii) of the RSS for section 87 with:**

Use a Type 2 loop wire. Use only Type 2 loop wire for Type E loop detectors.

**Delete the 3rd paragraph of section 87-1.03G of the RSS for section 87.**

**Replace the 2nd paragraph of section 87-1.03H(2) of the RSS for section 87 with:**

Use Method B to insulate a splice.

**Replace "Not Used" in the RSS for section 87-1.04 with:**

The cost of installing signs mounted on signal standards and mastarms must be included in the payment for modify signal and lighting.

**Add to the list of paragraph 2 of the RSS for section 87-4.01A:**

22. Closed Circuit Television (CCTV) System
23. Video Image Vehicle Detection System
24. Emergency Vehicle Detector System
25. Wireless Serial Ethernet Modem (WSEM)
26. 8 Port Ethernet Switch
27. Power Distribution Block

**Replace the paragraphs in section 87-4.03B of the RSS for section 87 with:**

Deliver the battery backup system cabinet to the Department's maintenance electrical shop at:

11325 Sanders Drive  
Rancho Cordova, CA 95742

The Department assembles the battery backup system.

The Department notifies you when the assembled Model 342LX cabinet with battery backup system cabinet is ready for you to pick up.

Install the assembled cabinet on the foundation.

**Add to the end of section 87-21.03C of the RSS for section 87:**

Modifying a signal and lighting system includes removing, adjusting, or adding:

1. Foundations
2. Pull boxes
3. Conduit
4. Conductors
5. Cables
6. Standards
7. Signal heads
8. Service equipment enclosure
9. Department-furnished controller assembly
10. Detectors
11. Telephone demarcation cabinet
12. Accessible pedestrian signals
13. Push button assemblies
14. Pedestrian signal heads
15. Luminaires
16. Photoelectric control
17. Fuse splice connectors
18. Battery backup system
19. Closed Circuit Television (CCTV) System
20. Video Image Vehicle Detection System
21. Emergency Vehicle Detector System
22. Wireless Serial Ethernet Modem (WSEM)
23. 8 Port Ethernet Switch
24. Power Distribution Block

**Add to the end of section 87-4.04 of the RSS for section 87:**

**87-4.05 CLOSED CIRCUIT TELEVISION (CCTV) SYSTEM**

**87-4.05A General**

**87-4.05A(1) Summary**

Section 87-4.05 includes specifications for installing Closed Circuit Television System (CCTV).

**87-4.05A(2) Submittals**

Submit a cost breakdown to the Engineer and to the Regional Transportation Management Center (RTMC) Office of Electrical Systems, 3165 Gold Valley Dr., Rancho Cordova, CA 95742 before procurement. The breakdown must include the following:

1. Camera
2. Universal Junction Box
3. Universal Pedestal Mount
4. Ethernet Extender Switch Combination Unit
5. 24 V Regulated Power Supply
6. Remote Ethernet Power Controller Switch
7. Multiple AC Outlet
8. Wireless Serial Ethernet Modem (WSEM)
9. Category 6 Data Line Surge Protector
10. Rack Mount Data Surge Suppressor
11. High mast CCTV assembly

Notify the Engineer 3 days before any CCTV is taken down. Once a CCTV is taken down, make sure it is operational again within 5 days. Do not work on more than 10 CCTVs at a time.

### **87-4.05A(3) Quality Control and Assurance**

#### **87-4.05A(3)(a) Warranty**

Furnish a 2-year replacement warranty from the manufacturer of the CCTV system against any defects or failures. The effective date of the warranty is the date of installation. Furnish replacement CCTV system parts within 5 days after receipt of the failed parts. The Department does not pay for the replacement parts. Deliver replacement modems and power supplies to the following department maintenance electrical shop:

RTMC  
3165 Gold Valley Dr.  
Rancho Cordova, California 95742

#### **87-4.05A(3)(b) Training**

Provide a minimum of 4 hours of operational and maintenance training to Department personnel. Provide enough documentation for up to 10 Caltrans personnel. Provide a two week notice before the start of training. The Department will provide a training facility.

#### **87-4.05A(3)(c) Acceptance Test Procedure**

Upon completion of work, each CCTV system must be subjected to post-installation tests as outlined herein. All software must be provided and loaded before the start of testing.

Notify the Engineer to arrange a date for testing. Provide a color monitor capable of displaying the color NTSC video and a computer capable of exercising the Camera functions and displaying the H.264 video using a local network connection. Perform and document the following tests in the presence of the Engineer. Place the results from each location into a binder and deliver to the Engineer.

#### **87-4.05A(3)(c)(1) Iris Auto/Manual Operation**

With IRIS Auto/Manual switch in Manual:

1. Open Iris and verify that the video image lightens.
2. Close the Iris and verify that the video image darkens.

Open the Iris to lighten the image and then switch IRIS Auto/Manual switch to auto. Verify that the Camera iris closes to produce the original video image.

Close the Iris to darken the image and then switch IRIS Auto/Manual switch to auto. Verify that the Camera iris opens to produce the original video image.

#### **87-4.05A(3)(c)(2) Focus Auto/Manual Operation**

With FOCUS Auto/Manual switch in Manual, demonstrate that the Camera can focus on objects both near and far in the field of view.

Focus near, then switch FOCUS Auto/Manual switch to auto and demonstrate that the Camera focus adjusts automatically to bring the image back in focus.

Focus far, then switch FOCUS Auto/Manual switch to auto and demonstrate that the Camera focus adjusts automatically to bring the image back in focus.

#### **87-4.05A(3)(c)(3) Zoom Telephoto/Wide Operation**

With the IRIS and FOCUS Auto/Manual switches in Auto, demonstrate the auto IRIS & FOCUS adjustments operate with a focused picture present in the video image as the picture is zoomed near and far.

With IRIS and FOCUS Auto/Manual switch in Manual operate the Zoom from wide angle to Telephoto to demonstrate that all IRIS & FOCUS adjustments do not operate as if in Auto.

Demonstrate that the analog zoom functions through 30 times the focal length.

#### **87-4.05A(3)(c)(4) Tilt Operation**

Demonstrate that with Iris and Focus in Auto & Zoom in wide mode that the Camera has a tilt range of 360 degrees.

#### **87-4.05A(3)(c)(5) Pan Right/Left Operation**

Demonstrate that with Iris and Focus in Auto, and Zoom in wide mode that the Camera can pan 360 degrees.

#### **87-4.05A(3)(c)(6) Camera Preset Operation**

Using Camera control software, demonstrate that the Camera system executes a minimum of 6 unique preset positions employing various degrees of zoom, pan and tilt. The Camera must move freely from one preset position to the next.

The Camera system must move to the next preset position in 4 seconds or less. Once in the preset position, the Camera must not move unless directed by another command.

The Camera control software must automatically and continuously test all 6 preset positions in succession for a minimum of one hour.

#### **87-4.05A(3)(c)(7) ID Generation**

Using Camera ID Generator and vendor supplied Camera control software, demonstrate the insertion of 20 text characters into the video image.

Demonstrate that the text can be cleared using the control software.

#### **87-4.05B Materials**

##### **87-4.05B(1) General**

The CCTV system must comply with all rules and regulations of the Federal Communications Commission, and these special provisions.

All materials installed must be new, corrosion resistant and in strict accordance with the details shown and these specifications.

The CCTV camera must display High Definition (HD) color digital video and be controlled from the RTMC using an Internet Protocol (IP) network connection.

##### **87-4.05B(2) Camera**

The CCTV system must deliver both digital video and analog video simultaneously. The Camera must also be controlled using both IP and the asynchronous serial communication standard TIA-422. The Camera must also have a built in web server to allow for administrative, setup, control, and viewing capabilities. The Camera command instruction protocol must be selectable between at least the ONVIF, NTCIP and COHU i-View 3965 series Camera control protocol. The Camera must meet or exceed the following general specifications:

Specifications	Description
<b>Camera</b>	
Image Sensor	1/3in 2 megapixel
Digital Image Resolution	1080p/1080i/720p
Analog Image Resolution	NTSC
Lens	30x optical zoom
Iris	Auto or manual
Focus	Auto or manual
Image Stabilization	On/Off
S/N Ratio	>50dB
<b>IP VIDEO/NETWORK</b>	
IP Video Streams	2 individually configured + Analog
Video Codec	H.264 and MJPEG
Codec Resolution	D1,VGA,HVGA,QVGA,2CIF, NTSC,SDTV
Frame Rates	30, 15, 7, 4, 2, 1
Data Rates	64Kb/sec to 5Mb/sec
Connection Types	Multicast or Unicast
Network Protocols	RTP, RTSP, UDP, TCP, IP, HTTP, ARP
On Screen Display	Logo or OSD overlay video
On Screen Titling	Up to 24 characters
On Screen Azimuth Display	Indicates viewing direction
<b>POSITIONING DRIVE</b>	
Pan Range	continuous 360 degrees
Tilt Range	+90 to -90 degrees or continuous 360 degrees
Compass setting	True North
Preset	64 preset positions
Tours	8 tours of 32 presets with individual dwell times
Protocol	ONVIF, COHU, NTCIP
Control	TIA-422 and IP
Configuration and Setup	Web Server
Firmware	Upgradeable flash memory
<b>CAMERA CABLE (ELECTRICAL/ENVIRONMENTAL)</b>	
Power Input	120 VAC
Cable Length	3ft
Cable Connector	Mil-Spec Circular
Operating Temperature	-29 to +165 degrees F
Heater	Yes
Protection Rating	IP-67

#### **87-4.05B(3) Universal Junction Box (UJB)**

The UJB must be a NEMA-3R enclosure mounted to the Universal Pedestal Mount (UPM). The details for the UJB are shown.

The universal junction box will contain the following items: Ethernet extender switch combination unit, Wireless Serial Ethernet Modem (WSEM), data surge suppressor, NEMA-15 duplex outlet, and 15A circuit breaker. All components must be mounted on a DIN rail bracket.

#### **87-4.05B(4) Camera Breakout Cable (CBC)**

The CBC is a 2-ft long cable that will connect to the mil-spec connector on the camera cable and terminate in the universal junction box. The CBC will also have the following terminations: mil-spec on one end and RJ-45 and a NEMA-15 plug on the other end.

#### **87-4.05B(5) Camera Interconnect Cable (CIC)**

The Camera Interconnect Cable must be either of the following:

1. A multi-conductor cable with an outdoor rated common outer jacket containing: TIA 538B CAT6 cable and three-AWG 12 (white, black, green) wires.
2. Two discrete cables each with an outdoor rated outer jacket: TIA 538B CAT-6 cable, three-AWG 12 (white, black, green) wires.

The Camera must be terminated at the 342LX cabinet with a NEMA-15 plug and RJ-45 connector. The CIC must be terminated at the pole mounted universal junction box with the three 12 AWG wires (white, black, green) stripped and tinned, and RJ-45 connector. The CIC must have a strain relief located towards the top of the CCTV pole and hung using a cable grip on the CCTV pole's j-hook. Wiring must run continuous from the universal junction box to the 342LX cabinet. No splices are allowed. Verify CIC cable length before ordering of materials.

#### **87-4.05B(6) Universal Pedestal Mount (UPM)**

The UPM must mount to either a 5" or 7" diameter end of the CCTV pole depending on the size of the top of the existing pole being used. The UPM must also allow for mounting of the universal junction box. The details for the UPM are shown.

#### **87-4.05C Construction**

Inform the Engineer one week before installation and testing.

The CCTV system must be installed and tested as a complete and operational system. The installation includes any ancillary components not detailed and required to make the CCTV system operate such as power supplies, cables, cable adapters, and mounting brackets.

You will be provided an IP configuration for each camera location. The camera must be configured with the appropriate IP address before the acceptance test procedure (ATP).

The camera compass setting must also be set for true North before the camera ATP.

The Camera must be mounted using a universal pedestal pole top mounted adapter (18" adaptor post) along with a universal junction box as shown and under these special provisions.

The Camera must connect to the Camera Interface Cable using connections provided within the universal junction box.

The cable run between components must be continuous without splices. A minimum of 3 feet of slack must be provided at each pull box, junction box or vault, and a minimum of 9 feet at each cabinet.

The CCTV system must be installed and tested per the CCTV system manufacturer requirements.

#### **87-4.05D Payment**

Not used.

#### **87-4.06 8 PORT ETHERNET SWITCH**

##### **87-4.06A General**

##### **87-4.06A(1) Summary**

Section 86-3.12 includes specifications for installing 8 port ethernet switch.

### **87-4.06A(2) Definitions**

**HUB:** Network focal point

**DIN:** Top Hat Type 35mm

**RTMC:** Regional Transportation Management Center

### **87-4.06A(3) Submittals**

Before installation, submit the following equipment documents:

1. Contract number
2. Manufacturer's name
3. Manufacturer's installation instructions
4. Your contact information
5. Manufacturer specification sheet along with the complete ordering number of the equipment.

Send an additional copy for approval to the RTMC Office of Electrical Systems at:

3165 Gold Valley Dr., Rancho Cordova, CA 95742

### **87-4.06A(4) Quality Control and Assurance**

#### **87-4.06A(4)(i) General**

Deliver the equipment to the Engineer for configuration and testing.

After installation, the Department will test the equipment as part of the local area field network system.

#### **87-4.06A(4)(ii) Warranty**

Furnish a 3-year replacement warranty from the manufacturer of the Ethernet switch against any defects or failures. The effective date of the warranty is the date of acceptance of the installation. Replacement switch must be provided within 10 days of receipt of a failed unit. The department does not pay for replacement parts. Deliver replacement modems and power supplies to the following department maintenance electrical shop:

RTMC  
3165 Gold Valley Dr.  
Rancho Cordova, California 95742

### **87-4.06B Materials**

The Ethernet switch must be a hardened switch used to expand the amount of Ethernet ports available at the network field hub. The Ethernet switch must have a minimum capacity of eight (8) network connections.

The Ethernet switch must meet the following requirements:

1. Ethernet Interface: 10/100Base T, IEEE 802.3, Auto-Negotiate, Auto-MDI-MDIX
2. Ports: (8) RJ-45, STP and UTP
3. LED Indicators: Power, Per Port Link Speed Status
4. Memory: 768 Kbits packet buffer
5. Input Voltage: 12 - 48 V(dc)
6. DIN Mount: Top Hat 35 mm
7. Operating Temperature: -40°F to +167°F

### **87-4.06C Construction**

Install the Ethernet switch on a DIN rail in the cabinet.

**87-4.06D Payment**

Not Used

**87-4.07 POWER DISTRIBUTION BLOCK**

**87-4.07A General**

**87-4.07A(1) Summary**

Section 87-4.07 includes specifications for installing Power Distribution Block.

**87-4.07A(2) Submittals**

Provide cut sheets and documentation showing the manufacturer certified Power Distribution Block.

**87-4.07A(3) Quality Control and Assurance**

The installation of the Power Distribution Block must be a certified installation.

**87-4.07B Materials**

The Power Distribution Block must have recessed screw terminals for safe connection. It must have a minimum of 9 pairs of terminal lugs (2 Terminal Lugs/Block). Terminal Block must separate terminals by an insulating block.

The Power Distribution Block must meet the following requirements:

Description	Specification
Wire Range	Supply: 24-10 AWG, Distribution: 24-12 AWG
Voltage	120 VAC
Current	2 AMPERE
Mount	Standard DIN Rail (1.4")
Dimension	3.75" (L) X 1.50" (W) X 2.75" (D)

**87-4.07C Construction**

Not Used.

**87-4.07D Payment**

Not Used

**87-4.08 WIRELESS SERIAL ETHERNET MODEM (WSEM)**

**87-4.08A General**

**87-4.08A(1) Summary**

Section 87-4.08 includes specifications for installing the wireless serial Ethernet modem (WSEM).

**87-4.08A(2) Submittals**

Submit warranty documentation before installation.

**87-4.08A(3) Quality Control and Assurance**

Furnish a 1-year replacement warranty from the manufacturer of the WSEM and antenna against any defects or failures. The effective date of the warranty is the date of installation. Furnish replacement supplies within 5 days after receipt of the failed parts. The Department does not pay for the replacement parts. Deliver replacement supplies to the following department maintenance electrical shop:



RTMC  
 3165 Gold Valley Dr.  
 Rancho Cordova, California 95742

**87-4.08B Materials**  
**87-4.08B(1) General**

Carrier Detect (CD) or Clear to Send (CTS) signal must be asserted 0.1s +/- 0.01s prior to data being transmitted and must be de-asserted 0.1s +/-0.01s after the last byte sequence is transmitted.

The WSEM must have the following features or better:

Description	Specifications
Frequency of Operation	902 – 928 MHz
Spread Spectrum	Frequency Hopping
Hopping Channels	50/Pattern
Link Rate	User Selectable between 345kbps and 1.1Mbps data rates
Error Detection	32bit CRC, ARQ
Data Encryption	128 bit AES
Sensitivity	124dBm at 9600 bps
RF-Power	100mW to 1W (20-30dBm)
System Gain	136dB system gain w/unity gain antenna
(2) Serial Ports	RS232:RxD, TxD, RTS, CTS, DCD, DSR, DTR RS422: Tx+, Tx-, Rx+, Rx-  RS485: 4 wire/2wire  Baud rate: 300bps to 230.4k <del>b</del> bps
Serial Connectors	DB-9F and RJ45
Antenna Connector	Reverse Polarity TNC Male
Ethernet	RJ-45, 10/100 BaseT IEEE 802.3
Network Protocols	TCP, UDP, ARP, ICMP, DHCP, HTTP, SNMP, FTP, Serial over IP
Management	Local Serial Port Console, Telnet, HTTP, SNMP, FTP Upgrade (No-PROM upgrades)
Diagnostics	VSWR, Battery voltage, Temperature, RSSI, Remote diagnostics
Operating Modes	Point-to-Point, Point-to-Multipoint, Store&-Forward Repeater, Peer-to-Peer
Ethernet Interface	RJ-45, 10/100BaseT, IEEE 802.3 Ethernet compliant, auto-sense, auto-negotiate
Operating Temperature	-40°F to +167°F
Warranty	1-Year

**87-4.08B(2) Low Profile ANTENNA**

The WSEM Low Profile Antenna (LPA) must be compatible with the WSEM. It must have field diversity with vertical polarization components, antenna diversity and frequency agility. A threaded stud mount will provide a vandal resistant mounting on a controller cabinet. It must have a weather sealed case and weather proofing must be included and provided.

The WSEM antenna must have the following features or better:

Description	Specifications
Form Factor (Height x dia.)	Low-profile, 3.3"x1.44"
Beam Width	Omni Directional
Polarization	Vertical
Frequency range	698-960 MHz, 1710-2700 MHz
VSWR (for 698-806, 806-960, 1710-2110, 2110-2170, 2300-2700 MHz frequencies)	<2.5:1, <2:1, <2:1, <2.5:1, <2.5:1, <2:1 respectively
Power	100 Watts max
Gain (698-960, 1710-1990, 2100-2700 MHz)	3.5 dBi, 5.5dBi, 4.6dBi respectively
Impedance	50 ohm
Connector	N-Type Female
Color	Black
Environmental	-40°F to +158°F

#### 87-4.08C Construction

Not Used

#### 87-4.08D Payment

Not Used

### 87-4.09 VIDEO IMAGE VEHICLE DETECTION SYSTEM

#### 87-4.09A General

##### 87-4.09A(1) Summary

Section 87-4.09 includes installing video image vehicle detection system (VIVDS) for traffic signals.

##### 87-4.09A(2) Definitions

**Video Detection Unit (VDU):** Processor unit that converts the video image from the camera and provides vehicle detection in defined zones. Unit includes an image processor, extension module, and communication card.

**Video Image Sensor Assembly (VIS):** An enclosed and environmentally-protected camera assembly used to collect the video image.

**Video Image Vehicle Detection System (VIVDS):** A system that detects video images of vehicles in defined zones and provides video output.

**Video Over Ethernet Adaptor (VOEA):** A system that provides an IP connection to the VIVDS and is accessible via a web browser. This includes the capability to make configuration changes remotely.

##### 87-4.09A(3) Submittals

Submit documentation within 30 days after Contract approval but before installing VIVDS equipment.

The documentation submittal must include:

1. Certificate of Compliance: As specified in Section 6-2.03C, "Certificates of Compliance," of the Standard Specifications.

2. Site Analysis Report: Written analysis for each detection site, recommending the optimum video image sensor assembly placement approved by the manufacturer.
3. Lane Configuration: Shop drawing showing:
  - 3.1. Detection zone setback
  - 3.2. Detection zone size
  - 3.3. Camera elevation
  - 3.4. Selected lens viewing angle
  - 3.5. Illustration of detection zone mapping to reporting contact output
  - 3.6. Illustration of output connector pin or wire terminal for lane assignment.
4. Configuration Record: Windows 7 PC compatible STAND ALONE ENCRYPTED FLASH OR HARD DRIVE USB 2.0 OR BETTER containing:
  - 4.1. Proposed zone designs
  - 4.2. Calibration settings
5. Mounting and Wiring Information: Manufacturer approved wiring, video cable and service connection diagrams.
6. Communication Protocol: Industry standard available in public domain. Document defining:
  - 6.1. Message structure organization
  - 6.2. Data packet length
  - 6.3. Message usability
  - 6.4. Necessary information to operate a system from a remote windows based personal computer.
7. Programming Software: STAND ALONE ENCRYPTED FLASH OR HARD DRIVE USB 2.0 OR BETTER containing set up and calibration software that observes and detects the vehicular traffic, including bicycles, motorcycles, and sub-compact cars, with overlay of detection zones and allows adjustment of the detection sensitivity for a traffic signal application.
8. Detector Performance STAND ALONE ENCRYPTED FLASH OR HARD DRIVE USB 2.0 OR BETTER. Recordings and Analysis: Performance analysis based on 24-hour STAND ALONE ENCRYPTED FLASH OR HARD DRIVE USB 2.0 OR BETTER recording of contiguous activity for each approach. Include:
  - 8.1. Two contiguous hours of sunny condition, with visible shadows projected a minimum of 6 feet into the adjacent lanes
  - 8.2. Two 1-hour night periods with vehicle headlights present.
9. Preventative Maintenance Parts Documentation: List of equipment replacement parts for preventative maintenance, including:
  - 9.1. Electrical parts, wiring and video cable
  - 9.2. Mechanical parts
  - 9.3. Assemblies.

Allow 7 days for the Engineer to review the documentation submittal.

If the Engineer requires revisions, submit a revised submittal within 5 days of receipt of the Engineer's comments and allow 5 days for the Engineer to review. If agreed to by the Engineer, revisions may be included as attachments in the resubmittal. The Engineer may conditionally approve, in writing, resubmittals that include revisions submitted as attachments, in order to allow construction activities to proceed.

Upon the Engineer's approval of the resubmittal, submit copies of the final documents (with approved revisions incorporated) to the Engineer.

Submit an acceptance testing schedule for approval 15 days before starting acceptance testing.

When beginning acceptance testing of VIVDS and detector performance and analysis, submit approved copies of the following:

1. Configuration Record: Windows 7 PC compatible STAND ALONE ENCRYPTED FLASH OR HARD DRIVE USB 2.0 OR BETTER containing:

- 1.1. Final zone designs
- 1.2. Calibration settings to allow reinstallation.
2. Mounting and Wiring Information: Final wiring and service connection diagrams.
  - 2.1. One copy for the Engineer
  - 2.2. A second copy wrapped in clear self-adhesive plastic, be placed in a heavy duty plastic envelope, and secured to the inside of the cabinet door.

#### **87-4.09A(4) Quality Control and Assurance**

##### **87-4.09A(4)(a) General**

VIVDS and support equipment required for acceptance testing must be new and as specified in the manufacturer's recommendations. Date of manufacture, as shown by date codes or serial numbers of electronic circuit assemblies, must not be older than 12 months from the scheduled installation start date. Material substitutions must not deviate from the material list approved by the Engineer.

##### **87-4.09A(4)(a)(1) Training**

Not Used

##### **87-4.09A(4)(a)(2) Warranty**

Furnish a 3-year replacement warranty from the manufacturer of VIS and VDU against defects in materials and workmanship or failures. The effective date of the warranty is the date of acceptance of the installation. Submit all warranty documentation before installation.

Replacement VIS and VDU must be furnished within 10 days of receipt of a failed unit. The Department does not pay for replacement.

Deliver replacement VIS and VDU to:

Bill Pearce,  
Caltrans Maintenance Electrical Shop at:  
Sunrise Electric Maintenance Shop,  
11325 Sanders Drive, Rancho Cordova, CA 95742

#### **87-4.09B Materials**

##### **87-4.09B(1) General**

VIVDS must include necessary firmware, hardware, and software for designing the detection patterns or zones at the intersection or approach. Detection zones must be created with a graphic user interface designed to allow to anyone trained in VIVDS system setup to configure and calibrate a lane in less than 15 minutes.

System elements must comply with the manufacturer's recommendations and be designed to operate continuously in an outdoor environment.

All equipment, cables, and hardware must be part of an engineered system that is designed by the manufacturer to fully interoperate with all other system components. Mounting assemblies must be corrosion resistant. Connectors installed outside the cabinets and enclosures must be corrosion resistant, weather proof, and watertight. Enclosed cables must be sunlight and weather resistant.

##### **87-4.09B(1)(a) Physical and Mechanical Requirements**

VIVDS must include:

1. VIS and mounting hardware. Use a clamping device as mounting hardware on a pole or mast-arm.
2. VDU
3. VOA
4. Power supply

5. Surge suppression
6. Cables
7. Connectors
8. Wiring for connecting to the Department-furnished Model 332L traffic controller cabinet.
9. Communication card

**87-4.09B(1)(b) Electrical**

VIVDS must operate between 90 to 135 V(ac) service as specified in NEMA TS-1. VIS, excluding the heater circuit, must draw less than 10 W of power. Power supply or transformer for the VIVDS must meet the following minimum requirements:

<b>Minimum Requirements for Power Supply and Transformers</b>		
Item	Power Supply	Transformer
Power Cord	Standard 120 V(ac), 3 prong cord, 3 feet minimum length (may be added by Contractor)	Standard 120 V(ac), 3 prong cord, 3 feet minimum length (may be added by Contractor)
Type	Switching mode type	Class 2
Rated Power	Two times (2x) full system load	Two times (2x) full system load
Operating Temperature	From -37 to 74 °C	From -37 to 74 °C
Operating Humidity Range	From 5 to 95 percent	From 5 to 95 percent
Input Voltage	From 90 to 135 V(ac)	From 90 to 135 V(ac)
Input Frequency	60 ± 3 Hz	60 ± 3 Hz
Inrush Current	Cold start, 25 A Max. at 115 V(ac)	N/A
Output Voltage	As required by VIVDS	As required by VIVDS
Overload Protection	From 105 to 150 percent in output pulsing mode	Power limited at >150 percent
Over Voltage Protection	From 115 to 135 percent of rated output voltage	N/A
Setup, Rise, Hold Up	800ms, 50ms, 15ms at 115 V(ac)	N/A
Withstand Voltage	I/P-0/P:3kV, I/P-FG:1.5kV, for 60 s.	I/P-0/P:3kV, I/P-FG:1.5kV, for 60 s
Working Temperature	Not to exceed 70°C at 30 percent load	Not to exceed 70 °C at 30 percent load
Safety Standards	UL 1012, UL 60950	UL 1585

Field terminated circuits must include transient protection as specified in IEEE Standard 587-1980, Category C. Video connections must be isolated from ground.

**87-4.09B(1)(c) Technical Requirements**

Camera and zoom lens assembly must be housed in an environmentally sealed enclosure that complies with NEMA 4 standards. Enclosure must be watertight and protected from dust. Enclosure must include a thermostat controlled heater to prevent condensation and to ensure proper lens operation at low temperatures. Adjustable sun shield that diverts water from the camera's field of view must be included. Connectors, cables and wiring must be enclosed and protected from weather. An environmentally sealed (protected from dust and moisture ingress) connector must be used at the rear plate of the housing. Wiring to the connector must be sealed with silicone or putty compound.

Each camera and its mounting hardware must be less than 10 pounds and less than 1 square foot equivalent pressure area. Only one camera must be mounted on a traffic signal or luminaire arm. Top of

camera must not be more than 12 inches above top of luminaire arm or 30 inches above top of traffic signal arm.

VIS must use a charge-coupled device (CCD) element or Complementary Metal–Oxide–Semiconductor (CMOS), support National Television Standards Committee (NTSC) and RS170 video output formats, and have a horizontal resolution of at least 360 lines. VIS must include an auto gain control (AGC) circuit, have a minimum sensitivity to scene luminance from 0.01 to 930 foot-candle, and produce a usable video image of vehicular traffic under all roadway lighting conditions regardless of the time of day. VIS must have a motorized lens with variable focus and zoom control with an aperture of f/1.4 or better. Focal length must allow  $\pm 50$  percent adjustment of the viewed detection scene.

A flat panel video display with a minimum 8-inch screen and that supports NTSC video output must be enclosed in the Model 332L cabinet for viewing video detector images and for performing diagnostic testing. Display must be viewable in direct sunlight. Each VIVDS must have video system connections that support the NTSC video output format, can be seen in each camera's field of view, and has a program to allow the user to switch to any video signal at an intersection. A metal shelf or pull-out document tray with metal top capable of supporting the VDU and monitor must be furnished and placed on an EIA 19 inch rack with 10-32 "Universal Spacing" threaded holes in the Model 332L cabinet. System must allow independent viewing of a scene while video recording other scenes without interfering with the operation of the system's output.

Mounting hardware must be powder-coated aluminum, stainless steel, or treated to withstand 250 hours of salt fog enclosure as specified in ASTM B 117 without any visible corrosion damage.

VDU must operate between  $-37$  to  $+74$  °C and from 0 to 95 percent relative humidity.

VDU front panel must have indicators for power, communication, presence of video input for each VIS, and a real time detector output operation. Hardware or software test switch must be included to allow the user to place either a constant or momentary call for each approach. Indicators must be visible in daylight from 5 feet away.

VDU must have a serial communication port, EIA 232/USB 2.0 that supports sensor unit setup, diagnostics, and operation from a local PC compatible laptop with Windows 7 or later version operating system. VIVDS must have an Ethernet communication environment, including Ethernet communication card. VIVDS must include central and field software to support remote real-time viewing and diagnostics for operational capabilities through wide area network (WAN).

VDU, image processors, extension modules, and video output assemblies must be inserted into the controller input file slots using the edge connector to obtain limited 24 V(dc) power and to provide contact closure outputs. Cabling the output file to a "D" connector or RJ-45 on the front of the VDU is acceptable. If the VDU is capable of simultaneously processing information from two video image sensor assemblies, the VDU will only process one through lane phase. No rewiring to the standard Model 332L cabinet is allowed. Wiring to the backplane of the input files is not allowed. Controller cabinet resident modules must comply with the requirements in Chapter 1 and Sections 5.2.8, 5.2.8.1, 5.2.8.2, 5.4.1, 5.4.5, 5.5.1, 5.5.5, and 5.5.6 of TEES.

#### **87-4.09B(1)(d) Functional Requirements**

VIVDS must support normal operation of existing detection zones while a zone is being added or modified. Zone must flash or change color on a viewing monitor when vehicular traffic is detected. Length and width of each detection zone for each lane must be approved by the Engineer.

Software and firmware must detect vehicular traffic presence, provide vehicle counts, set up detection zones, test VIVDS performance, and allow video scene and system operation viewing from the local traffic management center/office. VIVDS must support a minimum of 2 separate detection patterns or zones that can be enacted by a remote operator at the signal controller cabinet.

VIVDS detection zone must detect vehicles by providing an output for presence and pulse. At least one detection output must be provided for each detection zone. One spare detection output must be provided for each approach. Detection performance must be achieved for each detection zone with a maximum of 8 user-defined zones for every camera's field of view.

VIVDS must detect the presence of vehicles under all types of adverse weather and environmental conditions, including snow, hail, fog, dirt, dust or contaminant buildup on the lens or faceplate, minor camera motion due to winds, and vibration. Under low visibility conditions, the VIVDS must respond by selecting a fail-safe default pattern, placing a constant call mode for all approaches. VIVDS outputs must assume a fail-safe "on" or "call" pattern for presence detection if video signal or power is not available and must recover from a power failure by restoring normal operations within 3 minutes without manual intervention. If powered off for up to 90 days, system must maintain the configuration and calibration information in memory.

Detection algorithm must be designed to accommodate naturally occurring lighting and environment changes, specifically the slow moving shadows cast by buildings, trees, and other objects. These changes must not result in a false detection or mask a true detection. VIVDS must not require manual interventions for day-night transition or for reflections from poles, vehicles or pavement during rain and weather changes. VIVDS must suppress blooming effects from vehicle headlights and bright objects at night.

Vehicle detection must call service to a phase only if a demand exists and extend green service to the phase until the demand is taken care of or until the flow rates have reduced to levels for phase termination. VIVDS must detect the presence of vehicular traffic at the detection zone positions and provide the call contact outputs to the Model 170E or Model 2070E controller assembly with the following performance:

**Detector Performance**

Requirements	Performance during AMBER and RED interval	Performance during GREEN interval
Average response time after vehicle enters 3 feet into detection zone or after exiting 3 feet past detection zone	≤ 1 s	≤ 100 ms
Maximum number of MISSED CALLS in 24-hour duration, where MISSED CALLS are greater than 5 s during AMBER and RED intervals and greater than 1 s during GREEN intervals (upon entering 3 feet of detection zone or after exiting 3 feet past detection zone).	0	10
Maximum number of FALSE CALLS in 24-hour duration (calls greater than 500ms without a vehicle present)	20	20

VIVDS must be able to locally store, for each lane, vehicle count data in 5, 15, 30, and 60 minute intervals for a minimum period of 7 days and be remotely retrievable. VIVDS must count vehicular traffic in detection zone with a 95 percent accuracy or better for every hour counted over a morning or an evening

peak hour. VIVDS detection zone tested must have a minimum range of 50 feet behind the limit line for each approach. Testing period will be pre-approved by the Engineer 48 hours in advance.

#### **87-4.09C Construction**

Install VDU in a Department-furnished Model 170E or Model 2070E controller assembly. Install VIS power supply or transformer on a standard DIN rail using standard mounting hardware and power conductors wired to DIN rail mounted terminal blocks in the controller cabinet.

Wiring must be routed through end caps or existing holes and sealed. New holes for mounting or wiring must be shop-drilled.

Wire each VIS to the controller cabinet with a wiring harness that includes all power, control wiring, and coaxial video cable. Attach harness with standard MIL type and rated plugs. Cable type and wire characteristics must comply with manufacturer's recommendations for the VIS to cabinet distance. Wiring and cables must be continuous, without splices, between the VIS and controller cabinet. Coil a minimum of 7 feet of slack in the bottom of the controller cabinet. For setup and diagnostic access, terminate serial data communication output conductors at TB-0 and continue for a minimum of 10 feet to a DB9F connector. Tape ends of unused and spare conductors to prevent accidental contact to other circuits.

Label conductors inside the cabinet for the functions depicted the approved detailed diagrams. Label cables with permanent cable labels at each end.

Adjust the lens to view 110 percent of the largest detection area dimension. Zones or elements must be logically combined into reporting contact outputs that are equivalent to the detection loops and with the detection accuracy required.

Verify the performance of each unit, individually, and submit the recorded average and necessary material at the conclusion of the performance test. Determine and document the accuracy of each unit, individually, so that each unit may be approved or rejected separately. Failure to submit necessary material at the conclusion of testing invalidates the test. The recorded media serves as acceptance evidence and must not be used for calibration. Calibration must have been completed before testing and verification.

Verify the detection accuracy by observing the VIVDS performance and recorded video images for a contiguous 24-hour period. The recorded video images must show the viewed detection scene, the detector call operation, the signal phase status for each approach, the vehicular traffic count, and time-stamp to 1/100 of a second, all overlaid on the recorded video. Transfer the 24-hour analysis to STAND ALONE ENCRYPTED FLASH OR HARD DRIVE USB 2.0 OR BETTER.

VIVDS must meet the detection acceptance criterion specified in table titled "Detector Performance."

Calculate the VIVDS's vehicular traffic count accuracy as  $100[1 - (|TC - DC|/TC)]$ , where DC is the detector's vehicular traffic count and TC is the observed media-recorded vehicular traffic count and where the resulting fraction is expressed as an absolute value.

VOEA must provide access to all cameras at the intersection via an Ethernet connection using IP communication. All cameras must be visible simultaneously, or individually. The display must be identical to that which is supplied at the control cabinet. The system must allow all settings to be monitored and changed remotely.

The Engineer will review the data findings and accept or reject the results within 7 days. Vehicle anomalies or unusual occurrences will be decided by the Engineer. Data or counts not agreed by the Engineer will be considered errors and count against the unit's calibration. If the Engineer determines that the VIVDS does not meet the performance requirements, you must re-calibrate and retest the unit, and resubmit new test data within 7 days. After 3 failed attempts, you must replace the VIVDS with a new unit.





**APPENDIX A**

**to the contract documents for  
Diamond Springs Parkway – Phase 1A – SR-49 Realignment  
CIP No. 72375, Contract No. 2720**

**REVISED STANDARD SPECIFICATIONS**





2. Subcontracting for a part of the work
3. Supplying materials

### **2-1.03 CONTRACTOR REGISTRATION**

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

01-20-17

### **2-1.04 PREBID OUTREACH MEETING**

Section 2-1.04 applies if a mandatory prebid meeting is shown on the *Notice to Bidders*.

The Department will conduct a meeting to provide small businesses, including DVBEs and DBEs, the opportunity to meet and interact with prospective bidders in an effort to increase their participation in the performance of contracts.

Each bidder must attend the meeting. The bidder's representative must be a company officer, project superintendent, or project estimator. For a joint venture, one of the parties must attend the mandatory prebid meeting.

The Department does not accept a bid from a bidder who did not attend the meeting.

A sign-in sheet will be used to identify the attendees. Each bidder must include the name and title of the company representative attending the meeting.

The Department may hold a single prebid meeting for more than one contract. Sign the sign-in sheet for the contract you intend to bid on. If you are bidding on multiple contracts, sign each sign-in sheet for each contract you intend to bid on. The sign-in sheets, with the names of all companies in attendance at each prebid meeting, will be made available at the website shown on the *Notice to Bidders* for bidder inquiries.

The successful bidder is required to report each small business hired to work on this Contract as a result of the meeting.

### **2-1.05 RESERVED**

12-02-16

### **2-1.06 BID DOCUMENTS**

#### **2-1.06A General**

The *Bid* book includes bid forms and certifications, including forms not submitted through the electronic bidding service.

The *Notice to Bidders and Special Provisions* includes the *Notice to Bidders*, revised standard specifications, and special provisions.

The *Bid* book, including *Bid* book forms not available through the electronic bidding service, *Notice to Bidders and Special Provisions*, project plans, and any addenda to these documents may be accessed at the Department's Office of Construction Contract Awards website.

The *Standard Specifications* and *Standard Plans* may be viewed at the Department's Office of Construction Contract Awards website and may be purchased at the Publication Distribution Unit.

#### **2-1.06B Supplemental Project Information**

The Department makes supplemental information available as specified in the special provisions.

Logs of test borings are supplemental project information.

07-21-17

If an *Information Handout* or electronic design files are available, you may view them at the Contract Plans and Special Provisions link at the Department's Office of Construction Contract Awards website.

Electronic design files contain design information such as cross sections, digital models, and roadway design alignments and profiles.

12-02-16

If rock cores are available, you may view them by sending a request to Coreroom@dot.ca.gov.

If other supplemental project information is available for inspection, you may view it by phoning in a request.

Make your request at least 7 days before viewing. Include in your request:

1. District-County-Route
2. Contract number
3. Viewing date
4. Contact information, including telephone number

For rock cores, also include the bridge number in your request.

If bridge as-built drawings are available:

1. For a project in District 1 through 6 or 10, you may request them from the Office of Structure Maintenance and Investigations, fax (916) 227-8357
2. For a project in District 7, 8, 9, 11, or 12, you may request them from the Office of Structure Maintenance and Investigations, fax (916) 227-8357, and they are available at the Office of Structure Maintenance and Investigations, Los Angeles, CA, telephone (213) 897-0877

As-built drawings may not show existing dimensions and conditions. Where new construction dimensions are dependent on existing bridge dimensions, verify the field dimensions and adjust the dimensions of the work to fit the existing conditions.

#### **2-1.06C–2-1.06D Reserved**

#### **2-1.07 JOB SITE AND DOCUMENT EXAMINATION**

Examine the job site and bid documents. Notify the Department of apparent errors and patent ambiguities in the plans, specifications, and Bid Item List. Failure to do so may result in rejection of a bid or rescission of an award.

Bid submission is your acknowledgment that you have examined the job site and bid documents and are satisfied with:

1. General and local conditions to be encountered
2. Character, quality, and scope of work to be performed
3. Quantities of materials to be furnished
4. Character, quality, and quantity of surface and subsurface materials or obstacles
5. Requirements of the contract

#### **2-1.08 RESERVED**

#### **2-1.09 BID ITEM LIST**

Submit a bid based on the bid item quantities shown on the Bid Item List.

#### **2-1.10 SUBCONTRACTOR LIST**

On the Subcontractor List form, list each subcontractor that will perform work in an amount in excess of 1/2 of 1 percent of the total bid or \$10,000, whichever is greater (Pub Cont Code § 4100 et seq.).

For each subcontractor listed, the Subcontractor List form must show:

1. Business name and the location of its place of business.
2. California contractor license number for a non-federal-aid contract.
3. Public works contractor registration number.
4. Portion of work it will perform. Show the portion of the work by:

Diamond Springs Parkway – Phase 1A – SR-49 Realignment  
**CIP No. 72375, Contract No. 2720**  
December 18, 2018

County of El Dorado  
**Appendix A**  
AA-4

- 4.1. Bid item numbers for the subcontracted work
- 4.2. Percentage of the subcontracted work for each bid item listed
- 4.3. Description of the subcontracted work if the percentage of the bid item listed is less than 100 percent

#### **2-1.11 RESERVED**

#### **2-1.12 DISADVANTAGED BUSINESS ENTERPRISES**

##### **2-1.12A General**

Section 2-1.12 applies to a federal-aid contract.

Under 49 CFR 26.13(b):

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 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- (1) Withholding monthly progress payments;
- (2) Assessing sanctions;
- (3) Liquidated damages; and/or
- (4) Disqualifying the contractor from future bidding as non-responsible.

Include this assurance in each subcontract you sign with a subcontractor.

##### **2-1.12B Disadvantaged Business Enterprise Goal**

###### **2-1.12B(1) General**

Section 2-1.12B applies if a DBE goal is shown on the *Notice to Bidders*.

The Department shows a goal for DBEs to comply with the DBE program objectives provided in 49 CFR 26.1.

Make work available to DBEs and select work parts consistent with the available DBEs, including subcontractors, suppliers, service providers, and truckers.

Meet the DBE goal shown on the *Notice to Bidders* or demonstrate that you made adequate good faith efforts to meet this goal.

You are responsible to verify at bid opening the DBE firm is certified as a DBE by the California Unified Certification Program and possesses the work codes applicable to the type of work the firm will perform on the Contract.

Determine that selected DBEs perform a commercially useful function for the type of work the DBE will perform on the Contract as provided in 49 CFR 26.55(c)(1)–(4). Under 49 CFR 26.55(c)(1)–(4), the DBE must be responsible for the execution of a distinct element of work and must carry out its responsibility by actually performing, managing, and supervising the work.

All DBE participation will count toward the Department's federally mandated statewide overall DBE goal.

Credit for materials or supplies you purchase from DBEs will be evaluated on a contract-by-contract basis and counts toward the goal in the following manner:

1. 100 percent if the materials or supplies are obtained from a DBE manufacturer.
2. 60 percent if the materials or supplies are obtained from a DBE regular dealer.
3. Only fees, commissions, and charges for assistance in the procurement and delivery of materials or supplies if they are obtained from a DBE that is neither a manufacturer nor a regular dealer. 49 CFR 26.55 defines *manufacturer* and *regular dealer*.

You receive credit toward the goal if you employ a DBE trucking company that is performing a commercially useful function. The Department uses the following factors in determining whether a DBE trucking company is performing a commercially useful function:

- The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there cannot be a contrived arrangement for the purpose of meeting DBE goals.
- The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.
- The DBE receives credit for the total value of the transportation services it provides on the Contract using trucks it owns, insures, and operates using drivers it employs.
- The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the Contract.
- The DBE may lease trucks without drivers from a non-DBE truck leasing company. If the DBE leases trucks from a non-DBE truck leasing company and uses its own employees as drivers, it is entitled to credit for the total value of these hauling services.
- A lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.

[49 CFR 26.55(d)]

### **2-1.12B(2) DBE Commitment Submittal**

Submit DBE information under section 2-1.33.

Submit a copy of the quote from each DBE shown on the DBE Commitment form that describes the type and dollar amount of work shown on the form. Submit a DBE Confirmation form for each DBE shown on the DBE Commitment form to establish that it will be participating in the Contract in the type and dollar amount of work shown on the form. If a DBE is participating as a joint venture partner, submit a copy of the joint venture agreement.

### **2-1.12B(3) DBE Good Faith Efforts Submittal**

You can meet the DBE requirements by either documenting commitments to DBEs to meet the Contract goal or by documenting adequate good faith efforts to meet the Contract goal. An adequate good faith effort means that the bidder must show that it took all necessary and reasonable steps to achieve a DBE goal that, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to meet the DBE goal.

If you have not met the DBE goal, complete and submit the DBE Good Faith Efforts Documentation form under section 2-1.33 showing that you made adequate good faith efforts to meet the goal. Only good faith efforts directed toward obtaining participation by DBEs are considered.

Submit good faith efforts documentation within the specified time to protect your eligibility for award of the contract in the event the Department finds that the DBE goal has not been met.

Refer to 49 CFR 26 app A for guidance regarding evaluation of good faith efforts to meet the DBE goal.

The Department considers DBE commitments of other bidders in determining whether the low bidder made good faith efforts to meet the DBE goal.

### **2-1.13–2-1.14 RESERVED**

### **2-1.15 DISABLED VETERAN BUSINESS ENTERPRISES**

#### **2-1.15A General**

Section 2-1.15 applies to a non-federal-aid contract.



Take necessary and reasonable steps to ensure that DVBEs have the opportunity to participate in the Contract.

Comply with Mil & Vet Code § 999 et seq.

### **2-1.15B Projects \$5 Million or Less**

Section 2-1.15B applies to a project with an estimated cost of \$5 million or less.

Make work available to DVBEs and select work parts consistent with the available DVBE subcontractors and suppliers.

Meet the goal shown on the *Notice to Bidders*.

Complete and submit the Certified DVBE Summary form under section 2-1.33. List all DVBE participation on this form.

If a DVBE joint venture is used, submit the joint venture agreement with the Certified DVBE Summary form.

List each 1st-tier DVBE subcontractor on the Subcontractor List form regardless of its percentage of the total bid.

### **2-1.15C Projects More Than \$5 Million**

#### **2-1.15C(1) General**

Section 2-1.15C applies to a project with an estimated cost of more than \$5 million.

The Department encourages bidders to obtain DVBE participation to ensure the Department achieves its State-mandated overall DVBE goal.

If you obtain DVBE participation:

1. Complete and submit the Certified DVBE Summary form under section 2-1.33. List all DVBE participation on this form.
2. List each 1st-tier DVBE subcontractor on the Subcontractor List form regardless of its percentage of the total bid.

If a DVBE joint venture is used, submit the joint venture agreement with the Certified DVBE Summary form.

#### **2-1.15C(2) DVBE Incentive**

The Department grants a DVBE incentive to each bidder who achieves a DVBE participation of 1 percent or greater (Mil & Vet Code 999.5 and Code of Regs § 1896.98 et seq.).

To receive this incentive, submit the Certified DVBE Summary form under section 2-1.33.

Bidders other than the apparent low bidder, the 2nd low bidder, and the 3rd low bidder may be required to submit the Certified DVBE Summary form if the bid ranking changes. If the Department requests a Certified DVBE Summary form from you, submit the completed form within 4 business days of the request.

#### **2-1.15C(3) Incentive Evaluation**

The Department applies the small business and non–small business preference during bid verification and proceeds with the evaluation specified below for the DVBE incentive.

The DVBE incentive is a reduction, for bid comparison only, in the submitted total bid by the lesser of the following amounts:

1. Percentage of the DVBE achievement rounded to 2 decimal places of the verified total bid of the low bidder
2. 5 percent of the verified total bid of the low bidder

3. \$250,000

The Department applies the DVBE incentive and determines whether the bid ranking changes.

A non-small business bidder cannot displace a small business bidder. However, a small business bidder with a higher DVBE achievement can displace another small business bidder.

The Department proceeds with awarding the contract to the new low bidder and posts the new verified bid results at the Department's website.

**2-1.16–2-1.17 RESERVED**

**2-1.18 SMALL BUSINESS AND NON-SMALL BUSINESS SUBCONTRACTOR PREFERENCES**

**2-1.18A General**

Section 2-1.18 applies to a non-federal-aid contract.

The Department applies small business preferences and non-small business preferences under Govt Code § 14835 et seq. and 2 CA Code of Regs § 1896 et seq.

Any contractor, subcontractor, supplier, or service provider who qualifies as a small business is encouraged to apply for certification as a small business by submitting its application to the Department of General Services, Office of Small Business and DVBE Services.

Contract award is based on the total bid, not the reduced bid.

**2-1.18B Small Business Preference**

The Department allows a bidder certified as a small business by the Department of General Services, Office of Small Business and DVBE Services, a preference if:

1. Bidder submitted a completed Request for Small Business Preference or Non-Small Business Preference form with its bid
2. Low bidder did not request the preference or is not certified as a small business

The Bidder's signature on the Request for Small Business Preference or Non-Small Business Preference form certifies that the Bidder is certified as a small business at the date and time of bid or has submitted a complete application to the Department of General Services. The complete application and any required substantiating documentation must be received by the Department of General Services by 5:00 p.m. on the bid opening date.

The Department of General Services determines whether a bidder was certified on the bid opening date. The Department of Transportation confirms the Bidder's status as a small business before applying the small business preference.

The small business preference is a reduction for bid comparison in the total bid submitted by the small business contractor by the lesser of the following amounts:

1. 5 percent of the verified total bid of the low bidder
2. \$50,000

If the Department determines that a certified small business bidder is the low bidder after the application of the small business preference, the Department does not consider a request for non-small business preference.

**2-1.18C Non-Small Business Subcontractor Preference**

The Department allows a bidder not certified as a small business by the Department of General Services, Office of Small Business and DVBE Services, a preference if:

1. Bidder submitted a completed Request for Small Business Preference or Non-Small Business Preference form with its bid

2. Certified Small Business Listing for the Non–Small Business Preference form shows that you are subcontracting at least 25 percent to certified small businesses

Each listed subcontractor and supplier must be certified as a small business at the date and time of bid or must have submitted a complete application to the Department of General Services. The complete application and any required substantiating documentation must be received by the Department of General Services by 5:00 p.m. on the bid opening date.

The non–small business subcontractor preference is a reduction for bid comparison in the total bid submitted by the non–small business contractor requesting the preference by the lesser of the following amounts:

1. 5 percent of the verified total bid of the low bidder
2. \$50,000

#### **2-1.19–2-1.26 RESERVED**

#### **2-1.27 CALIFORNIA COMPANIES**

Section 2-1.27 applies to a non-federal-aid contract.

Under Pub Cont Code § 6107, the Department gives preference to a *California company*, as defined, for bid comparison purposes over a nonresident contractor from any state that gives or requires a preference to be given to contractors from that state on its public entity construction contracts.

Complete a California Company Preference form.

The California company's reciprocal preference amount is equal to the preference amount applied by the state of the nonresident contractor with the lowest responsive bid unless the California company is eligible for a small business preference or a non–small business subcontractor preference, in which case the preference amount is the greater of the two, but not both.

If the low bidder is not a California company and a California company's bid with reciprocal preference is equal to or less than the lowest bid, the Department awards the contract to the California company on the basis of its total bid.

#### **2-1.28–2-1.30 RESERVED**

#### **2-1.31 OPT OUT OF PAYMENT ADJUSTMENTS FOR PRICE INDEX FLUCTUATIONS**

You may opt out of the payment adjustments for price index fluctuations specified in section 9-1.07. To opt out, submit a completed Opt Out of Payment Adjustments for Price Index Fluctuations form under section 2-1.33.

#### **2-1.32 RESERVED**

#### **2-1.33 BID DOCUMENT COMPLETION AND SUBMITTAL**

##### **2-1.33A General**

Complete the forms in the *Bid* book.

Use the forms provided by the Department except as otherwise specified for a bidder's bond.

Do not fax forms except for the copies of forms with the public works contractor registration number submitted after the time of bid. Fax these copies to (916) 227-6282.

Failure to submit the forms and information as specified may result in a nonresponsive bid.

If an agent other than the authorized corporate officer or a partnership member signs the bid, file a Power of Attorney with the Department either before opening bids or with the bid. Otherwise, the bid may be nonresponsive.

Complete and submit the *Bid* book under the *Electronic Bidding Guide* at the Department's Office of Construction Contract Awards.

Your authorized digital signature is your confirmation of and agreement to all certifications and statements contained in the *Bid* book.

On forms and certifications that you submit through the electronic bidding service, you agree that each form and certification where a signature is required is deemed as having your signature.

**2-1.33B Bid Form Submittal Schedules**

**2-1.33B(1) General**

The *Bid* book includes forms specific to the contract. The deadlines for the submittal of the forms vary depending on the requirements of each contract. Determine the requirements of the contract and submit the forms based on the applicable schedule specified in section 2-1.33B.

Bid forms and information on the form that are due after the time of bid may be submitted at the time of bid.

**2-1.33B(2) Federal-Aid Contracts**

**2-1.33B(2)(a) General**

Section 2-1.33B(2) applies to a federal-aid contract.

**2-1.33B(2)(b) Contracts with a DBE Goal**

**2-1.33B(2)(b)(i) General**

Section 2-1.33B(2)(b) applies if a DBE goal is shown on the *Notice to Bidders*.

**2-1.33B(2)(b)(ii) Non-Informal-Bid Contract**

For a non-informal-bid contract, submit the bid forms according to the schedule shown in the following table:

03-03-17

**Bid Form Submittal Schedule for a  
Non-Informal Bid Federal-Aid Contract with a DBE Goal**

Form	Submittal deadline
Bid to the Department of Transportation	Time of bid except for the public works contractor registration number
Copy of the Bid to the Department of Transportation as submitted at the time of bid with the public works contractor registration number	10 days after bid opening
Subcontractor List	Time of bid except for the public works contractor registration number
Copy of the Subcontractor List as submitted at the time of bid with the public works contractor registration number	10 days after bid opening
Small Business Status	Time of bid
Opt Out of Payment Adjustments for Price Index Fluctuations <sup>a</sup>	Time of bid
DBE Commitment	No later than 4 p.m. on the 5th day after bid opening <sup>b</sup>
DBE Confirmation	No later than 4 p.m. on the 5th day after bid opening <sup>b</sup>
DBE Good Faith Efforts Documentation	No later than 4 p.m. on the 5th day after bid opening <sup>b</sup>

<sup>a</sup>Submit only if you choose the option.

<sup>b</sup>If the last day for submitting the bid form falls on a Saturday or holiday, it may be submitted on the next business day with the same effect as if it had been submitted on the day specified.

**2-1.33B(2)(b)(iii) Informal-Bid Contract**

For an informal-bid contract, submit the bid forms according to the schedule shown in the following table:

03-03-17

**Bid Form Submittal Schedule for an  
Informal-Bid Federal-Aid Contract with a DBE Goal**

Form	Submittal deadline
Bid to the Department of Transportation	Time of bid
Subcontractor List	Time of bid
Small Business Status	Time of bid
Opt Out of Payment Adjustments for Price Index Fluctuations <sup>a</sup>	Time of bid
DBE Commitment	No later than 4 p.m. on the 5th day after bid opening <sup>b</sup>
DBE Confirmation	No later than 4 p.m. on the 5th day after bid opening <sup>b</sup>
DBE Good Faith Efforts Documentation	No later than 4 p.m. on the 5th day after bid opening <sup>b</sup>

<sup>a</sup>Submit only if you choose the option.

<sup>b</sup>If the last day for submitting the bid form falls on a Saturday or holiday, it may be submitted on the next business day with the same effect as if it had been submitted on the day specified.

12-02-16

**2-1.33B(2)(c) Contracts without a DBE Goal****2-1.33B(2)(c)(i) General**

Section 2-1.33B(2)(c) applies if a DBE goal is not shown on the *Notice to Bidders*.

**2-1.33B(2)(c)(ii) Non-Informal-Bid Contract**

For a non-informal-bid contract, submit the bid forms according to the schedule shown in the following table:

**Bid Form Submittal Schedule for a  
Non-Informal-Bid Federal-Aid Contract without a DBE Goal**

Form	Submittal deadline
Bid to the Department of Transportation	Time of bid except for the public works contractor registration number
Copy of the Bid to the Department of Transportation as submitted at the time of bid with the public works contractor registration number	10 days after bid opening
Subcontractor List	Time of bid except for the public works contractor registration number
Copy of the Subcontractor List as submitted at the time of bid with the public works contractor registration numbers	10 days after bid opening
Small Business Status	Time of bid
Opt Out of Payment Adjustments for Price Index Fluctuations <sup>a</sup>	Time of bid

<sup>a</sup>Submit only if you choose the option.

**2-1.33B(2)(c)(iii) Informal-Bid Contract**

For an informal-bid contract, submit the bid forms according to the schedule shown in the following table:

**Bid Form Submittal Schedule for an  
Informal-Bid Federal-Aid Contract without a DBE Goal**

Form	Submittal deadline
Bid to the Department of Transportation	Time of bid
Subcontractor List	Time of bid
Small Business Status	Time of bid
Opt Out of Payment Adjustments for Price Index Fluctuations <sup>a</sup>	Time of bid

<sup>a</sup>Submit only if you choose the option.

**2-1.33B(2)(d)–2-1.33B(2)(h) Reserved**

**2-1.33B(3) Non-Federal-Aid Contracts**

**2-1.33B(3)(a) General**

Section 2-1.33B(3) applies to non-federal-aid contracts.

**2-1.33B(3)(b) Contracts with a DVBE Goal**

**2-1.33B(3)(b)(i) General**

Section 2-1.33B(3)(b) applies if a DVBE goal is shown on the *Notice to Bidders*.

**2-1.33B(3)(b)(ii) Non-Informal-Bid Contract**

For a non-informal-bid contract, submit the bid forms according to the schedule shown in the following table:

**Bid Form Submittal Schedule for a  
Non-Informal-Bid Non-Federal-Aid Contract with a DVBE Goal**

Form	Submittal deadline
Bid to the Department of Transportation	Time of bid except for the public works contractor registration number for a joint-venture contract
For a joint-venture contract, copy of the Bid to the Department of Transportation as submitted at the time of bid with the public works contractor registration number	10 days after bid opening
Subcontractor List	Time of bid
Opt Out of Payment Adjustments for Price Index Fluctuations <sup>a</sup>	Time of bid
Certified DVBE Summary	No later than 4 p.m. on the 4th business day after bid opening
California Company Preference	Time of bid
Request for Small Business Preference or Non-Small Business Preference <sup>a</sup>	Time of bid
Certified Small Business Listing for the Non-Small Business Preference <sup>a</sup>	No later than 4 p.m. on the 2nd business day after bid opening

<sup>a</sup>Submit only if you choose the option or preference.

**2-1.33B(3)(b)(iii) Informal-Bid Contract**

For an informal-bid contract, submit the bid forms according to the schedule shown in the following table:

**Bid Form Submittal Schedule for an Informal-Bid Non-Federal-Aid Contract with a DVBE Goal**

Form	Submittal deadline
Bid to the Department of Transportation	Time of bid
Subcontractor List	Time of bid
Opt Out of Payment Adjustments for Price Index Fluctuations <sup>a</sup>	Time of bid
Certified DVBE Summary	Time of bid
California Company Preference	Time of bid
Request for Small Business Preference or Non-Small Business Preference <sup>a</sup>	Time of bid
Certified Small Business Listing for the Non-Small Business Preference <sup>a</sup>	Time of bid

<sup>a</sup>Submit only if you choose the option or preference.

**2-1.33B(3)(c) Contracts without a DVBE Goal**

**2-1.33B(3)(c)(i) General**

Section 2-1.33B(3)(c) applies if a DVBE goal is not shown on the *Notice to Bidders*.

**2-1.33B(3)(c)(ii) Non-Informal-Bid Contract**

For a non-informal-bid contract, submit the bid forms according to the schedule shown in the following table:

**Bid Form Submittal Schedule for a Non-Informal-Bid Non-Federal-Aid Contract without a DVBE Goal**

Form	Submittal deadline
Bid to the Department of Transportation	Time of bid except for the public works contractor registration number for a joint-venture contract
For a joint-venture contract, copy of the Bid to the Department of Transportation as submitted at the time of bid with the public works contractor registration number	10 days after bid opening
Subcontractor List	Time of bid
Opt Out of Payment Adjustments for Price Index Fluctuations <sup>a</sup>	Time of bid
California Company Preference	Time of bid
Certified DVBE Summary <sup>b</sup>	No later than 4 p.m. on the 4th business day after bid opening
Request for Small Business Preference or Non-Small Business Preference <sup>a</sup>	Time of bid
Certified Small Business Listing for the Non-Small Business Preference <sup>a</sup>	No later than 4 p.m. on the 2nd business day after bid opening

<sup>a</sup>Submit only if you choose the option or preference.

<sup>b</sup>Submit only if you obtain DVBE participation or you are the apparent low bidder, 2nd low bidder, or 3rd low bidder and you choose to receive the specified incentive.

**2-1.33B(3)(c)(iii) Informal-Bid Contract**

For an informal-bid contract, submit the bid forms according to the schedule shown in the following table:

**Bid Form Submittal Schedule for an  
Informal-Bid Non-Federal-Aid Contract without a DVBE Goal**

Form	Submittal deadline
Bid to the Department of Transportation	Time of bid
Subcontractor List	Time of bid
Opt Out of Payment Adjustments for Price Index Fluctuations <sup>a</sup>	Time of bid
Certified DVBE Summary <sup>b</sup>	Time of bid
Request for Small Business Preference or Non-Small Business Preference <sup>a</sup>	Time of bid
Certified Small Business Listing for the Non-Small Business Preference <sup>a</sup>	Time of bid

<sup>a</sup>Submit only if you choose the option or preference.

<sup>b</sup>Submit only if you obtain DVBE participation or you are the apparent low bidder, 2nd low bidder, or 3rd low bidder and you choose to receive the specified incentive.

**2-1.33B(3)(d)–2-1.33B(3)(h) Reserved**

**2-1.33B(4)–2-1.33B(9) Reserved**

**2-1.34 BIDDER'S SECURITY**

Submit one of the following forms of bidder's security equal to at least 10 percent of the bid:

1. Cash
2. Cashier's check
3. Certified check
4. Signed bidder's bond by an admitted surety insurer
5. Electronic bidder's bond by an admitted surety insurer submitted using an electronic registry service approved by the Department

Submit cash, cashier's check, certified check, or bidder's bond to the Department's Office of Construction Contract Awards before the bid opening time.

Submit an electronic bidder's bond with the electronic bid.

If using a bidder's bond, you may use the form in the *Bid* book. If you do not use the form in the *Bid* book, use a form containing the same information.

**2-1.35–2-1.39 RESERVED**

**2-1.40 BID WITHDRAWAL**

Bids are not filed with the Department until the date and time of bid opening.

A bidder may withdraw or revise a bid after it has been submitted to the electronic bidding service if this is done before the bid opening date and time.

**2-1.41–2-1.42 RESERVED**

**2-1.43 BID OPENING**

The Department publicly opens and reads bids at the time and place shown on the *Notice to Bidders*.

**2-1.44–2-1.45 RESERVED**

**2-1.46 DEPARTMENT'S DECISION ON A BID**

The Department's decision on the bid amount is final.

The Department may reject:

1. All bids
2. A nonresponsive bid





4. Department must authorize the request before implementation
5. Any party to the agreement must provide requested documentation within 10 days of the Department's request for the documentation
6. Agreement to use a joint check must be short-term, not to exceed 1 year, allowing sufficient time needed to establish or increase a credit line with the material supplier

A request for a joint check agreement may be initiated by any party.

If a joint check is used, the DBE remains responsible for all elements of 49 CFR 26.55(c)(1).

Failure to comply with section 5-1.13B(3) disqualifies DBE participation and results in no credit and no payment to the Contractor for DBE participation.

A joint check may not be used between the Contractor or subcontractor and a DBE regular dealer, bulk material supplier, manufacturer, wholesaler, broker, trucker, packager, manufacturer's representative, or other persons who arrange or expedite transactions.

**Delete item 1 in the list in the paragraph of section 5-1.23C.**

01-20-17

**Replace section 5-1.36 with:**

**5-1.36 PROPERTY AND FACILITY PRESERVATION**

01-20-17

**5-1.36A General**

Preserve and protect:

1. Highway improvements and facilities
2. Adjacent property
3. Waterways
4. ESAs
5. Lands administered by other agencies
6. Railroads and railroad equipment
7. Nonhighway facilities, including utilities
8. Survey monuments
9. Department's instrumentation
10. Temporary work
11. Roadside vegetation not to be removed

Comply with Govt Code § 4216 et seq. Notify the Engineer at least 3 business days before you contact the regional notification center. Failure to contact the notification center prohibits excavation.

Immediately report damage to the Engineer.

If you cause damage, you are responsible.

The Department may make a temporary repair to restore service to a damaged facility.

Install suitable safeguards to preserve and protect facilities from damage.

Install temporary facilities, such as sheet piling, cribbing, bulkheads, shores, or other supports, necessary to support existing facilities or to support material carrying the facilities.

**5-1.36B Railroad Property**

If working on or adjacent to railroad property, do not interfere with railroad operations.

For an excavation on or affecting railroad property, submit work plans showing the system to be used to protect the railroad facilities. Instead of the 15 days specified in section 5-1.23B, allow 65 days for the review of the plans.

If the Contract does not include an agreement with a railroad company, do not allow personnel or equipment on railroad property.

Prevent material, equipment, and debris from falling onto railroad property.

### **5-1.36C Nonhighway Facilities**

#### **5-1.36C(1) General**

Before starting work that could damage or interfere with underground infrastructure, locate the infrastructure described in the Contract, including laterals and other appurtenances, and determine the presence of other underground infrastructure inferred from visible facilities, such as buildings, meters, and junction boxes.

Underground infrastructure described in the Contract may be in different locations from those described, and additional infrastructure may exist.

Upon discovering an underground main or trunk line not described in the Contract, immediately notify the Engineer and the infrastructure owner. The Engineer orders the locating and protecting of the infrastructure. The locating and protecting is change order work. If ordered, repair infrastructure damage. If the damage is not due to your negligence, the repair is change order work.

Immediately notify the Engineer of a delay due to the presence of main-line underground infrastructure not described in the Contract or in a substantially different location.

Notify the Engineer if the infrastructure described in the Contract cannot be found. If after giving the notice, you find the infrastructure in a substantially different location from that described, finding the infrastructure is change order work.

#### **5-1.36C(2) Nonhighway Facility Protection**

Reserved

#### **5-1.36C(3) Nonhighway Facility Rearrangement**

The Department may rearrange a nonhighway facility during the Contract. Rearrangement of a nonhighway facility includes installation, relocation, alteration, or removal of the facility.

The Department may authorize facility owners and their agents to enter the highway to perform rearrangement work for their facilities or to make connections or repairs to their property. Coordinate activities to avoid delays.

If necessary rearrangement of underground infrastructure is not described in the Contract, the Engineer may order you to perform the work. The rearrangement is change order work.

Immediately notify the Engineer of a delay due to a rearrangement different from that described in the Contract.

If you want infrastructure rearrangement different from that described in the Contract:

1. Notify the Engineer
2. Make an arrangement with the infrastructure owner
3. Obtain authorization for the rearrangement
4. Pay the infrastructure owner any additional cost

The Department does not adjust time or payment for a rearrangement different from that described the Contract.

### 5-1.36D Survey Monuments

Protect survey monuments on and off the highway. Upon discovery of a survey monument not identified and located by the Department, immediately:

1. Stop work near the monument
2. Notify the Engineer

Do not resume work near the monument until authorized.

### 5-1.36E Landscape

If you damage plants not to be removed:

1. Dispose of them unless the Engineer authorizes you to reduce them to chips and spread the chips within the highway at locations designated by the Engineer
2. Replace them

Replace plants with plants of the same species.

Replace trees with 24-inch-box trees.

Replace shrubs with no. 15-container shrubs.

Replace ground cover plants with plants from flats. Replace *Carpobrotus* ground cover plants with plants from cuttings. Plant ground cover plants 1 foot on center.

If a plant establishment or permanent erosion control establishment period is specified, replace plants before the start of the plant establishment or permanent erosion control establishment period; otherwise, replace plants at least 30 days before Contract acceptance.

Water each plant immediately after planting. Saturate the backfill soil around and below the roots or the ball of earth around the roots of each plant. Water as necessary to maintain plants in a healthy condition until Contract acceptance.

07-21-17

### 5-1.36F Irrigation Facilities

Keep existing irrigation facilities in place that are described to be removed, relocated, or modified until the Engineer determines they are no longer needed.

Maintain the existing water supply. If the existing water supply is interrupted for more than 3 consecutive days, provide an alternative water supply. Water the existing plants in the area irrigated from that water supply, including those maintained by the Department, as necessary to maintain healthy plant growth.

If you and the Department irrigate existing plants from the same water supply, furnish enough water to the Department for watering plantings on and off the highway as necessary to maintain a healthy condition through Contract acceptance.

If you damage irrigation facilities not to be removed:

1. Remove and dispose of them.
2. Repair and replace damaged facilities within 10 days.
3. Use similar commercial-quality components from the same manufacturer or components that are compatible with the existing irrigation system if authorized.
4. After completing the repair or replacement of the facilities, perform an operational test in the presence of the Engineer. If you repair or replace the remote control valves, conduct the test with the irrigation controller in the automatic mode.

Notify the Engineer:

1. At least 4 business days before shutting off the water supply to any portion of the existing irrigation system

2. Immediately after restoring the water supply to any portion of the existing irrigation system

**Add to the end of the 1st paragraph of section 5-1.39C(1):**

01-20-17

or permanent erosion control establishment

**Replace section 5-1.43E with:**

01-20-17

**5-1.43E Alternative Dispute Resolution**

**5-1.43E(1) General**

**5-1.43E(1)(a) General**

Section 5-1.43E applies to a contract with 100 or more original working days.

The ADR process must be used for the timely resolution of disputes that arise out of the work.

You must comply with section 5-1.43E to pursue a claim, file for arbitration, or file for litigation.

The ADR process is not a substitute for submitting an RFI or a potential claim record.

Do not use the ADR process for disputes between you and subcontractors or suppliers that have no grounds for a legal action against the Department. If you fail to comply with section 5-1.43 for a potential claim on behalf of a subcontractor or supplier, you release the Department of the subcontractor's or supplier's potential claim.

Do not use the ADR process for quantification of disputes for overhead expenses or costs. For a dispute for overhead expenses or costs, comply with section 9-1.17D.

Each party and the DRA or DRB must complete the Dispute Resolution Advisor Agreement form or Dispute Resolution Board Agreement form and comply with the provisions of the agreement. For these forms, go to the Department's Division of Construction website.

No DRA- or DRB-related meetings are allowed until each party and the DRA or DRB, execute the agreement. However, each party and the DRA or DRB, may agree to sign and execute the agreement at the 1st meeting.

**5-1.43E(1)(b) Definitions**

**dispute meeting:** Traditional and informal dispute meeting.

**DRA:** 1-member board established by the parties to assist in resolving disputes.

**DRB:** 3-member board established by the parties to assist in resolving disputes.

**party:** You or the Department.

1. **the parties:** You and the Department jointly.
2. **each party:** You and the Department severally.

**outside technical services:** Consultants with no prior direct involvement in the Contract.

**5-1.43E(1)(c) Establishment of Procedures**

Upon selecting the DRA or DRB, the parties must meet with the DRA or DRB to establish and agree to procedures for:

1. Submitting documents
2. Conducting hearings
3. Providing recommendations

#### 4. Associated tasks

The established procedures must comply with the Contract and the Dispute Resolution Advisor Agreement or Dispute Resolution Board Agreement. The procedures need not comply with laws of evidence.

#### **5-1.43E(1)(d) Progress Meetings**

The parties must periodically meet with the DRA or DRB at the job site so the DRA or DRB members can keep abreast of construction activities and become familiar with the work in progress.

The meetings must be held at the start of job site activities and at least once every 3 months after that.

The parties must attend each meeting.

The parties may agree to waive the scheduled meetings when the only work remaining is plant establishment work or permanent erosion control establishment work.

#### **5-1.43E(1)(e) Dispute Meetings**

You must follow the traditional dispute meeting process to pursue a potential claim.

Either party may refer a dispute to the DRA or DRB. To request a dispute meeting, a party must submit a copy of the referral and supporting documentation to the DRA or DRB. The documentation must describe the dispute in individual discrete segments such that resolved and unresolved segments are differentiated. The party must include an estimate of the cost of the affected work and impacts to the work completion date.

A copy of all documents submitted to the DRA or DRB must be simultaneously submitted to the other party.

The Department furnishes the DRA or DRB with the Contract documents and provides meeting facilities at no cost to you.

Neither party may meet with or discuss Contract issues with the DRA or DRB members unless the other party is present.

If the dispute involves a subcontractor, the subcontractor's superintendent or project manager must attend the meeting.

Only the following persons are allowed to participate and present information at the meeting:

1. Engineer
2. Department's area construction engineer
3. Department's structure representative.
4. Your superintendent
5. Your project manager
6. Either party's employees that have direct knowledge of the dispute and direct involvement in the project
7. Consultants directly involved in the development of the estimate or construction
8. Subcontractor's superintendent or project manager if the dispute involves a subcontractor

The following persons are not allowed to attend the meeting:

1. Attorneys
2. Claim consultants
3. Outside technical services not employed by either party unless requested by the DRA or DRB

If the DRA or DRB needs outside technical services to help the DRA or DRB make a recommendation, the parties must agree to the services before they are provided. If the parties and the DRA or DRB agree, the technical services may be provided by technical staff who works for either party.

During a dispute meeting, each party presents its position, makes rebuttals, furnishes relevant documents, and responds to DRA or DRB questions and requests. The following is not allowed:

1. Testimony under oath
2. Cross-examination
3. Reporting of the procedures by a shorthand reporter or by electronic means

If either party fails to attend a dispute meeting, all documents submitted by the nonattending party is considered as the nonattending party's entire position, and the DRA or DRB and the attending party may proceed with the dispute process.

#### **5-1.43E(1)(f) Informal Dispute Meetings**

The parties may resolve small and uncomplicated disputes using an informal process. The parties may use this process only if the parties and the DRA or DRB agree its use is appropriate for resolving the dispute.

The informal dispute meeting process is independent from the traditional process. The Department does not grant time extensions for the traditional dispute process if the informal dispute process is used.

Each party furnishes the DRA or DRB a 1-page brief description of the dispute with supporting documentation and any additional information requested by the DRA or DRB.

In an informal dispute meeting, each party presents its position and receives the DRA's or DRB's recommendation orally on the same day the dispute is heard. The DRA or DRB furnishes a 1-page report confirming the recommendation within 5 business days.

Either party may ask for clarification of the DRA's or DRB's recommendation at the dispute meeting.

If the dispute remains unresolved, the parties must notify the DRA or DRB within 5 business days after receipt of the DRA's or DRB's written confirmation of the recommendation.

The DRA or DRB will not be bound by its informal recommendation if a dispute is later heard in a traditional dispute meeting.

If the dispute is not resolved using the informal dispute meeting process, the parties must comply with the traditional dispute meeting specifications.

#### **5-1.43E(1)(g) Recommendations**

Recommendations resulting from the ADR process are nonbinding.

If the parties resolve the dispute with the aid of the DRA's or DRB's recommendation, the parties must implement the resolution.

#### **5-1.43E(1)(h) Completion of Alternative Dispute Resolution**

All ADR activities must be completed before Contract acceptance. Accelerated timeframes may be used if the parties and the DRA or DRB agree.

If a dispute becomes an unresolved claim after Contract acceptance, comply with section 9-1.17D(2).

Neither party may call the DRA or DRB members who served on the Contract as a witness in arbitration or other proceedings that may arise from the Contract.

The parties must indemnify and hold harmless the DRA or DRB members from and against all claims, damages, losses, and expenses, including attorney's fees, arising out of and resulting from the findings and recommendations of the DRA or DRB.

#### **5-1.43E(1)(i) Payment**

Pay the DRA or each DRB member \$2,000 per day for the DRA's or DRB's participation at each on-site meeting except if the DRA or a DRB member serves on more than 1 Department DRA or DRB, the \$2,000 must be divided evenly among the contracts.

On-site meetings include:

1. Initial project meeting
2. Progress meetings
3. Dispute meetings

The payment includes full compensation for on-site time, travel expenses, transportation, lodging, travel time, and incidentals for each day or portion thereof the DRA or DRB member is at a DRA or DRB meeting.

Before a DRA or DRB member spends any time reviewing the plans or specifications, evaluating positions, preparing recommendations, completing forms, or performs any other off-site DRA- or DRB-related tasks, the parties must agree to pay for the tasks. Pay the DRA or DRB member \$200 per hour for these tasks. This payment includes full compensation for incidentals such as expenses for telephone, fax, and computer services.

The Department reimburses you for 1/2 of the invoiced costs to the DRA or DRB and 1/2 of the costs of any outside technical services. Submit a change order bill and associated invoices with the original supporting documents in the form of a canceled check or bank statement to receive reimbursement. Do not add mark-ups to the change order bill.

The Department does not pay for (1) any DRA- or DRB-related work performed after Contract acceptance or (2) your cost of preparing for or attending ADR resolution meetings.

#### **5-1.43E(2) Dispute Resolution Advisor**

##### **5-1.43E(2)(a) General**

Section 5-1.43E(2) applies to a contract with a total bid from \$3 million to \$10 million.

##### **5-1.43E(2)(b) DRA Selection**

Within 30 days after Contract approval, the parties must select the DRA using the following procedure:

1. Each party nominates 3 DRA member candidates. Each candidate must be (1) on the Department's Dispute Resolution Advisor Candidates List at the Department's Division of Construction website or (2) must:
  - 1.1. Be knowledgeable in the type of construction and contract documents anticipated by the Contract
  - 1.2. Have completed training by the Dispute Resolution Board Foundation
  - 1.3. Have served on at least 3 dispute resolution boards on a Department contract as a member or at least 2 dispute resolution boards on a Department contract as the chairman
  - 1.4. Have no prior direct involvement on the Contract
  - 1.5. Have no financial interest in the Contract or with the parties, subcontractors, suppliers, consultants, or associated legal or business services within 6 months before award and during the Contract except for payments for Department DRA or DRB services or payments for retirement or pensions from either party not tied to, dependent on, or affected by the net worth of the party
2. The parties must request a disclosure statement from each nominated DRA candidate and must furnish the them to the other party. Each statement must include:
  - 2.1. Resume of the candidate's experience
  - 2.2. Declaration statement that describes past, present, anticipated, and planned professional or personal relationships with each of the following:
    - 2.2.1. Each party involved in the Contract
    - 2.2.2. Each parties' principals
    - 2.2.3. Each parties' counsel
    - 2.2.4. Associated subcontractors and suppliers
3. The parties must select 1 of the 6 candidates to be the DRA. If the parties cannot agree on 1 candidate, each party must select 1 of the 3 nominated by the other and the DRA is decided between the 2 candidates by a coin toss.



### **5-1.43E(2)(c) DRA Replacement**

The services of the DRA may end at any time with a notice of at least 15 days if either of the following occurs:

1. DRA resigns.
2. Either party replaces the DRA for failing to comply with the required employment or financial disclosure conditions of the DRA as described in the Contract and the Dispute Resolution Advisor Agreement.

A DRA replacement is selected the same way as the original DRA. The selection of a replacement DRA must start upon determination of the need for a replacement and must be completed within 15 days. The Dispute Resolution Advisor Agreement must be amended to reflect the change of the DRA.

### **5-1.43E(2)(d) DRA Traditional Dispute Meeting**

If you choose to pursue a potential claim, refer the dispute to the DRA within 5 business days after receiving the Engineer's response to your Supplemental Potential Claim Record. The dispute meeting must be held no later than 25 days after the DRA receives the referral unless the parties otherwise agree.

At least 10 days before the scheduled dispute meeting, each party must furnish the DRA documentation that supports its position and any additional information requested by the DRA.

If the DRA requests additional information within 5 business days after the dispute meeting, the party receiving the request must furnish this information within 5 business days after receiving the request.

The DRA furnishes a written recommendation within 10 days after the dispute meeting unless the parties agree to allow more time.

Within 5 business days after receiving the DRA's recommendation, either party may request clarification of any part of the recommendation. Only 1 request for clarification from each party is allowed per dispute.

Within 10 days after receiving the DRA's recommendation, each party must furnish a written response to the DRA indicating acceptance or rejection of the recommendation. If a party rejects the recommendation and has new information that supports its position, the party may request reconsideration. The reconsideration request must be made within 10 days after receiving the DRA's recommendation. Only 1 reconsideration request from each party is allowed per dispute.

If the parties accept the DRA's recommendation but cannot agree on the time or payment adjustment within 30 days after accepting the recommendation, either party may request that the DRA recommend an adjustment.

### **5-1.43E(3) Dispute Resolution Board**

#### **5-1.43E(3)(a) General**

Section 5-1.43E(3) applies to a contract with a total bid of over \$10 million.

#### **5-1.43E(3)(b) DRB Member Selection**

Within 45 days after Contract approval, the parties must select DRB members and establish the DRB using the following procedure:

1. Each party nominates a DRB member candidate. Each candidate must be (1) on the Department's Dispute Resolution Candidates List at the Department's Division of Construction website or (2) must:
  - 1.1. Be knowledgeable in the type of construction and contract documents anticipated by the Contract
  - 1.2. Have completed training by the Dispute Resolution Board Foundation
  - 1.3. Have no prior direct involvement on the Contract
  - 1.4. Have no financial interest in the Contract or with the parties, subcontractors, suppliers, consultants, or associated legal or business services within 6 months before award and during the Contract except for payments for Department DRA or DRB services or payments for retirement or pensions from either party not tied to, dependent on, or affected by the net worth of the party

2. The parties must request a disclosure statement from each nominated DRB member candidate and must each furnish it to the other party. Each statement must include:
  - 2.1. Resume of the candidate's experience
  - 2.2. Declaration statement that describes past, present, anticipated, and planned professional or personal relationships with each of the following:
    - 2.2.1. Each party involved in the Contract
    - 2.2.2. Each parties' principals
    - 2.2.3. Each parties' counsel
    - 2.2.4. Associated subcontractors and suppliers
3. The parties are allowed:
  - 3.1. One-time objection to the other's candidate without stating a reason
  - 3.2. Objection to any of the other's subsequent candidates based on a specific breach of the candidate's responsibilities or qualifications under items 1 and 2 above
4. If either party objects to the other's candidate, the party whose candidate was objected to must nominate another DRB candidate within 15 days.
5. The 1st candidate from a party that receives no objection becomes that party's DRB member.
6. Each party furnishes written notification to the selected DRB member.
7. Within 15 days after their notifications, the selected DRB members recommend to the parties the 3rd DRB member candidate and furnish that candidate's disclosure statement.
8. Within 15 days after the recommendation, each party must notify the first 2 DRB members whether the party approves or disapproves of the recommended 3rd DRB member candidate.
9. If the 2 DRB members cannot agree on the 3rd DRB candidate, they will submit a list of candidates to the parties for the final selection and approval.
10. If (1) the 2 DRB members do not recommend a 3rd DRB candidate within 15 days of notification of their selections, (2) the parties do not agree on the 3rd DRB member candidate within 15 days after the recommendation, or (3) the parties do not agree on any of the candidates on the list furnished by the first 2 selected DRB members, each party must select 3 candidates from the current list of arbitrators certified by the Public Works Contract Arbitration Committee established by Pub Cont Code § 10245 et seq. who will be willing to serve as a DRB member. The first 2 selected DRB members must select the 3rd member in a blind draw of these 6 candidates.
11. The 3 DRB members then decide which of the 3 will act as the DRB chairman. If the parties do not agree with the selected chairman, the 3rd member will act as the DRB chairman.

#### **5-1.43E(3)(c) DRB Member Replacement**

The services of a DRB member may end at any time with a notice of at least 15 days if any of the following occurs:

1. A member resigns
2. The Department replaces its selected member
3. You replace your selected member
4. The Department's and your selected members replace the 3rd member
5. Either party replaces any member for failing to comply with the required employment or financial disclosure conditions of the DRB membership as described in the Contract and in the Dispute Resolution Board Agreement.

Replacing any DRB member must be accomplished by written notification to the DRB and the other party with substantiation for replacing the member.

A replacement DRB member is selected the same way as the original DRB member. The selection of a replacement DRB member must start upon determination of the need for a replacement and must be completed within 15 days. The Dispute Resolution Board Agreement must be amended to reflect the change to the DRB.

#### **5-1.43E(3)(d) DRB Traditional Dispute Meeting**

If you choose to pursue a potential claim, refer the dispute to the DRB within 21 days after receiving the Engineer's response to your Supplemental Potential Claim Record unless a facilitated dispute resolution is included in the signed original partnering charter, in which case, make the referral within 41 days after



1. During the performance of this contract, the recipient, contractor, and its subcontractors shall not deny the contract's benefits to any person on the basis of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, genetic information, marital status, sex, gender, gender identity, gender expression, age, sexual orientation, or military and veteran status, nor shall they discriminate unlawfully against any employee or applicant for employment because of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, genetic information, marital status, sex, gender, gender identity, gender expression, age, sexual orientation, or military and veteran status. Contractor shall insure that the evaluation and treatment of employees and applicants for employment are free of such discrimination.
2. Contractor shall comply with the provisions of the Fair Employment and Housing Act (Gov. Code, § 12900 et seq.), the regulations promulgated thereunder (Cal. Code Regs., tit. 2, § 11000 et seq.), the provisions of Article 9.5, Chapter 1, Part 1, Division 3, Title 2 of the Government Code (Gov. Code, §§ 11135-11139.5), and the regulations or standards adopted by the awarding state agency to implement such article.
3. Contractor or recipient shall permit access by representatives of the Department of Fair Employment and Housing and the awarding state agency upon reasonable notice at any time during the normal business hours, but in no case less than 24 hours' notice, to such of its books, records, accounts, and all other sources of information and its facilities as said Department or Agency shall require to ascertain compliance with this clause.
4. Recipient, contractor and its subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.
5. The contractor shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform work under the contract.

Under 2 CA Code of Regs § 11122:

**STANDARD CALIFORNIA NONDISCRIMINATION CONSTRUCTION CONTRACT SPECIFICATIONS (GOV. CODE SECTION 12990)**

These specifications are applicable to all state contractors and subcontractors having a construction contract or subcontract of \$5,000 or more.

1. As used in the specifications:
  - a. "Act" means the Fair Employment and Housing Act.
  - b. "Administrator" means Administrator, Office of Compliance Programs, California Department of Fair Employment and Housing, or any person to whom the Administrator delegates authority;
2. Whenever the contractor or any subcontractor subcontracts a portion of the work, it shall include in each subcontract of \$5,000 or more the nondiscrimination clause in this contract directly or through incorporation by reference. Any subcontract for work involving a construction trade shall also include the Standard California Construction Contract Specifications, either directly or through incorporation by reference.
3. The contractor shall implement the specific nondiscrimination standards provided in paragraphs 6(a) through (e) of these specifications.
4. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the contractor has a collective bargaining agreement, to refer members of any group protected by the Act shall excuse the contractor's obligations under these specifications, Government Code section 12990, or the regulations promulgated pursuant thereto.5. In order for the nonworking training hours of apprentices and trainees to be counted, such apprentices and trainees must be employed by the contractor during the training period, and the contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor or the California Department of Industrial Relations.
5. In order for the nonworking training hours of apprentices and trainees to be counted, such apprentices and trainees must be employed by the contractor during the training period, and the contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained

pursuant to training programs approved by the U.S. Department of Labor or the California Department of Industrial Relations.

6. The contractor shall take specific actions to implement its nondiscrimination program. The evaluation of the contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The contractor must be able to demonstrate fully its efforts under steps a. through e. below:
  - a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and at all facilities at which the contractor's employees are assigned to work. The contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the contractor's obligations to maintain such a working environment.
  - b. Provide written notification within seven days to the director of the DFEH when the referral process of the union or unions with which the contractor has a collective bargaining agreement has impeded the contractor's efforts to meet its obligations.
  - c. Disseminate the contractor's equal employment opportunity policy by providing notice of the policy to unions and training, recruitment and outreach programs and requesting their cooperation in assisting the contractor to meet its obligations; and by posting the company policy on bulletin boards accessible to all employees at each location where construction work is performed.
  - d. Ensure all personnel making management and employment decisions regarding hiring, assignment, layoff, termination, conditions of work, training, rates of pay or other employment decisions, including all supervisory personnel, superintendents, general foremen, on-site foremen, etc., are aware of the contractor's equal employment opportunity policy and obligations, and discharge their responsibilities accordingly.
  - e. Ensure that seniority practices, job classifications, work assignments, and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the equal employment opportunity policy and the contractor's obligations under these specifications are being carried out.
7. Contractors are encouraged to participate in voluntary associations that assist in fulfilling their equal employment opportunity obligations. The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on equal employment opportunity in the industry, ensures that the concrete benefits of the program are reflected in the contractor's workforce participation, and can provide access to documentation that demonstrates the effectiveness of actions taken on behalf of the contractor. The obligation to comply, however, is the contractor's.
8. The contractor is required to provide equal employment opportunity for all persons. Consequently, the contractor may be in violation of the Fair Employment and Housing Act (Government Code section 12990 et seq.) if a particular group is employed in a substantially disparate manner.
9. The contractor shall not use the nondiscrimination standards to discriminate against any person because race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, genetic information, marital status, sex, gender, gender identity, gender expression, age, sexual orientation, or military and veteran status.
10. The contractor shall not enter into any subcontract with any person or firm decertified from state contracts pursuant to Government Code section 12990.
11. The contractor shall carry out such sanctions and penalties for violation of these specifications and the nondiscrimination clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Government Code section 12990 and its implementing regulations by the awarding agency. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Government Code section 12990.
12. The contractor shall designate a responsible official to monitor all employment related activity to ensure that the company equal employment opportunity policy is being carried out, to submit reports relating to the provisions hereof as may be required by OCP and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, status, (e.g., mechanic, apprentice

trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in any easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

**Add to the end of the 2nd sentence in the 1st paragraph of section 7-1.02K(1):**

04-22-16

, and hauling and delivery of ready-mixed concrete.

**Add between the 4th and 5th paragraphs of section 7-1.02K(3):**

04-22-16

Submitted certified payrolls for hauling and delivering ready-mixed concrete must be accompanied by a written time record. The time record must include:

1. Truck driver's full name and address
2. Name and address of the factory or batching plant
3. Time the concrete was loaded at the factory or batching plant
4. Time the truck returned to the factory or batching plant
5. Truck driver's signature certifying under penalty of perjury that the information contained in this written time record is true and correct

**Add between the 9th and 10th paragraphs of section 7-1.03:**

07-15-16

If a height differential of more than 0.04 foot is created by construction activities at a joint transverse to the direction of traffic on the traveled way or a shoulder subject to public traffic, construct a temporary taper at the joint with a slope complying with the requirements shown in the following table:

**Temporary Tapers**

Height differential (foot)	Slope (horizontal:vertical)	
	Taper use of 14 days or less	Taper use of more than 14 days
Greater than 0.08	100:1 or flatter	200:1 or flatter
0.04–0.08	70:1 or flatter	70:1 or flatter

For a taper on existing asphalt concrete or concrete pavement, construct the taper with minor HMA under section 39-2.07.

Grind existing surfaces to accommodate a minimum taper thickness of 0.10 foot under either of the following conditions:

1. HMA material such as rubberized HMA, polymer-modified bonded wearing course, or open-graded friction course is unsuitable for raking to a maximum 0.02 foot thickness at the edge
2. Taper will be in place for more than 14 days

For a taper on a bridge deck or approach slab, construct the taper with polyester concrete under section 60-3.04B.

The completed surface of the taper must be uniform and must not vary more than 0.02 foot from the lower edge of a 12-foot straightedge when placed on its surface parallel and perpendicular to traffic.

If authorized, you may use alternative materials or methods to construct the required taper.









A PCMS must be permanently mounted on a trailer, truck bed, or truck cab under the manufacturer's instructions. The PCMS must be securely mounted on the support vehicle such that it remains attached during any impact to the vehicle. If it is mounted on a trailer, the trailer must be capable of being leveled and plumbed.

A minimum of 3 feet of retroreflective material must be permanently affixed on all 4 sides of the trailer. The retroreflective material need not be continuous but must be visible on the same plane.

The sign panel must be capable of displaying a 3-line message with at least 7 characters per line. The characters must be at least 18 inches in height where the useable shoulder area is at least 15 feet wide. To prevent encroachment onto the traveled way where the useable shoulder area is less than 15 feet wide, you may use a smaller message panel with at least 12-inch-high characters.

The message displayed on the sign must be visible from a distance of 1,500 feet and legible from a distance of 750 feet at noon on a cloudless day and during the night by persons with 20/20 vision or vision corrected to 20/20.

The characters on a sign panel may be 10 inches in height if:

1. PCMS is mounted on a service patrol truck or other incident response vehicle or used for traffic control operations on a highway facility where the posted speed limit is less than 40 mph
2. Message is legible from a distance of at least 650 feet at noon on a cloudless day and during the night by persons with 20/20 vision or vision corrected to 20/20

A matrix sign must provide a complete alphanumeric selection.

A PCMS must automatically adjust its brightness under varying light conditions to maintain the legibility of the message. The sign must be equipped with an automatic-dimming mode that automatically compensates for the influence of temporary light sources or abnormal lighting conditions. The sign must have 3 or more manual dimming modes of different intensities.

During the hours of darkness, a matrix sign not using lamps must be either internally or externally illuminated.

The controller must be an all solid-state unit containing the necessary circuitry for the storage of at least 5 preprogrammed messages. The controller must be installed at a location that allows the operator to perform all functions from a single position. The controller must have a keyboard entry system that allows the operator to generate an infinite number of additional messages in addition to the preprogrammed stored messages. The keyboard must be equipped with a security lockout feature to prevent unauthorized use of the controller.

The controller must have:

1. Nonvolatile memory that stores keyboard-created messages during periods when the power is not activated
2. Variable display rate that allows the operator to match the information display to the speed of approaching traffic
3. Screen upon which messages may be reviewed before being displayed on the sign

The flashing-off time must be adjustable from within the control cabinet.

### **12-3.32C Construction**

Place a PCMS as far from the traveled way as practicable where it is legible to approaching traffic without encroaching on the traveled way. Where the vertical roadway curvature restricts the sight distance of approaching traffic, place the sign on or before the crest of the curvature where it is most visible to the approaching traffic. Where the horizontal roadway curvature restricts the sight distance of approaching traffic, place the sign at or before the curve where it is most visible to approaching traffic. Where practicable, place the sign behind guardrail or Type K temporary railing.

Make a taper consisting of 9 traffic cones placed 25 feet apart to delineate the location of a PCMS except where the sign is placed behind guardrail or Type K temporary railing.

When in full operation, the bottom of a sign must be at least 7 feet above the roadway in areas where pedestrians are anticipated and 5 feet above the roadway elsewhere, and the top of the sign must be not more than 14.5 feet above the roadway.

Operate the PCMS under the manufacturer's instructions.

Keep the PCMS clean to provide maximum visibility.

If multiple signs are needed, place each sign on the same side of the road at least 1,000 feet apart on freeways and expressways and at least 500 feet apart on other types of highways.

If more than one PCMS is simultaneously visible to traffic, only 1 sign may display a sequential message at any time. Do not use dynamic message displays, such as animation, rapid flashing, dissolving, exploding, scrolling, horizontal movement, or vertical movement of messages. The message must be centered within each line of the display.

You may use an additional PCMS if more than 2 phases are needed to display a message.

Display only messages shown or ordered.

Repeat the entire message continuously in not more than 2 phases of at least 3 seconds per phase. The sum of the display times for both of the phases must be a maximum of 8 seconds. If more than 2 phases are needed to display a message, use an additional PCMS.

You must be available by cell phone during activities that require a sign. Be prepared to immediately change the displayed message if ordered. You may operate the sign with a 24-hour timer control or remote control if authorized.

After the initial placement, move a sign from location to location as ordered.

When a PCMS is not in use, move it to an area at least 15 feet from the edge of the traveled way or remove it from the job site away from traffic.

### **12-3.32D Payment**

Not Used

#### **Add to section 12-4.02A(2):**

07-21-17

**Construction Zone Enhanced Enforcement Program (COZEEP):** Program that provides California Highway Patrol officers to monitor the movement of traffic within the work zone.

#### **Add between the 1st sentence and 2nd sentences in the 1st paragraph of section 12-4.02A(3)(a):**

07-15-16

For a project in District 7, submit the request at least 15 days before the proposed closure date.

#### **Add to the end of section 12-4.02A(3)(a):**

07-21-17

Submit a traffic break request using LCS to show the location and time of the requested traffic break.

**Replace *unauthorized closures* or in the last paragraph of section 12-4.02A(3)(b) with:**

07-21-17

authorized and unauthorized closures and

**Add to section 12-4.02A(3):**

07-21-17

**12-4.02A(3)(d) Traffic Break Schedule**

Every Monday by noon, submit a traffic break request for the next week. Support for a traffic break is based on local California Highway Patrol staffing levels and may not be available for the date or time requested.

Traffic break requests are limited to the hours when a shoulder or lane closure is allowed.

Cancel a traffic break request using LCS at least 48 hours before the start time of the traffic break.

The Department notifies you through LCS of authorized and unauthorized traffic breaks.

The Department does not adjust time or payment if (1) a California Highway Patrol officer is unavailable for the requested date or time or (2) your request is not authorized.

**Replace section 12-4.02C(2) with:**

01-15-16

**12-4.02C(2) Lane Closure System**

**12-4.02C(2)(a) General**

The Department provides LCS training. Request the LCS training at least 30 days before submitting the 1st closure request. The Department provides the training within 15 days after your request.

LCS training is web-based or held at a time and location agreed upon by you and the Engineer. For web-based training, the Engineer provides you the website address to access the training.

With 5 business days after completion of the training, the Department provides LCS accounts and user IDs to your assigned, trained representatives.

Each representative must maintain a unique password and current user information in the LCS.

04-15-16

The project is not accessible in LCS after Contract acceptance.

01-20-17

**12-4.02C(2)(b) Status Updates for Authorized Closures**

Update the status of authorized closures using the LCS Mobile web page.

For a stationary closure on a traffic lane, use code:

1. 10-97 immediately before you place the 1st cone on the traffic lane
2. 10-98 immediately after you remove all of the cones from the traffic lane

For a stationary closure on the shoulder, use code:

1. 10-97 immediately before you place the 1st cone after the last advance warning sign
2. 10-98 immediately after you remove the last cone before the advance warning signs

For a moving closure, use code:

1. 10-97 immediately before the actual start time of the closure
2. 10-98 immediately after the actual end time of the closure

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For closures not needed on the authorized date, use code 10-22 within 2 hours after the authorized start time.

If you are unable to access the LCS Mobile web page, immediately notify the Engineer of the closure's status.

**Add to the end of section 12-4.02C(7):**

07-21-17

**12-4.02C(7)(d) Traffic Breaks**

You may request a traffic break for special operations, such as:

1. Installation, removal, or replacement of an overhead power line or other utility cable across the highway
2. Falsework adjustment
3. Installation or removal of traffic control devices in areas without a standard-width shoulder
4. Transportation of large equipment across the highway
5. Access to median areas for workers or equipment

If the Department authorizes the traffic break, the Engineer notifies you and arranges the traffic break with the California Highway Patrol through COZEEP. The duration of a traffic break must not exceed 5 minutes or as authorized.

Two California Highway Patrol officers per vehicle are required for traffic breaks occurring any time from 2200 to 0600 hours.

A minimum of 2 California Highway Patrol vehicles will be assigned to conduct a traffic break.

Place a PCMS approximately 2,000 feet upstream of the work area or as agreed upon by the Engineer. The PCMS must comply with section 12-3.32 except the PCMS must not be trailer mounted. Monitor the traffic during the traffic break. If a queue develops, reposition the PCMS truck far enough upstream of the traffic break to provide real-time notification to motorists before they approach the traffic queue.

**Add to the end of section 12-4.02D:**

07-21-17

The Department does not pay for furnishing, placing, relocating, and removing PCMSs used for a traffic break.

The Department deducts the full cost of COZEEP support provided for the traffic break.

The hourly rate for each California Highway Patrol officer providing COZEEP support is \$115. This rate includes full compensation for each hour or portion thereof that the officer provides the support. Markups are not added to any expenses associated with COZEEP support.

The minimum number of hours for an officer is 4 hours, except if a closure is already in place and the Engineer authorizes your request for an on-duty officer to conduct a traffic break, the minimum number of hours for an officer is 1 hour.

For a cancellation less than 48 hours before the scheduled start time of COZEEP support, except for a cancellation due to adverse weather or extenuating circumstances, the Department deducts:

1. Minimum of \$50 per California Highway Patrol officer if the officer is notified before the start time
2. Maximum of 4 hours of pay per officer if the officer is not notified before the start time

**Replace section 12-4.04 with:**

07-21-17

**12-4.04 TEMPORARY PEDESTRIAN ACCESS ROUTES**

**12-4.04A General**

**12-4.04A(1) Summary**

Section 12-4.04 includes specifications for providing, maintaining, and removing temporary pedestrian access routes.

A temporary pedestrian access route includes temporary traffic control devices as shown except for temporary railing (Type K) and temporary crash cushions.

**12-4.04A(2) Definitions**

Reserved

**12-4.04A(3) Submittals**

If work activities require the closure of a pedestrian route and a temporary pedestrian access route is not shown, submit a work plan for a temporary pedestrian access route. The work plan must:

1. Describe the activities, processes, equipment, and materials that will be used to provide the temporary access route
2. Show the locations of the routes and the placement of traffic control devices for each stage of work
3. Include a time-scaled logic diagram displaying the sequence and duration of the planned activities for each stage of work
4. Be sealed and signed by an engineer who is registered as a civil engineer in the State

**12-4.04A(4) Quality Assurance**

Reserved

**12-4.04B Materials**

The walkway surface must be slip resistant and surfaced with minor HMA or commercial-quality, bituminous material, commercial-quality concrete, or wood.

A handrail with a circular cross section must have an outer diameter from 1-1/4 to 2 inches. A handrail with a noncircular cross section must have a perimeter from 4 to 6-1/4 inches and a maximum cross-section dimension of 2-1/4 inches.

Fasteners must be rounded to prevent injury to a pedestrian's fingers, hands, and arms and to eliminate sharp edges that could catch on clothing.

A detectable warning surface must be on the Authorized Material List for detectable warning surfaces and match yellow color no. 33538 of FED-STD-595.

Temporary traffic control devices used to channelize pedestrians must:

1. Be free of sharp or rough edges
2. Have a continuous detectable edging at least 6 inches high and at no more than 2 inches above the walkway surface
3. Be at least 32 inches in height
4. Have smooth connection points between devices to allow for a handrail
5. Have a top and bottom surface in the same vertical plane

**12-4.04C Construction**

Notify the Engineer 5 business days before closing an existing pedestrian route.

If work activities require the closure of a pedestrian route and a temporary pedestrian access route is not shown, provide a temporary pedestrian access route near the traveled way. You may route pedestrians using the existing sidewalk or by constructing a temporary access route.

If a bid item for a temporary pedestrian access route is not shown on the Bid Item List, then providing a temporary pedestrian access route is change order work.

Construct a temporary pedestrian access route such that:

1. Walkway surface is firm and stable and free of irregularities
2. Cross slope of the pedestrian route is at most 50:1 (horizontal:vertical)
3. Longitudinal slope of the pedestrian route is at most 20:1 (horizontal:vertical)
4. Walkway, landings, blended transitions, and curb ramps are at least 60 inches wide except where not feasible, the width must be at least 48 inches wide with a 60-by-60-inch passing space at least every 200 feet
5. Lateral joints or gaps between surfaces are less than 1/2 inch wide
6. Discontinuities in surface heights are less than 1/2 inch and beveled if greater than 1/4 inch with a slope no greater than 2:1 (horizontal:vertical)
7. Ramps have:
  - 7.1. Longitudinal slope of at most 12:1 (horizontal:vertical)
  - 7.2. Rise less than 30 inches
  - 7.3. Protective edging at least 2 inches high on each side and handrails at a height from 34 to 38 inches above the walkway surface if the rise is greater than 6 inches
8. Curb ramps have:
  - 8.1. Longitudinal slope of at most 12:1 (horizontal:vertical)
  - 8.2. Protective edging at least 2 inches high on each side if the curb ramp does not have flares and the rise is greater than 6 inches
9. Pedestrians are channelized when routed off existing pedestrian routes

Construct handrails such that they are continuous, smooth and free of sharp or rough edges.

Provide an overhead covering to protect pedestrians from falling objects and drippings from overhead structures.

If the temporary access route is next to traffic or work activities, place a temporary barrier to separate the route from vehicles and equipment.

Install a detectable warning surface at locations where a curb ramp, landing, or blended transition connects to a street. Install the warning surface such that it extends a minimum of 36 inches in the direction of travel and for the full width of the landing, blended transition, or curb ramp, excluding the flares.

Maintain the temporary pedestrian access route clear of obstructions. Do not allow traffic control devices, equipment, or construction materials to protrude into the walkway. Maintain a continuous unobstructed path connecting all pedestrian routes, parking lots, and bus stops located within the project limits.

Remove the temporary pedestrian access route when the Engineer determines it is no longer needed.

Provide a temporary pedestrian access route through falsework under section 16-2.02.

#### **12-4.04D Payment**

Not Used

#### **Replace the last sentence in the 1st paragraph of section 12-6.03A with:**

01-20-17

On multilane roadways, freeways, expressways, and 2-lane roadways with shoulders 4 feet or more in width, the temporary pavement delineation must also include edge line delineation for traveled ways open to traffic.





Within 5 business days of completing concrete grooving or grinding activities, submit the disposal receipts and weight tickets as informational submittals.

**Replace the 2nd paragraph of section 13-1.01D(2) with:**

05-06-16

Discharges from manufacturing facilities, such as batch plants and crushing plants, must comply with the discharge requirements in the NPDES General Permit for Storm Water Discharges Associated with Industrial Activities; Order No. 2014-0057-DWQ, CAS000001 (Industrial General Permit), issued by the SWRCB. For the Industrial General Permit, go to the SWRCB website.

**Replace *General Industrial Permit* in the 3rd paragraph of section 13-1.01D(2) with:**

05-06-16

Industrial General Permit

**Add to the list in the 2nd paragraph of section 13-1.03B:**

01-20-17

7. Offsite drying facilities for drying wastes before disposal

**Add between *Unit* and *the* in the 1st sentence in the 3rd paragraph of section 13-3.01A:**

01-20-17

or on federal or tribal lands

**Replace the paragraph in section 13-3.01C(1) with:**

01-20-17

Submit the documents shown with an X in the following table:

**Submittal Requirements**

Document	Risk level 1	Risk level 2	Risk level 3	EPA	Lake Tahoe Hydrologic Unit
SWPPP	X	X	X	X	X
Construction Site Monitoring Program	X	X	X	X	X <sup>a</sup>
Job site monitoring reports	X	X	X	X	X
Sampling and analysis plan	X	X	X	X	X
Sampling and analysis plan for nonvisible pollutants	X	X	X	X	X
Sampling and analysis plan for pH and turbidity	--	X	X	--	X
NAL reports	--	X	X	--	X
Receiving water monitoring trigger reports	--	--	X	--	--
Rain Event Action Plan	--	X	X	--	X
Annual Certification	X	X	X	X	X
Stormwater Annual Report	X	X	X	X	X

<sup>a</sup>For a project in the Lake Tahoe Hydrologic Unit, this program is referred to as the Construction Site Monitoring and Reporting Program

**Add between *Unit* and *discharges* in the 1st paragraph of section 13-3.01D(2):**

01-20-17

or on federal or tribal lands

**Replace the 2nd paragraph of section 13-3.01D(2) with:**

09-02-16

For a project in the Lake Tahoe Hydrologic Unit, discharges of stormwater from the project must comply with the NPDES General Permit for General Waste Discharge Requirements and National Pollutant Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction Activity in the Lake Tahoe Hydrologic Unit, Counties of Alpine, El Dorado, and Placer, (Order No. R6T-2016-0010 and NPDES No. CAG616002). You may view the General Permit for the Lake Tahoe Hydrologic Unit at the Construction Storm Water Program page of the SWRCB website.

**Add to the end of section 13-3.01D(2):**

01-20-17

A project on federal or tribal lands must comply with the permit issued by the US EPA for National Pollutant Discharge Elimination System General Permit for Discharges from Construction Activities. This permit governs stormwater and nonstormwater discharges from work activities at the job site. This permit may be viewed at the US EPA website.

**Add to the beginning of section 13-3.03:**

01-20-17

Post a sign or other notice at a safe, publicly accessible location close to the job site. The notice must include the NPDES tracking number and a contact name and phone number for obtaining additional project information. Locate the sign or notice such that it is visible from the part of the highway nearest the work activities.

**Replace the 2nd paragraph of section 13-4.03D(3) with:**

01-20-17

Collect concrete waste simultaneously with the waste-producing activity. Concrete waste includes grout, dust, debris, residue, and slurry from demolition, saw cutting, coring, grooving, or grinding activities.

**Add to the end of section 13-4.03D(3):**

01-20-17

Dispose of liquid residue from concrete grooving or grinding activities at an appropriately permitted disposal facility.

If authorized, you may transport liquid grooving or grinding residue to a contractor-support facility for drying.

**Replace section 13-5.02C with:**

01-20-17

**Section 13-5.02C Temporary Mulch**

Temporary mulch must comply with the specifications for wood mulch in section 20.

**Replace the 1st paragraph of section 13-5.03C with:**

01-20-17

Spread temporary mulch as specified for spreading wood mulch in section 20.

**Replace the 2nd paragraph of section 13-8.01D(2) with:**

09-02-16

For a project within the Lake Tahoe Hydrologic Unit, the design, installation, operation, and monitoring of the temporary ATS and monitoring of the treated effluent must comply with Attachment E of the NPDES General Permit for General Waste Discharge Requirements and National Pollutant Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction Activity in the Lake Tahoe Hydrologic Unit, Counties of Alpine, El Dorado, and Placer, (Order No. R6T-2016-0010 and NPDES No. CAG616002). You may view the General Permit for the Lake Tahoe Hydrologic Unit at the Construction Storm Water Program page of the SWRCB website.

**Replace *high-visibility fence* at each occurrence in section 13-10.02 with:**

01-20-17

temporary high-visibility fence

AA

**14 ENVIRONMENTAL STEWARDSHIP**

07-21-17

**Add to section 14-6.02:**

07-21-17

**biological resource incident:** Take of a regulated species or violation of a biological resource PLAC.

**invasive species:** Species whose presence in the environment causes economic or environmental harm or harm to human health.

07-21-17

**Delete *regulated fish* and its definition in section 14-6.02.**

**Replace *February 15 to September 1* in the 2nd paragraph of section 14-6.03B with:**

07-21-17

February 1 to September 30

**Replace the 1st paragraph of section 14-6.03C with:**

07-21-17

Protect all life stages of regulated fish in streams and conduct work activities to allow free passage of migratory fish.

**Replace *listed* in the 2nd paragraph of section 14-6.03C with:**

07-21-17

regulated

**Replace item 4 in the list in the 2nd paragraph of section 14-6.03D(1) with:**

4. Immediately notify the Engineer of any take of regulated species or violation of a biological resource  
PLAC

07-21-17

**Add to the list in the 3rd paragraph of section 14-6.03D(1):**

10. Details of any take of regulated species or violation of a biological resource PLAC

07-21-17

**Add between the 1st and 2nd sentences in the 4th paragraph of section 14-6.03D(1) with:**

If required under PLACs, the Department sends the biologist's statement of qualifications to regulatory agencies for review and approval before hiring. Allow 30 days for the regulatory agencies' review.

07-21-17

**Delete the 1st sentence of the 5th paragraph of section 14-6.03D(1).**

07-21-17

**Add between *is* and *authorized* in the last paragraph of section 14-6.03D(1):**

approved by regulatory agencies

07-21-17

**Add between the 2nd and 3rd sentences in the 3rd paragraph of section 14-10.01:**

Do not perform solid waste management in the median area unless there is construction activity present. Perform solid waste management monthly during the plant establishment period.

01-20-17

**Replace the last paragraph of section 14-11.03 with:**

Dispose of hazardous waste within 90 days of the start of generation. Use a hazardous waste manifest and a transporter registered with the DTSC to transport the waste to an appropriately permitted hazardous waste management facility. The transporter must have completed the California Highway Patrol's Basic Inspection of Terminals Program with a satisfactory rating.

01-20-17

**Replace the 2nd paragraph of section 14-11.13G(3) with:**

You may dispose of nonhazardous debris at a facility equipped to recycle the debris if you make all arrangements with the recycling facility's operator and perform any facility-required testing of the debris.

01-20-17

**Replace section 14-11.16 with:**

**14-11.16 ASBESTOS-CONTAINING CONSTRUCTION MATERIALS IN BRIDGES**

Reserved

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**19-4.01A(3) Submittals**

Reserved

**19-4.01A(4) Quality Assurance**

Reserved

**19-4.01B Materials**

Not Used

**19-4.01C Construction**

Excavate rock by blasting, controlled blasting, using chemical expanders or hydraulic splitters, or another authorized method.

**19-4.01D Payment**

The payment quantity for any type of rock excavation is measured as specified for roadway excavation.

**19-4.02 PRESPLITTING**

**19-4.02A General**

**19-4.02A(1) Summary**

Section 19-4.02 includes specifications for presplitting rock to form rock excavation slopes in conjunction with blasting or controlled blasting.

**19-4.02A(2) Definitions**

**presplitting:** Establishing a free surface or shear plane in rock along the specified excavation slope by the controlled use of explosives and blasting accessories in appropriately aligned and spaced drilled holes.

**19-4.02A(3) Submittals**

Submit a copy of the explosive manufacturer's instructions as an informational submittal before using any column-type explosive for presplitting.

**19-4.02A(4) Quality Assurance**

Reserved

**19-4.02B Materials**

The maximum diameter of explosive used in a presplit hole must not be greater than 50 percent of the diameter of the presplit hole.

Standard cartridge explosives prepared and packaged by explosive manufacturing firms must be used in the presplit holes. The explosives must consist of one of the following:

1. Fractional portions of standard cartridges to be affixed to a detonating cord in the field
2. Solid column explosives joined and affixed to a detonating cord in the field

Stemming materials must be dry, free-running material complying with the gradation requirements shown in the following table when tested under California Test 202:

Sieve size	Percentage passing
3/8"	100
No. 8	10

**19-4.02C Construction**

Presplit the rock to form rock excavation slopes.

Before drilling the presplitting holes, remove overburden soil and weathered rock along the top of the excavation for a distance of at least 50 feet beyond the production hole drilling limits or to the end of the

excavation. Expose fresh rock to an elevation equal to the bottom of the adjacent lift of the presplitting holes being drilled.

Drill slope holes for presplitting along the line of the planned slope. The drilled holes must be from 2-1/2 to 3 inches in diameter. Use the proper drilling equipment and techniques to ensure that no hole deviates (1) from the plane of the planned slope by more than 12 inches or (2) from parallel to an adjacent hole by more than 67 percent of the planned horizontal spacing between holes.

The Department does not pay for drilling more than 3 feet below finished grade unless additional drilling is ordered. The additional drilling is change order work.

The length of presplit holes for an individual lift must not exceed 20 feet, unless you can demonstrate to the Engineer that you can stay within the specified tolerances and produce a uniform slope. The length of holes may then be increased to a maximum of 60 feet if authorized.

Space the presplit holes a maximum of 3 feet on centers. Adjust the spacing to produce a uniform shear face between holes.

The Engineer may order you to drill auxiliary holes along the presplit line. These holes must not be loaded or stemmed. Except for spacing, the auxiliary drill holes must comply with the specifications for presplit holes. This work is change order work.

Place the adjacent line of production holes inside the presplit lines such that you avoid damage to the presplit face.

If necessary to reduce shatter and overbreak of the presplit surface, drill the 1st line of production holes parallel to the slope line at the top of the cut and at each bench level thereafter. Immediately stop blasting activities if the presplit surface is damaged.

Do not drill production holes within 8 feet of a presplit plane unless authorized. The bottom of the production holes must not be lower than the bottom of the presplit holes.

You may use a construction working bench offset by 24 inches from the bottom of each lift to drill the next lower presplitting pattern.

Adjust the drilling to compensate for any drift of previous levels and for the offset at the start of new levels to maintain the specified slope plane.

If the drilling and blasting methods do not produce a uniform slope and shear face without overbreak and within the specified tolerances, drill, blast, and excavate in short sections, up to 100 feet, until you achieve the desired results.

If you use a fractional portion of a standard explosive cartridge, firmly affix the cartridge to a length of detonating cord equal to the depth of the drill hole. Ensure the cartridge does not slip down the detonating cord or cock across the hole and bridge the flow of stemming material. Space the cartridges along the length of the detonating cord at a maximum of 30 inches on center. Adjust the spacing as needed to achieve the desired results.

If you use a solid column-type explosive, assemble and affix the column to the detonating cord under the explosive manufacturer's instructions.

The bottom charge of a presplit hole may be larger than the line charges but must not cause overbreak. Place the top charge of the presplitting hole far enough below the collar to avoid overbreaking the surface.

Before placing the charge, clear the hole of any obstructions for the hole's entire depth. Ensure that placing of the charge does not cause caving of material from the walls of the holes.

The Engineer may order the use of stemming materials as necessary to achieve a satisfactory presplit face. Stemmed presplit holes must be completely filled to the collar.

Simultaneously detonate charges in each presplitting pattern.

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The tolerances specified in section 19-2.03G do not apply to presplit surfaces of excavation slopes where presplitting is required. The presplit face must not deviate more than 1 foot from the plane passing through adjacent drill holes, except where the character of the rock is such that irregularities are unavoidable. The average plane of the completed slopes must not deviate more than 1 foot from the plan slopes. These tolerances are measured perpendicular to the plane of the slope. No portion of the slope may encroach on the roadbed.

If equally satisfactory presplit slopes are obtained, you may either presplit the slope face before drilling for production blasting or presplit the slope face and production blast at the same time, provided that the presplitting drill holes are fired with zero delay. Detonation of the production holes must be delayed from the detonation of the presplit line and must start at the row of holes farthest from the new slope line and progressing in steps to the row of holes nearest the presplit line. Detonation of the production holes must result in a minimum 50 ms delay between detonation of the presplit holes and detonation of the row of production holes nearest the presplit line. The presplitting holes must extend either to the end of the excavation or for a distance of not less than 50 feet beyond the limits of the production holes to be detonated.

#### **19-4.02D Payment**

The payment quantity for drill hole (presplitting) is the theoretical slope length determined from the elevation taken before detonating each lift and a plane 3 feet below finished grade. For holes that comply with the specified slope and tolerances, except alignment within the plane of the slope, the payment quantity is 75 percent of the theoretical slope length.

The Department does not pay for holes that do not show a hole trace for approximately 50 percent of the drilled length.

#### **19-4.03 BLASTING**

##### **19-4.03A General**

##### **19-4.03A(1) Summary**

Section 19-4.03 includes specifications for excavating rock by blasting.

Blasting activities must comply with federal, State, and local blasting regulations, including 8 CA Code of Regs Ch 4, Subchapter 7, Group 18, "Explosive Materials."

##### **19-4.03A(2) Definitions**

Reserved

##### **19-4.03A(3) Submittals**

Submit 3 copies of your blasting safety plan. The plan must include:

1. References to applicable federal, State, and local codes and regulations
2. Copies of permits required for blasting activities
3. Business name, contractor license number, address, and telephone number of the blasting subcontractor
4. Proof of current liability insurance and bonding
5. Name, address, telephone number, copies of applicable licenses, and resume of:
  - 5.1. Blaster-in-charge
  - 5.2. Personnel responsible for blast design, loading, and conducting blasting operations
  - 5.3. Safety officer for the blasting subcontractor
6. Name, address, and telephone number of the local fire station and law enforcement agencies
7. Detailed description of:
  - 7.1. Location where explosives will be stored
  - 7.2. Security measures to protect and limit access to the explosives
  - 7.3. Means for transporting explosives
  - 7.4. List of personnel allowed to handle the explosives
8. Exclusion zone and limited-entry zone for nonblast-related operations and personnel surrounding loading and blasting operations



9. Details of warning signals used to alert employees on the job site of an impending blast and to indicate the blast is completed and the area is safe to enter
10. Procedures for conducting blasting operations
11. Measures to protect blasting operations and personnel from lightning
12. Emergency evacuation procedures for areas where explosives may be present
13. Methods for recognizing, handling, and resolving misfires, including:
  - 13.1. Who will be notified
  - 13.2. How the blast zone will be secured until the misfire is resolved
  - 13.3. Identification of equipment that may be needed to resolve misfires
14. Details of signs to be used around blasting zones, including:
  - 14.1. Timing of when signs will be posted for a specific blast
  - 14.2. Name and telephone number of the person responsible for placing the signs
  - 14.3. Roadway signs for compliance with the *California MUTCD*, Chapter 6H, Typical Application 2
15. Traffic control details for:
  - 15.1. Loading and blasting operations
  - 15.2. Misfire event or other blast-related phenomenon that causes a transportation corridor to remain closed to the public
16. Description of the possible generation of noxious gas and details of the safeguards to be used to protect employees, work zones adjacent to the shot, private property, and the public
17. Procedure to report and resolve complaints for blast-related accidents
18. Copies of each SDS and manufacturer data sheets of explosives, caps, primers, initiators, and other compounds

If the plan requires revisions, the Department provides comments. Submit a revised plan after receiving the comments. Submit 3 copies of the revised blasting safety plan after authorization.

#### **19-4.03A(4) Quality Assurance**

Reserved

#### **19-4.03B Materials**

Not Used

#### **19-4.03C Construction**

You may use hydraulic splitters, pneumatic hammers, blasting, or another authorized roadway excavation method to fracture rock and construct stable final rock cut faces.

#### **19-4.03D Payment**

Not Used

### **19-4.04 CONTROLLED BLASTING**

#### **19-4.04A General**

##### **19-4.04A(1) Summary**

Section 19-4.04 includes specifications for excavating rock by controlled blasting.

Blasting activities must comply with federal, State, and local blasting regulations, including 8 CA Code of Regs Ch 4, Subchapter 7, Group 18, "Explosives and Pyrotechnics," and 22 CA Code of Regs, Division 4.5, Ch 33, "Best Management Practices for Perchlorate Materials."

##### **19-4.04A(2) Definitions**

**controlled blasting:** Using explosives and blasting accessories in predetermined spaced and aligned drilled holes.

##### **19-4.04A(3) Submittals**

###### **19-4.04A(3)(a) General**

Reserved

### **19-4.04A(3)(b) Blasting Safety Plan**

Submit 3 copies of your blasting safety plan. The plan must include:

1. References to applicable federal, State, and local codes and regulations
2. Copies of permits required for blasting activities
3. Business name, contractor license number, address, and telephone number of the blasting subcontractor
4. Proof of current liability insurance and bonding
5. Name, address, telephone number, copies of applicable licenses, and resume of:
  - 5.1. Blaster-in-charge.
  - 5.2. Personnel responsible for blast design, loading, and conducting blasting operations.
  - 5.3. Safety officer for the blasting subcontractor.
  - 5.4. Blast monitoring consultant.
  - 5.5. Blasting consultant if the project involves near-field blasting activities. Include a list of controlled blasting projects worked on by the blasting consultant.
6. Name, address, and telephone number of the local fire station and law enforcement agencies
7. Detailed description of:
  - 7.1. Location where explosives will be stored
  - 7.2. Security measures to protect and limit access to the explosives
  - 7.3. Means for transporting explosives
  - 7.4. List of personnel allowed to handle the explosives
8. Exclusion zone and limited-entry zone for nonblast-related operations and personnel surrounding loading and blasting operations
9. Details of warning signals used to alert employees on the job site of an impending blast and to indicate the blast is completed and the area is safe to enter
10. Procedures for conducting blasting operations
11. Measures to protect blasting operations and personnel from lightning
12. Emergency evacuation procedures for areas where explosives may be present
13. Methods for recognizing, handling, and resolving misfires, including:
  - 13.1. Who will be notified
  - 13.2. How the blast zone will be secured until the misfire is resolved
  - 13.3. Identification of equipment that may be needed to resolve misfires
14. Details of signs to be used around blasting zones, including:
  - 14.1. Timing of when signs will be posted for a specific blast
  - 14.2. Name and telephone number of the person responsible for placing the signs
  - 14.3. Roadway signs for compliance with the *California MUTCD*, Chapter 6H, Typical Application 2
15. Traffic control details for:
  - 15.1. Loading and blasting operations
  - 15.2. Misfire event or other blast-related phenomenon that causes a transportation corridor to remain closed to the public
16. Description of the possible generation of noxious gas and details of the safeguards to be used to protect employees, work zones adjacent to the shot, private property, and the public
17. Procedure to report and resolve complaints for blast-related accidents
18. Copies of each SDS and manufacturer data sheets of explosives, caps, primers, initiators, and other compounds

If the blasting safety plan requires revisions, the Department provides comments. Submit a revised plan after receiving comments. Submit 3 copies of the revised plan after authorization.

### **19-4.04A(3)(c) Controlled Blasting Plan**

Submit 3 copies of your controlled blasting plan for each blast. The plan must include details on how each blast will be controlled and the following:

1. Blast identification by numerical and chronological sequence
2. Location, referenced to stationing, offset distance, date, and time of the blast
3. Drawings showing drill hole pattern, spacing, burden, and initiation sequence
4. Typical cross-sections through the zone to be blasted

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5. Groundwater level, if present, within the prism to be blasted
6. Initiation-sequence diagram showing the actual firing time of each delay
7. Type of material to be blasted
8. Number of drill holes
9. Diameter, depth, and spacing of holes
10. Height or length of stemming
11. Types and characteristics of explosives, including the explosive's density, relative strength, and date of manufacture
12. Type of caps and delay periods and their date of manufacture
13. Total amount of explosives to be used
14. Total amount of explosives detonating within any 8 ms period
15. Powder factor (pounds of explosive per cubic yard of material blasted)
16. Method of firing
17. Direction and distance to nearest building or structure
18. Type of instrumentation and method for monitoring vibration and noise from the blasting activities
19. Location and placement of the instrumentation
20. Measures to limit noise and flyrock
21. Measures to limit overbreak
22. Name of the blasting subcontractor
23. Name and signature of the blaster-in-charge
24. Drawings showing the spacing and proximity of shot guards relative to the blast location

If you revise the controlled blasting plan to adjust for site conditions or the Department provides comments, submit a revised plan before starting controlled blasting. Submit 3 copies of the revised plan after authorization.

**19-4.04A(3)(d) Preblast and Postblast Surveys**

Submit a preblast survey of all structures, including buildings, within 330 feet of controlled blasting locations at least 15 days before starting the blasting activities. Submit the preblast survey with the controlled blasting plan.

The preblast survey must include:

1. Written report, sketches, and photographs or video with the date and time displayed on the image
2. Name of the person who performed the survey
3. Names of the property owner and occupants
4. Property address
5. Date and time of the inspection
6. Description of the structure or other improvements, including culverts and bridges
7. Detailed description of the existing condition of the walls, ceiling, and floor of each interior room, including any attic or basement
8. Detailed description of the existing condition of the foundations, exterior walls, roofs, doors, windows, and porches
9. Detailed description of the existing condition of garages, outbuildings, sidewalks, driveways, and swimming pools
10. Detailed listing of highway sign posts, light fixtures, and overhead power lines
11. Survey of wells or other private water supplies, including the total depth and existing water surface levels
12. Identification of sites conducting procedures, processes, or operations that may be sensitive to blasting activities
13. Scaled map or aerial photo showing the location of the structures and properties surveyed and the location of all proposed blasting sites

If blasting activities are suspended for 45 days or more, perform another preblast survey and submit the survey at least 15 days before resuming blasting activities.

Submit a postblast survey of the same buildings and other structures as in the preblast survey within 15 days after completing blasting activities. The postblast survey must include all items included in the preblast survey.

#### **19-4.04A(3)(e) Vibration and Noise Monitoring Report**

Submit a vibration and noise monitoring report for each controlled blast shot. The report must include:

1. Identification of the blasting seismograph used to record each blast shot
2. Name of the blast monitoring consultant
3. Distance and direction of the recording stations from the blast area
4. Type of ground at the recording station and type of material on which the instrumentation sits
5. Maximum particle velocity in each component and the resultant peak particle velocity of each shot
6. Copy of the seismograph readings with the date and signature of the blast monitoring consultant
7. Noise levels recorded in dB (C-network or Linear network) units

#### **19-4.04A(3)(f) Video Recording**

Submit a video recording of each controlled blast on a DVD or other Engineer-authorized data-storage device. Identify each video or section of the video with an index to identify each blast.

#### **19-4.04A(3)(g) Blasting Complaint Report**

Submit a report for each blasting complaint, including:

1. Name and address of the complainant
2. Date, time, and nature of the complaint
3. Dated photo or videotape of the physical damage
4. Name of the person who received the complaint
5. Record of the complaint investigation
6. Resolution of the complaint

#### **19-4.04A(3)(h) Postblast Report**

Submit a postblast report within 48 hours of a controlled blast. The report must include all data required in the controlled blasting plan for that shot and the following information:

1. Description of site conditions, loading, and time of blast
2. Description of weather conditions at time of blast including wind direction and cloud cover
3. Drillers boring record
4. Copy of vibration and noise monitoring report
5. Copy of documented complaints arising from the blast

#### **19-4.04A(4) Quality Assurance**

##### **19-4.04A(4)(a) General**

Reserved

##### **19-4.04A(4)(b) Blaster-In-Charge for Controlled Blasting**

Assign a blaster-in-charge to supervise all controlled blasting activities. The blaster-in-charge must have at least 10 years of experience in performing or supervising similar blasting activities and must be a licensed blaster.

##### **19-4.04A(4)(c) Blast Monitoring Consultant for Controlled Blasting**

Assign a blast monitoring consultant to monitor blasting-generated vibrations and noise near buildings and other structures that may be subject to damage. The monitoring consultant must be responsible for collecting and interpreting the vibration and noise data. The blast monitoring consultant must:

1. Not be employed by the blasting contractor or other subcontractor on the project
2. Have a minimum 2-year associate's degree in science or engineering
3. Have at least 5 years of documented experience in collecting and interpreting ground vibrations and noise data

#### **19-4.04A(4)(d) Blasting Consultant for Controlled Blasting**

Assign a blasting consultant to oversee near-field blasting activities. The blasting consultant must:

1. Be an engineering geologist or civil engineer who is licensed in the State
2. Have at least 10 years of experience providing specialized blasting services in near-field blasting
3. Not be employed by the blasting contractor, explosive manufacturer, or explosive distributor

#### **19-4.04B Materials**

Each seismograph used to record controlled blasting activities must be capable of:

1. Recording particle velocities for 3 mutually perpendicular components of vibration and an instantaneous resultant peak vector sum in the range generally found for controlled blasting
2. Continuously measuring, recording, and reporting vibrations along 3 primary axes
3. Measuring and recording vibration frequencies ranging from 2 to 300 Hz
4. Providing a printed record of each event showing a plot of peak particle velocity versus vibration frequencies
5. Measuring and recording airblast noise levels

The seismograph's noise transducer must be detachable from the main unit to allow its placement at elevations with a clear line of sight between the transducer and the blast.

#### **19-4.04C Construction**

##### **19-4.04C(1) General**

At least 7 days before starting or resuming controlled blasting activities, provide written notification to the occupants of the buildings within 330 feet of the blasting. Notify the occupants of pending blasting activities on the day of blasting.

Do not perform blasts within 1,200 feet of concrete placed within the previous 72 hours.

Before firing any blast, confirm that the groundwater conditions are consistent with the shot design and explosive type to be used.

Before firing any blast in areas where flyrock may result in personal injury or damage to property or the work, cover the rock to be blasted with blasting mats, soil, or other equally serviceable material to prevent flyrock.

If blasting causes flyrock, suspend blasting activities. The blasting consultant must review the job site to determine the cause of the flyrock problem and submit a revised controlled blasting plan that prevents flyrock.

Do not use drill cuttings as stemming in controlled blasting activities.

Keep vibration levels below a peak particle velocity of 2 inches per second at the nearest building, highway facility, or utility.

Limit noise from airblast overpressure levels to below 128 dB (C-scale or linear network) at the nearest building.

Control ground vibrations and noise created from blasting by using properly designed delay sequencing and charge weights for shots.

Provide 3 seismographs to record controlled blasting activities. Record each blast shot using the seismographs. Video record each blast from a safe location with a clear view of the blast area, activities, and progression.

Notify the Engineer no later than the start of the next day's work shift of any blasting complaint received.

#### **19-4.04D Payment**

Not Used

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**Replace the 3rd paragraph of section 20-2.01B(7) with:**

07-21-17

Valve box covers must be labeled. Labels must:

1. Be predrilled plate plastic consisting of 2 layers of contrasting color
2. Be at least 1/8 inch thick
3. Have mechanically engraved inscriptions at least 1 inch high

Covers for valve boxes that contain remote control valves must be labeled with the controller and station.

Covers for valve boxes that contain irrigation equipment must be labeled with the standard abbreviation for that equipment.

**Replace section 20-2.01C(2) with:**

07-21-17

**20-2.01C(2) Trenching and Backfilling**

For a project with multiple water service points, excavate and backfill the trenches 1 service point at a time.

Remove rocks and debris encountered during trenching activity. The removal of rocks and debris is change order work.

Backfill each trench with material that is excavated from the trench. Each trench must have a uniform bearing throughout the entire length and must be free of jagged rubble, rock, broken concrete, asphalt concrete and sharp objects greater than 2 inches in greatest dimension.

Compact the backfill in the trench to a minimum relative compaction of 90 percent. If the trench backfill settles, place additional material and compact until the backfill is level with the surrounding grade.

Ensure conduit, supply line, and joints are not moved or damaged by backfill activity.

If trenching requires the removal of:

1. Plants:
  - 1.1 Remove plants as necessary under section 20-1.03C.
  - 1.2 If plants are to remain, adjust the trench alignment to minimize damage.
  - 1.3 If the supply line location interferes with the excavation of plant holes, relocate the plant hole away from the supply line.
  - 1.4 Where authorized by the Engineer, prune trees and shrubs as necessary to complete the trenching work.
2. Turf:
  - 2.1 Do not remove a width of more than 12 inches.
  - 2.2 Replace with sod under section 20-3.02C(3)(e).
3. Groundcover:
  - 3.1 Do not remove a width of more than 6 feet.
  - 3.2 Replace groundcover with plants from flats and plant at 12 inches on center under section 20-3.02C.
  - 3.3 You may rototill existing *Carpobrotus* and *Delosperma*. Backfill for the trenches must not contain plants longer than 6 inches. No replacement of *Carpobrotus* and *Delosperma* is required if removed by rototilling.
4. Existing surface:
  - 4.1 Make a minimum 2-inch-deep saw cut along neat lines around the perimeter of the pavement to be removed at locations determined by the Engineer.
  - 4.2 Place a minimum of 2 inches of sand bedding under and on top of supply lines and conduits.
  - 4.3 Compact the backfill under the replacement surfacing to a minimum relative compaction of 95 percent.

- 4.4 Replace the structural section to match the removed materials. The surface must have the same uniform smoothness, color, and texture as the adjacent surface.

If trenching in areas to receive new surfacing:

1. Place a minimum of 2 inches of sand bedding under and on top of supply lines and conduits.
2. Compact the backfill under the new surfacing to a minimum relative compaction of 95 percent.

**Replace 86 in the 1st paragraph of section 20-2.01C(3) with:**

87

04-15-16

**Replace section 20-2.04A(4) with:**

Perform conductors test. The test must comply with the specifications in section 87.

04-15-16

Where the conductors are installed by trenching and backfilling, perform the test after a minimum of 6 inches of backfill material has been placed and compacted over the conductors.

**Replace 5 in the 1st paragraph of section 20-2.04C(2) with:**

10

07-21-17

**Add between the 1st and 2nd paragraphs of section 20-2.04C(2):**

Tie a 24-inch loop of wire at all changes of direction that are greater than 45 degrees. Untie the loops after all the connections are made.

07-21-17

**Replace the 1st paragraph of section 20-2.04C(4) with:**

Splice low voltage control and neutral conductors under section 87, except do not use Method B.

04-15-16

**Replace the 3rd paragraph of section 20-2.05B with:**

The impeller must be glass reinforced nylon on a tungsten carbide shaft.

07-15-16

**Replace 86 in the 2nd paragraph of section 20-2.06C with:**

87

04-15-16

**Replace section 20-2.07B(5) with:**

**20-2.07B(5) PVC Pipe Conduit Sleeve**

PVC pipe conduit sleeves must be schedule 40 complying with ASTM D1785.

Fittings must be schedule 80.

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**Replace the 9th paragraph of section 20-2.07C(1) with:**

07-21-17

Place Type G pavement markers with retroreflective face facing away from the oncoming traffic under section 81-3 on paved shoulders or dikes at irrigation conduit locations where authorized.

**Delete the 2nd paragraph of section 20-2.07C(2)(a).**

07-21-17

**Replace section 20-2.07C(3) with:**

07-21-17

**20-2.07C(3) PVC Pipe Conduit Sleeve**

Where PVC pipe conduit sleeves 2 inches or less in outside diameter are installed under surfacing, you may install by directional boring under section 20-2.07C(2)(b).

Cap ends of conduit until used.

**Delete the 4th and 5th paragraph of section 20-2.08C(4).**

07-21-17

**Replace sections 20-2.09B and 20-2.09C with:**

07-15-16

**20-2.09B Materials**

**20-2.09B(1) General**

Swing joints must match the inlet connection size of the riser.

Where shown, a sprinkler assembly must include a check valve.

Threaded nipples for swing joints and risers must be schedule 80, PVC 1120 or PVC 1220 pipe, and comply with ASTM D1785. Risers for sprinkler assemblies must be UV resistant.

Fittings for sprinkler assemblies must be injection-molded PVC, schedule 40, and comply with ASTM D2466.

Flexible hose for sprinkler assemblies must be leak-free, non-rigid and comply with ASTM D2287, cell Type 6564500. The hose must comply with ASTM D2122 and have the thickness shown in the following table:

Nominal hose diameter (inch)	Minimum wall thickness (inch)
1/2	0.127
3/4	0.154
1	0.179

Solvent cement and fittings for flexible hose must comply with section 20-2.08B(5).

**20-2.09B(2) Pop-Up Sprinkler Assemblies**

Each pop-up sprinkler assembly must include a body, nozzle, swing joint, pressure reducing device, fittings, and sprinkler protector where shown.

**20-2.09B(3) Riser Sprinkler Assemblies**

Each riser sprinkler assembly must include a body, flexible hose, threaded nipple, nozzle, swing joint (except for a Type V riser), pressure reducing device, fittings, and riser support where shown.

**20-2.09B(4) Tree Well Sprinkler Assemblies**

Each tree well sprinkler assembly must include a threaded nipple, nozzle, swing joint, fittings, perforated drainpipe, and drain grate.

The perforated drainpipe must be commercial-grade, rigid PVC pipe with holes spaced not more than 6 inches on center on 1 side of the pipe.

The drain grate must be a commercially-available, 1-piece, injection-molded grate manufactured from structural foam polyolefins with UV light inhibitors. Drain grate must be black.

Gravel for filling the drainpipe must be graded such that 100 percent passes the 3/4-inch sieve and 100 percent is retained on the 1/2-inch sieve. The gravel must be clean, washed, dry, and free from clay or organic material.

**20-2.09C Construction**

Where shown, install a flow shut-off device under the manufacturer's instructions, unless you use equipment with a preinstalled flow shut-off device.

Where shown, install a pressure reducing device under the manufacturer's instructions, unless you use equipment with a preinstalled pressure reducing device.

Install pop-up and riser sprinkler assembly:

- 1. From 6-1/2 to 8 feet from curbs, dikes, and sidewalks
- 2. At least 10 feet from paved shoulders
- 3. At least 3 feet from fences and walls

If sprinkler assembly cannot be installed within these limits, the location will be determined by the Engineer.

Set sprinkler assembly riser on slopes perpendicular to the plane of the slope.

**Replace the paragraph of section 20-2.10B(3) with:**

07-15-16

Each check valve must be one of the following:

- 1. Schedule 80 PVC with a factory setting to withstand a minimum 7-foot head on risers
- 2. Class 200 PVC if used on a nonpressurized plastic irrigation supply line
- 3. Internal to the sprinkler body with a factory setting to withstand a minimum 7-foot head

**Delete item 3 in the list in the paragraph of section 20-2.10B(4).**

07-21-17

**Replace the paragraph of section 20-2.10C(3) with:**

07-15-16

Install check valves as necessary to prevent low-head drainage.

**Replace the paragraphs of section 20-3.01B(10) with:**

07-15-16

Each plant stake for vines must be nominal 1 by 1 inch and 18 inches long.

Each plant stake for trees must be nominal 2 by 2 inches or nominal 2 inches in diameter and long enough to keep the tree in an upright position.

**Replace the paragraph of section 20-3.01B(11) with:**

07-15-16

Each plant tie for vines must be extruded vinyl-based tape, 1 inch wide and at least 8 mils thick.

Each plant tie for trees must be a (1) minimum 3/4-inch-wide, UV-resistant, flexible vinyl tie complying with ASTM D412 for tensile and elongation strength, or (2) lock-stitch, woven polypropylene with a minimum 900 lb tensile strength.

**Add between the 7th and 8th paragraphs of section 20-3.02C(3)(b):**

07-15-16

Spread the vine shoots and tie them with a plant tie to each stake above the crossing point.

**Replace the 8th paragraph of section 20-3.02C(3)(b) with:**

07-15-16

Tie trees to the stakes with 2 tree ties, 1 tie to each stake. Each tie must form a figure eight by crossing the tie between the tree and the stake. Install ties at the lowest position that will support the tree in an upright position. Install the ties such that they provide trunk flexibility but do not allow the trunk to rub against the stakes. Wrap each end of the tie 1-1/2 turns around the stake and securely tie or nail it to the stake.

**Replace the 1st paragraph of section 20-5.02C(1) with:**

07-15-16

Where edging is used to delineate the limits of inert ground cover or wood mulch areas, install the edging before installing the inert ground cover or wood mulch.

**Delete *AND MULCHES* in the heading of section 20-5.03.**

07-15-16

**Delete *and mulches* in the paragraph of section 20-5.03A(1)(a).**

07-15-16

**Replace the paragraph of section 20-5.03A(3)(a) with:**

07-15-16

Before installing inert ground cover, remove plants and weeds to the ground level.

**Add to the beginning of section 20-5.03A(3)(b):**

07-21-17

Excavate to the depth shown.

**Delete or mulch at each occurrence in sections 20-5.03A(3)(c) and 20-5.03A(3)(d).**

**Add to the end of section 20-5.03B(2)(c):**

You may use rock with superficial chipping or jagged edges if the rock is placed such that the chipped areas and jagged edges are submerged in the concrete.

**Add to the 2nd paragraph of section 20-5.03B(3):**

Rock that is exposed on the finished surface must be round, smooth, clean and without jagged edges or chipped areas showing.

**Replace section 20-5.03E with:**

**20-5.03E Reserved**

**Replace section 20-5.04 with:**

**20-5.04 WOOD MULCH**

**20-5.04A General**

**20-5.04A(1) Summary**

Section 20-5.04 includes specifications for placing wood mulch.

**20-5.04A(2) Definitions**

Reserved

**20-5.04A(3) Submittals**

Submit a certificate of compliance for wood mulch.

Submit a 2 cu ft mulch sample with the mulch source shown on the bag. Obtain authorization before delivering the mulch to the job site.

**20-5.04A(4) Quality Assurance**

Reserved

**20-5.04B Materials**

**20-5.04B(1) General**

Mulch must not contain more than 0.1 percent of deleterious materials such as rocks, glass, plastics, metals, clods, weeds, weed seeds, coarse objects, sticks larger than the specified particle size, salts, paint, petroleum products, pesticides or chemical residues harmful to plant or animal life.

**20-5.04B(2) Tree Bark Mulch**

Tree bark mulch must be derived from cedar, Douglas fir, or redwood species.

The mulch must be ground such that at least 95 percent of the material by volume is less than 2 inches long in any dimension and no more than 30 percent by volume is less than 1 inch long in any dimension.

**20-5.04B(3) Wood Chip Mulch**

Wood chip mulch must:



**Replace section 21-2.02K with:**

01-20-17

**21-2.02K Compost**

Compost must be derived from one or a combination of the following types of 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 must not be derived from mixed municipal solid waste and must not contain paint, petroleum products, pesticides, or other chemical residues harmful to plant or animal life. Metal concentrations in compost must not exceed the maximum listed under 14 CA Code of Regs § 17868.2.

Process compost materials under 14 CA Code of Regs § 17868.3.

The quality characteristics of compost must have the values shown in the following table:

<b>Compost</b>		
Quality characteristic	Test method <sup>a</sup>	Requirement
pH	TMECC 04.11-A	6–8.5
Soluble salts (dS/m)	TMECC 04.10-A	0–10
Moisture content (% wet weight)	TMECC 03.09-A	30–60
Organic matter content (% dry weight)	TMECC 05.07-A	30–70
Maturity (seed emergence) (% relative to positive control)	TMECC 05.05-A	80 or above
Maturity (seedling vigor) (% relative to positive control)	TMECC 05.05-A	80 or above
Stability (mg CO <sub>2</sub> -C/g OM per day)	TMECC 05.08-B	8 or below
Pathogen Salmonella (most probable number per 4 grams dry weight basis)	TMECC 07.01-B	< 3
Pathogen Fecal coliform (most probable number per gram dry weight basis)	TMECC 07.01-B	< 1,000
Physical contaminants (% dry weight) Plastic, glass, and metal	TMECC 02.02-C	combined total: < 0.5 <sup>b</sup>
Physical contaminants (% dry weight) Sharps	TMECC 02.02-C	None detected

<sup>a</sup> 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).

<sup>b</sup> Film plastic can be no more than 0.1% of the combined total.

The particle size for fine, medium, and coarse compost must comply with the requirements shown in the following table:

**Compost Gradation**

Quality characteristic	Test method <sup>a</sup>	Percentage passing	
		Min	Max
Fine compost (dry weight): 2-inch sieve 3/8-inch sieve Max particle length: 2"	TMECC 02.02-B	98 95	-- --
Medium compost (dry weight): Pass 2-inch sieve Pass 3/8-inch sieve (min 25% retained) Max particle length: 6"	TMECC 02.02-B	90 40	-- 75
Coarse compost (dry weight): Pass 2-inch sieve Pass 3/8-inch sieve (min 60% retained) Max particle length: 6"	TMECC 02.02-B	95 --	-- 40

<sup>a</sup> 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).

**Replace the 1st and 2nd paragraphs of section 21-2.02Q with:**

01-20-17

Compost sock must be a mesh tube filled with compost and must have a functional longevity of 1 year.

The mesh tube must be composed of a natural biodegradable product, such as cotton, jute, sisal, burlap, wood-based yarn, or coir. The tube must have one of the following diameters:

1. From 8 to 9 inches
2. 12 inches in diameter

The mesh tube must be clean, evenly woven, and free of encrusted concrete or other contaminating materials, cuts, tears, broken or missing yarns, and thin, open, or weak places.

07-21-17

**Delete and compost socks in the 4th paragraph of section 21-2.02R.**

**Replace the 2nd sentence in the 1st paragraph of section 21-2.03B with:**

07-21-17

Apply duff to the edge of the shoulder backing. When shoulder backing is absent, do not apply duff within 3 feet of the edge of pavement.

**Replace item 3 in the list in the 2nd paragraph of section 21-2.03F with:**

07-21-17

Apply seed to the edge of the shoulder backing. When shoulder backing is absent, do not apply seed within 3 feet of the edge of pavement.





**23-1.01D Quality Assurance**

**23-1.01D(1) General**

**23-1.01D(1)(a) General**

Take samples under California Test 125.

**23-1.01D(1)(b) Test Result Disputes**

You and the Engineer must work together to avoid potential conflicts and to resolve disputes regarding test result discrepancies. Notify the Engineer within 5 business days of receiving the test result if you dispute the test result.

01-20-17

If you or the Engineer dispute each other’s test results, submit your test results and copies of paperwork including worksheets used to determine the disputed test results. An independent third party performs referee testing. Before the independent third party participates in a dispute resolution, it must be qualified under AASHTO re:source program and the Department’s Independent Assurance Program. The independent third party must have no prior direct involvement with this Contract. By mutual agreement, the independent third party is chosen from:

1. Department laboratory in a district or region not in the district or region the project is located
2. Transportation Laboratory
3. Laboratory not currently employed by you or your material producer

07-15-16

If split acceptance samples are not available, the independent third party uses any available material representing the disputed material for evaluation.

If the independent third party determines the Department’s test results are valid, the Engineer deducts the independent third party testing costs from payments. If the independent third party determines your test results are valid, the Department pays the independent third party testing costs.

**23-1.01D(2) Quality Control**

**23-1.01D(2)(a) General**

Provide a QC manager when the quantity of subbase or base is as shown in the following table:

<b>QC Manager Requirements</b>	
Subbase or base	Requirement
Stabilized soil (sq yd)	≥ 20,000
Aggregate subbases (cu yd)	≥ 20,000
Aggregate bases (cu yd)	≥ 20,000
CTB (cu yd)	≥ 10,000
Lean concrete base (cu yd)	≥ 2,000
Rapid strength concrete base (cu yd)	≥ 1,000
Lean concrete base rapid setting (cu yd)	≥ 1,000
Concrete base (cu yd)	≥ 1,000
Treated permeable bases (cu yd)	≥ 2,000
Reclaimed pavements (sq yd)	≥ 10,000

Provide a testing laboratory to perform quality control tests. Maintain sampling and testing equipment in proper working condition.

You are not entitled to compensation for the suspension of work resulting from noncompliance with quality control requirements, including those identified within the QC plan.

**23-1.01D(2)(b) Quality Control Plan**

The QC plan must describe the organization and procedures used to:

1. Control the production process
2. Determine if a change to the production process is needed
3. Implement a change

The QC plan must include action and suspension limits and details of corrective action to be taken if any process is outside of those limits. Suspension limits must not exceed specified acceptance criteria.

The QC plan must describe how test results will be submitted including times for sampling and testing for each quality characteristic.

**23-1.01D(2)(c) Qualifications**

Testing laboratories and testing equipment must comply with the Department’s Independent Assurance Program.

Personnel performing sampling and testing must be qualified under the Department’s Independent Assurance Program for the sampling and testing performed.

**23-1.01D(3) Department Acceptance**

Reserved

**23-1.02 MATERIALS**

Not Used

**23-1.03 CONSTRUCTION**

Not Used

**23-1.04 PAYMENT**

Not Used

**23-2–23-7 RESERVED**

\*\*\*\*\*

**24 STABILIZED SOILS**

07-21-17

**Add to section 24-1.01C(1):**

Submit a stabilized soil quality control plan.

07-15-16

**Add to section 24-1.01D(1):**

07-15-16

Construct test pads for compaction tests by scraping away material to the depth ordered. If a compaction test fails, corrective action must include the layers of material already placed above the test pad elevation.

**Replace section 24-1.01D(2) with:**

07-15-16

**24-1.01D(2) Quality Control**

**24-1.01D(2)(a) General**

Reserved

**24-1.01D(2)(b) Quality Control Plan**

Reserved

**24-1.01D(2)(c) Qualifications**

Reserved

**24-1.01D(2)(d) Preparing Basement Material**

After preparing an area for soil stabilization, verify the surface grades.

**24-1.01D(2)(e) Mixing**

Except for clods larger than 1 inch, randomly test the adequacy of the mixing with a phenolphthalein pH indicator solution.

**Add to the end of footnote a in the table in section 24-1.01D(3):**

07-21-17

For cement stabilized soil, see section 24-3.03D.

**Replace the 1st paragraph of section 24-1.03C with:**

07-15-16

The Engineer orders the application rate as pounds of stabilizing agent per square yard of basement material to be stabilized.

**Delete section 24-2.01D(1)(c)**

07-15-16

**Replace 250 in the 2nd sentence in the 2nd paragraph of section 24-2.01D(2)(c) with:**

07-15-16

500

**Add to section 24-2.01D(2):**

07-15-16

**24-2.01D(2)(d) Quality Control Testing**

Lime stabilized soil quality control must include testing the quality characteristics at the frequencies shown in the following table:

**QC Testing Frequencies**

Quality characteristic	Test method	Sampling location	Minimum frequency
Ground surface temperature before adding lime and full depth ground temperature during mixing operations	--	Each temperature location	1 test per 20,000 sq ft, minimum 1 per day
Lime application rate	Calibrated tray or equal	Roadway	1 test per 40,000 sq ft, minimum 2 per day
Gradation on mixed material	California Test 202	Roadway	1 per 500 cu yd, minimum 1 per day
Moisture content	California Test 226	Roadway	1 per 500 cu yd on each layer, each day during mixing and mellowing periods, minimum 1 per day
Relative compaction	California Test 231	Roadway	1 per 500 cu yd on each layer, minimum 1 per day

**Replace section 24-3 with:**

07-21-17

**24-3 CEMENT STABILIZED SOIL**

**24-3.01 GENERAL**

**24-3.01A Summary**

Section 24-3 includes specifications for constructing CSS by mixing basement material with cement and water.

**24-3.01B Definitions**

Reserved

**24-3.01C Submittals**

Submit cement samples under California Test 125. Include the mill analysis.

Submit a certificate of compliance under section 90-1.01C(3).

**24-3.01D Quality Assurance**

**24-3.01D(1) General**

**24-3.01D(1)(a) General**

Stop CSS activities and immediately notify the Engineer if either of the following occurs:

1. Any quality control test result does not comply with the specifications
2. Visual inspection shows noncompliant CSS

If CSS activities are stopped, before resuming activities:

1. Notify the Engineer of the adjustments you will make
2. Reprocess, remedy, or replace the noncompliant CSS until it complies with specifications
3. Construct a 1,000 square yard test strip of CSS demonstrating ability to comply with the specifications
4. Obtain the Engineer's authorization

**24-3.01D(1)(b) Preparing Basement Material**

For every 1,000 sq yd of basement material to be cement stabilized:

1. Test the relative compaction under California Test 231
2. Test the moisture content under California Test 226

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### **24-3.01D(1)(c) Applying Cement**

The Engineer determines the final application rate based on ASTM D1633, Method A, except:

1. Test specimens must be compacted under ASTM D1557, Method A or B.
2. Test specimens must be cured by sealing each specimen with 2 layers of plastic at least 4 mil thick. The plastic must be tight around the specimen. Seal all seams with duct tape to prevent moisture loss. Sealed specimens must be placed in an oven for 7 days at  $100 \pm 5$  degree F. At the end of the curing period, specimens must be removed from the oven and air-cooled. Duct tape and plastic wrap must be removed before capping. Specimens must not be soaked before testing.

The application rate is ordered as pounds of cement per square yard of basement material to be stabilized.

Before applying cement, measure and record the air temperature and in situ moisture content of the basement material to be stabilized.

The Engineer verifies the application rate using a calibrated tray or equal once per 40,000 sq ft of stabilized basement material, or twice per day, whichever is greater.

### **24-3.01D(2) Quality Control**

#### **24-3.01D(2)(a) General**

Reserved

#### **24-3.01D(2)(b) Mixing**

During mixing operations, measure and record the air temperature for the basement material to be stabilized.

For each day of mixing, test the in-place moisture content under California Test 231, Part 1, Section E and verify moisture content under California Test 226. Sample immediately after mixing.

After mixing, maintain the in-place moisture of the basement material to be stabilized within a range of 1 percent below to 2 percent above the optimum moisture determined under California Test 216. Determine in-place moisture content under California Test 231. During compaction and finish grading, add water to the surface to prevent drying until the next layer of mixed material is placed, or until you apply curing treatment.

#### **24-3.01D(2)(c) Compaction**

After compaction, determine in-place wet density under California Test 231 and moisture content under California Test 226, at the same locations. Perform one test per 1,000 sq yd of CSS. Test in 0.50-foot depth intervals from the bottom of the CSS layer regardless of the layer thickness. Convert wet density to dry density and calculate relative compaction under California Test 216 on a dry density basis.

#### **24-3.01D(2)(d) Quality Control Testing**

Cement stabilized soil quality control must include testing the quality characteristics at the frequencies shown in the following table:

**QC Testing Frequencies**

Quality characteristic	Test method	Sampling location	Minimum frequency
Air temperature before adding cement to basement material	--	Each temperature location	1 test per 20,000 sq ft, minimum 1 per day
Moisture content of basement material before adding cement	California Test 226	Roadway	1 per 1000 sq yd per layer, minimum 1 per day
Cement application rate	Calibrated tray or equal	Roadway	1 test per 20,000 sq ft, minimum 2 per day
Gradation on mixed material	California Test 202	Roadway	1 per 1000 sq yd per layer, minimum 1 per day
Moisture content of mixed material	California Test 226	Roadway	1 per 1000 sq yd per layer, minimum 1 per day
Moisture content of compacted material at time of relative compaction testing	California Test 231	Roadway	1 per 1000 sq yd per layer, minimum 1 per day
Relative compaction	California Test 231	Roadway	1 per 1000 sq yd per layer, minimum 1 per day

**24-3.02 MATERIALS**

Cement must comply with section 90-2.01A, Type II or Type V portland cement.

**24-3.03 CONSTRUCTION**

**24-3.03A General**

Remove standing water from the basement material.

Apply cement at air temperatures above 40 degrees F and rising. Do not apply cement to frozen basement material.

During compaction and finish grading, add water to the surface to prevent drying until the next layer of mixed material is placed, or until you apply curing treatment.

Do not scarify surfaces of intermediate or final layers of CSS.

**24-3.03B Applying Cement**

Apply cement uniformly over the area to be stabilized using a vane spreader.

Do not apply dry cement in windy conditions that will result in dust outside the treatment area.

**24-3.03C Mixing**

You may mix cement and the basement material off the job site.

Complete initial mixing work within 30 minutes of the application of cement.

After mixing, maintain the in-place moisture of the basement material to be stabilized within a range of 1 percent below to 2 percent above the optimum moisture.

Before compaction, the CSS, except rock, must within the percentage passing limits for the sieve sizes shown in the following table:

**Cement Stabilized Soil Gradation**

Sieve sizes	Percentage passing
2"	100
3/4"	98-100
No. 4	55-100



Replace *Reserved* in section 25-1.01D(2) with:

07-15-16

**25-1.01D(2)(a) General**

Reserved

**25-1.01D(2)(b) Quality Control Plan**

Reserved

**25-1.01D(2)(c) Qualifications**

Reserved

**25-1.01D(2)(d) Quality Control Testing**

AS quality control must include testing the quality characteristics at the frequencies shown in the following table:

**QC Testing Frequencies**

Quality characteristic	Test method	Sampling location	Minimum frequency
R-value	California Test 301	Stockpiles, transportation units, windrows, or roadways	1 test before beginning work and every 2000 cu yd thereafter <sup>a</sup>
Aggregate gradation	California Test 202	Stockpiles, transportation units, windrows, or roadways	1 per 500 cu yd but at least one per day of placement
Sand equivalent	California Test 217	Stockpiles, transportation units, windrows, or roadways	
Relative compaction	California Test 231	Roadway	1 per 500 sq yd on each layer

<sup>a</sup>Additional R-value frequency testing will not be required when the average of 4 consecutive sand equivalent tests is 4 or more above the specified operating range value.

**Add between the 2nd and 3rd paragraphs of section 25-1.01D(3):**

07-15-16

The Engineer takes aggregate subbase samples for R-value, aggregate gradation, and sand equivalent from any of the following locations:

1. Windrow
2. Roadway

07-15-16

**Delete for each noncompliant test result in the 4th paragraph of section 25-1.01D(3).**

07-15-16

**Delete a in the 5th paragraph of section 25-1.01D(3).**





**QC Testing Frequencies**

Quality characteristic	Test method	Sampling location	Minimum frequency
R-value	California Test 301	Stockpiles, transportation units, windrows, or roadways	1 test before starting work and every 2,000 cu yd thereafter <sup>a</sup>
Aggregate gradation	California Test 202	Stockpiles, transportation units, windrows, or roadways	1 per 500 cu yd but at least one per day of placement
Sand equivalent	California Test 217	Stockpiles, transportation units, windrows, or roadways	
Durability index <sup>b</sup>	California Test 229	Stockpiles, transportation units, windrows, or roadways	1 per project
Relative compaction	California Test 231	Roadway	1 per 500 sq yd on each layer

<sup>a</sup>Additional R-value frequency testing will not be required when the average of 4 consecutive sand equivalent tests is 29 or greater for Class 2 AB or 25 or greater for Class 3 AB.

<sup>b</sup>Applies if section 26-1.02 contains an applicable requirement for durability index

**Add between requirements, and and in the 1st paragraph of section 26-1.01D(3):**

07-15-16

durability,

**Add between the 2nd and 3rd paragraphs of section 26-1.01D(3):**

07-15-16

The Engineer takes aggregate base samples for R-value, aggregate gradation, sand equivalent, and durability index from any of the following locations:

1. Windrow
2. Roadway

**Delete the 3rd paragraph of section 26-1.01D(3).**

07-15-16

**Add to the end of section 26:**

**26-2-26-10 RESERVED**

07-21-17

\*\*\*\*\*

## 27 CEMENT TREATED BASES

07-21-17

Add to the beginning of section 27:

07-21-17

### 27-1 GENERAL

Add to section 27-1.01C:

07-15-16

Submit cement treated base QC plan.

Replace the headings and paragraphs in section 27-1.01D with:

07-15-16

#### 27-1.01D Quality Assurance

##### 27-1.01D(1) General

After the CTB has been spread on the subgrade and before initial compaction, the cement content of the completed mixture of CTB must not vary from the specified cement content by more than 0.6 percent of the weight of the dry aggregate when tested under California Test 338.

For Class A CTB, compaction is tested under California Test 312 or 231.

The relative compaction of CTB must be at least 95 percent. Each layer of CTB may be tested for compaction, or all layers may be tested together at the option the Engineer. If all layers are tested together, you are not relieved of the responsibility to achieve the required compaction in each layer placed.

##### 27-1.01D(1)(a) Aggregate

When tested under California Test 301, aggregate for Class B CTB must have (1) an R-value of at least 60 before mixing with cement and (2) an R-value of at least 80 when aggregate is mixed with an amount of cement that does not exceed 2.5 percent by weight of the dry aggregate.

Before sand equivalent testing, aggregate samples must not be treated with lime, cement, or chemicals.

If the aggregate gradation test results, the sand equivalent test results, or both comply with contract compliance requirements but not operating range requirements, you may continue placing CTB for the remainder of the work day. Do not place additional CTB until you demonstrate to the Engineer that the CTB to be placed complies with the operating range requirements.

If the aggregate gradation test results, sand equivalent test results, or both do not comply with contract compliance requirements, remove the CTB or request a payment deduction. If your request is authorized, \$2.50/cu yd is deducted. If CTB is paid for by weight, the Engineer converts tons to cubic yards for the purpose of reducing payment for noncompliant CTB left in place. An aggregate gradation and a sand equivalent test represents up to (1) 500 cu yd or (2) 1 day's production if less than 500 cu yd.

##### 27-1.01D(1)(b) Road-Mixed Cement Treated Base Moisture Content

Just before initial compaction the moisture content of the completed mixture must be at least the optimum moisture content less 1 percent. The moisture content is determined under California Test 226 and optimum moisture content is determined under California Test 312.

##### 27-1.01D(1)(c) Plant-Mixed Cement Treated Base Moisture Content

At the point of delivery to the work, the moisture content of the completed mixture must be at least the optimum moisture content less 1 percent. The moisture content is determined under California Test 226 and optimum moisture content under California Test 312.

**27-1.01D(2) Quality Control****27-1.01D(2)(a) General**

Reserved

**27-1.01D(2)(b) Quality Control Plan**

Reserved

**27-1.01D(2)(c) Qualifications**

Reserved

**27-1.01D(2)(d) Quality Control Testing**

CTB quality control must include testing the quality characteristics at the frequencies shown in the following table:

**QC Testing Frequencies**

Quality characteristic	Test method	Sampling location	Minimum frequency
Aggregate gradation	California Test 202 modified	Stockpiles, plant, transportation units, windrow, or roadway	1 per 500 cu yd but at least one per day of placement
Sand equivalent	California Test 217	Stockpiles, plant, transportation units, windrow, or roadway	
R-value <sup>a</sup>	California Test 301	Stockpiles, plant, transportation units, windrows, or roadway	1 test before starting work and every 2000 cu yd thereafter <sup>b</sup>
Optimum moisture content	California Test 312	Plant, transportation units, windrow, or roadway	1 per day of placement
Moisture content	California Test 226	Roadway	1 per 500 cu yd but at least one per day of placement
Cement content	California Test 338	Windrows or roadway	1 per 1000 cu yd but at least one per day of placement
Relative compaction	California Test 312 or 231	Roadway	1 per 2000 sq yd but at least one per day of placement
Compressive strength <sup>c</sup>	California Test 312	Windrow or roadways	1 per day of placement

<sup>a</sup>R-value is required for Class B CTB only

<sup>b</sup>Additional R-value frequency testing will not be required while the average of 4 consecutive sand equivalent tests is 4 or more above the specified operating range value.

<sup>c</sup>Compressive strength is required for Class A CTB only when specified

**27-1.01D(3) Department Acceptance**

The Department's acceptance testing includes testing the CTB quality characteristics shown in the following table:

**CTB Requirements for Acceptance**

Quality characteristic	Test method
Aggregate gradation	California Test 202 modified
Sand equivalent	California Test 217
R-value <sup>a</sup>	California Test 301
Optimum moisture content	California Test 312
Moisture content	California Test 226
Cement content	California Test 338
Relative compaction	California Test 312 or 231
Compressive strength <sup>b</sup>	California Test 312

<sup>a</sup>R-value is required for Class B CTB only

<sup>b</sup>Compressive strength is required for Class A CTB only when specified

The Engineer takes samples for aggregate gradation and sand equivalent from any of the following locations:

1. Plant
2. Truck
3. Windrow, for road-mixed only
4. Roadbed, for road-mixed only

**Add to section 27-1.02:**

Water must comply with section 90-1.02D.

07-15-16

**Add to section 27-1.03F:**

The relative compaction of CTB must be at least 95 percent.

07-15-16

**Add to the end of section 27:**

**27-2-27-10 RESERVED**

07-21-17

\*\*\*\*\*

**28 CONCRETE BASES**

07-15-16

**Replace the headings and paragraphs in section 28-1.01D with:**

07-15-16

**28-1.01D Quality Assurance**

**28-1.01D(1) General**

Aggregate samples must not be treated with lime, cement, or chemicals before testing for sand equivalent.

Stop concrete base activities and immediately notify the Engineer whenever:

1. Any QC or QA test result does not comply with the specifications
2. Visual inspection shows a noncompliant concrete base

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If concrete base activities are stopped, before resuming activities:

1. Notify the Engineer of the adjustments you will make
2. Remedy or replace the noncompliant concrete base
3. Field qualify or construct a new test strip as specified for the concrete base involved to demonstrate compliance with the specifications
4. Obtain authorization

**28-1.01D(2) Quality Control**

**28-1.01D(2)(a) General**

Reserved

**28-1.01D(2)(b) Quality Control Plan**

Reserved

**28-1.01D(2)(c) Qualifications**

Reserved

**28-1.01D(3) Department Acceptance**

Reserved

**Add to section 28-2.01C(1):**

Submit a lean concrete base QC plan.

07-15-16

**Replace the headings and paragraphs in section 28-2.01D with:**

07-15-16

**28-2.01D Quality Assurance**

**28-2.01D(1) General**

**28-2.01D(1)(a) General**

The molds for compressive strength testing under ASTM C31 or ASTM C192 must be 6 by 12 inches.

If the aggregate gradation test results, sand equivalent test results or both comply with the contract compliance requirements but not the operating range requirements, you may continue placing LCB for the remainder of the work day. Do not place additional LCB until you demonstrate the LCB to be placed complies with the operating range requirements.

**28-2.01D(1)(b) Qualifications**

Field qualification tests and calculations must be performed by an ACI certified "Concrete Laboratory Technician, Grade I.

**28-2.01D(1)(c) Aggregate Qualification Testing**

Qualify the aggregate for each proposed aggregate source and gradation. The qualification tests include (1) a sand equivalent and (2) an average 7-day compressive strength under ASTM C39 of 3 cylinders manufactured under ASTM C192 except cure cylinders in molds without lids after initial curing.

For the compressive strength test, the cement content for each cylinder must be 300 lb/cu yd. The 7-day average compressive strength must be at least 610 psi. The cement must be Type II portland cement.

LCB must have from 3 to 4 percent air content during aggregate qualification testing.

**28-2.01D(1)(d) Field Qualification Testing**

Before placing LCB, you must perform field qualification testing and obtain authorization for each mix design. Retest and obtain authorization for changes to the authorized mix designs.

Notify the Engineer at least 5 business days before field qualification. Perform the field qualification at the job site or an authorized location.

Field qualification testing includes tests for compressive strength, air content, and penetration or slump.

For compressive strength field qualification testing:

1. Prepare 12 cylinders under ASTM C31 except final cure cylinders in molds without lids from a single batch.
2. Perform 3 tests; each test consists of determining the average compressive strength of 2 cylinders at 7 days under ASTM C39. The average compressive strength for each test must be at least 530 psi

If you submitted a notice to produce LCB qualifying for a transverse contraction joint waiver, manufacture additional specimens and test the LCB for compressive strength at 3 days. Prepare the compressive strength cylinders under ASTM C31 except final cure cylinders in molds without lids at the same time using the same material and procedures as the 7-day compressive strength cylinders except do not submit 6 additional test cylinders. The average 3-day compressive strength for each test must be not more than 500 psi.

**28-2.01D(2) Quality Control**

**28-2.01D(2)(a) General**

Reserved

**28-2.01D(2)(b) Quality Control Manager**

Reserved

**28-2.01D(2)(c) Quality Control Testing**

Test the LCB under the test methods and at the locations and frequencies shown in the following table:

**LCB Sampling Location and Testing Frequencies**

Quality characteristic	Test method	Sampling location	Minimum sampling and testing frequency
Sand equivalent	ASTM D2419	Source	1 per 500 cubic yards but at least 1 per day of production
Aggregate gradation	ASTM C136		
Air content	ASTM C231	Job site	
Penetration <sup>a</sup>	ASTM C360		
Slump <sup>a</sup>	ASTM C143		
Compressive strength	ASTM C39 <sup>b</sup>		

<sup>a</sup>Test for either penetration or slump

<sup>b</sup>Prepare cylinders under ASTM C31 except final cure cylinders in molds without lids.

**28-2.01D(3) Department Acceptance**

The Department accepts LCB based on compliance with the requirements shown in the following table:

**LCB Requirements for Acceptance**

Quality characteristic	Test method	Requirement
Compressive strength (min, psi at 7 days)	ASTM C39 <sup>a</sup>	530 <sup>b</sup>

<sup>a</sup> Cylinders prepared under ASTM C31 except final cure cylinders in molds without lids.

<sup>b</sup> A compressive strength test represents up to (1) 1,000 cu yd or (2) 1 day's production if less than 1,000 cu yd.

Replace *section 28-2.01D(4)* in item 3 of the 5th paragraph in section 28-2.03D with:

07-15-16

section 28-2.01D(1)(c)

Replace the 1st paragraph in section 28-2.03F with:

07-15-16

After finishing LCB, cure LCB with pigmented curing compound under section 90-1.03B(3) and 40-1.03I.  
Apply curing compound:

1. In 2 separate applications
2. Before the atmospheric temperature falls below 40 degrees F
3. At a rate of 1 gal/150 sq ft for the first application
4. At a rate of 1 gal/200 sq ft for the second application

Replace *Reserved* in section 28-3.01C(3) with:

07-15-16

Submit a rapid strength concrete base QC plan.

Replace the headings and paragraphs in section 28-3.01D with:

07-15-16

**28-3.01D Quality Assurance**

**28-3.01D(1) General**

**28-3.01D(1)(a) General**

At the preconstruction meeting be prepared to discuss the project specifications and methods of performing each item of work. Items discussed must include the processes for:

1. Production
2. Transportation
3. Placement
4. QC plan, if specified in the special provisions
5. Contingency plan
6. QC sampling and testing
7. Acceptance criteria

Beams for modulus of rupture testing must be fabricated and tested under California Test 524. The beams may be fabricated using an internal vibrator under ASTM C31. For each test, 3 beam must be fabricated and the test results averaged. No single test represents more than that day's production or 130 cu yd, whichever is less.

For early age testing, beams must be cured so the monitored temperatures in the beams and the test strip are always within 5 degrees F. The internal temperatures of the RSC base and early age beams must be monitored and recorded at intervals of at least 5 minutes. Thermocouples or thermistors connected to strip-chart recorders or digital data loggers must be installed to monitor the temperatures. Temperature recording devices must be accurate to within  $\pm 2$  degrees F. Until early age testing is completed, internal temperatures must be measured at 1 inch from the top, 1 inch from the bottom, and no closer than 3 inches from any edge.

For other age testing, beams must be cured under California Test 524 except beams must be placed into sand at a time that is the earlier of either from 5 to 10 times the final set time, or 24 hours.



RSC base must have an opening age modulus of rupture of not less than 400 psi and a 7-day modulus of rupture of not less than 600 psi.

**28-3.01D(1)(b) Preconstruction Meeting**

Reserved

**28-3.01D(1)(c) Test Strip**

Reserved

**28-3.01D(2) Quality Control**

**28-3.01D(2)(a) General**

Reserved

**28-3.01D(2)(b) Quality Control Manager**

Reserved

**28-3.01D(2)(c) Quality Control Testing**

Test the rapid strength concrete base under the test methods and at the locations and frequencies shown in the following table:

**Rapid Strength Concrete Base Sampling Location and Testing Frequencies**

Quality characteristic	Test method	Sample Location	Minimum testing frequency <sup>a</sup>
Cleaness value	California Test 227	Source	1 per 500 cubic yards but at least 1 per shift
Sand equivalent	California Test 217		
Aggregate gradation	California Test 202		
Air content	California Test 504	Job site	1 per 130 cu yd but at least 1 per shift
Yield	California Test 518		1 per shift
Slump or penetration	ASTM C143 or California Test 533		1 per 2 hours of placement
Density	California Test 518		1 per shift
Aggregate moisture meter calibration <sup>b</sup>	California Test 223 or California Test 226		1 per shift
Modulus of rupture	California Test 524		1 per 130 cu yd but at least 1 per shift

<sup>a</sup>Test at the most frequent interval.

<sup>b</sup>Check calibration of the plant moisture meter by comparing moisture meter readings with California Test 223 or California Test 226 test results.

Notify the Engineer at least 2 business days before any sampling and testing. Submit testing results within 15 minutes of testing completion. Record inspection, sampling, and testing on the forms accepted with the QC plan and submit them within 48 hours of completion of each day of production and within 24 hours of 7-day modulus of rupture tests.

During the placement of RSC base, fabricate beams and test for the modulus of rupture:

1. At opening age
2. At 7 days after placing the first 30 cu yd
3. At least once every 130 cu yd
4. Within the final truckload

Opening age tests must be performed in the presence of the Engineer.

**28-3.01D(3) Department Acceptance**

The Department accepts RSC base based on compliance with the requirements shown in the following table:

Diamond Springs Parkway – Phase 1A – SR-49 Realignment  
**CIP No. 72375, Contract No. 2720**  
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### RSC Base Requirements for Acceptance

Quality characteristic	Test method	Requirement
Modulus of rupture (min, psi at 7 days)	California Test 524	600

The Engineer adjust payment for RSC base for the 7-day modulus of rupture as follows:

1. Payment for a base with a modulus of rupture of 600 psi or greater is not adjusted.
2. Payment for a base with a modulus of rupture of less than 600 and greater than or equal to 550 psi is reduced by 5 percent.
3. Payment for a base with a modulus of rupture of less than 550 and greater than or equal to 500 psi is reduced by 10 percent.
4. Payment for a base with a modulus of rupture of less than 500 psi is not adjusted and no payment is made. Remove and replace this base.

#### Add to section 28-4.01C(1):

Submit a lean concrete base rapid setting QC plan.

07-15-16

#### Replace the headings and paragraphs in section 28-4.01D with:

07-15-16

#### **28-4.01D Quality Assurance**

##### **28-4.01D(1) General**

##### **28-4.01D(1)(a) General**

For compressive strength testing, prepare 6 cylinders under California Test 540. Test cylinders must be 6 by 12 inches. As an alternative to rodding, a vibrator may be used under California Test 524. Test cylinders under California Test 521 and perform 3 tests with each test consisting of 2 cylinders. The test result is the average from the 2 cylinders.

##### **28-4.01D(1)(b) Field Qualification**

Before placing lean concrete base rapid setting, you must perform field qualification testing and obtain authorization for each mix design. Retest and obtain authorization for changes to authorized mixed designs.

Proposed mix designs must be field qualified before you place the base represented by those mix designs. The technician performing the field test must hold current ACI certification as a Concrete Field Testing Technician-Grade I.

Notify the Engineer at least 5 days before field qualification. Perform field qualification within the job site or a location authorized.

Field qualification testing includes compressive strength, air content, and penetration or slump in compliance with the table titled "Lean Concrete Base Rapid Setting Requirements."

Field qualification must comply with the following:

1. Test for compressive strength at opening age and 7 days of age
2. At opening age, the compressive strength for each test must be at least 180 psi and the average strength for the 3 tests must be at least 200 psi
3. At 7 days age, the compressive strength for each test must be at least 600 psi and the average strength for the 3 tests must be at least 725 psi

**28-4.01D(2) Quality Control**

**28-4.01D(2)(a) General**

Reserved

**28-4.01D(2)(b) Quality Control Manager**

Reserved

**28-4.01D(2)(c) Quality Control Testing**

Test the base under the test methods and at the locations and frequencies shown in the following table:

**LCB Rapid Setting Sampling Location and Testing Frequencies**

Quality characteristic	Test method	Sampling location	Minimum sampling and testing frequency
Sand equivalent	ASTM D2419	Source	1 per 500 cu yd, minimum 1 per day of production
Aggregate gradation	ASTM C136		
Air content	ASTM C231	Job site	1 per 4 hours of placement work, plus one in the last hour of placement work
Penetration <sup>a</sup>	ASTM C360		
Slump <sup>a</sup>	ASTM C143		
Compressive strength	California Test 521		

<sup>a</sup>Test either penetration or slump

During placement of lean concrete base rapid setting, fabricate cylinders and test compressive strength for opening age and 7 days. Opening age tests must be performed in the presence of the Engineer.

**28-4.01D(3) Department Acceptance**

The Department accepts LCB rapid setting based on compliance with the requirement shown in the following table:

**LCB Rapid Setting Requirements for Acceptance**

Quality characteristic	Test method	Requirement
Compressive strength (min, psi at 7 days)	California Test 521 <sup>a</sup>	725

<sup>a</sup>Cylinders made under California Test 540

**Replace the 2nd and 3rd paragraphs in section 28-4.03A with:**

07-15-16

Concrete paving operations with equipment not supported by the base may start before opening age. Do not open pavement for traffic before opening age of the LCB rapid setting.

Any other paving operations must start after the final set time of the base. The base must have a compressive strength of at least 450 psi under California Test 521 before:

1. Placing HMA
2. Placing other base material
3. Operating equipment on the base

**Replace *Reserved* in section 28-5.01C with:**

07-15-16

Submit a concrete base QC plan.

Replace the headings and paragraphs in section 28-5.01D(2) with:

07-15-16

**28-5.01D(2) Quality Control**

**28-5.01D(2)(a) General**

Reserved

**28-5.01D(2)(b) Quality Control Manager**

Reserved

**28-5.01D(2)(c) Quality Control Testing**

Test the concrete base under the test methods and at the locations and frequencies shown in the following table:

**Concrete Base Sampling Location and Testing Frequencies**

Quality characteristic	Test method	Sample location	Minimum testing frequency <sup>a</sup>
Cleanness value	California Test 227	Source	1 per 500 cubic yards but at least 1 per shift
Sand equivalent	California Test 217		
Aggregate gradation	California Test 202		
Air content	California Test 504	Job site	1 per 500 cu yd but at least 1 per shift
Yield	California Test 518		1 per shift
Slump or penetration	ASTM C143 or California Test 533		1 per 2 hours of placement
Density	California Test 518		1 per shift
Aggregate moisture meter calibration <sup>b</sup>	California Test 223 or California Test 226		1 per shift
Modulus of rupture	California Test 524		1 per 500 cu yd but at least 1 per shift

<sup>a</sup>Test at the most frequent interval.

<sup>b</sup>Check calibration of the plant moisture meter by comparing moisture meter readings with California Test 223 or California Test 226 test results.

**28-5.01D(3) Department Acceptance**

The Department accepts a concrete base based on compliance with the requirements shown in the following table:

**Concrete Base Requirements for Acceptance**

Quality characteristic	Test method	Requirement
Modulus of rupture (min, psi at 28 days)	California Test 523	570

Acceptance for the modulus of rupture is on a lot basis. The Department provides the molds and machines for the modulus of rupture acceptance testing. Provide any material and labor the Engineer may require for the testing.

\*\*\*\*\*

## 29 TREATED PERMEABLE BASES

07-15-16

Replace the headings and paragraphs in section 29-1.01 with:

07-15-16

### 29-1.01 GENERAL

#### 29-1.01A Summary

Section 29-1 includes general specifications for constructing treated permeable bases.

#### 29-1.01B Definitions

Reserved

#### 29-1.01C Submittals

Submit a treated permeable base quality control plan.

#### 29-1.01D Quality Assurance

##### 29-1.01D(1) General

Reserved

##### 29-1.01D(2) Quality Control

###### 29-1.01D(2)(a) General

Reserved

###### 29-1.01D(2)(b) Quality Control Plan

Reserved

###### 29-1.01D(2)(c) Qualifications

Reserved

#### 29-1.01D(3) Department Acceptance

Reserved

Replace the headings and paragraphs in section 29-2.01D with:

07-15-16

### 29-2.01D Quality Assurance

#### 29-2.01D(1) General

The Engineer determines the asphalt content of the asphalt mixture under California Test 382. The bitumen ratio, pounds of asphalt per 100 lb of dry aggregate, must not vary more than 0.5 lb of asphalt above or below the quantity designated by the Engineer. Samples used to determine the bitumen ratio are obtained from trucks at the plant or from the mat behind the paver before rolling. If the sample is taken from the mat behind the paver, the bitumen ratio must not be less than the quantity designated by the Engineer, less 0.7 lb of asphalt per 100 lb of dry aggregate.

#### 29-2.01D(2) Quality Control

##### 29-2.01D(2)(a) General

Reserved

##### 29-2.01D(2)(b) Quality Control Testing

ATPB quality control must include testing the quality characteristics at the frequencies shown in the following table:

**QC Testing Frequencies**

Quality characteristic	Test method	Sampling location	Minimum frequency
Gradation	California Test 202	Stockpiles or plant	1 for every 4 hours of production but at least one per day of placement
Cleanness value	California Test 227	Stockpiles or plant	1 for every 4 hours of production but at least one per day
Percentage of crushed particles	California Test 205	Stockpiles or plant	1 test before production and one every 5,000 cu yd thereafter
Los Angeles rattler loss at 500 rev	California Test 211	Stockpiles or plant	1 test before production and one every 5,000 cu yd thereafter
Film stripping	California Test 302	Plant	1 test before production and one every 5000 cu yd thereafter
Asphalt content of the asphalt mixture	California Test 382	Plant, transportation units, windrows, or roadway	1 for every 4 hours of production but at least one per day

**29-2.01D(3) Department Acceptance**

The Department accepts ATPB based on aggregate gradation, cleanness value, percent of crushed particles, Los Angeles rattler, film stripping and asphalt content requirements specified in section 29-2.02 and section 29-2.01D(1).

The Engineer takes samples for aggregate gradation, cleanness value, percent of crushed particles, Los Angeles rattler, and film stripping from the plant.

The Engineer takes samples for asphalt content of the asphalt mixture from any of the following locations:

1. Plant
2. Truck
3. Windrow
4. Roadbed

**Replace the headings and paragraphs in section 29-3.01 with:**

07-15-16

**29-3.01 GENERAL**

**29-3.01A Summary**

Section 29-3 includes specifications for constructing cement treated permeable bases.

**29-3.01B Definitions**

Reserved

**29-3.01C Submittals**

Reserved

**29-3.01D Quality Assurance**

**29-3.01D(1) General**

Reserved







# DIVISION V SURFACINGS AND PAVEMENTS

## 36 GENERAL

07-21-17

Replace section 36-3 with:

07-21-17

### 36-3 PAVEMENT SMOOTHNESS

#### 36-3.01 GENERAL

##### 36-3.01A Summary

Section 36-3 includes specifications for measuring the smoothness of pavement surfaces.

##### 36-3.01B Definitions

**area of localized roughness:** Moving average of the International Roughness Index values for each wheel path using a 25-foot continuous interval and a 250-mm filter.

**Mean Roughness Index:** Average of the International Roughness Index values for the left and right wheel paths for the same traffic lane using a fixed interval and a 250-mm filter.

**wheel paths:** Pair of lines 3 feet from and parallel to the edges of a traffic lane. Left and right wheel paths are based on the direction of travel.

##### 36-3.01C Submittals

###### 36-3.01C(1) General

Reserved

###### 36-3.01C(2) Inertial Profiler Certification

At least 5 business days before starting initial profiling or changing the inertial profiler or operator, submit:

1. Inertial profiler certification issued by the Department
2. Operator certification for the inertial profiler issued by the Department
3. Manufacturer's instructions and test procedures for calibration and verification of the inertial profiler

Within 2 business days after cross-correlation testing, submit a ProVAL profiler certification analysis report for the test results to the Engineer and to the electronic mailbox address [smoothness@dot.ca.gov](mailto:smoothness@dot.ca.gov).

###### 36-3.01C(3) Inertial Profiler Data

###### 36-3.01C(3)(a) General

At least 15 days before inertial profiling, you must register with the Department's secure file sharing system. To obtain information on the registration process, send an e-mail with your contact information to [smoothness@dot.ca.gov](mailto:smoothness@dot.ca.gov).

Within 2 business days after each day of profiling, submit the profile information to the Engineer and to the Department's secure file sharing system. After submitting the profile information to the Department's file sharing system, send a notification of your electronic submittal to the Engineer and to the above electronic mailbox address with the names of the files submitted.

The profiling information must include:

1. Raw profile data for each lane
2. ProVAL ride quality analysis report for the Mean Roughness Index of each lane in a PDF file. Report the following:
  - 2.1. Listing of Mean Roughness Index values for 0.1-mile segments or portions thereof
  - 2.2. Inputs, including the specified Mean Roughness Index threshold and fixed segment length
  - 2.3. Raw profile data name selections
  - 2.4. Areas exempt from inertial profile smoothness
3. ProVAL ride quality analysis report for the International Roughness Index of the left and right wheel paths of each lane in a PDF file. Report the following:

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- 3.1. Listing of areas of localized roughness
- 3.2. Inputs, including the specified area of the localized roughness threshold and continuous segment length
- 3.3. Raw profile data name selections
- 3.4. Areas exempt from inertial profile smoothness
4. GPS data file for each lane. Submit the data file in GPS eXchange file format.
5. Manufacturer's recommended calibration and verification test results for the inertial profiler.
6. Inertial profiler's calibration and verification test results, including results for bounce, block, and the distance measurement instrument.
7. Completed Pavement Smoothness Inertial Profiler Submittal Record.

Submit Asphalt Concrete Pavement Smoothness Corrections Information or Concrete Pavement Smoothness Corrections Information with your final profiling information submittal.

Submit the raw profile data in an unfiltered electronic pavement profile file format. Use the following file-naming convention:

YYYYMMDD\_TTCCRRR\_EA\_D\_L\_W\_B\_E\_X\_PT.PPF

where:

YYYY = year

MM = month, leading zero

DD = day of month, leading zero

TT = district, leading zero

CCC = county, 2- or 3-letter abbreviation as shown in section 1-1.08

RRR = route number with no leading zeros

EA = Contract number, excluding the district identification number, expressed as 6 characters

D = traffic direction, *NB*, *SB*, *WB*, or *EB*

L = lane number from left to right in the direction of travel

W = wheel path, *L* for left, *R* for right, or *B* for both

B = beginning station to the nearest foot, such as 10+20, or beginning post mile to the nearest hundredth, such as 25.06 with no leading zero

E = ending station to the nearest foot, such as 14+20, or ending post mile to the nearest hundredth, such as 28.06 with no leading zero

X = profile operation, *EXIST* for existing pavement, *INTER* for after prepaving smoothness correction, *MILL* for after milling, *PAVE* for after paving, and *CORR* for after final surface pavement correction

PT = type of pavement surface profiled, such as Type A HMA, RHMA-G, JPCP, or CRCP

If you are submitting multiple inertial profiler data files, compress the files into a .ZIP file format and submit them using the file-naming convention TT\_EA\_X\_YYYYMMDD.zip.

### **36-3.01C(3)(b) Smoothness Corrective Grinding Plan**

At least 2 business days before performing corrective grinding for areas of localized roughness or areas exceeding the specified thresholds for the Mean Roughness Index, submit a corrective grinding plan as an informational submittal.

The corrective grinding plan must include:

Diamond Springs Parkway – Phase 1A – SR-49 Realignment  
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1. Grinder manufacturer make and model
2. Grinder wheelbase in feet, measured from the front centerline to the back centerline of the single wheel or tandem wheel spread
3. Grinder head position in feet, measured relative to the centerline of the front single wheel or the front tandem wheel spread
4. Tandem wheel spreads in feet, for rear and front wheels as applicable
5. Tabular listing of the planned corrective grinding, including:
  - 5.1. Start and stop locations in stationing to the nearest foot
  - 5.2. Width of grind, such as left half lane, right half lane, or full width lane
  - 5.3. Corresponding grinder head depths to the nearest 0.01 inch
  - 5.4. Direction of grind, up to 2 passes per grind location, such as forward, reverse, forward-forward, reverse-reverse, forward-reverse, reverse-forward
  - 5.5. Distance from start or stop locations to the nearest semipermanent reference point
6. Forecasted improvement in terms of the Mean Roughness Index and area of localized roughness values

### **36-3.01C(4) Straightedge Measurements**

Within 2 business days of measuring smoothness with a straightedge, submit a list of the areas requiring smoothness correction or a report stating there are no areas requiring smoothness correction. Identify the areas requiring smoothness correction by:

1. Location number
2. District-County-Route
3. Beginning station or post mile to the nearest 0.01 mile
4. For correction areas within a traffic lane:
  - 4.1. Lane direction, *NB*, *SB*, *EB*, or *WB*
  - 4.2. Lane number from left to right in the direction of travel
  - 4.3. Wheel path, *L* for left, *R* for right, or *B* for both
5. For correction areas not within a traffic lane:
  - 5.1. Identify the pavement area, such as shoulder, weigh station, or turnout
  - 5.2. Direction and distance from the centerline, *L* for left or *R* for right
6. Estimated size of correction area

### **36-3.01D Quality Assurance**

#### **36-3.01D(1) General**

Reserved

#### **36-3.01D(2) Certifications**

The inertial profiler must display a current certification decal showing the expiration date.

The operator must be certified for each model of inertial profiler operated.

The certifications issued by the Department for the inertial profiler and operator must not be more than 12 months old.

#### **36-3.01D(3) Quality Control**

##### **36-3.01D(3)(a) General**

Reserved

##### **36-3.01D(3)(b) Smoothness**

###### **36-3.01D(3)(b)(i) General**

Test pavement smoothness using an inertial profiler except use a 12-foot straightedge for the pavement at:

1. Traffic lanes less than 1,000 feet in length, including ramps, turn lanes, and acceleration and deceleration lanes

2. Horizontal curves with a centerline radius less than the following and within the superelevation transition of such curves:
  - 2.1. 150 feet for asphalt concrete pavements
  - 2.2. 300 feet for Portland cement concrete pavements
3. Areas within 12.5 feet of manholes
4. Shoulders
5. Weigh-in-motion areas
6. Miscellaneous areas such as medians, gore areas, turnouts, and maintenance pullouts

Where inertial profiler testing is required:

1. Determine the pavement smoothness for each traffic lane by obtaining the International Roughness Index for the left and right wheel paths in an individual lane
2. Determine the Mean Roughness Index and areas of localized roughness using FHWA's engineering software ProVAL

Where OGFC is required, test the pavement smoothness of the final HMA or concrete pavement surface before placing OGFC and after placing OGFC.

### **36-3.01D(3)(b)(ii) Inertial Profiler Calibration and Verification Tests**

Notify the Engineer at least 2 business days before performing calibration and verification testing of the inertial profiler.

Conduct the following calibration and verification tests in the Engineer's presence each day before profiling:

1. Block test to verify the accuracy of the height sensor under California Test 387
2. Bounce test to verify the combined accuracy of the height sensor and accelerometer under California Test 387
3. Distance measurement instrument test to verify the accuracy of the distance measuring instrument under California Test 387
4. Manufacturer's recommended tests

Conduct a cross-correlation verification test of the inertial profiler in the Engineer's presence before performing the initial profiling. A verification test must be performed at least annually. Conduct 5 repeat runs of the inertial profiler on an authorized test section. The test section must be a 0.1-mile segment of existing concrete pavement if you are measuring new concrete pavement or existing asphalt concrete pavement if you are measuring new asphalt concrete pavement. Where micro-milled asphalt concrete surfaces are to be measured, the cross-correlation verification test may be performed on the initial 0.1-mile section of milled asphalt concrete surface. Calculate a cross-correlation to determine the repeatability of your device under California Test 387 using a ProVAL profiler certification analysis with a 3-foot maximum offset. The cross-correlation must be a minimum of 0.92.

### **36-3.01D(3)(b)(iii) Performing, Analyzing, and Collecting Data**

Operate the inertial profiler under the manufacturer's instructions and AASHTO R 57 at 1-inch recording intervals using a minimum 4-inch line laser sensor.

Establish semipermanent reference points for aligning inertial profiler runs and locating potential corrective grinding. Place semipermanent reference points at a frequency of 0.5 mile or less along the edge of the traffic lane or roadway. Maintain semipermanent reference points until Department acceptance testing is completed.

Collect profiling data under AASHTO R 57 and analyze it using 250 mm and International Roughness Index filters.

While collecting the profile data to determine the International Roughness Index values, record semipermanent reference points and the beginning and end of the following locations in the raw profile data:

1. Bridge approach slabs
2. Bridges
3. Culverts visible on the roadway surface
4. Railroad crossings
5. At-grade intersections
6. Project limits
7. Change in pavement type

Profile the left and right wheel paths of each lane.

Determine the Mean Roughness Index for 0.1-mile fixed sections using the ProVAL ride quality analysis with a 250 mm filter. Calculate the Mean Roughness Index of each lane. A partial section equal or less than 0.05-mile length is to be included with the previous or the subsequent segment forming up to a 0.15-mile length. A partial section greater than 0.05 mile, but less than 0.10 mile, is a separate segment. Sections must comply with the Mean Roughness Index specifications for a full section. A weighted average calculation will be used for those partial sections that have been combined with previous or subsequent segments.

Determine the areas of localized roughness using ProVAL with the average International Roughness Index values for each wheel path using a 25-foot continuous interval and a 250 mm filter.

#### **36-3.01D(4) Department Acceptance**

The Department accepts pavement surfaces for smoothness based on compliance with the smoothness specifications for the type of pavement surface specified.

For areas that require pavement smoothness determined using a 12-foot straightedge, the pavement surface must not vary from the lower edge of the straightedge by more than:

1. 0.01 foot when the straightedge is laid parallel with the centerline
2. 0.02 foot when the straightedge is laid perpendicular to the centerline and extends from edge to edge of a traffic lane
3. 0.02 foot when the straightedge is laid within 24 feet of a pavement conform

Pavement located within 12.5 feet of the ends of bridges, approach slabs, culverts visible on the roadway surface, railroad crossings, at-grade intersections, and transverse surface joints with existing pavement must comply with Mean Roughness Index and 12-foot straightedge requirements. The requirements for areas of localized roughness do not apply to these areas.

For each 0.1-mile section, your International Roughness Index values must be within 10 percent of the Department's International Roughness Index values. The Engineer may order you to recalibrate your inertial profiler equipment and reprofile. If your results are inaccurate due to operator error, the Engineer may disqualify your inertial profiler operator.

#### **36-3.02 MATERIALS**

Not Used

#### **36-3.03 CONSTRUCTION**

Notify the Engineer of the start location by station and start time at least 2 business days before each day of profiling.

Before profiling, remove foreign objects from the pavement surface and mark the beginning and ending station on the pavement shoulder. The stationing must be the same when profiling more than one surface.

#### **36-3.04 PAYMENT**

Not Used

AA

### 37 BITUMINOUS SEALS

01-20-17

Replace section 37 with:

07-15-16

### 37 SEAL COATS

#### 37-1 GENERAL

#### 37-1.01 GENERAL

##### 37-1.01A Summary

Section 37-1 includes general specifications for applying seal coats.

##### 37-1.01B Definitions

Reserved

##### 37-1.01C Submittals

At least 10 days before the preconstruction meeting submit a list of participants in the preconstruction meeting. Provide each participant's name, employer, title, and role in the production and placement of the seal coats.

At least 10 days before starting seal coat activities, submit the names of the authorized laboratories for quality control testing.

For each delivery of asphalt binder or asphaltic emulsion to the job site, submit a certificate of compliance and a copy of the specified test results.

For a seal coat that uses crumb rubber modifier, submit a Crumb Rubber Usage Report form monthly and at the end of project.

##### 37-1.01D Quality Assurance

##### 37-1.01D(1) General

For aggregate testing, quality control laboratories must be in compliance with the Department's Independent Assurance Program to be an authorized laboratory. Quality control personnel must be qualified under the Department's Independent Assurance Program.

01-20-17

For emulsion testing, quality control laboratories must participate in the AASHTO re:source proficiency sample program.

07-15-16

##### 37-1.01D(2) Preconstruction Meeting

Hold a preconstruction meeting within 5 days before start of seal coat work at a mutually agreed time and place with the Engineer and your:

1. Project superintendent
2. Project foreman
3. Traffic control foreman

Make arrangements for the conference facility. Preconstruction meeting participants must sign an attendance sheet provided by the Engineer. Be prepared to discuss:

1. Quality control testing
2. Acceptance testing
3. Seal coat placement
4. Proposed application rates for asphaltic emulsion or asphalt binder and aggregate.

5. Training on placement methods
6. Checklist of items for proper placement
7. Unique issues specific to the project, including:
  - 7.1. Weather
  - 7.2. Alignment and geometrics
  - 7.3. Traffic control requirements
  - 7.4. Haul distances
  - 7.5. Presence and absence of shaded areas
  - 7.6. Any other local conditions
8. Contingency plan for material deliveries, equipment breakdowns, and traffic handling
9. Who in the field has authority to adjust application rates and how adjustments will be documented
10. Schedule of sweepings

### **37-1.02 MATERIALS**

Not Used

### **37-1.03 CONSTRUCTION**

#### **37-1.03A General**

If seal coat activities affect access to public parking, residential property, or commercial property, post signs at 100-foot intervals on the affected streets. Signs must display *No Parking – Tow Away*. Signs must state the dates and hours parking or access will be restricted. Notify residents, businesses, and local agencies at least 24 hours before starting activities. The notice must:

1. Describe the work to be performed
2. Detail streets and limits of activities
3. Indicate dates and work hours
4. Be authorized

Asphaltic emulsion or asphalt binder for seal coats may be reheated if necessary. After loading the asphaltic emulsion or asphalt binder into a truck for transport to the job site, do not heat asphaltic emulsion above 160 degrees F and asphalt rubber binder above 425 degrees F. During reheating, circulate or agitate the asphaltic emulsion or asphalt binder to prevent localized overheating.

Except for fog seals, apply quick setting Grade 1 asphaltic emulsions at a temperature from 75 to 130 degrees F and apply quick setting Grade 2 asphaltic emulsions at a temperature from 110 to 185 degrees F.

You determine the application rates for asphaltic emulsion or asphalt binder and aggregate and the Engineer authorizes the application rates.

#### **37-1.03B Equipment**

A self-propelled distributor truck for applying asphaltic emulsion or asphalt binder must be equipped with:

1. Pressure-type system with insulated tanks with circulating unit
2. Spray bars:
  - 2.1. With minimum length of 9 feet and full-circulating type
  - 2.2. With full-circulating-type extensions if needed to cover a greater width
  - 2.3. Adjustable to allow positioning at various heights above the surface to be treated
  - 2.4. Operated by levers such that 1 or all valves may be quickly opened or closed in one operation
3. Devices and charts to provide for accurate and rapid determination and control of asphaltic emulsion or asphalt binder quantities being applied. Include an auxiliary wheel type meter that registers:
  - 3.1. Speed in ft/min
  - 3.2. Trip by count
  - 3.3. Total distance in feet
4. Distribution system:

- 4.1. Capable of producing a uniform application of asphaltic emulsion or asphalt binder in controlled quantities ranging from 0.02 to 1 gal/sq yd of surface and at a pressure ranging from 25 to 75 psi
- 4.2. Pumps that spray asphaltic emulsion or asphalt binder within 0.02 gal/sq yd of the set rate
- 4.3. With a hose and nozzle for application of asphaltic emulsion to areas inaccessible to the spray bar
- 4.4. With pressure gauges and a thermometer for determining temperatures of the asphaltic emulsion or asphalt binder

You may use cab-controlled valves for the application of asphaltic emulsion or asphalt binder. The valves controlling the flow from nozzles must act positively to provide a uniform unbroken application of asphaltic emulsion or asphalt binder.

Maintain distributor and storage tanks at all times to prevent dripping.

#### **37-1.04 PAYMENT**

Not Used

### **37-2 CHIP SEALS**

#### **37-2.01 GENERAL**

##### **37-2.01A General**

##### **37-2.01A(1) Summary**

Section 37-2.01 includes general specifications for applying chip seals.

##### **37-2.01A(2) Definitions**

Reserved

##### **37-2.01A(3) Submittals**

At least 15 days before starting placement of chip seal, submit:

1. Samples for:
  - 1.1. Asphaltic emulsion chip seal, two 1-quart wide mouth plastic containers with screw top lid of asphaltic emulsion
  - 1.2. Polymer modified asphaltic emulsion chip seal, two 1-quart wide mouth plastic containers with screw top lid of polymer modified asphaltic emulsion
  - 1.3. Asphalt rubber binder chip seal, two 1-quart cans of base asphalt binder
  - 1.4. Asphalt rubber binder chip seal, five 1-quart cans of asphalt rubber binder
2. Asphaltic emulsion, polymer modified asphaltic emulsion, asphalt binder or asphalt rubber binder data as follows:
  - 2.1. Supplier and Type/Grade of asphaltic emulsion or asphalt binder
  - 2.2. Type of modifier used including polymer or crumb rubber or both
  - 2.3. Percent of crumb rubber, if used as modifier
  - 2.4. Copy of the specified test results for asphaltic emulsion or asphalt binder
3. 50 lb of uncoated aggregate
4. Aggregate test results for the following:
  - 4.1. Gradation
  - 4.2. Los Angeles Rattler
  - 4.3. Percent of crushed particles
  - 4.4. Flat and elongated particles
  - 4.5. Film stripping
  - 4.6. Cleanness value
  - 4.7. Durability
5. Vialit test results

Submit quality control test results for the quality characteristics within the reporting times allowance after sampling shown in the following table:

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**Quality Control Test Result Reporting**

Quality characteristic	Maximum reporting time allowance
Los Angeles Rattler loss (max, %)	48 hours
Percent of crushed particles (min, %)	48 hours
Flat and elongated particles (max by weight at 3:1, %)	48 hours
Film stripping (max, %)	48 hours
Durability (min)	48 hours
Gradation (percentage passing)	24 hours
Cleanness value (min)	24 hours
Asphaltic emulsion spread rate (gal/sq yd)	24 hours

Within 3 days after taking asphaltic emulsion or asphalt binder quality control samples, submit the authorized laboratory's test results.

**37-2.01A(4) Quality Assurance**

**37-2.01A(4)(a) General**

Reserved

**37-2.01A(4)(b) Quality Control**

**37-2.01A(4)(b)(i) General**

Reserved

**37-2.01A(4)(b)(ii) Aggregate**

All tests must be performed on uncoated aggregate except for film stripping which must be performed on precoated aggregate.

For aggregate, the authorized laboratory must perform sampling and testing at the specified frequency and location for the following quality characteristics:

**Aggregate Quality Control Requirements**

Quality characteristic	Test method	Minimum sampling and testing frequency	Location of sampling
Los Angeles Rattler loss (max, %) At 100 revolutions At 500 revolutions	California Test 211	1st day of production	See California Test 125
Percent of crushed particles Coarse aggregate (min, %) One-fractured face Two-fractured faces Fine aggregate (min, %) (Passing No. 4 sieve and retained on No. 8 sieve) One fractured face	AASHTO T 335	1st day of production	See California Test 125
Flat and elongated particles (max by weight at 3:1, %)	ASTM D4791	1st day of production	See California Test 125
Film stripping (max, %)	California Test 302	1st day of production	See California Test 125
Durability (min)	California Test 229	1st day of production	See California Test 125
Gradation (% passing)	California Test 202	2 per day	See California Test 125
Cleanness value (min)	California Test 227	2 per day	See California Test 125

**37-2.01A(4)(b)(iii) Chip Seals**

For a chip seal, the authorized laboratory must perform sampling and testing at the specified frequency and location for the following quality characteristics:

**Chip Seal Quality Control Requirements**

Quality characteristic	Test method	Minimum sampling and testing frequency	Location of sampling
Asphaltic emulsion binder spread rate (gal/sq yd)	California Test 339	1 per day per distributor truck	Pavement surface

**37-2.01A(4)(c) Department Acceptance**

Department Acceptance shall not apply to identified areas where the existing surfacing before application of chip seal, contains defective areas as determined by the Engineer and Contractor. At least 7 days before starting placement of the chip seal, the Contractor shall submit a written list of existing defective areas, identifying the lane direction, lane number, starting and ending highway post mile locations, and defect type. The Engineer must agree on which of the identified areas are defective.

Defective areas are defined as one of the following:

1. Areas with wheel path rutting in excess of 3/8 inch when measured by placing a straightedge 12 feet long on the finished surface perpendicular to the center line and measuring the vertical distance between the finished surface and the lower edge of the straightedge
2. Areas exhibiting flushing

For a chip seal, acceptance is based on visual inspection for the following:

1. Uniform surface texture
2. Raveling, which consists of the separation of the aggregate from the asphaltic emulsion or asphalt binder
3. Flushing, which consists of the occurrence of a film of asphaltic material on the surface of the chip seal.
4. Streaking, which consists of alternating longitudinal bands of asphaltic emulsion or asphalt binder without uniform aggregate retention, approximately parallel with the lane line.

Areas of raveling, flushing or streaking that are greater than 0.5 sq ft shall be considered defective and must be repaired.

Raveling and streaking must be repaired by placing an additional layer of chip seal over the defective area.

For asphaltic emulsion or asphalt binder, acceptance is based on the Department’s sampling and testing for compliance with the requirements for the quality characteristics specified.

For aggregate, acceptance is based on the Department’s sampling and testing for compliance with the requirements shown in the following table:

**Chip Seal Aggregate Acceptance Criteria**

Quality characteristic	Test method	Requirements
Los Angeles Rattler loss (max, %) At 100 revolutions At 500 revolutions	California Test 211	10 40
Percent of crushed particles: Coarse aggregate (min, %) One-fractured face Two-fractured faces Fine aggregate (min, %) (Passing No. 4 sieve and retained on No. 8 sieve) One fractured face	AASHTO T 335	95 90 70
Flat and elongated particles (max by weight at 3:1, %)	ASTM D4791	10
Film stripping (max, %)	California Test 302	25
Durability (min)	California Test 229	52
Gradation (% passing by weight)	California Test 202	Aggregate Gradation table shown under Materials for the chip seal type specified.
Cleanness value (min)	California Test 227	80

If test results for the aggregate gradation do not comply with specifications, you may remove the chip seal represented by these tests or request that it remain in place with a payment deduction. The deduction is \$1.75 per ton for the aggregate represented by the test results.

If test results for aggregate cleanness value do not comply with the specifications, you may remove the chip seal represented by these tests or you may request that the chip seal remain in place with a pay deduction corresponding to the cleanness value shown in the following table:

**Chip Seal Cleanness Value Deductions**

Cleanness value	Deduction
80 or over	None
79	\$2.00 /ton
77-78	\$4.00 /ton
75-76	\$6.00 /ton

If the aggregate cleanness value is less than 75, remove the chip seal.

**37-2.01B Materials**

**37-2.01B(1) General**

Reserved

**37-2.01B(2) Asphaltic Emulsions and Asphalt Binders**

Reserved

**37-2.01B(3) Aggregate**

**37-2.01B(3)(a) General**

Aggregate must be broken stone, crushed gravel, or both.

Aggregate must comply with the requirements shown in the following table:

### Chip Seal Aggregate Requirements

Quality characteristic	Test method	Requirements
Los Angeles Rattler loss (max, %) At 100 revolutions At 500 revolutions	California Test 211	10 40
Percent of crushed particles Coarse aggregate (min, %) One-fractured face Two-fractured faces Fine aggregate (min, %) (Passing No. 4 sieve and retained on No. 8 sieve) One fractured face	AASHTO T 335	95 90 70
Flat and elongated particles (max by weight at 3:1, %)	ASTM D4791	10
Film stripping (max, %)	California Test 302	25
Durability (min)	California Test 229	52
Gradation (% passing by weight)	California Test 202	Aggregate Gradation table shown under Materials for the chip seal type specified.
Cleanness value (min)	California Test 227	80

The authorized laboratory must conduct the Vialit test using the proposed asphaltic emulsion or asphalt binder and aggregate for compliance with the requirements shown in the following table:

### Chip Retention Requirements

Quality characteristic	Test method	Requirement
Chip retention (%)	Vialit test method for aggregate in chip seals, French chip (Modified) <sup>a</sup>	95

<sup>a</sup>The asphaltic emulsion or asphalt binder must be within the field placement temperature range and application rate during specimen preparation. For asphalt binder cure the specimen for first 2 hours at 100 °F.

#### 37-2.01B(3)(b) Precoated Aggregate

Precoating of aggregate must be performed at a central mixing plant. The plant must be authorized under the Department's *MPQP*.

When precoating aggregate, do not recombine fine materials collected in dust control systems.

Precoated aggregate must be preheated from 260 to 325 degrees F. Coat with any of the asphalts specified in the table titled "Performance Graded Asphalt Binder" in section 92. The asphalt must be from 0.5 to 1.0 percent by weight of dry aggregate. You determine the exact asphalt rate for precoating of aggregate.

Do not stockpile precoated aggregate.

#### 37-2.01C Construction

##### 37-2.01C(1) General

For chip seals on 2-lane, 2-way roadways, place a W8-7 (LOOSE GRAVEL) sign and a W13-1 (35) plaque at 2,000-foot maximum intervals along each side of the traveled way where aggregate is spread on a traffic lane and at public roads or streets entering the chip seal area. Place the 1st W8-7 sign in each direction where traffic first encounters the loose aggregate, regardless of which lane the aggregate is spread on. A W13-1 (35) plaque is not required where the posted speed limit is less than 40 mph.

For chip seals on freeways, expressways, and multilane conventional highways, place a W8-7, (LOOSE GRAVEL) sign and a W13-1 (35) plaque at 2,000-foot maximum intervals along the outside edge of the Diamond Springs Parkway – Phase 1A – SR-49 Realignment

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traveled way nearest to the lane worked on, at on ramps, and at public roads or streets entering the chip seal area. Place the 1st W8-7 sign where the aggregate starts with respect to the direction of travel on that lane. A W13-1 (35) plaque is not required where the posted speed limit is less than 40 mph.

Pilot cars must have cellular or radio contact with other pilot cars and personnel in the work zone. The maximum speed of the pilot cars conveying or controlling traffic through the traffic control zone must be 15 mph on 2-lane, two-way highways and 25 mph on multilane divided and undivided highways. Pilot cars must only use traffic lanes open to traffic.

On the days that closures are not allowed, you may use a moving closure to maintain the seal coat surface. The moving closure is only allowed during daylight hours when traffic will be the least inconvenienced and delayed. The Engineer determines the hours for the moving closure.

Maintain signs in place at each location until the final sweeping of the chip seal surface for that location is complete. Signs may be set on temporary portable supports with the W13-1 sign below the W8-7 sign or on barricades with the W13-1 sign alternating with the W8-7 sign.

Schedule chip seal activities so that the chip seals are placed on both lanes of the traveled way each work shift.

If traffic is routed over a surface where a chip seal application is intended, the chip seal must not be applied to more than half the width of the traveled way at a time, and the remaining width must be kept free of obstructions and open to traffic until the previously applied width is ready for traffic use.

Wherever maintenance sweeping of the chip seal surface is complete, place permanent traffic stripes and pavement markings within 10 days.

If you fail to place the permanent traffic stripes and pavement markings within the specified time, the Department withholds 50 percent of the estimated value of the chip seal work completed that has not received permanent traffic stripes and pavement markings.

### **37-2.01C(2) Equipment**

Equipment for chip seals must include and comply with the following:

1. Aggregate haul trucks must have:
  - 1.1. Tailgate that discharge aggregate
  - 1.2. Device to lock onto the rear aggregate spreader hitch
  - 1.3. Dump bed that will not push down on the spreader when fully raised
  - 1.4. Dump bed that will not spill aggregate on the roadway when transferred to the spreader hopper
  - 1.5. Tarpaulin to cover precoated aggregate when haul distance exceeds 30 minutes or ambient temperature is less than 65 degrees F
2. Self-propelled aggregate spreaders must have:
  - 2.1. Aggregate hopper in the rear
  - 2.2. Belt conveyor that carries the aggregate to the front
  - 2.3. Spreading hopper capable of providing a uniform aggregate spread rate over the entire width of the traffic lane in 1 application.
3. Self-propelled power brooms must:
  - 3.1. Not be steel-tined brooms on emulsion chip seals
  - 3.2. Be capable of removing loose aggregate adjacent to barriers that prevent aggregate from being swept off the roadway, including curbs, gutters, dikes, berms, and railings
4. Pneumatic or foam filled rubber tired rollers must:
  - 4.1. Be an oscillating type at least 4 feet wide
  - 4.2. Be self-propelled and reversible
  - 4.3. Have tires of equal size, diameter, type, and ply
  - 4.4. Carry at least 3,000 lbs of load on each wheel
  - 4.5. Have tires with an air pressure of 100 ± 5 psi or be foam filled

### **37-2.01C(3) Surface Preparation**

Before applying chip seals, cover manholes, valve and monument covers, grates, or other exposed facilities located within the area of application, using a plastic or oil resistant construction paper secured by tape or adhesive to the facility being covered. Reference the covered facilities with enough control points to relocate the facilities after the application of the chip seal.

Immediately before applying chip seals, clean the surface to receive a chip seal by removing any extraneous material affecting adhesion of the chip seal with the existing surface and drying. Use self-propelled power brooms to clean the existing pavement.

### **37-2.01C(4) Placement**

#### **37-2.01C(4)(a) General**

Schedule the operations so that chip seals are placed on both lanes of the traveled way each work shift. At the end of the work shift, the end of the chip seals on both lanes must generally match.

#### **37-2.01C(4)(b) Applying Asphaltic Emulsions or Asphalt Binders**

Prevent spraying on existing pavement not intended for chip seals or on previously applied chip seals using a material such as building paper. Remove the material after use.

Align longitudinal joints between chip seal applications with designated traffic lanes.

For asphaltic emulsion or asphalt binder, overlap longitudinal joints by not more than 4 inches. You may overlap longitudinal joints up to 8 inches if authorized.

For areas not accessible to a truck distributor bar apply:

1. Asphaltic emulsions by hand spraying
2. Asphalt binders with a squeegee or other authorized means

You may overlap the asphaltic emulsion or asphalt binder applications before the application of aggregate at longitudinal joints.

Do not apply the asphaltic emulsion or asphalt binder unless there is sufficient aggregate at the job site to cover the asphaltic emulsion or asphalt binder.

Discontinue application of asphaltic emulsion or asphalt binder early enough to comply with lane closure requirements. Apply to 1 lane at a time and cover the lane width entirely in 1 operation.

#### **37-2.01C(4)(c) Spreading Aggregates**

##### **37-2.01C(4)(c)(i) General**

Prevent vehicles from driving on asphaltic emulsion or asphalt binder before spreading aggregate.

Spread aggregate within 10 percent of your determined rate.

Spread aggregate at a uniform rate over the full lane width in 1 application. Apply to 1 lane at a time.

Sweep excess aggregate at joints before spreading adjacent aggregate.

Operate the spreader at speeds slow enough to prevent aggregate from rolling over after dropping.

If the spreader is not moving, aggregate must not drop. If you stop spreading and aggregate drops, remove the excess aggregate before resuming activities.

##### **37-2.01C(4)(c)(ii) Precoated Aggregate Application**

During transit, cover precoated aggregate with tarpaulins if the ambient air temperature is below 65 degrees F or the haul time exceeds 30 minutes.

When applied, precoated aggregate must be from 225 to 325 degrees F.

### **37-2.01C(4)(d) Finishing**

#### **37-2.01C(4)(d)(i) General**

Remove piles, ridges, or unevenly distributed aggregate. Repair permanent ridges, bumps, streaks or depressions in the finished surface. Spread additional aggregate and roll if aggregate is picked up by rollers or vehicles.

Chip seal joints between adjacent applications of a chip seal must be smooth, straight, uniform, and completely covered.

A coverage is 1 roller movement over the entire width of lane. A pass is 1 roller movement parallel to the chip seal application in either direction. Overlapping passes are part of the coverage being made and are not part of a subsequent coverage. Do not start a new coverage until completing the previous coverage.

Before opening to traffic, finish the chip seals in the following sequence:

1. Perform initial rolling consisting of 1 coverage with a pneumatic-tired roller
2. Perform final rolling consisting of 2 coverages with a pneumatic-tired roller
3. Sweep excess aggregate from the roadway and adjacent abutting areas
4. Apply a flush coat if specified
5. Remove covers from the facilities

#### **37-2.01C(4)(d)(ii) Traffic Control With Pilot Car**

For 2-lane 2-way roadways under 1-way traffic control, upon completion of final rolling, traffic must be controlled with pilot cars and routed over the new chip seal for a period of 2 to 4 hours before opening the lane to traffic not controlled with pilot cars.

For multilane roadways, when traffic is controlled with pilot cars, a maximum of 1 lane in the direction of travel must be open to traffic. Traffic must be controlled with pilot cars and be routed on the new chip seal surface of the lane for a minimum of 2 hours after completion of the initial sweeping and before opening the lane to traffic not controlled with pilot cars. Once traffic controlled with pilot cars is routed over the chip seal at a particular location, continuous control must be maintained at that location until the chip seal placement and sweeping on adjacent lanes to receive a chip seal is completed.

#### **37-2.01C(4)(d)(iii) Sweeping**

Sweeping must be performed after the chip seal has set and there is no damage or dislodging of aggregate from the chip seal surface. As a minimum, sweeping is required at the following times:

1. On 2-lane 2-way roadways, from 2 to 4 hours after traffic, controlled with pilot cars, has been routed on the chip seal
2. On multilane roadways, from 2 to 4 hours after aggregate have been placed
3. In addition to previous sweeping, perform final sweeping immediately before opening any lane to public traffic, not controlled with pilot cars

#### **37-2.01C(4)(d)(iv) Excess Aggregate**

Dispose of excess aggregate. If ordered, salvaging and stockpiling of excess aggregate is change order work.

#### **37-2.01C(4)(e) Chip Seal Maintenance**

Perform sweeping on the morning following the application of aggregate on any lane that has been open to traffic not controlled with pilot cars and before starting any other activities.

Chip seal surfaces must be maintained for 4 consecutive days from the day aggregate is applied. Maintenance must include sweeping to maintain a surface free of loose aggregate and to prevent formation of corrugations. Sweeping must not dislodge aggregate set in asphaltic emulsion or asphalt binder.

After 4 consecutive days, excess aggregate must be removed from the paved areas.

### **37-2.01D Payment**

If there is no bid item for traffic control system, furnishing and using a pilot car is included in the various items of the work involved in applying the chip seal.

The payment quantity for precoated aggregate is the weight measured after the aggregate is preheated and precoated with asphalt binder.

If recorded batch weights are printed automatically, the payment quantity for aggregate is the weight determined from the printed batch weights if:

1. Total weight for the precoated aggregate per batch is printed
2. Total asphalt binder weight per batch is printed
3. Zero tolerance weight is printed before weighing the first batch and after weighing the last batch for each truckload
4. Time, date, mix number, load number, and truck identification are correlated with a load slip
5. Copy of the recorded batch weights is certified by a licensed weighmaster

### **37-2.02 ASPHALTIC EMULSION CHIP SEALS**

#### **37-2.02A General**

##### **37-2.02A(1) Summary**

Section 37-2.02 includes specifications for applying asphaltic emulsion chip seals. An asphaltic emulsion chip seal includes applying an asphaltic emulsion, followed by aggregate, and then a flush coat.

A double asphaltic emulsion chip seal is the application of an asphaltic emulsion followed by aggregate, applied twice in sequence and then a flush coat.

##### **37-2.02A(2) Definitions**

Reserved

##### **37-2.02A(3) Submittals**

Immediately after sampling, submit two 1-quart plastic containers of asphaltic emulsion taken in the presence of the Engineer. Samples must be submitted in insulated shipping container.

##### **37-2.02A(4) Quality Assurance**

###### **37-2.02A(4)(a) General**

Reserved

###### **37-2.02A(4)(b) Quality Control**

###### **37-2.02A(4)(b)(i) General**

Reserved

###### **37-2.02A(4)(b)(ii) Asphaltic Emulsions**

Circulate asphaltic emulsion in the distributor truck before sampling. Take samples from the distributor truck at mid load or from a sampling tap or thief. Before taking samples, draw and dispose of 1 gallon. In the presence of the Engineer, take two 1-quart samples in a plastic container with lined sealed lid for acceptance testing.

For asphaltic emulsion, the authorized laboratory must perform quality control sampling and testing at the specified frequency and location for the following quality characteristics:



**Asphaltic Emulsion**

Quality characteristic	Test method	Minimum sampling and testing frequency	Sampling location
Saybolt Furol Viscosity, at 25 °C (Saybolt Furol seconds)	AASHTO T 59	Minimum 1 per day per delivery truck	Distributor truck
Sieve Test (%)			
Storage stability, 1 day (%)			
Residue by distillation (%)			
Particle charge <sup>a</sup>			
Tests on Residue from Distillation Test:			
Penetration, 25 °C	AASHTO T 49	Minimum 1 per day per delivery truck	Distributor truck
Ductility	AASHTO T 51		
Solubility in trichloroethylene	AASHTO T 44		

<sup>a</sup>If the result of the particle charge is inconclusive, the asphaltic emulsion must be tested for pH under ASTM E70. Grade QS1h asphaltic emulsion must have a minimum pH of 7.3. Grade CQS1h asphaltic emulsion must have a maximum pH of 6.7.

**37-2.02A(4)(c) Department Acceptance**

Aggregate acceptance is based on the Department's sampling and testing for compliance with the requirements shown in the following table:

**Aggregate Gradation Acceptance Criteria**

Quality characteristic	Test method	Requirement		
		3/8"	5/16"	1/4"
Gradation (% passing by weight)	California Test 202	3/8"	5/16"	1/4"
Sieve size:		--	--	--
3/4"		100	--	--
1/2"		85-100	100	100
3/8"		0-15	0-50	60-85
No. 4		0-5	0-15	0-25
No. 8		--	0-5	0-5
No. 16		--	0-3	0-3
No. 30		0-2	0-2	0-2
No. 200				

**37-2.02B Materials**

**37-2.02B(1) General**

Reserved

**37-2.02B(2) Asphaltic Emulsions**

Reserved

**37-2.02B(3) Aggregate**

Aggregate gradation for an asphaltic emulsion chip seal must comply with the requirements shown in the following table:

**Asphaltic Emulsion Chip Seal Aggregate Gradation**

Quality characteristic	Test method	Requirement		
Gradation (% passing by weight)	California Test 202	3/8"	5/16"	1/4"
Sieve size:				
3/4"		--	--	--
1/2"		100	--	--
3/8"		85–100	100	100
No. 4		0–15	0–50	60–85
No. 8		0–5	0–15	0–25
No. 16		--	0–5	0–5
No. 30		--	0–3	0–3
No. 200	0–2	0–2	0–2	

**37-2.02C Construction**

**37-2.02C(1) General**

Reserved

**37-2.02C(2) Asphaltic Emulsions**

Asphaltic emulsions must be applied within the application rate ranges shown in the following table:

**Asphaltic Emulsion Application Rates**

Aggregate gradation	Application rate range (gal/sq yd)
3/8"	0.30–0.45
5/16"	0.25–0.35
1/4"	0.20–0.30

For double asphaltic emulsion chip seals, the asphaltic emulsions must be applied within the application rates shown in the following table:

**Asphaltic Emulsion Application Rates**

Double chip seals	Application rate range (gal/sq yd)
1st application	0.30–0.45
2nd application	0.20–0.30

When applied, the temperature of the asphaltic emulsions must be from 130 to 180 degrees F.

Apply asphaltic emulsions when the ambient air temperature is from 65 to 110 degrees F and the pavement surface temperature is at least 80 degrees F.

Do not apply asphaltic emulsions when weather forecasts predict the ambient air temperature will fall below 39 degrees F within 24 hours after application.

**37-2.02C(3) Spreading Aggregates**

Aggregate must be spread within the spread rate ranges shown in the following table:

**Aggregate Spread Rates**

Aggregate gradation	Spread rate range (lb/sq yd)
3/8"	20–30
5/16"	16–25
1/4"	12–20

For double asphaltic emulsion chip seals, aggregate must be spread within the spread rate ranges shown in the following table:

<b>Aggregate Spread Rates</b>	
Double chip seal	Spread rate range (lb/sq yd)
1st application	23–30
2nd application	12–20

Remove excess aggregate on the 1st application before the 2nd application of asphaltic emulsion.

You may stockpile aggregate for asphaltic emulsion chip seals if you prevent contamination. Aggregate must have a damp surface at spreading. If water visibly separates from the aggregate, do not spread. You may re-dampen aggregate in the delivery vehicle.

Spread aggregate before an asphaltic emulsion sets or breaks.

Do not spread aggregate more than 2,500 feet ahead of the completed initial rolling.

**37-2.02D Payment**

Not Used

**37-2.03 POLYMER MODIFIED ASPHALTIC EMULSION CHIP SEALS**

**37-2.03A General**

**37-2.03A(1) Summary**

Section 37-2.03 includes specifications for applying polymer modified asphaltic emulsion chip seals. A polymer modified asphaltic emulsion chip seal includes applying a polymer modified asphaltic emulsion, followed by aggregate, and then a flush coat.

A double polymer modified asphaltic emulsion chip seal is the application of a polymer modified asphaltic emulsion followed by aggregate, applied twice in sequence and then a flush coat.

**37-2.03A(2) Definitions**

Reserved

**37-2.03A(3) Submittals**

Immediately after sampling, submit two 1-quart cans of polymer modified asphaltic emulsion taken in the presence of the Engineer. A sample must be submitted in an insulated shipping container.

**37-2.03A(4) Quality Assurance**

**37-2.03A(4)(a) General**

Reserved

**37-2.03A(4)(b) Quality Control**

**37-2.03A(4)(b)(i) General**

Reserved

**37-2.03A(4)(b)(ii) Polymer Modified Asphaltic Emulsions**

Circulate polymer modified asphaltic emulsions in the distributor truck before sampling. Take samples from the distributor truck at mid load or from a sampling tap or thief. Before taking samples, draw and dispose of 1 gallon. In the presence of the Engineer, take two 1-quart samples for acceptance testing.

For polymer modified asphaltic emulsions, the authorized laboratory must perform quality control sampling and testing at the specified frequency and location for the following quality characteristics:

**Polymer Modified Asphaltic Emulsion**

Quality characteristic	Test method	Minimum sampling and testing frequency	Sampling location
Saybolt Furol Viscosity, at 50 °C (Saybolt Furol seconds)	AASHTO T 59	Minimum 1 per day per delivery truck	Distributor truck
Settlement, 5 days (max, %)			
Storage stability test, 1 day (max, %)			
Sieve test (max, %)			
Demulsibility (min, %)			
Particle charge			
Ash content (max, %)			
Residue by evaporation (min, %)	California Test 331		
Tests on residue from evaporation test:			
Penetration, 25 °C	AASHTO T 49	Minimum 1 per day per delivery truck	Distributor truck
Penetration, 4 °C, 200g for 60 seconds	AASHTO T 49		
Ductility, 25 °C (min, mm)	AASHTO T 51		
Torsional recovery (min, %)	California Test 332		
Ring and Ball Softening Point (min, °F)	AASHTO T 53		

**37-2.03A(4)(c) Department Acceptance**

Aggregate acceptance is based on the Department's sampling and testing for compliance with the requirements shown in the following table:

**Aggregate Gradation Acceptance Criteria**

Quality characteristic	Test method	Requirement		
		3/8"	5/16"	1/4"
Gradation (% passing by weight)	California Test 202	3/8"	5/16"	1/4"
Sieve size:		--	--	--
3/4"		100	--	--
1/2"		85–100	100	100
3/8"		0–15	0–50	60–85
No. 4		0–5	0–15	0–25
No. 8		--	0–5	0–5
No. 16		--	0–3	0–3
No. 30		0–2	0–2	0–2
No. 200				

**37-2.03B Materials**

**37-2.03B(1) General**

Reserved

**37-2.03B(2) Polymer Modified Asphaltic Emulsions**

A polymer modified asphaltic emulsion must include elastomeric polymer.

A polymer modified asphaltic emulsion must be Grade PMRS2, PMRS2h, PMCRS2, or PMCRS2h. Polymer content in percent by weight does not apply.

A polymer modified asphaltic emulsion must comply with section 94 and the quality characteristic requirements in the following table:

**Polymeric Asphaltic Emulsion**

Quality characteristic	Test method	Requirement
Penetration, 4 °C, 200g for 60 seconds (min)	AASHTO T 49	6
Ring and Ball Softening Point (min, °F)	AASHTO T 53	135

**37-2.03B(3) Aggregate**

The aggregate gradation for a polymer modified asphaltic emulsion chip seal must comply with the requirements shown in the following table:

**Asphaltic Emulsion Chip Seal Aggregate Gradation**

Quality characteristic	Test method	Requirement		
		3/8"	5/16"	1/4"
Gradation (% passing by weight)	California Test 202	3/8"	5/16"	1/4"
Sieve Size		--	--	--
3/4"		100	--	--
1/2"		85-100	100	100
3/8"		0-15	0-50	60-85
No. 4		0-5	0-15	0-25
No. 8		--	0-5	0-5
No. 16		--	0-3	0-3
No. 30		0-2	0-2	0-2
No. 200				

**37-2.03C Construction**

Polymer modified asphaltic emulsions must be applied within the application rate ranges shown in the following table:

**Polymer Modified Asphaltic Emulsion Application Rates**

Aggregate gradation	Application rate range (gal/sq yd)
3/8"	0.30-0.45
5/16"	0.25-0.35
1/4"	0.20-0.30

For double polymer modified asphaltic emulsion chip seals, polymer modified asphaltic emulsions must be applied within the application rates shown in the following table:

**Polymer Modified Asphaltic Emulsion Application Rates**

Double application	Application rate range (gal/sq yd)
1st application	0.30-0.45
2nd application	0.20-0.30

Apply polymer modified asphaltic emulsions when the ambient air temperature is from 60 to 105 degrees F and the pavement surface temperature is at least 80 degrees F.

Do not apply polymer modified asphaltic emulsions when weather forecasts predict the ambient air temperature will fall below 39 degrees F within 24 hours after application.

Aggregate must be spread within the spread rate ranges shown in the following table:

### Aggregate Spread Rates

Chip seal type	Spread rate range (lb/sq yd)
3/8"	20–30
5/16"	16–25
1/4"	12–20

For double chip seals, aggregate must be spread within spread rate ranges shown in the following table:

### Aggregate Spread Rates

Double application	Spread rate range (lb/sq yd)
1st application	23–30
2nd application	12–20

Remove excess aggregate on the 1st application before the 2nd application of asphaltic emulsion.

You may stockpile aggregate for the polymer modified asphaltic emulsion chip seals if you prevent contamination. Aggregate must have damp surfaces at spreading. If water visibly separates from the aggregate, do not spread. You may redampen aggregate in the delivery vehicle.

Spread aggregate before the polymer modified asphaltic emulsion sets or breaks.

Do not spread aggregate more than 2,500 feet ahead of the completed initial rolling.

#### 37-2.03D Payment

Not Used

#### 37-2.04 ASPHALT RUBBER BINDER CHIP SEALS

##### 37-2.04A General

##### 37-2.04A(1) Summary

Section 37-2.04 includes specifications for applying asphalt rubber binder chip seals.

An asphalt rubber binder chip seal consists of applying asphalt rubber binder followed by heated aggregate precoated with asphalt binder followed by a flush coat.

##### 37-2.04A(2) Definitions

**crumb rubber modifier:** Combination of ground or granulated high natural scrap tire crumb rubber and scrap tire crumb rubber derived from waste tires described in Pub Res Code § 42703.

**descending viscosity reading:** Subsequent viscosity reading at least 5 percent lower than the previous viscosity reading.

**high natural scrap tire crumb rubber:** Material containing 40 to 48 percent natural rubber.

**scrap tire crumb rubber:** Any combination of vehicle tires or tire buffing.

##### 37-2.04A(3) Submittals

At least 5 business days before use, submit the permit issued by the local air district for asphalt rubber binder field blending equipment and application equipment. If an air quality permit is not required by the local air district for producing asphalt rubber binder, submit verification from the local air district that an air quality permit is not required.

For each delivery of asphalt rubber binder ingredients to the job site, submit a certificate of compliance with a copy of the specified test results.

Submit a certified volume or weight slip for each delivery of asphalt rubber binder ingredients and asphalt rubber binder.

Submit a SDS for each asphalt rubber binder ingredient and the asphalt rubber binder.

At least 15 days before use, submit:

1. Samples of each asphalt rubber binder ingredient:
  - 1.1. 2 lbs of scrap tire crumb rubber
  - 1.2. 2 lbs of high natural scrap tire crumb rubber
  - 1.3. Two 1-quart cans of base asphalt binder
  - 1.4. Two 1-quart cans of asphalt modifier
2. Asphalt rubber binder formulation and data as follows:
  - 2.1. For asphalt modifier, include:
    - 2.1.1. Source of asphalt modifier
    - 2.1.2. Type of asphalt modifier
    - 2.1.3. Percentage of asphalt modifier by weight of asphalt binder
    - 2.1.4. Percentage of combined asphalt binder and asphalt modifier by weight of asphalt rubber binder
    - 2.1.5. Test results for the specified quality characteristics
  - 2.2. For crumb rubber modifier, include:
    - 2.2.1. Each source and type of scrap tire crumb rubber and high natural scrap tire crumb rubber
    - 2.2.2. Percentage of scrap tire crumb rubber and high natural scrap tire crumb rubber by total weight of asphalt rubber binder
    - 2.2.3. Test results for the specified quality characteristics
  - 2.3. For asphalt rubber binder, include minimum reaction time and temperature

Immediately after sampling, submit five 1-quart cans of asphalt rubber binder taken in the presence of the Engineer. Sample must be submitted in insulated shipping containers.

Submit notification 15 minutes before each viscosity test or submit a schedule of testing times.

Submit the log of asphalt rubber binder descending viscosity test results within 1 business day after sampling.

Submit asphalt rubber binder quality control viscosity test results within 1 business day after sampling.

### **37-2.04A(4) Quality Assurance**

#### **37-2.04A(4)(a) General**

The equipment used in producing asphalt rubber binder and the equipment used in spreading asphalt rubber binder must be permitted for use or exempted by the local air district.

#### **37-2.04A(4)(b) Quality Control**

##### **37-2.04A(4)(b)(i) General**

Reserved

##### **37-2.04A(4)(b)(ii) Asphalt Modifiers**

For asphalt modifiers, the authorized laboratory must perform quality control sampling and testing at the specified frequency for the following quality characteristics:

**Asphalt Modifier for Asphalt Rubber Binder**

Quality characteristic	Test method	Frequency
Viscosity	ASTM D445	1 per shipment
Flash point	ASTM D92	
Molecular Analysis:		
Asphaltenes	ASTM D2007	1 per shipment
Aromatics	ASTM D2007	

**37-2.04A(4)(b)(iii) Crumb Rubber Modifiers**

Sample and test scrap tire crumb rubber and high natural scrap tire crumb rubber separately.

Perform quality control sampling and testing at the specified frequency for the following quality characteristics:

**Crumb Rubber Modifier**

Quality characteristic	Test method	Frequency
Scrap tire crumb rubber gradation	California Test 385	1 per 10,000
High natural scrap tire crumb rubber gradation	California Test 385	1 per 3,400 lb
Wire in CRM	California Test 385	1 per 10,000 lb
Fabric in CRM	California Test 385	
CRM particle length	--	
CRM specific gravity	California Test 208	
Natural rubber content in high natural scrap tire crumb rubber	ASTM D297	1 per 3,400 lb

**37-2.04A(4)(b)(iv) Asphalt Rubber Binders**

For asphalt rubber binders, the authorized laboratory must perform quality control sampling and testing at the specified frequency and location for the following quality characteristics:

**Asphalt Rubber Binder Quality Control Requirements**

Quality characteristic	Test method	Sampling location	Frequency
Descending viscosity <sup>a</sup> at 375 °F (Pa•s x 10 <sup>-3</sup> )	ASTM D7741	Reaction vessel	1 per lot <sup>b</sup>
Viscosity at 375 °F (Pa•s x 10 <sup>-3</sup> )	ASTM D7741	Distribution truck	15 minutes before use per lot <sup>b</sup>
Cone penetration at 25 °C (0.10 mm)	ASTM D217	Distribution truck	1 per lot <sup>b</sup>
Resilience at 25 °C (% rebound)	ASTM D5329		
Softening point (°C)	ASTM D36		

<sup>a</sup>Start taking viscosity readings at least 45 minutes after adding crumb rubber modifier and continue taking viscosity readings every 30 minutes until 2 consecutive descending viscosity readings have been obtained and the final viscosity complies with the specification requirement.

<sup>b</sup>A lot is defined in the *MPQP*.

Retain samples from each lot. Test samples for cone penetration, resilience, and softening point for the first 3 lots and if all 3 lots pass, the testing frequency may be reduced to once for every 3 lots.

If QC test results indicate that the asphalt rubber binder does not comply with the specifications, take corrective action and notify the Engineer.

**37-2.04A(4)(c) Department Acceptance**

**37-2.04A(4)(c)(i) General**

Reserved



**37-2.04A(4)(c)(ii) Asphalt Modifiers**

The Department accepts asphalt modifier based on compliance with the requirements shown in the following table:

<b>Asphalt Modifier for Asphalt Rubber Binder</b>		
Quality characteristic	Test method	Requirement
Viscosity at 100 °C (m <sup>2</sup> /s x 10 <sup>-6</sup> )	ASTM D445	X ± 3 <sup>a</sup>
Flash point (min, °C)	ASTM D92	207
Molecular Analysis:		
Asphaltenes (max, % by mass)	ASTM D2007	0.1
Aromatics (min, % by mass)	ASTM D2007	55

<sup>a</sup>The symbol "X" is the asphalt modifier viscosity.

**37-2.04A(4)(c)(iii) Crumb Rubber Modifiers**

Scrap tire CRM and high natural CRM are sampled and tested separately.

The Department accepts scrap tire CRM and high natural CRM based on compliance with the requirements shown in the following table:

<b>Crumb Rubber Modifier for Asphalt Rubber Binder</b>		
Quality characteristic	Test method	Requirement
Wire in CRM (max, %)	California Test 385	0.01
Fabric in CRM (max, %)	California Test 385	0.05
CRM particle length (max, in)	--	3/16
CRM specific gravity	California Test 208	1.1–1.2
Natural rubber content in high natural CRM (%)	ASTM D297	40.0–48.0

The Department accepts CRM gradation based on the requirements shown in the following table:

<b>Crumb Rubber Modifier Gradation Requirements</b>					
Quality characteristic	Test method	Requirement			
		Scrap tire crumb rubber		High natural scrap tire crumb rubber	
Gradation (% passing by weight) Sieve size:	California Test 385	Operating range	Contract compliance	Operating range	Contract compliance
No. 8		100	100	--	--
No. 10		95–100	90–100	100	100
No. 16		35–85	32–88	92–100	85–100
No. 30		2–25	1–30	25–95	20–98
No. 50		0–10	0–15	6–35	2–40
No. 100		0–5	0–10	0–7	0–10
No. 200		0–2	0–5	0–3	0–5

If a test result for CRM gradation does not comply with the specifications, the Department deducts the corresponding amount for each gradation test as shown in the following table:

Material	Gradation test result <sup>a</sup>	Deduction
Scrap tire crumb rubber	Operating range < TR < Contract compliance	\$250
Scrap tire crumb rubber	TR > Contract compliance	\$1,100
High natural scrap tire crumb rubber	Operating range < TR < Contract compliance	\$250
High natural scrap tire crumb rubber	TR > Contract compliance	\$600

<sup>a</sup>Test Result = TR

Each gradation test for scrap tire crumb rubber represents 10,000 lb or the quantity used in that day's production, whichever is less.

Each gradation test for high natural scrap tire crumb rubber represents 3,400 lb or the quantity used in that day's production, whichever is less.

### 37-2.04A(4)(c)(iv) Asphalt Rubber Binders

For Department acceptance testing, take a sample of asphalt rubber binder in the Engineer's presence every 5 lots or once a day, whichever is greater. Each sample must be in five 1-quart cans with an open top and friction lid.

For an asphalt rubber binder, acceptance is based on the Department's sampling and testing for compliance with the requirements shown in the following table:

#### Asphalt Rubber Binder

Quality characteristic	Test method	Requirement
Cone penetration at 25 °C (0.10 mm)	ASTM D217	25–60
Resilience at 25 °C (% rebound)	ASTM D5329	18–50
Softening point (°C)	ASTM D36	55–88
Viscosity at 375 °F (Pa•s x 10 <sup>-3</sup> ) <sup>a</sup>	ASTM D7741	1,500–2,500

<sup>a</sup>Prepare sample for viscosity test under California Test 388.

### 37-2.04A(4)(c)(v) Precoated Aggregate

The Department accepts precoated aggregate based on compliance with the requirements shown in the following table:

#### Precoated Aggregate Gradation Acceptance Criteria

Quality Characteristic	Test method	Requirement
1/2" gradation (% passing by weight) Sieve size:	California Test 202	
3/4"		100
1/2"		85–90
3/8"		0–30
No. 4		0–5
No. 8		--
No. 200	0–1	
3/8" gradation (% passing by weight) Sieve size:	California Test 202	
3/4"		100
1/2"		95–100
3/8"		70–85
No. 4		0–15
No. 8		0–5
No. 200	0–1	

**37-2.04B Materials**

**37-2.04B(1) General**

Reserved

**37-2.04B(2) Asphalt Binders**

Asphalt binder used as the base binder for asphalt rubber binder must comply with the specifications for asphalt binder. Do not modify asphalt binder with polymer.

**37-2.04B(3) Asphalt Modifiers**

An asphalt modifier must be a resinous, high flash point, and aromatic hydrocarbon. An asphalt modifier must comply with the requirements shown in the following table:

**Asphalt Modifier for Asphalt Rubber Binder**

Quality characteristic	Test method	Requirement
Viscosity at 100 °C (m <sup>2</sup> /s x 10 <sup>-6</sup> )	ASTM D445	X ± 3 <sup>a</sup>
Flash point (min, CL.O.C., °C)	ASTM D92	207
Molecular analysis:		
Asphaltenes by mass (max, %)	ASTM D2007	0.1
Aromatics by mass (min, %)	ASTM D2007	55

<sup>a</sup>X denotes the proposed asphalt modifier viscosity from 19 to 36. A change in X requires a new asphalt rubber binder submittal.

**37-2.04B(4) Crumb Rubber Modifiers**

The CRM to be used must be on the Authorized Materials List for crumb rubber modifier.

The CRM must be ground or granulated at ambient temperature.

Scrap tire crumb rubber and high natural scrap tire crumb rubber must be delivered to the asphalt rubber binder production site in separate bags.

Steel and fiber must be separated. If steel and fiber are cryogenically separated, it must occur before grinding and granulating. Cryogenically-produced CRM particles must be large enough to be ground or granulated.

The CRM must be dry, free-flowing particles that do not stick together. A maximum of 3 percent calcium carbonate or talc by weight of CRM may be added. The CRM must not cause foaming when combined with the asphalt binder and asphalt modifier.

The CRM must comply with the requirements shown in the following table:

**Crumb Rubber Modifier for Asphalt Rubber Binder**

Quality characteristic	Test method	Requirement
Wire in CRM (max, %)	California Test 385	0.01
Fabric in CRM (max, %)	California Test 385	0.05
CRM particle length (max, in)	--	3/16
CRM specific gravity	California Test 208	1.1–1.2

The CRM must comply with the requirements shown in the following table:

**Crumb Rubber Modifier Requirements**

Quality characteristic	Test method	Requirement	
		Scrap tire crumb rubber	High natural scrap tire crumb rubber
Acetone extract (%)	ASTM D297	6.0–16.0	4.0–16.0
Rubber hydrocarbon (min, %)		42.0–65.0	50.0
Natural rubber content (%)		22.0–39.0	40.0–48.0
Carbon black content (%)		28.0–38.0	--
Ash content (max, %)		8.0	--

Scrap tire crumb rubber gradation must comply with the gradation requirements shown in the following table:

**Scrap Tire Crumb Rubber Gradation**

Quality characteristic	Test method	Requirement		
		Gradation limit	Operating range	Contract compliance
Gradation (% passing by weight) Sieve size:	California Test 385			
No. 8		100	100	100
No. 10		98–100	95–100	90–100
No. 16		45–75	35–85	32–88
No. 30		2–20	2–25	1–30
No. 50		0–6	0–10	0–15
No. 100		0–2	0–5	0–10
No. 200		0	0–2	0–5

High natural scrap tire crumb rubber gradation must comply with the gradation requirements shown in the following table:

**High Natural Scrap Tire Crumb Rubber Gradation**

Quality characteristic	Test method	Requirement		
		Gradation limit	Operating range	Contract compliance
Gradation (% passing by weight) Sieve size:	California Test 385			
No. 10		100	100	100
No. 16		95–100	92–100	85–100
No. 30		35–85	25–95	20–98
No. 50		10–30	6–35	2–40
No. 100		0–4	0–7	0–10
No. 200		0–1	0–3	0–5

**37-2.04B(5) Asphalt Rubber Binders**

An asphalt rubber binder must be a combination of:

1. Asphalt binder
2. Asphalt modifier
3. Crumb rubber modifier

Asphalt rubber binder blending equipment must be authorized under the Department's *MPQP*.

The blending equipment must allow the determination of weight percentages of each asphalt rubber binder ingredient.

An asphalt rubber binder must be 79 ± 1 percent by weight asphalt binder and 21 ± 1 percent by weight of CRM. The minimum percentage of CRM must be 20.0 percent and lower values must not be rounded up.

The CRM must be 75 ± 2 percent by weight scrap tire crumb rubber and 25 ± 2 percent by weight high natural scrap tire crumb rubber.

An asphalt modifier and asphalt binder must be blended at the production site. An asphalt modifier must be from 2.5 to 6.0 percent by weight of the asphalt binder in the asphalt rubber binder. The asphalt rubber binder supplier determines the exact percentage.

If blended before adding CRM, the asphalt binder must be from 375 to 440 degrees F when an asphalt modifier is added and the mixture must circulate for at least 20 minutes. An asphalt binder, asphalt modifier, and CRM may be proportioned and combined simultaneously.

The blend of an asphalt binder and an asphalt modifier must be combined with the CRM at the asphalt rubber binder production site. The asphalt binder and asphalt modifier blend must be from 375 to 440 degrees F when the CRM is added. Combined ingredients must be allowed to react at least 45 minutes at temperatures from 375 to 425 degrees F except the temperature must be at least 10 degrees F below the flash point of the asphalt rubber binder.

After reacting, the asphalt rubber binder must comply with the requirements shown in the following table:

**Asphalt Rubber Binder**

Quality characteristic	Test method	Requirement
Cone penetration at 25 °C (0.10 mm)	ASTM D217	25–60
Resilience at 25 °C (% rebound)	ASTM D5329	18–50
Softening point (°C)	ASTM D36	55–88
Viscosity at 375 °F (Pa·s x 10 <sup>-3</sup> ) <sup>a</sup>	ASTM D7741	1,500–2,500

<sup>a</sup>Prepare sample for viscosity test under California Test 388.

Maintain asphalt rubber binder at a temperature from 375 to 415 degrees F.

Stop heating unused asphalt rubber binder 4 hours after the 45-minute reaction period. Reheating asphalt rubber binder that cools below 375 degrees F is a reheat cycle. Do not exceed 2 reheat cycles. If reheating, the asphalt rubber binder must be from 375 to 415 degrees F before use.

During reheating, you may add CRM. The CRM must not exceed 10 percent by weight of the asphalt rubber binder. Allow added CRM to react for at least 45 minutes. Reheated asphalt rubber binder must comply with the specifications for asphalt rubber binder.

**37-2.04B(6) Precoated Aggregate**

Before precoating with asphalt binder, aggregate for an asphalt rubber binder chip seal must comply with the gradation requirements shown in the following table:

**Asphalt Rubber Binder Chip Seal Aggregate Gradation**

Quality characteristic	Test method	Requirement	
Gradation (% passing by weight)	California Test 202	1/2"	3/8"
Sieve size:			
3/4"		100	100
1/2"		85–90	95–100
3/8"		0–30	70–85
No. 4		0–5	0–15
No. 8		--	0–5
No. 200	0–1	0–1	

### **37-2.04C Construction**

#### **37-2.04C(1) General**

Reserved

#### **37-2.04C(2) Equipment**

Distributor trucks must be equipped with:

1. Mixing and heating unit
2. Observation platform on the rear of the truck for an observer on the platform to see the nozzles and unplug them if needed

#### **37-2.04C(3) Asphalt Rubber Binder Application**

Apply the asphalt rubber binder when the ambient temperature is from 60 to 105 degrees F and the pavement surface temperature is at least 55 degrees F.

Do not apply the asphalt rubber binder unless enough aggregate is available at the job site to cover the asphalt rubber binder within 2 minutes. Intersections, turn lanes, gore points, and irregular areas must be covered within 15 minutes.

Do not apply asphalt rubber binder when pavement is damp or during high wind conditions. If authorized, you may adjust the distributor bar height and distribution speed and use shielding equipment during high wind conditions.

When applied, the temperature of the asphalt rubber binder must be from 385 to 415 degrees F.

Apply the asphalt rubber binder at a rate from 0.55 to 0.65 gal/sq yd. You may reduce the application rate by 0.050 gal/sq yd in the wheel paths.

#### **37-2.04C(4) Precoated Aggregate Spreading**

Spread aggregate at a rate from 28 to 40 lb/sq yd. Do not spread aggregate more than 200 feet ahead of the completed initial rolling.

#### **37-2.04C(5) Rolling and Sweeping**

Perform initial rolling within 90 seconds of spreading aggregate. If authorized for final rolling, you may use a steel-wheeled roller weighing from 8 to 10 tons in static mode only.

Perform a final sweeping before Contract acceptance. The final sweeping must not dislodge aggregate.

#### **37-2.04D Payment**

Asphalt rubber binder is measured as specified for asphalt binder.

### **37-2.05 STRESS ABSORBING MEMBRANE INTERLAYERS**

#### **37-2.05A General**

Section 37-2.05 includes specifications for placing stress absorbing membrane interlayers (SAMI).

Comply with section 37-2.04 except a flush coat is not required.

Traffic must not be allowed on a SAMI.

#### **37-2.05B Materials**

For a SAMI, aggregate must comply with the 3/8-inch gradation.

#### **37-2.05C Construction**

If a SAMI is overlaid in the same work shift, section 37-2.01C(4)(e) does not apply.

Final sweeping is not required for a SAMI.

#### **37-2.05D Payment**

Not Used

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## **37-2.06 MODIFIED ASPHALT BINDER CHIP SEALS**

Reserved

## **37-2.07 SCRUB SEALS**

Reserved

## **37-3 SLURRY SEALS AND MICRO-SURFACINGS**

### **37-3.01 GENERAL**

#### **37-3.01A General**

##### **37-3.01A(1) Summary**

Section 37-3.01 includes general specifications for applying slurry seals and micro-surfacings.

##### **37-3.01A(2) Definitions**

Reserved

##### **37-3.01A(3) Submittals**

At least 15 days before starting placement of a slurry seal or micro-surfacing, submit:

1. Samples for:
  - 1.1. Asphaltic emulsion slurry seal, two 1-quart wide mouth plastic containers with screw top lid of asphaltic emulsion
  - 1.2. Polymer modified asphaltic emulsion slurry seal, two 1-quart wide mouth plastic containers with screw top lid of polymer modified asphaltic emulsion
  - 1.3. Micro-surfacing, two 1-quart wide mouth plastic containers with screw top lid of micro-surfacing emulsion
2. Asphaltic emulsion, polymer modified asphaltic emulsion, or micro-surfacing emulsion data as follows:
  - 2.1. Supplier and Type/Grade of asphaltic emulsion
  - 2.2. Type of modifier polymer for polymer modified asphaltic emulsion or micro-surfacing emulsion
  - 2.3. Copy of the specified test results for asphaltic emulsion, polymer modified asphaltic emulsion, or micro-surfacing emulsion
3. 50 lb of aggregate
4. Aggregate test results for the followings:
  - 4.1. Gradation
  - 4.2. Los Angeles Rattler
  - 4.3. Percent of crushed particles
  - 4.4. Sand equivalent
  - 4.5. Durability

At least 10 days before starting placement of a slurry seal or micro-surfacing, submit a laboratory report of test results and the proposed mix design from an authorized laboratory. The authorized laboratory must sign the laboratory report and mix design.

The report must include:

1. Test results used in the mix design compared with specification requirements
2. Proportions based on the dry weight of aggregate, including ranges, for:
  - 2.1. Aggregate
  - 2.2. Water
  - 2.3. Additives
  - 2.4. Mineral filler
  - 2.5. Slurry seal emulsion or micro-surfacing emulsion residual asphalt content
3. Recommended changes to the proportions based on heating the mixture to 100 degrees F and mixing for 60 seconds, if atmospheric temperatures during application will be 90 degrees F or above, for:
  - 3.1. Water
  - 3.2. Additives

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3.3. Mineral filler

4. Quantitative moisture effects on the aggregate's unit weight determined under ASTM C29M

If the mix design consists of the same materials covered by a previous laboratory report, you may submit the previous laboratory report that must include material testing data performed within the previous 12 months for authorization.

If you change any of the materials in the mix design, submit a new mix design and laboratory report at least 10 days before starting slurry seal or micro-surfacing work.

Submit a certificate of compliance as specified for asphaltic emulsion in section 94-1.01C with each shipment of asphaltic emulsion, polymer modified asphaltic emulsion or micro-surfacing emulsion.

Submit quality control test results for the quality characteristics within the reporting times allowance after sampling shown in the following table:

<b>Quality Control Test Reporting Requirements</b>	
Quality characteristic	Maximum reporting time allowance
Los Angeles Rattler loss (max, %)	2 business days
Percent of crushed particles (min, %)	2 business days
Durability (min)	2 business days
Resistance of fine aggregate to degradation by abrasion in the Micro-Deval Apparatus (% loss by weight)	2 business days
Gradation (% passing by weight)	48 hours
Sand equivalent (min)	48 hours
Moisture content (%)	48 hours

Within 3 days after taking asphaltic emulsion, polymer modified asphaltic emulsion or micro-surfacing emulsion quality control samples, submit the authorized laboratory's test results.

**37-3.01A(4) Quality Assurance**

**37-3.01A(4)(a) General**

Your authorized laboratory must be able to perform International Slurry Surfacing Association tests and mix design.

**37-3.01A(4)(b) Quality Control**

**37-3.01A(4)(b)(i) General**

Reserved

**37-3.01A(4)(b)(ii) Aggregate**

For aggregate, the authorized laboratory must perform sampling and testing at the specified frequency and location for the following quality characteristics:



### Aggregate Quality Control

Quality characteristic	Test method	Minimum sampling and testing frequency	Location of sampling
Los Angeles Rattler loss (max, %) At 500 revolutions	California Test 211	1st day of production	See California Test 125
Percent of crushed particles (min, %)	AASHTO T 335	1st day of production	See California Test 125
Sand equivalent (min)	California Test 217	1 per working stockpile per day	See California Test 125
Resistance of fine aggregate to degradation by abrasion in the Micro-Deval Apparatus (% loss by weight)	ASTM D7428	1 per working stockpile per day	See California Test 125
Gradation (% passing by weight)	California Test 202	1 per working stockpile per day	See California Test 125
Moisture content, from field stockpile (%)	AASHTO T 255 <sup>a</sup>	1 per working stockpile per day	See California Test 125

<sup>a</sup>Test aggregate moisture at field stockpile every 2 hours if you are unable to maintain the moisture content to within a maximum daily variation of ±0.5 percent.

#### 37-3.01A(4)(b)(iii) Slurry Seals and Micro-surfacings

Reserved

#### 37-3.01A(4)(c) Department Acceptance

Slurry Seal and micro-surfacing acceptance is based on:

1. Visual inspection for the following:
  - 1.1. Uniform surface texture throughout the work limits.
  - 1.2. Marks in the surface:
    - 1.2.1. Up to 4 marks in the completed slurry seal or micro-surfacing surface that are up to 1 inch wide and up to 6 inches long per 1000 square feet of slurry seal or micro-surfacing placed.
    - 1.2.2. No marks in the completed slurry seal or micro-surfacing surface that are over 1 inch wide or 6 inches long.
  - 1.3. Excessive raveling consisting of the separation of the aggregate from the asphaltic emulsion, polymer modified asphaltic emulsion or micro-surfacing emulsion.
  - 1.4. Bleeding consists of the occurrence of a film of asphaltic material on the surface of the slurry seal or micro-surfacing.
  - 1.5. Delaminating of slurry seal or micro-surfacing from the existing pavement.
  - 1.6. Rutting or wash-boarding.
2. Department's sampling and testing for compliance with the requirements for aggregate shown in the following table:

### Aggregate Gradation Acceptance Criteria

Quality characteristic	Test method	Requirements		
Gradation (% passing by weight) Sieve Size:	California Test 202	Type I	Type II	Type III
3/8"		--	100	100
No. 4		100	94-100	70-90
No. 8		90-100	65-90	45-70
No. 16		60-90	40-70	28-50
No. 30		40-65	25-50	19-34
No. 200		10-20	5-15	5-15

An aggregate gradation test represents 300 tons or 1 day's production, whichever is less.

If test results for aggregate gradation do not comply with the specifications, you may remove the slurry seal or micro-surfacing represented by the test results or request it remain in place with a payment deduction. If your request is authorized, the Department deducts:

1. \$1.75 per ton of slurry seal for each noncompliant aggregate gradation
2. \$2.00 per ton of micro-surfacing for each noncompliant aggregate gradation

#### 37-3.01B Materials

##### 37-3.01B(1) General

Additional water must not cause separation of the asphaltic emulsion, polymer modified asphaltic emulsion or micro-surfacing emulsion from the aggregate before placement.

You may use an additive that does not adversely affect the slurry seal or micro-surfacing.

##### 37-3.01B(2) Aggregate

Aggregate must be rock dust. Aggregate must be free from vegetable matter, deleterious substances, caked or clay lumps, and oversized particles.

Aggregate for a slurry seal and micro-surfacing must comply with the gradations shown in the following table:

#### Aggregate Gradation

Quality characteristic	Test method	Requirements		
Gradation (% passing by weight) Sieve size:	California Test 202	Type I	Type II	Type III
3/8"		--	100	100
No. 4		100	94-100	70-90
No. 8		90-100	65-90	45-70
No. 16		60-90	40-70	28-50
No. 30		40-65	25-50	19-34
No. 200		10-20	5-15	5-15

#### 37-3.01C Construction

##### 37-3.01C(1) General

Before applying slurry seals or micro-surfacings, cover manholes, valve and monument covers, grates, and other exposed facilities located within the area of application using plastic or oil resistant construction paper secured by tape or adhesive to the facility being covered. Reference the covered facilities with enough control points to relocate the facilities after application of the slurry seals or micro-surfacings.

##### 37-3.01C(2) Proportioning

Proportion slurry seal and micro-surfacing ingredients in compliance with the authorized mix design.

### **37-3.01C(3) Mixing and Spreading Equipment**

#### **37-3.01C(3)(a) General**

Mixing and spreading equipment for slurry seals and micro-surfacings must proportion the asphaltic emulsions, water, aggregate, and any additives by volume and mix them in continuous pug mill mixers.

Introduce emulsions into the mixer with a positive displacement pump. If you use a variable-rate pump, the adjusting unit must be sealed in its calibrated position.

Introduce water into the mixer through a meter that measures gallons.

Choose a truck mounted mixer-spreader or continuous self-loading mixer spreader.

#### **37-3.01C(3)(b) Truck Mounted Mixer Spreaders**

Truck mounted mixer spreaders must comply with:

1. Rotating and reciprocating equipment must be covered with metal guards.
2. Proportion aggregate using a belt feeder with an adjustable cutoff gate. The Engineer verifies the height of the gate opening.
3. Belt feeder must have a depth monitor device. The depth monitor device must automatically shut down power to the belt feeder when the aggregate depth is less than 70 percent of the target depth.
4. Separate monitor device must detect the revolutions of the belt feeder. This device must automatically shut down power to the belt feeder if it detects no revolutions. If the belt feeder is an integral part of the equipment's drive chain, the monitor device is not required.
5. Aggregate belt feeder must be connected directly to the drive on the emulsion pump. The aggregate feeder drive shaft must have a revolution counter reading the nearest 0.10 revolution for micro-surfacing, and nearest 1 revolution for slurry seal.
6. Emulsion storage must be equipped with a device that automatically shuts down power to the emulsion pump and aggregate belt feeder when the level of stored emulsion is lowered. To allow for normal fluctuations, there may be a delay of 3 seconds between detection of low emulsion storage levels or low aggregate depths and automatic power shut down.
7. Emulsion storage must be located immediately before the emulsion pump.
8. Emulsion storage tank must have a temperature indicator at the pump suction level. The indicator must be accurate to  $\pm 5$  degrees F.
9. No-flow and revolution warning devices must be in working condition. Low-flow indicators must be visible while walking alongside the equipment.

#### **37-3.01C(3)(c) Continuous Self-Loading Mixer Spreaders**

Continuous self-loading mixer spreaders must be automatically sequenced and self-propelled. The mixing machine must deliver each material to a double shafted mixer and discharge the mixed material on a continuous flow basis. The mixing machines must have sufficient storage capacity to maintain a continuous supply of material to the proportioning controls. The mixing machine operators must have full control of forward and reverse speeds during placement.

#### **37-3.01C(3)(d) Spreader Boxes**

The spreader boxes used to spread slurry seals and micro-surfacings must be:

1. Capable of spreading the slurry seal or micro-surfacing a minimum of 12 feet wide and preventing the loss of slurry seal or micro-surfacing.
2. Equipped with flexible rubber belting on each side. The belting must contact the pavement to prevent the loss of slurry seal or micro-surfacing from the box.
3. Equipped to uniformly apply the slurry seal or micro-surfacing on superelevated sections and shoulder slopes. Micro-surfacing spreader box must be equipped with reversible motor driven augers.
4. Equipped with a series of strike-off devices at its rear.
  - 4.1. The leading strike off device must be:
    - 4.1.1. Fabricated of a suitable material such as steel or stiff rubber
    - 4.1.2. Designed to maintain close contact with the pavement during spreading
    - 4.1.3. Capable of obtaining the specified thickness

- 4.1.4. Capable of being adjusted to the various pavement cross sections
- 4.2. The final strike-off device must be:
  - 4.2.1. Fabricated of flexible material that produces a uniform texture in the finished surface
  - 4.2.2. Cleaned daily and changed if longitudinal scouring occurs in the slurry seal of micro-surfacing
5. Clean and free of slurry seal or micro-surfacing at the start of each work shift.

#### **37-3.01C(3)(e) Shoulder Equipment**

Spread the slurry seal or micro-surfacing on shoulders with a device such as an edge box that forms clean and straight joints and edges.

#### **37-3.01C(3)(f) Equipment Calibration**

Equipment calibration must comply with the *MPQP*. Notify the Engineer at least 5 business days before calibrating.

If the Department authorizes a truck or continuous mixer spreader, its calibration is valid for 6 months provided you:

1. Use the same truck or continuous mixer spreader verified with a unique identifying number
2. Use the same materials in compliance with the authorized mix design
3. Do not perform any repair or alteration to the proportioning systems

Calibrate the adjustable cut-off gate settings of each truck or continuous mixer spreader on the project to achieve the correct delivery rate of aggregate and emulsion per revolution of the aggregate feeder under the *MPQP*.

Checks must be performed for each aggregate source using an authorized vehicle scale.

Individual checks of the aggregate belt feeder's delivery rate to the pug mill mixer must not vary more than 2 percent from the average of 3 runs of at least 3 tons each.

Before using a variable-rate emulsion pump, the pump must be calibrated and sealed in the calibrated condition under the *MPQP*.

Individual checks of the emulsion pump's delivery rate to the pug mill mixer must not vary more than 2 percent from the average of 3 runs of at least 500 gal each.

#### **37-3.01C(4) Surface Preparation**

Immediately before applying slurry seals or micro-surfacings, clean the surface to receive slurry seals or micro-surfacings by removing any extraneous material affecting adhesion of the slurry seal or micro-surfacing with the existing surface. Use self-propelled power brooms or other methods such as flushing to clean the existing pavement.

#### **37-3.01C(5) Placement**

##### **37-3.01C(5)(a) General**

If truck-mounted mixer-spreaders are used, keep at least 2 operational spreaders at the job site during placement.

Spread slurry seals and micro-surfacings uniformly and do not spot, rehandle, or shift the mixture. However in areas inaccessible to spreading equipment, spread the slurry seal or micro-surfacing mixtures with hand tools or other authorized methods. If placing with hand tools, lightly dampen the area first.

You may fog the roadway surface with water ahead of the spreader box. The fog spray must be adjusted for pavement:

1. Temperature
2. Surface texture
3. Dryness

You determine the application rates for slurry seals or micro-surfacings and the Engineer authorizes the application rates. Spread within 10 percent of authorized rate.

The mixtures must be uniform and homogeneous after spreading, and there must not be separation of the emulsion and aggregate after setting.

### **37-3.01C(5)(b) Weather Conditions**

Only place slurry seals or micro-surfacings if both the pavement and air temperatures are at least 50 degrees F and rising. The expected high temperature must be at least 65 degrees F within 24 hours after placement.

Do not place slurry seals or micro-surfacings if rain is imminent or the air temperature is expected to be below 36 degrees F within 24 hours after placement.

### **37-3.01C(5)(c) Joints**

Transverse and longitudinal joints must be:

1. Uniform
2. Straight
3. Neat in appearance
4. Without material buildup
5. Without uncovered areas

Transverse joints must be butt-type joints.

Prevent double placement at transverse joints over previously placed slurry seals or micro-surfacings.

Place longitudinal joints:

1. On centerlines, lane lines, edge lines, or shoulder lines
2. With overlaps not more than 4 inches

You may request other longitudinal joint patterns if they do not adversely affect the slurry seals or micro-surfacings.

The maximum difference between the pavement surface and the bottom edge of a 12-foot straightedge placed perpendicular to the longitudinal joint must be 0.04 foot.

### **37-3.01C(5)(d) Finished Surfaces**

Finished slurry seals or micro-surfacings must be smooth and free of irregularities such as scratch or tear marks. You may leave up to 4 marks that are up to 1 inch wide and 6 inches long per 75 linear feet of slurry seal or micro-surfacing placed. Do not leave any marks that are over 1 inch wide or 6 inches long.

### **37-3.01C(5)(e) Maintenance Sweeping**

Sweep the slurry seals or micro-surfacings 24 hours after placement without damaging the slurry seals or micro-surfacings. For 4 days afterwards, sweep the slurry seals or micro-surfacings daily unless determined otherwise by the Engineer.

### **37-3.01C(5)(f) Repair of Early Distress**

The slurry seals or micro-surfacings must not show bleeding, raveling, separation, or other distresses for 15 days after placing. If bleeding, raveling, delaminating, rutting, or wash-boarding occurs after placing the slurry seals or micro-surfacings, make repairs using an authorized method.

### **37-3.01D Payment**

Not Used

## 37-3.02 SLURRY SEALS

### 37-3.02A General

#### 37-3.02A(1) Summary

Section 37-3.02 includes specifications for applying slurry seals.

Applying a slurry seal consists of spreading a mixture of asphaltic emulsion or polymer modified asphaltic emulsion, aggregate, additives, and water on a surface or pavement.

#### 37-3.02A(2) Definitions

Reserved

#### 37-3.02A(3) Submittals

Immediately after sampling, submit two 1-quart wide mouth plastic containers of asphaltic emulsion or polymer modified asphaltic emulsion taken in the presence of the Engineer. Samples must be submitted in insulated shipping containers.

#### 37-3.02A(4) Quality Assurance

##### 37-3.02A(4)(a) General

Reserved

##### 37-3.02A(4)(b) Quality Control

###### 37-3.02A(4)(b)(i) General

Take samples of asphaltic emulsion and polymer modified asphaltic emulsion from the tank truck at mid load or from a sampling tap or thief. Before taking samples, draw and dispose of 1 gallon. In the presence of the Engineer take two 1-quart samples in wide mouth plastic containers with lined, sealed lids for acceptance testing.

###### 37-3.02A(4)(b)(ii) Asphaltic Emulsion

For asphaltic emulsions, the authorized laboratory must perform quality control sampling and testing at the specified frequency and location for the following quality characteristics:

#### Asphaltic Emulsion

Quality characteristic	Test method	Minimum sampling and testing frequency	Sampling location
Saybolt Furol Viscosity, at 25 °C (Saybolt Furol seconds)	AASHTO T 59	Minimum 1 per day per delivery truck	Delivery truck
Sieve Test (%)			
Storage stability, 1 day (%)			
Residue by distillation (%)			
Particle charge <sup>a</sup>			
Tests on Residue from Distillation Test:			
Penetration, 25 °C	AASHTO T 49	Minimum 1 per day per delivery truck	Delivery truck
Ductility	AASHTO T 51		
Solubility in trichloroethylene	AASHTO T 44		

<sup>a</sup>If the result of the particle charge is inconclusive, the asphaltic emulsion must be tested for pH under ASTM E70. Grade QS1h asphaltic emulsion must have a minimum pH of 7.3. Grade CQS1h asphaltic emulsion must have a maximum pH of 6.7.

###### 37-3.02A(4)(b)(iii) Polymer Modified Asphaltic Emulsion

For polymer modified asphaltic emulsions, the authorized laboratory must perform quality control sampling and testing at the specified frequency and location for the following quality characteristics:

**Polymer Modified Asphaltic Emulsion**

Quality characteristic	Test method	Minimum sampling and testing frequency	Sampling Location
Tests on emulsion:			
Saybolt Furol Viscosity at 25 °C (Saybolt Furol seconds)	AASHTO T 59	Minimum 1 per day per delivery truck	Delivery truck
Sieve test (%)	AASHTO T 59		
Storage stability after 1 day (%)	AASHTO T 59		
Residue by evaporation (min, %)	California Test 331		
Particle charge	AASHTO T 59		
Tests on residue by evaporation:			
Penetration at 25 °C	AASHTO T 49	Minimum 1 per day per delivery truck	Delivery truck
Ductility at 25 °C (min, mm)	AASHTO T 51		
Torsional recovery (min, %)	California Test 332		
Or  Polymer content based on residual asphalt (min, %)	California Test 401		

**37-3.02A(4)(c) Department Acceptance**

For a slurry seal asphaltic emulsion and polymer modified asphaltic emulsion, acceptance is based on the Department's sampling and testing for compliance with the requirements for the quality characteristics specified.

Aggregate acceptance is based on the Department's sampling and testing for compliance with the requirements shown in the following table:

**Aggregate Acceptance Criteria**

Quality characteristic	Test method	Requirement
Los Angeles Rattler loss (max, %) At 500 revolutions	California Test 211 <sup>a</sup>	35
Percent of crushed particles (min, %)	California Test 205	95
Durability (min)	California Test 229	55
Sand equivalent (min)	California Test 217	45
Type I		
Type II		
Type III		60

<sup>a</sup>California Test 211 must be performed on the source aggregate before crushing.

A sand equivalent test represents 300 tons or 1 day's production, whichever is less.

If test results for sand equivalent do not comply with the specifications, you may remove the slurry seal represented by the test results or request it remain in place with a payment deduction. If your request is authorized, the Department deducts \$1.75 per ton of slurry seal for each noncompliant sand equivalent test.

**37-3.02B Materials**

**37-3.02B(1) General**

Reserved

### 37-3.02B(2) Asphaltic Emulsions

An asphaltic emulsion must comply with the requirements in Section 94. The asphaltic emulsion must be Grade CQS1h.

### 37-3.02B(3) Polymer Modified Asphaltic Emulsions

A polymer modified asphaltic emulsion must:

1. Consist of an elastomeric polymer mixed with an asphaltic material uniformly emulsified with water and an emulsifying or stabilization agent.
2. Use either neoprene polymer or butadiene and styrene copolymer. The polymer must be homogeneous and milled into the asphaltic emulsion at the colloid mill.
3. Be Grade PMCQS1h and must comply with the requirements shown in the following table:

**Polymer Modified Asphaltic Emulsion Requirements**

Quality characteristic	Test method	Requirement
Tests on emulsion:		
Saybolt Furol Viscosity at 25 °C (Saybolt Furol seconds)	AASHTO T 59	15–90
Sieve test (%)	AASHTO T 59	0–0.3
Storage stability after 1 day (%)	AASHTO T 59	0–1
Residue by evaporation (min, %)	California Test 331	60
Particle charge	AASHTO T 59	Positive
Tests on residue by evaporation:		
Penetration at 25 °C	AASHTO T 49	40–90
Ductility at 25 °C (min, mm)	AASHTO T 51	400
Torsional recovery (min, %)	California Test 332	18
Or		
Polymer content based on residual asphalt (min, %)	California Test 401	2.5

### 37-3.02B(4) Aggregate

Aggregate must comply with the quality characteristic requirements shown in the following table:

**Aggregate Requirements**

Quality characteristic	Test method	Requirement
Los Angeles Rattler loss (max, %) At 500 revolutions	California Test 211 <sup>a</sup>	35
Percent of crushed particles (min, %)	California Test 205	95
Durability (min)	California Test 229	55
Sand equivalent (min)		
Type I	California Test 217	45
Type II		55
Type III		60

<sup>a</sup>California Test 211 must be performed on the source aggregate before crushing. The aggregate supplier must certify that the crushed aggregate being used on the project is manufactured from the source aggregate complying with the LA rattler requirements.

### 37-3.02B(5) Slurry Seal Mix Design

The slurry seal mix design, using project source aggregate, an asphaltic emulsion, and set-control agents if any, must comply with the requirements shown in the following table:



### Slurry Seal Mix Design Requirements

Quality characteristic	Test method <sup>a</sup>	Requirement
Consistency (max, mm)	Technical Bulletin 106	30
Wet stripping	Technical Bulletin 114	Pass
Compatibility	Technical Bulletin 115	Pass <sup>b</sup>
Cohesion test, within 1 hour (min, kg-mm)	Technical Bulletin 139	200
Wet track abrasion (max, g/m <sup>2</sup> )	Technical Bulletin 100	810

<sup>a</sup>Test methods are by the International Slurry Surfacing Association.

<sup>b</sup>Mixing test must pass at the maximum expected air temperature at the job site during placement.

The mix design must have the percent of asphaltic residue, based on percentage by weight of the dry aggregate, within the ranges shown in the following table:

Slurry seal type	Residue range
Type I	10–16
Type II	7.5–13.5
Type III	6.5–12.0

Determine the exact percentage based on the design asphalt binder content and the asphalt residual content of the asphaltic emulsion furnished.

#### 37-3.02C Construction

##### 37-3.02C(1) General

Reserved

##### 37-3.02C(2) Proportioning

After proportioning, slurry seal mixtures must be workable.

##### 37-3.02C(3) Mixing and Spreading Equipment

Reserved

##### 37-3.02C(4) Placement

The slurry seal spread rates must be within the ranges shown in the following table:

Slurry Seal Spread Rates	
Slurry seal type	Application range (lb of dry aggregate/sq yd)
Type I	8–12
Type II	10–18
Type III	20–25

Within 4 hours after placement, slurry seals must be set enough to allow traffic without pilot cars. Protect slurry seals from damage until it has set and will not adhere or be picked up by vehicle tires. Slurry seals must not exhibit distress from traffic such as bleeding, raveling, separation or other distresses.

#### 37-3.02D Payment

The payment quantity for slurry seal is the weight determined by combining the weights of the aggregate and asphaltic emulsion or polymeric asphaltic emulsion. The payment quantity for slurry seal does not include the weights of the added water and set-control additives.

### 37-3.03 MICRO-SURFACINGS

#### 37-3.03A General

##### 37-3.03A(1) Summary

Section 37-3.03 includes specifications for applying micro-surfacings.

Diamond Springs Parkway – Phase 1A – SR-49 Realignment

**CIP No. 72375, Contract No. 2720**

December 18, 2018

County of El Dorado

**Appendix A**

AA-127

Applying a micro-surfacing consists of spreading a mixture of a micro-surfacing emulsion, water, additives, mineral filler, and aggregate on the pavement.

**37-3.03A(2) Definitions**

Reserved

**37-3.03A(3) Submittals**

Immediately after sampling, submit two 1-quart wide mouth plastic containers of micro-surfacing emulsion taken in the presence of the Engineer. Samples must be submitted in insulated shipping container.

**37-3.03A(4) Quality Assurance**

**37-3.03A(4)(a) General**

Reserved

**37-3.03A(4)(b) Quality Control**

**37-3.03A(4)(b)(i) General**

Reserved

**37-3.03A(4)(b)(ii) Micro-surfacing Emulsions**

Take samples from the truck tank at mid load from a sampling tap or thief. Before taking samples, draw and dispose of 1 gallon. In the presence of the Engineer, take two 1-quart wide mouth plastic containers for acceptance testing.

For a micro-surfacing emulsion, the authorized laboratory must perform quality control sampling and testing at the specified frequency and location for the quality characteristics shown in the following table:

**Micro-Surfacing Emulsion**

Quality characteristic	Test method	Minimum sampling and testing frequency	Sampling location
Tests on emulsion:			
Saybolt Furol Viscosity, at 25°C (Saybolt Furol seconds)	AASHTO T 59	Minimum 1 per day per delivery truck	Delivery truck
Storage stability, 1 day (max, %) <sup>a</sup>			
Sieve test (max, %)			
Residue by evaporation (min, %)	California Test 331	Minimum 1 per day per delivery truck	Delivery truck
Tests on residue from evaporation test:			
Penetration at 25 °C	AASHTO T 49	Minimum 1 per day per delivery truck	Delivery truck
Softening point (min, °C)	AASHTO T 53		

<sup>a</sup>Storage stability test will be run if the storage exceeds 48 hours

**37-3.03A(4)(c) Department Acceptance**

For micro-surfacing emulsions, acceptance is based on the Department’s sampling and testing for compliance with the requirements shown in the following table:

### Micro-surfacing Emulsion Acceptance Criteria

Quality characteristic	Test method	Requirement
Tests on emulsion:		
Saybolt Furol Viscosity at 25 °C (Saybolt Furol seconds)	AASHTO T 59	15–90
Sieve test (%)	AASHTO T 59	0.30
Storage stability, 1 day (max, %)	AASHTO T 59	0–1
Settlement <sup>a</sup> , 5 days (max, %)	ASTM D244	5
Residue by evaporation (min, %)	California Test 331	62
Tests on residue by evaporation:		
Penetration at 25 °C	AASHTO T 49	40–90
Softening point (min, °C)	AASHTO T 53	57

<sup>a</sup>Settlement test on emulsion is not required if used within 48 hours of shipment.

Acceptance of aggregate, except mineral filler, is based on the Department's sampling and testing for compliance with the requirements shown in the following table:

### Aggregate Acceptance Criteria

Quality characteristic	Test method	Requirement
Los Angeles Rattler loss (max, %) At 500 revolutions	California Test 211 <sup>a</sup>	35
Percent of crushed particles (min, %)	California Test 205	95
Durability (min)	California Test 229	65
Sand equivalent (min)	California Test 217	
Type II		65
Type III		65

<sup>a</sup>California Test 211 must be performed on the aggregate before crushing. The aggregate supplier must certify that the crushed aggregate being used on the project is manufactured from the source aggregate complying with the LA rattler requirements.

An aggregate sand equivalent test represents 300 tons or 1 day's production, whichever is less.

If the test results for aggregate sand equivalent do not comply with the specifications, you may remove the micro-surfacing represented by the test results or request it remain in place with a payment deduction. If your request is authorized, the Department deducts \$2.00 per ton of micro-surfacing for each noncompliant aggregate sand equivalent test.

#### 37-3.03B Materials

##### 37-3.03B(1) General

Reserved

##### 37-3.03B(2) Micro-surfacing Emulsions

A micro-surfacing emulsion must be a homogeneous mixture of asphalt, an elastomeric polymer and an emulsifier solution.

Add an elastomeric polymer modifier to asphalt or emulsifier solution before emulsification. An elastomeric polymer solid must be a minimum of 3 percent by weight of the micro-surfacing emulsion's residual asphalt.

A micro-surfacing emulsion must comply with the requirements shown in the following table:

**Micro-surfacing Emulsion Requirements**

Quality characteristic	Test method	Requirement
Tests on emulsion:		
Saybolt Furol Viscosity at 25 °C (Saybolt Furol seconds)	AASHTO T 59	15–90
Sieve test (%)	AASHTO T 59	0.30
Storage stability, 1 day (max, %)	AASHTO T 59	0–1
Settlement <sup>a</sup> , 5 days (max, %)	ASTM D244	5
Residue by evaporation (min, %)	California Test 331	62
Tests on residue by evaporation:		
Penetration at 25 °C	AASHTO T 49	40–90
Softening point (min, °C)	AASHTO T 53	57

<sup>a</sup>Settlement test on emulsion is not required if used within 48 hours of shipment.

**37-3.03B(3) Aggregate**

Aggregate must comply with the quality characteristic requirements shown in the following table:

**Aggregate Requirements**

Quality characteristic	Test method	Requirement
Los Angeles Rattler loss (max, %) At 500 revolutions	California Test 211 <sup>a</sup>	35
Percent of crushed particles (min, %)	California Test 205	95
Durability (min)	California Test 229	65
Sand equivalent (min)	California Test 217	
Type II		65
Type III		65

<sup>a</sup>California Test 211 must be performed on the source aggregate before crushing. The aggregate supplier must certify that the crushed aggregate being used on the project is manufactured from the source aggregate complying with the LA rattler requirements.

**37-3.03B(4) Mineral Fillers**

If a mineral filler is used, it must be type I or type II Portland cement. A mineral filler used during mix design must be used during production.

**37-3.03B(5) Micro-Surfacing Mix Designs**

The micro-surfacing mix design must have the material proportion limits shown in the following table:

**Micro-surfacing Mix Design Proportion Limits**

Material	Proportion limits
Micro-surfacing emulsion asphalt residual content (% of dry weight of aggregate)	5.5–10.5
Water and additives	As Required
Mineral filler (% of dry weight of aggregate)	0–3

The micro-surfacing mix design must comply with the requirements shown in the following table:

**Micro-surfacing Mix Design Requirements**

Quality characteristics	Test method <sup>a</sup>	Requirement
Wet cohesion At 30 minutes (set) (min, kg-cm) At 60 minutes (traffic) (min, kg-cm)	Technical Bulletin 139	12 20
Excess asphalt (max, g/m <sup>2</sup> )	Technical Bulletin 109	540
Wet stripping (min, %)	Technical Bulletin 114	90
Wet track abrasion loss 6-day soak (max, g/m <sup>2</sup> )	Technical Bulletin 100	810
Displacement Lateral (max, %) Specific gravity after 1000 cycles of 57 kg (max)	Technical Bulletin 147A	5 2.10
Classification compatibility (min, grade points)	Technical Bulletin 144	(AAA, BAA) 11
Mix time at 25 °C (min)	Technical Bulletin 113	Controllable to 120 seconds

<sup>a</sup>Test methods are by the International Slurry Surfacing Association.

**37-3.03B(6) Tack Coats**

If there is a bid item for tack coat, you must coat the pavement surface with an asphaltic emulsion mixed with additional water before applying a micro-surfacing. The maximum ratio of water to asphaltic emulsion must be 2 to 1. Apply the tack coat at a rate from 0.08 to 0.15 gal/sq yd. The exact rate must be authorized.

You determine the grade of slow-setting or quick setting asphaltic emulsion to be used.

**37-3.03C Construction**

**37-3.03C(1) General**

Reserved

**37-3.03C(2) Proportioning**

Field conditions may require adjustments to the proportions within the authorized mix design during construction.

**37-3.03C(3) Mixing and Spreading Equipment**

**37-3.03C(3)(a) General**

Reserved

**37-3.03C(3)(b) Scratch Course Boxes**

Spread the scratch courses with the same type of spreader box used to spread micro-surfacings except use an adjustable steel strike-off device instead of a final strike-off device.

**37-3.03C(3)(c) Wheel Path Depression Boxes**

Each wheel path depression box must have adjustable strike-off device between 5 and 6 feet wide to regulate depth. The wheel path depression box must also have devices such as hydraulic augers capable of:

1. Moving the mixed material from the rear to the front of the filling chamber
2. Guiding larger aggregate into the deeper section of the wheel path depression
3. Forcing the finer material towards the outer edges of the spreader box

**37-3.03C(4) Test Strips**

If micro-surfacing placement will require more than 1 day, you must construct a test strip. The test strip must be:

1. From 300 to 450 feet long
2. The same as the full production micro-surfacing
3. On 1 of the application courses specified at an authorized location
4. At the same time of day or night the full production micro-surfacing is to be applied

If multiple application courses are specified, you may construct test strips over 2 days or nights.

The Engineer evaluates the test strip after traffic has used it for 12 hours. If the Engineer determines the mix design or placement procedure is unacceptable, make modifications and construct a new test strip for the Engineer's evaluation.

**37-3.03C(5) Placement**

**37-3.03C(5)(a) General**

Reserved

**37-3.03C(5)(b) Repair Wheel Path Depressions**

If repairing wheel path depressions is shown in plans, fill wheel path depressions and irregularities with micro-surfacing material before spreading micro-surfacing. If the depressions are less than 0.04 foot deep, fill with a scratch course. If the depressions are 0.04 foot deep or more, fill the depressions using a wheel path depression box.

Spread scratch courses by adjusting the steel strike-off of a scratch course box until it is directly in contact with the pavement surface.

Spread micro-surfacings with a wheel path depression box leaving a slight crown at the surface. Use multiple applications to fill depressions more than 0.12 foot deep. Do not apply more than 0.12 foot in a single application.

Allow traffic to compact each filled wheel path depression for a minimum of 12 hours before placing additional micro-surfacings.

**37-3.03C(5)(c) Micro-surfacing Pavement Surfaces**

The micro-surfacing spread rates must be within the ranges shown in the following table:

Micro-surfacing type	Application range (lb of dry aggregate/sq yd)
Type II	10–20
Type III <sup>a</sup>	20–32
Type III <sup>b</sup>	30–32

<sup>a</sup>Over asphalt concrete pavement

<sup>b</sup>Over concrete pavement and concrete bridge decks

Within 2 hours after placement, micro-surfacings must be set enough to allow traffic without pilot cars. Protect the micro-surfacings from damage until it has set and will not adhere or be picked up by vehicle tires. Micro-surfacings must not exhibit distress from traffic such as bleeding, raveling, separation or other distresses.

**37-3.03D Payment**

The payment quantity for micro-surfacing is the weight determined by combining the weights of the aggregate and micro-surfacing emulsion. The payment quantity for micro-surfacing does not include the weights of added water, mineral filler, and additives.

**37-3.04 RUBBERIZED AND MODIFIED SLURRY SEALS**

Reserved

## 37-4 FOG SEALS AND FLUSH COATS

### 37-4.01 GENERAL

#### 37-4.01A General

##### 37-4.01A(1) Summary

Section 37-4.01 includes general specifications for applying fog seals and flush coats.

##### 37-4.01A(2) Definitions

Reserved

##### 37-4.01A(3) Submittals

At least 15 days before use, submit:

1. Sample of asphaltic emulsion in two 1-quart plastic container with lined, sealed lid
2. Asphaltic emulsion information and test data as follows:
  - 2.1. Supplier
  - 2.2. Type/Grade of asphalt emulsion
  - 2.3. Copy of the specified test results for asphaltic emulsion

#### 37-4.01B Materials

Not Used

#### 37-4.01C Construction

##### 37-4.01C(1) General

Reserved

##### 37-4.01C(2) Weather Conditions

Only place a fog seal or flush coat if both the pavement and ambient temperatures are at least 50 degrees F and rising. Do not place a fog seal or flush coat within 24 hours of rain or within 24 hours of forecast rain or freezing temperatures.

#### 37-4.01D Payment

Not Used

### 37-4.02 FOG SEALS

#### 37-4.02A General

##### 37-4.02A(1) Summary

Section 37-4.02 includes specifications for applying fog seals.

Applying a fog seal includes applying a diluted slow-setting or quick setting asphaltic emulsion.

##### 37-4.02A(2) Definitions

Reserved

##### 37-4.02A(3) Submittals

Immediately after sampling, submit two 1-quart plastic container of asphaltic emulsion taken in the presence of the Engineer. Samples must be submitted in insulated shipping container.

##### 37-4.02A(4) Quality Assurance

###### 37-4.02A(4)(a) General

Reserved

###### 37-4.02A(4)(b) Quality Control

###### 37-4.02A(4)(b)(i) General

Reserved

**37-4.02A(4)(b)(ii) Asphaltic Emulsions**

Circulate asphaltic emulsions in the distributor truck before sampling. Take samples from the distributor truck at mid load or from a sampling tap or thief. Before taking samples, draw and dispose of 1 gallon. In the presence of the Engineer, take asphalt emulsion sample in two 1-quart plastic container with lined, sealed lid.

For asphaltic emulsions, the authorized laboratory must perform quality control sampling and testing at the specified frequency and location for the following quality characteristics:

**Asphaltic Emulsion**

Quality characteristic	Test Method	Minimum sampling and testing frequency	Sampling location
Saybolt Furol Viscosity, at 25 °C (Saybolt Furl seconds)	AASHTO T 59	Minimum 1 per day per delivery truck	Distributor truck
Sieve Test (%)			
Storage stability, 1 day (%)			
Residue by distillation (%)			
Particle charge <sup>a</sup>			
Tests on Residue from Distillation Test:			
Penetration, 25 °C	AASHTO T 49	Minimum 1 per day per delivery truck	Distributor truck
Ductility	AASHTO T 51		
Solubility in trichloroethylene	AASHTO T 44		

<sup>a</sup>If the result of the particle charge is inconclusive, the asphaltic emulsion must be tested for pH under ASTM E70. Grade QS1h asphaltic emulsion must have a minimum pH of 7.3. Grade CQS1h asphaltic emulsion must have a maximum pH of 6.7.

**37-4.02A(4)(b)(iii) Asphaltic Emulsion Spread Rates**

For fog seals, the authorized laboratory must perform sampling and testing at the specified frequency and location for the following quality characteristics:

**Fog Seal Quality Control Requirements**

Quality characteristic	Test method	Minimum sampling and testing frequency	Location of sampling
Asphaltic emulsion spread rate (gal/sq yd)	California Test 339	2 per day	Pavement surface

**37-4.02A(4)(c) Department Acceptance**

Fog seal acceptance is based on:

1. Visual inspection for the following:
  - 1.1. Uniform surface texture throughout the work limits
  - 1.2. Flushing consisting of the occurrence of a film of asphaltic material on the surface
  - 1.4. Streaking consisting of alternating longitudinal bands of asphaltic emulsion approximately parallel with the lane line
2. The Department's sampling and testing for compliance with the requirements for the quality characteristics specified in section 94 for asphaltic emulsion
3. Department's sampling and testing for compliance with the requirements for fog seal shown in the following table:

**Fog Seal Acceptance Criteria**

Quality Characteristic	Test Method	Requirement
Asphaltic emulsion spread rate (gal/sq yd)	California Test 339	TV ± 10%



**37-4.02B Materials**

You determine the grade of slow-setting or quick setting asphaltic emulsion to be used.

**37-4.02C Construction**

Apply asphaltic emulsions for fog seals at a residual asphalt rate from 0.02 to 0.06 gal/sq yd.

If additional water is added to the asphaltic emulsions, the resultant mixture must not be more than 1 part asphaltic emulsion to 1 part water. You determine the dilution rate.

If the fog seals become tacky, sprinkle water as required.

If fog seals and chip seals are on the same project, the joint between the seal coats must be neat and uniform.

**37-4.02D Payment**

The Department does not adjust the unit price for an increase or decrease in the asphaltic emulsion quantity.

**37-4.03 FLUSH COATS**

**37-4.03A General**

**37-4.03A(1) Summary**

Section 37-4.03 includes specifications for applying flush coats.

Applying a flush coat includes applying a fog seal coat followed by sand.

**37-4.03A(2) Definitions**

Reserved

**37-4.03A(3) Submittals**

At least 15 days before use, submit:

- 1. Proposed target X values for sand gradation.
- 2. Gradation test results for sand

Submit quality control test results for sand gradation within 2 business days of sampling.

**37-4.03A(4) Quality Assurance**

**37-4.03A(4)(a) General**

Reserved

**37-4.03A(4)(b) Quality Control**

For sand, the authorized laboratory must perform sampling and testing at the specified frequency and location for the following quality characteristics:

**Sand Quality Control**

Quality characteristic	Test method	Minimum sampling and testing frequency	Location of sampling
Gradation (% passing by weight)	California Test 202	1 per day	See California Test 125

**37-4.03A(4)(c) Department Acceptance**

Flush coat acceptance is based on fog seal acceptance and the following:

- 1. Visual inspection for uniform application of sand.
- 2. Sand acceptance is based on the Department's sampling and testing for compliance with the requirements shown in the following table:

### Sand Gradation Acceptance Criteria

Quality characteristic	Test method	Requirement
Gradation (% passing by weight)	California Test 202	
Sieve size:		
3/8"		100
No. 4		93–100
No. 8		61–99
No. 16		X ± 13
No. 30		X ± 12
No. 50		X ± 9
No.100		1–15
No. 200	0–10	

NOTE: "X" is the gradation that you propose to furnish for the specific sieve size.

#### 37-4.03B Material

##### 37-4.03B(1) General

Reserved

##### 37-4.03B(2) Sand

Sand must be free from deleterious coatings, clay balls, roots, bark, sticks, rags, and other extraneous material.

Sand for a flush coat must comply with the gradations shown in the following table:

#### Sand Gradation

Quality characteristic	Test method	Requirement
Gradation (% passing by weight)	California Test 202	
Sieve size:		
3/8"		100
No. 4		93–100
No. 8		61–99
No. 16		X ± 13
No. 30		X ± 12
No. 50		X ± 9
No.100		1–15
No. 200	0–10	

NOTE: "X" is the gradation that you propose to furnish for the specific sieve size.

Fine aggregate sizes must be distributed such that the difference between the total percentage passing the No. 16 and No. 30 sieves is from 10 to 40, and the difference between the percentage passing the No. 30 and No. 50 sieves is from 10 to 40.

#### 37-4.03C Construction

##### 37-4.03C(1) General

During flush coat activities, close adjacent lanes to traffic. Do not track asphaltic emulsion on existing pavement surfaces.

Apply sand immediately after applying asphaltic emulsions.

Spread sand aggregate with a mechanical device that spreads sand at a uniform rate over the full width of a traffic lane in a single application. Spread sand at a rate from 2 to 6 lb/sq yd. You determine the application rates for sand and the Engineer authorizes the application rate.

**37-4.03C(2) Sweeping**

Sweep loose sand material remaining on the surface 24 hours after application.

**37-4.03D Payment**

The Department does not adjust the unit price for an increase or decrease in the sand cover (seal) quantity.

**37-5 PARKING AREA SEALS**

**37-5.01 GENERAL**

**37-5.01A Summary**

Section 37-5 includes specifications for applying parking area seals. Sealing a parking area consists of spreading a mixture of asphaltic emulsion, aggregate, polymer, and water.

**37-5.01B Definitions**

Reserved

**37-5.01C Submittals**

At least 15 days before starting placement, submit a 20 lb sample of the aggregate to be used.

At least 10 days before starting placement, submit:

1. Name of the authorized laboratory to perform testing and mix design.
2. Laboratory report of test results and a proposed mix design. The report and mix design must include the specific materials to be used and show a comparison of test results and specifications. The mix design report must include the quantity of water allowed to be added at the job site. The authorized laboratory performing the tests must sign the original laboratory report and mix design.
3. Manufacturer's data for oil seal primer and polymer.

If the mix design consists of the same materials covered by a previous laboratory report, you may submit the previous laboratory report that must include material testing data performed within the previous 12 months for authorization.

If you request substitute materials, submit a new laboratory report and mix design at least 10 days before starting placement.

Submit a certificate of compliance for the parking area seal material.

Immediately after sampling, submit two 1-quart plastic containers of parking area seal taken in the presence of the Engineer. Samples must be submitted in insulated shipping containers.

**37-5.01D Quality Assurance**

**37-5.01D(1) General**

Reserved

**37-5.01D(2) Quality Control**

**37-5.01D(2)(a) General**

Reserved

**37-5.01D(2)(b) Asphaltic Emulsions**

For an asphaltic emulsion, the authorized laboratory must perform quality control sampling and testing at the specified frequency and location for the following quality characteristics:

### Asphaltic Emulsion

Quality characteristic	Test Method	Minimum sampling and testing frequency	Sampling location
Saybolt Furol Viscosity, at 25 °C (Saybolt Furol seconds)	AASHTO T 59	Minimum 1 per day per delivery truck	Distributor truck
Sieve Test (%)			
Storage stability, 1 day (%)			
Residue by distillation (%)			
Particle charge <sup>a</sup>			
Tests on Residue from Distillation Test			
Penetration, 25 °C	AASHTO T 49	Minimum 1 per day per delivery truck	Distributor truck
Ductility	AASHTO T 51		
Solubility in trichloroethylene	AASHTO T 44		

<sup>a</sup>If the result of the particle char is inconclusive, the asphaltic emulsion must be tested for pH under ASTM E70. Grade QS1h asphaltic emulsion must have a minimum pH of 7.3. Grade CQS1h asphaltic emulsion must have a maximum pH of 6.7.

### 37-5.01D(2)(c) Sand

For sand, the authorized laboratory must perform sampling and testing at the specified frequency and location for the following quality characteristics:

#### Sand Quality Control

Quality characteristic	Test method	Minimum sampling and testing frequency	Location of sampling
Gradation (% passing by weight)	California Test 202	One per project	See California Test 125

### 37-5.01D(2)(d) Parking Area Seals

For a parking area seal, the authorized laboratory must perform quality control sampling and testing at the specified frequency for the following quality characteristics:

#### Parking Area Seal Requirements

Quality characteristic	Test method	Frequency
Mass per liter (kg)	ASTM D244	One per project
Cone penetration (mm)	California Test 413	
Nonvolatile (%)	ASTM D2042 <sup>a</sup>	
Nonvolatile soluble in trichloroethylene (%)		
Wet track abrasion (g/m <sup>2</sup> )	ASTM D3910	
Dried film color	--	
Viscosity (KU) <sup>b</sup>	ASTM D562	

<sup>a</sup>Weigh 10 g of homogenous material into a previously tarred, small can. Place in a constant temperature oven at 165 ± 5 °C for 90 ± 3 minutes. Cool, reweigh, and calculate nonvolatile components as a percent of the original weight.

<sup>b</sup>Krebs units

### 37-5.01D(3) Department Acceptance

Parking area seal acceptance is based on:

1. Visual inspection for:
  - 1.1. Uniform surface texture throughout the work limits
  - 1.2. Marks in the surface:
    - 1.2.1. Up to 4 marks in the completed parking area seal that are up to 1 inch wide and up to 6 inches long per 1,000 square feet of parking area seal placed.

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- 1.2.2. No marks in the completed parking area seal surface that are over 1 inch wide or 6 inches long.
- 1.2. Raveling consisting of the separation of the aggregate from the asphaltic emulsion
- 1.3. Bleeding consisting of the occurrence of a film of asphaltic material on the surface of the parking area seal
- 1.4. Delaminating of the parking area seal from the existing pavement
- 1.5. Rutting or wash-boarding
- 2. The Department's sampling and testing of aggregate for compliance with 100 percent passing no. 16 sieve under California Test 202
- 3. The Department's sampling and testing for compliance with the requirements shown in the following table:

**Parking Area Seal Acceptance Criteria**

Quality characteristic	Test method	Requirement
Mass per liter (min, kg)	ASTM D244	1.1
Cone penetration (mm)	California Test 413	340–700
Nonvolatile (min, %)	ASTM D2042 <sup>a</sup>	50
Nonvolatile soluble in trichloroethylene (%)		10–35
Wet track abrasion (max, g/m <sup>2</sup> )	ASTM D3910	380
Dried film color	--	Black
Viscosity (min, KU) <sup>b</sup>	ASTM D562	75

<sup>a</sup>Weigh 10 g of homogenous material into a previously tared, small ointment can. Place in a constant temperature oven at 165 ± 5 °C for 90 ± 3 minutes. Cool, reweigh, and calculate nonvolatile components as a percent of the original weight.

<sup>b</sup>Krebs units

**37-5.02 MATERIALS**

**37-5.02A General**

Aggregate must be clean, hard, durable, uncoated, and free from organic and deleterious substances. One hundred percent of the aggregate must pass the no. 16 sieve.

Asphaltic emulsion must be either Grade SS1h or CSS1h, except the values for penetration at 25 degrees C for tests on residue from distillation must be from 20 to 60.

Polymer must be either neoprene, ethylene vinyl acetate, or a blend of butadiene and styrene.

Oil seal primer must be a quick-drying emulsion with admixtures. Oil seal primer must be manufactured to isolate the parking area seal from pavement with residual oils, petroleum grease, and spilled gasoline.

Crack sealant must comply with section 37-6.

Water must be potable and not separate from the emulsion before the material is placed.

**37-5.02B Mix Design**

The proposed mix design for a parking area seal must comply with the requirements shown in the following table:

**Parking Area Seal Mix Design Requirements**

Quality characteristic	Test method	Requirement
Mass per liter (min, kg)	ASTM D244	1.1
Cone penetration (mm)	California Test 413	340–700
Nonvolatile (min, %)	ASTM D2042 <sup>a</sup>	50
Nonvolatile soluble in trichloroethylene (%)		10–35
Wet track abrasion (max, g/m <sup>2</sup> )	ASTM D3910	380
Dried film color	--	Black
Viscosity (min, KU) <sup>b</sup>	ASTM D562	75

<sup>a</sup>Weigh 10 g of homogenous material into a previously tarred, small ointment can. Place in a constant temperature oven at 165 ± 5 °C for 90 ± 3 minutes. Cool, reweigh, and calculate nonvolatile components as a percent of the original weight.

<sup>b</sup>Krebs units

A parking area seal must contain a minimum of 2 percent polymer by volume of undiluted asphaltic emulsion.

**37-5.02C Proportioning**

Parking area seal ingredients must be mixed at a central plant. The plant must include mechanical or electronic controls that consistently proportion the ingredients. Mix an asphaltic emulsion with the other ingredients mechanically.

Store the parking area seal in a tank equipped with mixing or agitation devices. Keep stored materials thoroughly mixed. Protect stored materials from freezing conditions.

**37-5.03 CONSTRUCTION**

**37-5.03A General**

Request that the Engineer shut off the irrigation control system at least 5 days before placing the seal. Do not water plants adjacent to the seal at least 24 hours before and after the seal coat placement.

**37-5.03B Surface Preparations**

If cracks in the existing pavement are from 1/4 to 1 inch wide, treat the cracks under section 37-6. Do not place the parking area seals until the Engineer determines that the crack treatments are cured.

If cracks in the existing pavement are greater than 1 inch wide, the Engineer orders the repair. This work is change order work.

After any crack treatment and before placing parking area seals, clean the pavement surface, including removal of oil and grease spots. Do not use solvents.

If cleaning the pavement with detergents, thoroughly rinse with water. Allow all water to dry before placing parking area seals.

You must seal oil and grease spots that remain after cleaning. Use an oil seal primer and comply with the manufacturer's instructions.

If the existing pavement has oil and grease spots that do not come clean and sealing is insufficient, the Engineer orders the repair of the pavement. This work is change order work.

Before placing the parking area seals, dampen the pavement surface using a distributor truck. Place the seal on the damp pavement but do not place it with standing water on the pavement.

**37-5.03C Placement**

If adding water at the job site based on the manufacturer's instructions for consistency and spreadability, do not exceed 15 percent by volume of undiluted asphaltic emulsion.

Place the parking area seals in 1 or more application. The seals must be uniform and smooth, free of ridges or uncoated areas.

If placing in multiple applications, allow the last application to thoroughly dry before the subsequent application.

Do not allow traffic on the parking area seals for at least 24 hours after placement.

Do not stripe over the parking area seals until it is dry.

#### **37-5.04 PAYMENT**

The payment quantity for parking area seal is the weight determined by combining the weights of the aggregate and asphaltic emulsion. The payment quantity for parking area seal does not include the added water and set-control additive.

### **37-6 CRACK TREATMENTS**

#### **37-6.01 GENERAL**

##### **37-6.01A Summary**

Section 37-6 includes specifications for treating cracks in asphalt concrete pavement.

##### **37-6.01B Definitions**

Reserved

##### **37-6.01C Submittals**

If your selected crack treatment material is on the Authorized Material List for flexible pavement crack treatment material, submit a certificate of compliance including:

1. Manufacturer's name
2. Production location
3. Brand or trade name
4. Designation
5. Batch or lot number
6. Crack treatment material type
7. Contractor or subcontractor name
8. Contract number
9. Lot size
10. Shipment date
11. Manufacturer's signature

If your selected crack treatment material is not on the Authorized Material List for flexible pavement crack treatment material, submit a sample and test results from each batch or lot 20 days before use. Testing must be performed by an authorized laboratory and test results must show compliance with the specifications. Test reports must include the information specified for the certificate of compliance submittal. Each hot-applied crack treatment material sample must be a minimum of 3 lb and submitted in a silicone release container. Each cold-applied crack treatment material sample must be a minimum of 2 quarts and submitted in a plastic container.

At least 10 days before the start of work, submit sand gradation test results under California Test 202.

Submit the following with each delivery of crack treatment material to the job site:

1. Manufacturer's heating and application instructions
2. Manufacturer's SDS
3. Name of the manufacturer's recommended detackifying agent

##### **37-6.01D Quality Assurance**

###### **37-6.01D(1) General**

Hot-applied crack treatment material must be sampled at least once per project in the Engineer's presence. Collect two 3-pounds-minimum samples of crack treatment material from the dispensing wand into silicone release boxes.

Cold-applied crack treatment material must be sampled at least once per project in the Engineer's presence. Collect 2 samples of crack treatment material from the dispensing wand into 1-quart containers.

**37-6.01D(2) Quality Control**

Reserved

**37-6.01D(3) Department Acceptance**

Crack treatment acceptance is based on:

1. Visual inspection for uniform filling of cracks throughout the work limits including:
  - 1.2. Crack treatment is not more than a 1/4 inch below the specified level
  - 1.3. Sealant failures
  - 1.4. Crack re-opening
  - 1.5. Crack overbanding is less than 3 inches wide
2. The Department's sampling and testing for compliance with the requirements shown in the following table:

**Crack Treatment Acceptance Criteria**

Quality characteristic <sup>a</sup>	Test method <sup>b</sup>	Requirement				
		Type 1	Type 2	Type 3	Type 4	Type 5
Softening point (min, °C)	ASTM D36	102	96	90	84	84
Cone penetration at 77 °F (max)	ASTM D5329	35	40	50	70	90
Resilience at 77 °F, unaged (%)	ASTM D5329	20–60	25–65	30–70	35–75	40–80
Flexibility (°C) <sup>c</sup>	ASTM D3111	0	0	0	-11	-28
Tensile adhesion (min, %)	ASTM D5329	300	400	400	500	500
Specific gravity (max)	ASTM D70	1.25	1.25	1.25	1.25	1.25
Asphalt compatibility	ASTM D5329	Pass	Pass	Pass	Pass	Pass
Sieve test (% passing)	See note d	100	100	100	100	100

<sup>a</sup>Cold-applied crack treatment material residue collected under ASTM D6943, Method B and sampled under ASTM D140 must comply with the grade specified.

<sup>b</sup>Except for viscosity, cure each specimen at a temperature of 23 ± 2 °C and a relative humidity of 50 ± 10 percent for 24 ± 2 hours before testing.

<sup>c</sup>For the flexibility test, the specimen size must be 6.4 ± 0.2 mm thick by 25 ± 0.2 mm wide by 150 ± 0.5 mm long. The test mandrel diameter must be 6.4 ± 0.2 mm. The bend arc must be 180 degrees. The bend rate must be 2 ± 1 seconds. At least 4 of 5 test specimens must pass at the specified test temperature without fracture, crazing, or cracking.

<sup>d</sup>For hot-applied crack treatment, dilute with toluene and sieve through a no. 8 sieve. For cold-applied crack treatment, sieve the material as-received through a no. 8 sieve. If the manufacturer provides a statement that added components passed the no. 16 sieve before blending, this requirement is void.

**37-6.02 MATERIALS**

**37-6.02A General**

Reserved

**37-6.02B Crack Treatment Material**

A crack treatment material must comply with the requirements shown in the following table:



**Crack Treatment Material**

Quality characteristic <sup>a</sup>	Test method <sup>b</sup>	Requirement				
		Type 1	Type 2	Type 3	Type 4	Type 5
Softening point (min, °C)	ASTM D36	102	96	90	84	84
Cone penetration at 77 °F (max)	ASTM D5329	35	40	50	70	90
Resilience at 77 °F, unaged (%)	ASTM D5329	20–60	25–65	30–70	35–75	40–80
Flexibility (°C) <sup>c</sup>	ASTM D3111	0	0	0	-11	-28
Tensile adhesion (min, %)	ASTM D5329	300	400	400	500	500
Specific gravity (max)	ASTM D70	1.25	1.25	1.25	1.25	1.25
Asphalt compatibility	ASTM D5329	Pass	Pass	Pass	Pass	Pass
Sieve test (% passing)	See note d	100	100	100	100	100

<sup>a</sup>Cold-applied crack treatment material residue collected under ASTM D6943, Method B and sampled under ASTM D140 must comply with the grade specifications.

<sup>b</sup>Except for viscosity, cure each specimen at a temperature of 23 ± 2 °C and a relative humidity of 50 ± 10 percent for 24 ± 2 hours before testing.

<sup>c</sup>For the flexibility test, the specimen size must be 6.4 ± 0.2 mm thick by 25 ± 0.2 mm wide by 150 ± 0.5 mm long. The test mandrel diameter must be 6.4 ± 0.2 mm. The bend arc must be 180 degrees. The bend rate must be 2 ± 1 seconds. At least 4 of 5 test specimens must pass at the specified test temperature without fracture, crazing, or cracking.

<sup>d</sup>For hot-applied crack treatment, dilute with toluene and sieve through a no. 8 sieve. For cold-applied crack treatment, sieve the material as-received through a no. 8 sieve. If the manufacturer provides a statement that added components passed the no. 16 sieve before blending, this requirement is void.

A crack treatment material must be delivered to the job site with the information listed below. If crack treatment material is delivered to the job site in containers, each container must be marked with the following information.

1. Manufacturer's name
2. Production location
3. Brand or trade name
4. Designation
5. Crack treatment trade name
6. Batch or lot number
7. Maximum heating temperature
8. Expiration date for cold application only

Hot-applied crack treatment must be delivered to the job site premixed in cardboard containers with meltable inclusion liners or in a fully meltable package.

Cold-applied crack treatment must have a minimum shelf life of 3 months from the date of manufacture.

**37-6.02C Sand**

Sand applied to tacky crack treatment material must be clean, free of clay, and comply with the gradation shown in the following table:

**Sand Gradation**

Quality characteristic	Test method	Requirement
Gradation (% passing by weight)	California Test 202	
Sieve size:		
No. 4		100
No. 50		0–30
No. 200		0–5



**Add between the 3rd and 4th paragraphs of section 39-2.01A(1):**

04-15-16

For HMA that uses asphalt binder containing crumb rubber modifier, submit a Crumb Rubber Usage Report form monthly and at the end of the project.

**Replace the table in the 4th paragraph of section 39-2.01A(1) with:**

07-21-17

Test method	Year of publication
AASHTO M 17	2011 (2015)
AASHTO M 323	2013
AASHTO R 30	2002 (2015)
AASHTO R 59	2011 (2015)
AASHTO T 27	2014
AASHTO T 49	2014
AASHTO T 59	2013
AASHTO T 96	2002 (2010)
AASHTO T 164	2014
AASHTO T 176	2008
AASHTO T 209	2012
AASHTO T 269	2014
AASHTO T 275	2007 (2012)
AASHTO T 283	2014
AASHTO T 304	2011
AASHTO T 305	2014
AASHTO T 308	2010
AASHTO T 312	2014
AASHTO T 313	2012 (2016)
AASHTO T 315	2012 (2016)
AASHTO T 324	2014
AASHTO T 329	2013
AASHTO T 335	2009
ASTM D36/D36M	2014 <sup>E1</sup>
ASTM D92	2012b
ASTM D217	2010
ASTM D297	2013
ASTM D445	2014
ASTM D1856	2009 (Reapproved 2015)
ASTM D2007	2011
ASTM D2074	2007 (Reapproved 2013)
ASTM D2995	1999 (Reapproved 2009)
ASTM D4791	2010
ASTM D5329	2009
ASTM D7741/D7741M	2011 <sup>E1</sup>
Asphalt Institute MS-2	7th edition (2015)

**Replace items 1 and 2 in the 1st paragraph of section 39-2.01A(3)(b)(i) with:**

07-21-17

1. Mix design documentation on a Contractor Hot Mix Asphalt Design Data form dated within 12 months of the submittal for the JMF verification.

2. JMF verification on a Caltrans Hot Mix Asphalt Verification form and the Contractor Hot Mix Asphalt Design Data form that was submitted for the JMF verification, if applicable.

**Add to item 8 in the 4th paragraph of section 39-2.01A(3)(b)(i):**

, except lime supplier and source

07-15-16

**Replace the headings and paragraphs of section 39-2.01A(3)(i) with:**

**39-2.01A(3)(i) Reserved**

01-15-16

**Replace the 2nd sentence in the 3rd paragraph of section 39-2.01A(4)(b) with:**

Submit 3 parts and keep 1 part.

01-15-16

**Delete item 3 in the 5th paragraph of section 39-2.01A(4)(b).**

07-21-17

**Replace *AASHTO Materials Reference Laboratory* in the paragraph of section 39-2.01A(4)(f)(i) with:**

AASHTO re:source

01-20-17

**Delete the 6th paragraph of section 39-2.01A(4)(i)(i).**

07-21-17

**Add between *single* and *test* in the 7th paragraph of section 39-2.01A(4)(i)(i):**

aggregate or HMA

07-15-16

**Replace *Engineer may accept* in the introductory clause of the 3rd paragraph of section 39-2.01A(4)(i)(ii) with:**

Engineer must accept

07-21-17

**Replace *AASHTO Materials Reference Laboratory* in the 2nd paragraph of section 39-2.01A(4)(i)(iv) with:**

AASHTO re:source

01-20-17

**Replace the 1st paragraph of section 39-2.01B(2)(a) with:**

07-21-17

The HMA mix design must comply with the superpave HMA mix design as described in *MS-2 Asphalt Mix Design Methods* by the Asphalt Institute.

**Replace the 1st paragraph of section 39-2.01B(2)(b) with:**

07-15-16

If the proposed JMF indicates that the aggregate is being treated with dry lime or lime slurry with marination, or the HMA with liquid antistripping, then testing the untreated aggregate under AASHTO T 283 and AASHTO T 324 is not required.

If HMA treatment is required or being used by the Contractor, determine the plasticity index of the aggregate blend under California Test 204.

**Add between *aggregate* and *with dry lime* in the 3rd and 4th paragraphs of section 39-2.01B(2)(b):**

07-15-16

blend

**Replace the 9th through 11th paragraphs of section 39-2.01B(8)(a) with:**

07-15-16

HMA must be produced at the temperatures shown in the following table:

<b>HMA Production Temperatures</b>	
HMA compaction	Temperature (°F)
HMA	
Density based Method	≤ 325 305–325
HMA with WMA technology	
Density based Method	240–325 260–325

**Replace section 39-2.01B(11) with:**

07-21-17

**39-2.01B(11) Miscellaneous Areas and Dikes**

For miscellaneous areas and dikes:

1. Choose the aggregate gradation from:
  - 1.1. 3/8-inch Type A HMA aggregate gradation
  - 1.2. 1/2-inch Type A HMA aggregate gradation
  - 1.3. dike mix aggregate gradation
2. Choose asphalt binder Grade PG 64-10, PG 64-16 or PG 70-10.
3. Minimum asphalt binder content must be:
  - 3.1. 6.40 percent for 3/8-inch Type A HMA aggregate gradation
  - 3.2. 5.70 percent for 1/2-inch Type A HMA aggregate gradation
  - 3.3. 6.00 percent for dike mix aggregate gradation

If you request and the Engineer authorizes, you may reduce the minimum asphalt binder content.

Aggregate gradation for dike mix must be within the TV limits for the specified sieve size shown in the following table:

**Dike Mix Aggregate Gradation  
(Percentage Passing)**

Sieve size	Target value limit	Allowable tolerance
1/2"	100	--
3/8"	---	95 - 100
No. 4	73-77	TV ± 10
No. 8	58-63	TV ± 10
No. 30	29-34	TV ± 10
No. 200		0 - 14

For HMA used in miscellaneous areas and dikes, sections 39-2.01A(3), 39-2.01A(4), 39-2.01B(2), 39-2.01B(4)(c), and 39-2.01B(5)-(10) do not apply.

**Replace item 4 in the 2nd paragraph of section 39-2.01C(1) with:**

07-15-16

- 4. For method compaction:
  - 4.1. The temperature of the HMA and the HMA produced with WMA water injection technology in the windrow does not fall below 260 degrees F
  - 4.2. The temperature of the HMA produced using WMA additive technology in the windrow does not fall below 250 degrees F

**Add to the list in the 7th paragraph of section 39-2.01C(1):**

07-21-17

- 4. Marks
- 5. Tearing
- 6. Irregular texture

**Delete item 3 in the 8th paragraph of section 39-2.01C(1).**

07-15-16

**Replace the 1st paragraph of section 39-2.01C(2)(c) with:**

07-21-17

For method compaction, each paver spreading HMA must be followed by at least one of each of the following 3 types of rollers:

- 1. Breakdown roller must be a vibratory roller specifically designed to compact HMA. The roller must be capable of at least 2,500 vibrations per minute and must be equipped with amplitude and frequency controls. The roller's gross static weight must be at least 7.5 tons.
- 2. Intermediate roller must be an oscillating-type pneumatic-tired roller at least 4 feet wide. Pneumatic tires must be of equal size, diameter, type, and ply. The tires must be inflated to 60 psi minimum and maintained so that the air pressure does not vary more than 5 psi.
- 3. Finishing roller must be a steel-tired, 2-axle tandem roller. The roller's gross static weight must be at least 7.5 tons.

Replace *planning* in the 3rd paragraph of section 39-2.01C(3)(d) with:

planing

07-21-17

Replace 39-2.01A(3)(m)(iv) in the 6th paragraph of section 39-2.01C(3)(e) with:

36-3.01C(3)

01-15-16

Replace 2.06 in the 4th paragraph of section 39-2.01C(3)(f) with:

2.05

07-15-16

Replace section 39-2.01C(3)(g) with:

**39-2.01C(3)(g) Geosynthetic Pavement Interlayer**

07-21-17

Where shown, place geosynthetic pavement interlayer over a coat of asphalt binder and in compliance with the manufacturer's instructions. Do not place the interlayer on a wet or frozen surface. If the interlayer, in compliance with the manufacturer's instructions, does not require asphalt binder, do not apply asphalt binder before placing the interlayer.

Before placing the interlayer or asphalt binder:

1. Repair cracks 1/4 inch and wider, spalls, and holes in the pavement. This repair is change order work.
2. Clean the pavement of loose and extraneous material.

If the interlayer requires asphalt binder, immediately before placing the interlayer, apply asphalt binder at a rate specified by the interlayer manufacturer; at 0.25±0.03 gal per square yard of interlayer; or at a rate that just saturates the interlayer; whichever is greater. Apply asphalt binder the width of the interlayer plus 3 inches on each side. At an interlayer overlap, apply asphalt binder on the lower interlayer the same overlap distance as the upper interlayer.

If asphalt binder tracked onto the interlayer or brought to the surface by construction equipment causes interlayer displacement, cover it with a small quantity of HMA.

If the interlayer placement does not require asphalt binder, apply tack coat prior to placing HMA at the application rates specified under section 39-2.01C(3)(f) based on the condition of the underlying surface on which the interlayer was placed.

Align and place the interlayer with no overlapping wrinkles, except a wrinkle that overlaps may remain if it is less than 1/2 inch thick. If the overlapping wrinkle is more than 1/2 inch thick, cut the wrinkle out and overlap the interlayer no more than 2 inches.

Overlap the interlayer borders between 2 to 4 inches. In the direction of paving, overlap the following roll with the preceding roll at any break.

You may use rolling equipment to correct distortions or wrinkles in the interlayer.

Before placing HMA on the interlayer, do not expose the interlayer to:

1. Traffic, except for crossings under traffic control and only after you place a small HMA quantity
2. Sharp turns from construction equipment
3. Damaging elements

Pave HMA on the interlayer during the same work shift. The minimum HMA thickness over the interlayer must be 0.12 foot including at conform tapers.

**Add to the end of section 39-2.01C(15)(b):**

The compacted lift thickness must not exceed 0.25 foot.

07-15-16

**Add between *rectangles* and *with* in the 4th paragraph of section 39-2.01C(16):**

, half the lane width,

04-15-16

**Add between *to* and *the* in item 1 of the 4th paragraph of section 39-2.01C(16):**

and along

04-15-16

**Delete *coat* in the 5th paragraph of section 39-2.01C(16).**

07-15-16

**Replace 37 in the 5th paragraph of section 39-2.01C(16) with:**

37-4.02

07-15-16

**Replace section 39-2.02A(3)(b) with:**

The JMF must be based on the superpave HMA mix design as described in *MS-2 Asphalt Mix Design Methods* by the Asphalt Institute.

01-15-16

**Add between the 1st and 2nd paragraphs of section 39-2.02C:**

If the ambient air temperature is below 60 degrees F, cover the loads in trucks with tarpaulins. If the time for HMA discharge to truck at the HMA plant until transfer to paver's hopper is 90 minutes or greater and if the ambient air temperature is below 70 degrees F, cover the loads in trucks with tarpaulins, unless the time from discharging to the truck until transfer to the paver's hopper or the pavement surface is less than 30 minutes. The tarpaulins must completely cover the exposed load until you transfer the mixture to the paver's hopper or the pavement surface.

07-15-16



Replace the table in the 2nd paragraph of section 39-2.02C with:

07-15-16

**Minimum Ambient Air and Surface Temperatures**

Lift thickness (feet)	Ambient air (°F)		Surface (°F)	
	Unmodified asphalt binder	Modified asphalt binder	Unmodified asphalt binder	Modified asphalt binder
Type A HMA and Type A HMA produced with WMA water injection technology				
<0.15	55	50	60	55
≥0.15	45	45	50	50
Type A HMA produced with WMA additive technology				
<0.15	45	45	50	45
≥0.15	40	40	40	40

Delete the 3rd paragraph of section 39-2.02C.

07-15-16

Add between *HMA* and *placed* in the 1st sentence of the 4th paragraph of section 39-2.02C:

07-15-16

and Type A HMA produced with WMA water injection technology

Add between the 4th and the 5th paragraphs of section 39-2.02C:

07-15-16

For Type A HMA produced with WMA additive technology placed under method compaction, if the asphalt binder is:

1. Unmodified, complete:
  - 1.1 1st coverage of breakdown compaction before the surface temperature drops below 240 degrees F
  - 1.2. Breakdown and intermediate compaction before the surface temperature drops below 190 degrees F
  - 1.3. Finish compaction before the surface temperature drops below 140 degrees F
  - 1.4 You may continue static rolling below 140 degrees F to remove roller marks.
2. Modified, complete:
  - 2.1. 1st coverage of breakdown compaction before the surface temperature drops below 230 degrees F
  - 2.2. Breakdown and intermediate compaction before the surface temperature drops below 170 degrees F
  - 2.3. Finish compaction before the surface temperature drops below 130 degrees F
  - 2.4. You may continue static rolling below 130 degrees F to remove roller marks.

Replace the 2nd paragraph of section 39-2.03A(3)(b) with:

01-15-16

The JMF must be based on the superpave HMA mix design as described in *MS-2 Asphalt Mix Design Methods* by the Asphalt Institute.

Replace the requirement in the row for *Voids in mineral aggregate on plant produced HMA* in the 2nd table in section 39-2.03A(4)(e)(i) with:

18.0-23.0

01-15-16

**Add before the 1st paragraph of section 39-2.03A(4)(e)(ii)(C):**

CRM used must be on the Authorized Materials List for Crumb Rubber Modifier.

04-15-16

CRM must be a ground or granulated combination of scrap tire crumb rubber and high natural scrap tire crumb rubber, CRM must be 75.0 ± 2.0 percent scrap tire crumb rubber and 25.0 ± 2.0 percent high natural scrap tire crumb rubber by total weight of CRM. Scrap tire crumb rubber and high natural scrap tire crumb rubber must be derived from waste tires described in Pub Res Code § 42703.

**Replace the row for *Hamburg wheel track* in the table in section 39-2.03B(2) with:**

01-15-16

Hamburg wheel track (min, number of passes at the inflection point)	AASHTO T 324 (Modified) <sup>d</sup>	
Binder grade:		
PG 58		10,000
PG 64		12,500
PG 70		15,000

**Replace *AASHTO R 35* in the 4th paragraph of section 39-2.03B(2) with:**

superpave HMA mix design as described in *MS-2 Asphalt Mix Design Methods* by the Asphalt Institute

07-21-17

**Replace *RHMA-G* in the 3rd and 5th paragraphs of section 39-2.03C with:**

RHMA-G and RHMA-G produced with WMA water injection technology

07-15-16

**Add between the 3rd and 4th paragraphs of section 39-2.03C:**

Spread and compact RHMA-G produced with WMA additive technology at an ambient air temperature of at least 50 degrees F and a surface temperature of at least 50 degrees F.

01-20-17

**Add between the 5th and 6th paragraphs of section 39-2.03C:**

For RHMA-G produced with WMA additive technology placed under method compaction:

07-15-16

1. Complete the 1st coverage of breakdown compaction before the surface temperature drops below 260 degrees F
2. Complete breakdown and intermediate compaction before the surface temperature drops below 230 degrees F
3. Complete finish compaction before the surface temperature drops below 180 degrees F
4. You may continue static rolling below 140 degrees F to remove roller marks

**Replace 39-2.03A(4)(b)(ii) in the 1st sentence of section 39-2.04A(4)(b)(ii) with:**

01-20-17

39-2.03A(4)(c)(ii)

**Replace the 6th and 7th paragraphs of section 39-2.04C with:**

07-15-16

For HMA-O and HMA-O produced with WMA water injection technology:

1. With unmodified asphalt binder:
  - 1.1. Spread and compact only if the atmospheric temperature is at least 55 degrees F and the surface temperature is at least 60 degrees F.
  - 1.2. Complete the 1st coverage using 2 rollers before the surface temperature drops below 240 degrees F.
  - 1.3. Complete all compaction before the surface temperature drops below 200 degrees F.
2. With modified asphalt binder, except asphalt rubber binder:
  - 2.1. Spread and compact only if the atmospheric temperature is at least 50 degrees F and the surface temperature is at least 50 degrees F.
  - 2.2. Complete the 1st coverage using 2 rollers before the surface temperature drops below 240 degrees F.
  - 2.3. Complete all compaction before the surface temperature drops below 180 degrees F.

For HMA-O produced with WMA additive technology:

1. With unmodified asphalt binder:
  - 1.1. Spread and compact only if the atmospheric temperature is at least 45 degrees F and the surface temperature is at least 50 degrees F.
  - 1.2. Complete the 1st coverage using 2 rollers before the surface temperature drops below 230 degrees F.
  - 1.3. Complete all compaction before the surface temperature drops below 190 degrees F.
2. With modified asphalt binder, except asphalt rubber binder:
  - 2.1. Spread and compact only if the atmospheric temperature is at least 40 degrees F and the surface temperature is at least 40 degrees F.
  - 2.2. Complete the 1st coverage using 2 rollers before the surface temperature drops below 230 degrees F.
  - 2.3. Complete all compaction before the surface temperature drops below 170 degrees F.

**Replace RHMA-O and RHMA-O-HB in the 8th paragraph of section 39-2.04C with:**

07-15-16

RHMA-O and RHMA-O produced with WMA water injection technology, and RHMA-O-HB and RHMA-O-HB produced with WMA water injection technology

**Add between the 8th and 9th paragraphs of section 39-2.04C:**

07-15-16

For RHMA-O produced with WMA additive technology and RHMA-O-HB produced with WMA additives technology:

1. Spread and compact if the ambient air temperature is at least 45 degrees F and the surface temperature is at least 50 degrees F
2. Complete the 1st coverage using 2 rollers before the surface temperature drops below 270 degrees F

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#### **48-6.01C(2) Guy Wire Anchors**

Submit the guy wire anchor manufacturer's product information and installation instructions. Do not install anchors unless authorized.

#### **48-6.01D Quality Assurance**

##### **48-6.01D(1) General**

Reserved

##### **48-6.01D(2) Welding**

Welding must comply with AWS D1.1.

#### **48-6.02 MATERIALS**

##### **48-6.02A General**

Wire used for messenger wires, tether wires, or guy wires must be 7-wire strand complying with ASTM A475, Utilities Grade.

Connection hardware for wires must provide a termination efficiency factor of not less than 0.80.

Wood poles, push braces, and stubs must comply with ANSI O5.1.

Treat wood under AWP A U1, Use Category UC4B, Commodity Specification D.

Except for wire, helical anchors, expanded steel plate anchors, cross plate anchors, and expanding rock anchors, steel components must comply with section 56-3.

##### **48-6.02B Helical Anchors, Expanded Steel Plate Anchors, Cross Plate Anchors, and Expanding Rock Anchors**

Fabricate helical anchors, expanded steel plate anchors, and cross plate anchors under section 75.

Fabricate attachable thimble eyes and expanding rock anchors from suitable ferrous material.

Welding must comply with AWS D1.1.

Fabricate as a continuous piece or as separate segments with mechanical connections between segments. Include integral thimble eye or include attachable thimble eye.

Galvanize all helical anchor parts under section 75.

Paint expanded steel plate anchors, cross plate anchors, and expanding rock anchors as specified for repairing damaged galvanized surfaces in section 75-1.02B.

The final assembly must have (1) a minimum ultimate tensile strength greater than the minimum required breaking strength of the guy wire and (2) a minimum ultimate torsional strength greater than twice the minimum installation torque.

##### **48-6.02C Reuse of Materials and Relocation of Temporary Supports**

You may reuse structural components and relocate temporary supports provided that the materials remain in acceptable condition for reuse, except do not reuse:

1. Components of high-strength bolt assemblies that have been or are required to be tensioned past snug tight
2. High-strength cap screws that have been or are required to be tensioned past snug tight
3. Tension control bolts

#### **48-6.03 CONSTRUCTION**

##### **48-6.03A General**

Install construction bracing as necessary to withstand all imposed loads during erection, construction, and removal of any temporary wood poles.

The Engineer may order you to install Type K temporary railing at temporary wood pole locations that are less than 15 feet from the edge of a traffic lane.

Install all temporary railing protecting temporary wood poles before erecting temporary wood poles. Do not remove temporary railing until authorized.

For overhead line construction not specifically covered in the contract documents, comply with Public Utility Commission General Order 95.

#### **48-6.03B Foundations**

Verify the design soil parameters before starting construction of temporary wood poles.

Remove any accumulated water from the pole excavation prior to placing granular backfill at the bottom of the pole excavation. Thoroughly compact and level the granular backfill at the bottom of the pole excavation prior to setting the pole.

Backfill around poles with manufactured sand that is free of rocks or other deleterious material. Place the backfill material in 4-inch thick layers. Moisten and thoroughly compact each layer.

Remove accumulated water from the anchor excavation prior to placing an expanded steel anchor. Expand the base of the expanded steel anchor prior to placing backfill. Place backfill around the expanded steel anchor in 4-inch thick layers. Thoroughly compact each layer.

Protect foundations from softening and undermining.

#### **48-6.03C Erection**

If temporary wood poles are over or adjacent to roadways or railroads, all construction bracing must (1) be installed at the time each element of the temporary wood pole is erected and (2) remain in place until the temporary wood pole is removed.

Suspend conductors from messenger wire by continuous lashing wire. No spare wire conductors or cables are allowed unless described.

Sag overhead bundles to maintain required clearances over the ambient temperature range of - 30 to 120 degrees F. The sag must be between 4.6 and 5.4 percent of horizontal span unless otherwise shown. Minimum vertical clearance over grade is 25 feet unless otherwise shown.

#### **48-6.03D Attachments**

If specific connection details are not shown, mount attachments under the manufacturer's written instructions and such that there is no loss of cross section.

#### **48-6.03E Damping**

If at any time during service the temporary structural support exhibits excessive vibration, immediately install dampers. Dampers must be effective in mitigating the vibration and must not compromise the structural supports or the supported hardware.

#### **48-6.03F Removal**

Remove temporary structural supports such that portions not yet removed remain stable at all times.

Remove temporary wood poles and helical anchors. Fill the void with excavated material or sand that is free of deleterious material. Place the backfill material in 4-inch thick layers. Moisten and thoroughly compact each layer.

Dispose of surplus excavated material uniformly along the adjacent roadway.

Dispose of temporary structural support materials and work debris.

#### **48-6.03G Guy Wire Helical Anchors**

##### **48-6.03G(1) General**

Reserved

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### **48-6.03G(2) Installation Parameters**

Use the minimum installation torque shown. You may request an alternative minimum installation torque based on a revised value for empirical torque factor.

For alternative minimum installation torque, use the following equation to calculate the installation torque:

$$T = Qa(FS/Kt)$$

where:

T = Minimum installation torque, ft-lb

FS = Factor of safety of 2.0

Qa = Minimum allowable tensile capacity shown, lb

Kt = Empirical torque factor, 1/ft (inverse foot)

Include a geotechnical report sealed and signed by a licensed geotechnical engineer with recommended values for empirical torque factor and alternative minimum installation torque with your request.

Do not start installation unless your alternative installation parameters are authorized.

Verify the installation parameters before the start of anchor installation.

### **48-6.03G(3) Installation**

Install anchors under the manufacturer's written instructions and the following:

1. Do not install anchors underneath utilities or subsurface structures.
2. Maintain horizontal clearances as required by the Engineer.
3. Install to the minimum embedment length.
4. Continuously monitor and record torque during installation. If torque at the minimum embedment length is not equal to or greater than the minimum required, continue installation to greater embedment until the minimum installation torque is achieved for 2 continuous feet.

### **48-6.03G(4) Removal**

After service is complete, remove anchors using reverse torque. Fill the void with excavated material or sand free of deleterious materials. Place the backfill material in 4-inch thick layers. Moisten and thoroughly compact each layer.

## **48-6.03H Expanded Steel Plate Anchors, Cross Plate Anchors, and Expanding Rock Anchors**

### **48-6.03H(1) General**

Reserved.

### **48-6.03H(2) Installation**

Install anchors under the manufacturer's written instructions.

Locate and mark all substructures and utilities. Do not install anchors underneath subsurface utilities or structures.

### **48-6.03H(3) Removal**

After service is complete, remove anchors to a depth of at least 3 feet below finished grade. Fill the void with sand free of deleterious materials. Place the backfill material in 4-inch thick layers. Moisten and thoroughly compact each layer.

### **48-6.04 PAYMENT**

Not Used



**Delete the 2nd paragraph of section 49-1.04.**

04-15-16

**Delete the 4th paragraph of section 49-2.01C(5).**

01-15-16

**Replace item 3 in the list in the 2nd paragraph of section 49-3.01A with:**

3. CISS concrete piles

07-15-16

**Add between *undisturbed material* and *in a dry* in the 1st paragraph of section 49-3.01C:**

, casing, or steel shell

07-15-16

**Replace the 2nd and 3rd paragraphs of section 49-3.01C with:**

Place and secure reinforcement. Securely block the reinforcement to provide the minimum clearance shown between the reinforcing steel cage and the sides of the drilled hole, casing, or steel shell.

07-15-16

Steel shells, casings, and drilled holes must be clean and free of debris before reinforcement and concrete are placed.

**Replace *dewatered* in the 4th paragraphs of section 49-3.01C with:**

drilled

07-15-16

**Add to section 49-3.02A(1):**

Permanent steel casing and driven steel shell must comply with section 49-2.02.

07-15-16

**Replace the paragraph of section 49-3.02A(2) with:**

**dry hole:** A drilled hole that requires no work to keep it free of water.

07-15-16

**dewatered hole:** A drilled hole that:

1. Accumulates no more than 12 inches of water at the bottom during a 1 hour period without any pumping from the hole.
2. Has no more than 3 inches of water at the bottom immediately before placing concrete.
3. Does not require temporary casing to control the groundwater.

**Replace item 8 in the list in the 1st paragraph of section 49-3.02A(3)(b) with:**

8. Drilling plan and sequence
9. Concrete sequence and placement plan

07-15-16

10. If inspection pipes are required, methods for ensuring the inspection pipes remain straight, undamaged, and properly aligned during concrete placement

**Replace 1 business day in the paragraph of section 49-3.02A(3)(d) with:**

2 business days

07-15-16

**Add to section 49-3.02A(3)(d):**

The log must:

07-15-16

1. Show the pile location, tip elevation, cutoff elevation, dates of excavation and concrete placement, total quantity of concrete placed, length and tip elevation of any casing, and details of any hole stabilization method and materials used.
2. Include an 8-1/2 by 11 inch graph of concrete placed versus depth of hole filled as follows:
  - 2.1. Plot the graph continuously throughout concrete placement. Plot the depth of drilled hole filled vertically with the pile tip at the bottom and the quantity of concrete placed horizontally.
  - 2.2. Take readings at each 5 feet of pile depth, and indicate the time of the reading on the graph.

**Add after the sentence in the paragraph of section 49-3.02A(3)(e):**

Allow 10 days for the review.

07-15-16

**Replace the 3rd sentence in the paragraph of section 49-3.02A(3)(f) with:**

Allow 10 days for the review and analysis of this report.

07-15-16

**Add after *rejected pile* in the 1st sentence in the 1st paragraph of section 49-3.02A(3)(g):**

to be mitigated

07-15-16

**Delete the 2nd paragraph of section 49-3.02A(3)(g).**

07-15-16

**Replace item 3 in the list in the 3rd paragraph of section 49-3.02A(3)(g) with:**

3. Step by step description of the mitigation work to be performed, including drawings if necessary. If the *ADSC Standard Mitigation Plan* is an acceptable mitigation method, include the most recent version. For the most recent version of the *ADSC Standard Mitigation Plan*, go to:  
<http://www.dot.ca.gov/hq/esc/geotech/ft/adscmitplan.htm>

07-15-16

**Replace the 2nd sentence in the paragraph of section 49-3.02A(3)(i) with:**

Allow 10 days for the review.

07-15-16

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**Add to section 49-3.02A(3):**

07-15-16

**49-3.02A(3)(j) Certifications**

If synthetic slurry is used, submit as an informational submittal the names and certifications of your employees who are trained and certified by the synthetic slurry manufacturer.

**Add after *excavated hole* in the 1st sentence in the 3rd paragraph of section 49-3.02A(4)(c):**

07-15-16

lined with plastic

**Replace the 1st paragraph of section 49-3.02A(4)(d)(i) with:**

07-15-16

Section 49-3.02A(4)(d) applies to CIDH concrete piles except for piles (1) less than 24 inches in diameter or (2) constructed in dry or dewatered holes.

**Replace *gamma-gamma logging* in the 2nd paragraph of section 49-3.02A(4)(d)(i) with:**

07-15-16

GGL

**Replace the 1st sentence in the 3rd paragraph of section 49-3.02A(4)(d)(i) with:**

07-15-16

After notification by the Engineer of pile acceptance, fill the inspection pipes and cored holes with grout.

**Replace *gamma-gamma logging* in section 49-3.02A(4)(d)(ii) with:**

07-15-16

GGL

**Replace the 3rd and 4th paragraphs of section 49-3.02A(4)(d)(iii) with:**

07-15-16

The Department may perform CSL to determine the extent of the anomalies identified by GGL and to further evaluate a rejected pile for the presence of anomalies not identified by GGL. The pile acceptance test report will indicate if the Department intends to perform CSL and when the testing will be performed. Allow the Department 20 additional days for a total of 50 days to perform CSL and to provide supplemental results.

If authorized, you may perform testing on the rejected pile.

**Delete the 8th paragraph of section 49-3.02A(4)(d)(iii).**

07-15-16

**Add to the end of section 49-3.02A(4)(d)(iii):**

07-15-16

If the Engineer determines it is not feasible to repair the rejected pile, submit a mitigation plan for replacement or supplementation of the rejected pile.

**Add to section 49-3.02A(4):**

07-15-16

**49-3.02A(4)(e) Certifications**

If synthetic slurry is used, your employees who will be providing technical assistance in the slurry activities must be trained and certified by the synthetic slurry manufacturer to show their competency to perform inspection of slurry operations.

**Replace section 49-3.02B(4) with:**

07-15-16

**49-3.02B(4) Reserved**

**Replace *near* in the 3rd, 4th, and 5th paragraphs of section 49-3.02B(6)(b) with:**

07-15-16

within 2 feet of

**Replace *twice per shift* in item 2 in the 3rd paragraph of section 49-3.02B(6)(b) with:**

07-15-16

every 4 hours

**Delete the 7th and 8th paragraphs of section 49-3.02B(6)(b).**

07-15-16

**Delete the 3rd paragraph of section 49-3.02B(6)(c).**

07-15-16

**Replace *near* in item 2 in the 4th paragraph of section 49-3.02B(6)(c) with:**

07-15-16

within 2 feet of

**Replace item 5 in the 4th paragraph of section 49-3.02B(6)(c) with:**

07-15-16

5. After final cleaning and immediately before placing concrete.

**Replace section 49-3.02B(9) with:**

07-15-16

**49-3.02B(9) Inspection Pipes**

Inspection pipes must be schedule 40 PVC pipe complying with ASTM D1785 with a nominal pipe size of 2 inches.

Watertight PVC couplers complying with ASTM D2466 are allowed to facilitate pipe lengths in excess of those commercially available.

**Add to the beginning of section 49-3.02C(1):**

07-15-16

Unless otherwise authorized, drilling the hole and placing reinforcement and concrete in the hole must be performed in a continuous operation.

**Replace the 5th paragraph of section 49-3.02C(2) with:**

07-15-16

If slurry is used during excavation, maintain the slurry level at a height required to maintain a stable hole, but not less than 10 feet above the piezometric head.

**Replace the 1st sentence in the 9th paragraph of section 49-3.02C(2) with:**

07-15-16

Remove water that has infiltrated the dewatered hole before placing concrete, as required for dewatered hole.

**Replace the 1st sentence in the 10th paragraph of section 49-3.02C(2) with:**

07-15-16

If authorized, to control caving or water seepage, you may enlarge portions of the hole, backfill the hole with slurry cement backfill, concrete, or other material, and redrill the hole to the diameter shown.

**Replace the 4th paragraph of section 49-3.02C(3) with:**

07-15-16

Remove the temporary casing during concrete placement. Maintain the concrete in the casing at a level required to maintain a stable hole, but not less than 5 feet above the bottom of the casing, to prevent displacement of the concrete by material from outside the casing.

**Replace the 5th paragraph of section 49-3.02C(4) with:**

07-15-16

For a single CIDH concrete pile supporting a column:

1. If the pile and the column share the same reinforcing cage diameter, this cage must be accurately placed as shown
2. If the pile reinforcing cage is larger in diameter than the column cage:
  - 2.1. Maintain a clear horizontal distance of at least 3.5 inches between the two cages, if the concrete is placed under dry conditions
  - 2.2. Maintain a clear horizontal distance of at least 5 inches between the two cages if the concrete is placed under slurry
  - 2.3. The offset between the centerlines of the two cages must not exceed 6 inches

**Replace the paragraphs in section 49-3.02C(5) with:**

07-15-16

For acceptance testing, install and test vertical inspection pipes as follows:

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1. Log the location of the inspection pipe couplers with respect to the plane of pile cutoff.
2. Cap each inspection pipe at the bottom. Extend the pipe from 3 feet above the pile cutoff to the bottom of the reinforcing cage. Provide a temporary top cap or similar means to keep the pipes clean before testing. If pile cutoff is below the ground surface or working platform, extend inspection pipes to 3 feet above the ground surface or working platform.
3. If any changes are made to the pile tip, extend the inspection pipes to the bottom of the reinforcing cage.
4. Install inspection pipes in a straight alignment and parallel to the main reinforcement. Securely fasten inspection pipes in place and provide protective measures to prevent misalignment or damage to the inspection pipes during installation of the reinforcement and placement of concrete in the hole. Construct CIDH concrete piles such that the relative distance of inspection pipes to vertical steel reinforcement remains constant.
5. After concrete placement is complete, fill inspection pipes with water to prevent debonding of the pipe.
6. Provide safe access to the tops of the inspection pipes.
7. After placing concrete and before requesting acceptance testing, test each inspection pipe in the Engineer's presence by passing a rigid cylinder through the length of pipe. The rigid cylinder must be 1-1/4-inch diameter by 4.5-foot long, weigh 12 pounds or less, and be able to freely pass down through the entire length of the pipe under its own weight and without the application of force.
8. When performing acceptance testing, inspection pipes must provide a 2-inch-diameter clear opening and be completely clean, unobstructed, and either dry or filled with water as authorized.
9. After acceptance testing is complete, completely fill the inspection pipes with water.

If the rigid cylinder fails to pass through the inspection pipe:

1. Completely fill the inspection pipes in the pile with water immediately.
2. Core a nominal 2-inch-diameter hole through the concrete for the entire length of the pile for each inspection pipe that does not pass the rigid cylinder. Coring must not damage the pile reinforcement.
3. Locate cored holes as close as possible to the inspection pipes they are replacing and no more than 5 inches clear from the reinforcement.

Core holes using a double wall core barrel system with a split tube type inner barrel. Coring with a solid type inner barrel is not allowed.

Coring methods and equipment must provide intact cores for the entire length of the pile.

Photograph and store concrete cores as specified for rock cores in section 49-1.01D(5).

The coring operation must be logged by an engineering geologist or civil engineer licensed in the State and experienced in core logging. Coring logs must comply with the Department's *Soil and Rock Logging, Classification, and Presentation Manual* for rock cores. Coring logs must include core recovery, rock quality designation of the concrete, locations of breaks, and complete descriptions of inclusions and voids encountered during coring.

The Department evaluates the portion of the pile represented by the cored hole based on the submitted coring logs and concrete cores. If the Department determines a pile is anomalous based on the coring logs and concrete cores, the pile is rejected.

**Replace item 2 in the list in the 2nd paragraph of section 49-3.02C(7) with:**

2. Extend at least 5 feet below the construction joint. If placing casing into rock or a dry hole, the casing must extend at least 2 feet below the construction joint.

07-15-16



**Add to the beginning of section 49-3.02C(9):**

07-15-16

**49-3.02C(9)(a) General**

**Replace the 2nd sentence of the 3rd paragraph of section 49-3.02C(9) with:**

04-15-16

Do not vibrate the concrete.

**Add after *concrete pump* in the 8th paragraph of section 49-3.02C(9):**

07-15-16

and slurry pump

**Replace item 3 in the list in the 11th paragraph of section 49-3.02C(9) with:**

07-15-16

3. Maintain the slurry level at a height required to maintain a stable hole, but not less than 10 feet above the piezometric head.

**Replace the 13th paragraph of section 49-3.02C(9) with:**

07-15-16

Maintain a log of concrete placement for each drilled hole.

**Replace 14th and 15th paragraphs of section 49-3.02C(9) with:**

07-15-16

If a temporary casing is used, maintain concrete placed under slurry at a level required to maintain a stable hole, but not less than 5 feet above the bottom of the casing. The withdrawal of the casing must not cause contamination of the concrete with slurry.

The equivalent hydrostatic pressure inside the casing must be greater than the hydrostatic pressure on the outside of the casing to prevent intrusion of water, slurry, or soil into the column of freshly placed concrete.

Remove scum, laitance, and slurry-contaminated concrete from the top of the pile.

**Add to section 49-3.02C(9):**

07-15-16

**49-3.02C(9)(b) Mineral Slurry**

Remove any caked slurry on the sides or bottom of hole before placing reinforcement.

If concrete is not placed immediately after placing reinforcement, the reinforcement must be removed and cleaned of slurry, the sides of the drilled hole must be cleaned of caked slurry, and the reinforcement again placed in the hole for concrete placement.

**49-3.02C(9)(c) Synthetic Slurry**

A manufacturer's representative must:

1. Provide technical assistance for the use of their material
2. Be at the job site before introduction of the synthetic slurry into the drilled hole
3. Remain at the job site until released by the Engineer

After the manufacturer's representative has been released by the Engineer, your employee certified by the manufacturer must be present during the construction of the pile under slurry.

**Replace the heading of section 49-3.03 with:**

07-15-16

**CAST-IN-STEEL SHELL CONCRETE PILING**

**Replace the 1st paragraph of section 49-3.03A(1) with:**

07-15-16

Section 49-3.03 includes specifications for constructing CISS concrete piles consisting of driven open-ended or closed-ended steel shells filled with reinforcement and concrete.

**Add to the end of section 49-3.03A(1):**

07-15-16

CISS concrete piles include Class 90 Alternative V and Class 140 Alternative V piles.

**Add to section 49-3.03A(3):**

01-15-16

Submit a Pile and Driving Data Form under section 49-2.01A(3)(a) if specified in the special provisions.

**Replace the paragraph of section 49-3.03D with:**

07-15-16

Furnish piling is measured along the longest side of the pile from the specified tip elevation shown to the plane of pile cutoff.

**Replace section 49-4.03 with:**

01-15-16

**49-4.03 CONSTRUCTION**

**49-4.03A General**

Reserved

**49-4.03B Drilled Holes**

Drill holes for steel soldier piles into natural foundation material. Drilled holes must be accurately located, straight, and true.

Furnish and place temporary casings or tremie seals where necessary to control water or to prevent caving of the hole.

Before placing the steel soldier pile, remove loose materials existing at the bottom of the hole after drilling operations have been completed.

Do not allow surface water to enter the hole. Remove all water in the hole before placing concrete.

If temporary casings are used, they must comply with section 49-3.02C(3).





8. Pipe culvert headwalls and endwalls for a pipe with a diameter of less than 5 feet

01-20-17

**Add to section 51-1.01B:**

**age of break:** Age in hours, determined by your testing, at which RSC attains its minimum specified compressive strength.

07-21-17

**Delete the 1st paragraph of section 51-1.01C(5).**

01-20-17

**Delete the 5th item in the list in the 4th paragraph of section 51-1.01C(5).**

01-20-17

**Replace section 51-1.01D(2)(b) with:**

**51-1.01D(2)(b) Rapid Strength Concrete**

07-21-17

**51-1.01D(2)(b)(i) General**

Reserved

**51-1.01D(2)(b)(ii) Prequalification of Mix Design**

Prequalify RSC under section 90-1.01D(5)(b) before use. Prequalification of an RSC mix design includes determining the opening age and attaining the specified minimum 28-day compressive strength.

Determine the opening age of the RSC mix design 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 ± 3 degrees F until the cylinders are tested.
3. Determine the age of break to attain an average strength of the 5 test cylinders.
4. Opening age is the age of break plus 1 hour.

The average strength of the 5 test cylinders must be at least the minimum specified compressive strength. Not more than 2 test cylinders may have a strength of less than 95 percent of the minimum specified compressive strength.

If compressive strength tests performed in the field show that the RSC has attained the minimum specified compressive strength, you may open the lane to traffic at the age of break. Perform the compressive strength tests under the specifications for sampling and testing cylinders in section 90-1.01D(5)(a). If you choose to use this option, notify the Engineer before starting construction.

**51-1.01D(2)(b)(iii) Mock-ups**

Reserved

**Replace the 1st sentence in the 3rd paragraph of section 51-1.01D(3)(b)(iii) with:**

If portions of completed deck surfaces or approach slabs have a coefficient of friction of less than 0.35, those portions must be ground or grooved parallel to the center line to produce a coefficient of friction of not less than 0.35.

01-20-17

**Add to section 51-1.02I:**

07-15-16

Metal frames, covers, grates, and other miscellaneous iron and steel used with drainage inlets must comply with section 75-2.

**Add to section 51-1.03B:**

07-15-16

You may use PC drainage inlets as an alternative to CIP drainage inlets.

**Add between the 10th and 11th paragraphs of section 51-1.03C(2)(a):**

07-15-16

For drainage inlets, extend the outside forms at least 12 inches below the top of the inlet. You may place concrete against excavated earth below this depth except:

1. You must use full-depth outside forms or other protection when work activities or unstable earth may cause hazardous conditions or contamination of the concrete.
2. You must increase the wall thickness 2 inches if placing concrete against the excavated surface. The interior dimensions must be as shown.

**Add to section 51-1.03C(2)(b):**

07-15-16

For drainage inlets, remove exterior forms to at least 12 inches below the final ground surface. Exterior forms below this depth may remain if their total thickness is not more than 1 inch.

**Add to the end of section 51-1.03D(1):**

07-21-17

If using a mobile volumetric mixer, before each work shift and after each time the mixer is washed out, discharge at least 2 cubic feet of RSC into a concrete waste container before placing RSC into the work.

**Replace the 1st paragraph of section 51-1.03E(5) with:**

01-20-17

For drill and bond dowel (chemical adhesive), install dowels under the chemical adhesive manufacturer's instructions.

**Add to the list in the 2nd paragraph of section 51-1.03F(2):**

07-15-16

4. Interior and top surfaces of drainage inlets

**Replace the paragraphs of section 51-1.03F(5)(b)(i) with:**

01-20-17

Except for bridge widenings and bridge decks to be covered with an overlay, texture roadway surfaces of bridge decks, approach slabs, and sleeper slabs, and other roadway surfaces of concrete structures longitudinally by grinding and grooving or by longitudinal tining.

For bridge widenings, texture the roadway surfaces longitudinally by longitudinal tining.

For bridge decks that are to be covered with an overlay, texture the deck using a burlap drag or broom device that produces striations either parallel or transverse to the centerline. If these structures are opened to traffic before the overlay is placed, the deck surface must meet the coefficient of friction requirement in section 51-1.01D(3)(b)(iii).

**Replace the 3rd paragraph of section 51-1.03F(5)(b)(ii) with:**

01-20-17

Grind and groove the deck surface to within 18 inches of the toe of the barrier as follows:

1. Grind the surface under section 42-3. Grinding must not reduce the concrete cover on reinforcing steel to less than 1-3/4 inches.
2. Groove the ground surfaces longitudinally under section 42-2. The grooves must be parallel to the centerline.

**Replace the 2nd sentence of the 3rd paragraph in section 51-1.03F(5)(b)(iii) with:**

01-20-17

Grooves must be from 1/8 to 3/16 inch deep after concrete has hardened.

**Replace the 8th paragraph of section 51-1.03H with:**

07-21-17

Section 90-3.03 does not apply to curing RSC for bridge decks. Cure bridge decks constructed with RSC as follows:

1. Immediately after strike-off, continually mist the deck with water using atomizing nozzles. Continue misting until the concrete reaches a compressive strength of at least 2000 psi.
2. After misting, apply curing compound no. 1 to the deck under section 90-1.03B(3).

Repair any damage to the film of the curing compound with additional curing compound. Repairing damaged curing compound after the deck is opened to traffic is not required.

**Add to section 51-1.04:**

07-15-16

The payment quantity for structural concrete, drainage inlet is the volume determined from the dimensions shown for CIP drainage inlets.

**Replace the 2nd paragraph of section 51-2.02D(2)(a) with:**

07-21-17

Bolts, nuts, and washers must comply with ASTM F3125, Grade A325.

**Add to section 51-4.01C(1):**

07-15-16

For PC drainage inlets, submit field repair procedures and a patching material test sample before repairs are made. Allow 10 days for the Engineer's review.

**Add to section 51-4.01C(2)(a):**

07-15-16

For drainage inlets with oval or circular cross sections, submit shop drawings with calculations. Shop drawings and calculations must be sealed and signed by an engineer who is registered as a civil engineer in the State. Allow 15 days for the Engineer's review.

**Add to section 51-4.01D(3):**

07-15-16

The Engineer may reject PC drainage inlets exhibiting any of the following:

1. Cracks more than 1/32 inch wide
2. Nonrepairable honeycombed or spalled areas of more than 6 square inches
3. Noncompliance with reinforcement tolerances or cross sectional area shown
4. Wall, inlet floor, or lid less than minimum thickness
5. Internal dimensions less than dimensions shown by 1 percent or 1/2 inch, whichever is greater
6. Defects affecting performance or structural integrity

**Add to section 51-4.02C:**

07-15-16

Materials for PC drainage inlets must comply with the following:

1. Preformed flexible joint sealant must be butyl-rubber complying with ASTM C990
2. Resilient connectors must comply with ASTM C923
3. Sand bedding must comply with section 19-3.02F(2)
4. Bonding agents must comply with ASTM C1059/C1059, Type II

**Add to section 51-4.02D:**

07-15-16

**51-4.02D(8) Drainage Inlets**

PC units for drainage inlets must be rectangular, round, or oval in cross section, or any combination. Transitions from a rectangular grate opening to a round or oval basin must be made in not less than 8 inches. Provide means for field adjustment to meet final grade, paving, or surfacing.

If oval or circular shape cross-sections are furnished, they must comply with *AASHTO LRFD Bridge Design Specifications, Sixth Edition with California Amendments*.

Wall and slab thicknesses may be less than the dimensions shown by at most 5 percent or 3/16 inch, whichever is greater.

Reinforcement placement must not vary more than 1/2 inch from the positions shown.

**Add to section 51-4.03:**

07-15-16

**51-4.03H Drainage Inlets**

Repair PC drainage inlet sections to correct damage from handling or manufacturing imperfections before installation.

Center pipes in openings to provide a uniform gap. Seal gaps between the pipe and the inlet opening with nonshrink grout under the grout manufacturer's instructions. For systems designated as watertight, seal these gaps with resilient connectors.



Match fit keyed joints to ensure uniform alignment of walls and lids. Keys are not required at the inlet floor level if the floor is precast integrally with the inlet wall. Seal keyed joint locations with preformed butyl rubber joint sealant. You may seal the upper lid and wall joint with nonshrink grout.

Clean keyed joint surfaces before installing sealant. Joint surfaces must be free of imperfections that may affect the joint. Use a primer if surface moisture is present. Use a sealant size recommended by the sealant manufacturer. Set joints using sealant to create a uniform bearing surface.

Flat drainage inlet floors must have a field-cast topping layer at least 2 inches thick with a slope of 4:1 (horizontal:vertical) toward the outlet. Use a bonding agent when placing the topping layer. Apply the bonding agent under the manufacturer's instructions.

**Add to section 51-5.03D(1):**

01-20-17

Approach slab (aggregate base) includes using AB to fill voids that remain after removing subsealing material or CTB beneath existing approach slabs.

**Add to section 51-5.03E:**

07-21-17

If using magnesium phosphate concrete, modified high-alumina-based concrete, or portland-cement-based concrete complying with section 51-1.02C to construct the paving notch extension, allow 1 hour between placing the paving notch extension concrete and placing the approach slab concrete.

If using RSC to construct the paving notch extension, the RSC must have a minimum compressive strength of 1,200 psi before placing the approach slab concrete and a minimum compressive strength of 2,500 psi before opening the overlaying approach slab to traffic.

**Add to section 51-5.04:**

01-20-17

Structural concrete used to fill voids below the approach slab that are caused by removal of subsealing material or CTB is paid for as aggregate base (approach slab). The payment quantity does not include the volume of structure concrete used to fill an overexcavation.

**Replace the 2nd paragraph of section 51-7.01A with:**

07-15-16

Minor structures include structures described as minor structures.

**Delete the 4th paragraph of section 51-7.01B.**

07-15-16

**Delete the 1st and 3rd paragraphs of section 51-7.01C.**

07-15-16

**Delete the heading and paragraph of section 51-7.02.**

07-15-16

AA

**52 REINFORCEMENT**

07-21-17

**Add to section 52-1.02:**

**52-1.02E Dowels**

01-20-17

Reinforcing steel dowels must be deformed bars complying with section 52-1.02B.

Threaded rods used as dowels must comply with section 75-1.02A.

**Replace *Reserved* in section 52-6.01B with:**

07-21-17

**group:** Set of 5 or fewer consecutive lots after the 1st lot.

**Replace *Reseved* in section 52-6.01C(2)(a) with:**

07-21-17

Reserved

**Replace *Reseved* in section 52-6.01C(3)(a) with:**

07-21-17

Reserved

**Replace the 2nd paragraph of section 52-6.01C(4)(b) with:**

07-21-17

Each QC test report must include:

- 1. Group number, lot number, and location
- 2. Bar size
- 3. Splice type
- 4. Mechanical splice length
- 5. Location of fracture
- 6. Physical condition of splice test sample
- 7. Notable defects
- 8. Total measured slip
- 9. Ultimate tensile strength of each splice
- 10. The following for ultimate butt splices:
  - 10.1. Location of visible necking area
  - 10.2. Largest measured strain

**Replace the paragraph in section 52-6.01C(6)(c) with:**

07-21-17

For each bar size of each coupler model type of service splice or ultimate butt splice to be used in the work, submit a splice prequalification report that includes:

- 1. Copy of the manufacturer's product literature giving complete data on the splice material and installation procedures

2. Names of the operators who will be performing the splicing
3. Descriptions of the positions, locations, equipment, and procedures that will be used in the work
4. Certified test results from the authorized laboratory for the prequalification splice test samples
5. Certifications from the fabricator for operator and procedure prequalification
6. Manufacturer's QC Process Manual

**Add between the 2nd and 3rd paragraphs of section 52-6.01D(1):**

07-21-17  
Before starting service or ultimate butt splicing activities, select the lots that constitute each group for QA testing.

**Replace the last paragraph of section 52-6.01D(1) with:**

07-21-17  
Section 11-2 does not apply to resistance-butt-welded splices.

**Replace the 2nd paragraph of section 52-6.01D(2)(b) with:**

07-21-17  
For each bar size of each splice coupler model type to be used, each operator must prepare 4 prequalification splice test samples.

**Replace the last paragraph of section 52-6.01D(2)(b) with:**

07-21-17  
Splice test samples and testing must comply with the QC testing requirements specified in section 52-6.01D(4)(b) for the type of splice to be used in the work.

**Replace the 1st paragraph of section 52-6.01D(3)(a) with:**

07-21-17  
Prepare splice test samples under California Test 670.

**Replace the 4th paragraph of section 52-6.01D(3)(a) with:**

07-21-17  
When preparing or removing splice test samples for QC testing, concurrently prepare or remove 4 Department acceptance splice test samples from the same lot during:

1. 1st QC test
2. 1 QC test from each group, randomly selected by the Engineer

**Add to section 52-6.01D(3)(a):**

07-21-17  
If splices from a lot will be encased in concrete prior to receiving passing Department acceptance test results, you must prepare additional samples selected by the Engineer from the same lot for additional Department acceptance testing. You may prepare the samples as specified for service splice test samples in section 52-6.01D(4)(b)(iii). The Department will test service splice test samples as specified for service splices and ultimate butt splice test samples as specified for ultimate butt splices.

**Add to the list in the 5th paragraph of section 52-6.01D(4)(b)(i):**

07-21-17

4. Group number of each lot

**Add between the 1st and 2nd paragraphs of section 52-6.01D(5):**

07-21-17

If a Department acceptance test result does not comply with the material and QA requirements, the Department rejects all splices in the lot and the group.

For the other lots in the rejected group that pass QC testing, you may request the Engineer to perform additional Department acceptance testing for additional splice samples. If a Department acceptance splice test result complies with the material and QA requirements, the Department accepts all splices in that lot.

If a lot of splices is rejected, prepare a splice rejection mitigation report for that rejected lot as specified in section 52-6.01D(4)(b)(i).

If the QC and the Department acceptance test results have different compliance determinations, the Department will sample and test all subsequent lots until QC and the Department acceptance test compliance determinations are consistent for 2 consecutive lots before resuming sampling and testing of 1 lot from every group.

**Replace the paragraph in section 52-6.02B(3) with:**

07-21-17

Ultimate butt splice test samples must demonstrate necking as either of the following:

1. Except for 30-inch and smaller diameter hoops, for *Necking Option I* as specified in California Test 670, the test sample must fracture in the reinforcing bar outside of the affected zone and show visible necking. For 30-inch and smaller diameter hoops, the test sample must show visible necking at fracture at any location.
2. For *Necking Option II* as specified in California Test 670, the largest measured strain must be at least:
  - 2.1. 6 percent for no. 11 and larger bars
  - 2.2. 9 percent for no. 10 and smaller bars

**Replace the 3rd paragraph of section 52-6.03B with:**

01-15-16

For uncoated and galvanized reinforcing bars complying with ASTM A615/A615M, Grade 60, ASTM A706/A706M, or ASTM A767/A767M, Class 1, the length of lap splices must be at least:

1. 45 diameters of the smaller bar spliced for reinforcing bars no. 8 or smaller
2. 60 diameters of the smaller bar spliced for reinforcing bars nos. 9, 10, and 11

For epoxy-coated reinforcing bars and alternatives to epoxy-coated reinforcing bars complying with ASTM A775/A775M, ASTM A934/A934M, ASTM A1035/A1035M, or ASTM A1055/A1055M, the length of lap splices must be at least:

1. 65 diameters of the smaller bar spliced for reinforcing bars no. 8 or smaller
2. 85 diameters of the smaller bar spliced for reinforcing bars nos. 9, 10, and 11

AA

**53 SHOTCRETE**

01-15-16

**Replace 632 in item 1 in the list in the 3rd paragraph of section 53-1.02 with:**

675

01-15-16

**Replace item 2 in the list in the 3rd paragraph of section 53-1.02 with:**

- 2. You may substitute a maximum of 30 percent coarse aggregate for the fine aggregate. Coarse aggregate must comply with section 90-1, except section 90-1.02C(4)(d) does not apply. The gradation for the coarse aggregate must comply with the gradation specified in section 90-1.02C(4)(b) for the 1/2 inch x No. 4 or the 3/8 inch x No. 8 primary aggregate nominal size.

01-15-16

**Replace *shotcrete* in the 2nd sentence of the 4th paragraph of section 53-1.02 with:**

concrete

01-15-16

AA

**55 STEEL STRUCTURES**

07-21-17

**Replace *Welder* in the 1st paragraph of section 55-1.01D(3)(a) with:**

Welding

07-21-17

**Replace the heading of the table in the 5th item in the 2nd paragraph of section 55-1.01D(3)(b)(iii)(2) with:**

**Table 1: Grade A325 Snug-Tight Tension Values**

07-21-17

Replace the table in the 7th item in the 2nd paragraph of section 55-1.01D(3)(b)(iii)(2) with:

07-21-17

**Table 3: Grade A325 Minimum Tension Values**

Bolt diameter (inches)	Minimum tension (kips)
1/2	12
5/8	19
3/4	28
7/8	39
1	51
1-1/8	64
1-1/4	81
1-3/8	97
1-1/2	118

Replace the table in the 5th item in the 3rd paragraph of section 55-1.01D(3)(b)(iii)(2) with:

07-21-17

**Table 4: Grade A325 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	74
1-1/4	94
1-3/8	112
1-1/2	136

Replace the table in the 4th item in the 2nd paragraph of section 55-1.01D(3)(b)(iii)(3) with:

07-21-17

**Table 5 Grade A325 Maximum Allowable Torque**

Bolt diameter (inches)	Torque (ft-lb)
1/2	150
5/8	290
3/4	500
7/8	820
1	1230
1-1/8	1730
1-1/4	2450
1-3/8	3210
1-1/2	4250

Replace *ASTM A325, Type 1* in the 2nd table of section 55-1.02D(1) with:

07-21-17

ASTM F3125, Grade A325, Type 1



**Nondestructive Testing for Steel Standards and Poles**

Weld location	Weld type	Minimum required NDT
Circumferential splices around the perimeter of tubular sections, poles, and arms	CJP groove weld with backing ring	100% UT or RT
Longitudinal seam	CJP or PJP groove weld	Random 25% MT
Longitudinal seam within 6 inches of a circumferential splice	CJP groove weld	100% UT or RT
Welds attaching base plates, flange plates, pole plates, or mast arm plates to poles or arm tubes	CJP groove weld with backing ring and reinforcing fillet	t $\geq$ 5/16 inch: 100% UT and 100% MT t < 5/16 inch: 100% MT after root weld pass and final weld pass
	External (top) fillet weld for socket-type connections	100% MT
Hand holes and other appurtenances	Fillet and PJP welds	MT full length on random 25% of all standards and poles

NOTE: t = pole or arm thickness



### Nondestructive Testing for Overhead Sign Structures

Weld location	Weld type	Minimum required NDT
Base plate to post	CJP groove weld with backing ring and reinforcing fillet	100% UT and 100% MT
Base plate to gusset plate	CJP groove weld	100% UT
Circumferential splices of pipe or tubular sections	CJP groove weld with backing ring	100% UT or RT
Split post filler plate welds	CJP groove weld with backing bar	100% UT or RT
Longitudinal seam weld for pipe posts	CJP groove weld	t < 1/4 inch: 100% MT t ≥ 1/4 inch: 100% UT or RT
	PJP groove weld	Random 25% RT
Chord angle splice weld	CJP groove weld with backing bar	100% UT or RT
Truss vertical, diagonal, and wind angles to chord angles	Fillet weld	Random 25% MT
Upper junction plate to chord (cantilever type truss)	Fillet weld	Random 25% MT
Bolted field splice plates (tubular frame type)	CJP groove weld	100% UT and 100% MT
Cross beam connection plates (lightweight extinguishable message sign)	Fillet weld	Random 25% MT
Arm connection angles (lightweight extinguishable message sign)	Fillet weld	100% MT
Mast arm to arm plate (lightweight extinguishable message sign)	CJP groove weld with backing ring	t ≥ 5/16 inch: 100% UT and 100% MT t < 5/16 inch: 100% MT after root weld pass and final weld pass
Post angle to post (lightweight extinguishable message sign)	Fillet weld	100% MT
Hand holes and other appurtenances	Fillet and PJP welds	MT full length on random 25% of all sign structures

NOTE: t = pole or arm thickness

#### 56-1.01D(2)(b)(ii) Ultrasonic Testing

For UT of welded joints with any members less than 5/16 inch thick or tubular sections less than 13 inches in diameter, the acceptance and repair criteria must comply with Clause 6.13.3.1 of AWS D1.1.

For UT of other welded joints, the acceptance and repair criteria must comply with Table 6.3 of AWS D1.1 for cyclically loaded nontubular connections.

After galvanization, perform additional inspection for toe cracks along the full length of all CJP groove welds at tube-to-transverse plate connections using UT.

When performing UT, use an authorized procedure under AWS D1.1, Annex S.

#### 56-1.01D(2)(b)(iii) Radiographic Testing

The acceptance criteria for radiographic or real time image testing must comply with AWS D1.1 for tensile stress welds.

#### 56-1.01D(2)(b)(iv) Longitudinal Seam Welds

The Engineer selects the random locations for NDT.

Grind the cover pass smooth at the locations to be tested.

If repairs are required in a portion of a tested weld, perform NDT on the repaired portion and on 25 percent of the untested portions of the weld. If more repairs are required, perform NDT on the entire weld.

**56-1.01D(3) Department Acceptance**

Reserved

**Replace section 56-2.01D(2)(b) with:**

Reserved

07-15-16

**Replace the 2nd sentence of the 1st paragraph of section 56-2.02F with:**

Manufactured pipe posts must comply with one of the following:

07-15-16

**Add to the list in the 1st paragraph of section 56-2.02F:**

4. ASTM A1085, Grade A

07-15-16

**Replace the 2nd paragraph of section 56-2.02F with:**

You may fabricate pipe posts from structural steel complying with ASTM A36/A36M, ASTM A709/A709M, Grade 36, or ASTM A572/A572M, Grades 42 or 50.

07-15-16

**Delete the last sentence in the 1st paragraph of section 56-2.02K(2).**

07-15-16

**Delete the 3rd paragraph of section 56-2.02K(2).**

07-15-16

**Replace the 2nd paragraph of section 56-2.02K(4) with:**

Safety cable at walkways must not be kinked, knotted, deformed, frayed, or spliced.

07-15-16

**Replace the 1st sentence of the paragraph in section 56-2.02K(5) with:**

The edges of handholes and other large post and arm openings must be ground smooth.

07-15-16

**Replace the heading of section 56-3 with:**

**56-3 STANDARDS, POLES, PEDESTALS, AND POSTS**

07-15-16

**Replace the paragraph in section 56-3.01A with:**

07-15-16

Section 56-3 includes general specifications for fabricating and installing standards, poles, pedestals, and posts.

**Replace section 56-3.01B(2)(b) with:**

07-15-16

Standards with handholes must comply with the following:

1. Include a UL-listed lug and 3/16-inch or larger brass or bronze bolt for attaching the bonding jumper for non-slip-base standards.
2. Attach a UL-listed lug to the bottom slip base plate with a 3/16-inch or larger brass or bronze bolt for attaching the bonding jumper for slip-base standards.

**Replace the 1st sentence of the 3rd paragraph of section 56-3.01C(2)(a) with:**

07-15-16

After each standard, pole, pedestal, and post is properly positioned, place mortar under the base plate.

**Replace the 2nd sentence of the 4th paragraph of section 56-3.01C(2)(a) with:**

07-15-16

The top of the foundation at curbs or sidewalks must be finished to curb or sidewalk grade.

**Replace the 10th paragraph of section 56-3.01C(2)(a) with:**

07-15-16

Except when located on a structure, construct foundations monolithically.

**Replace the 13th paragraph of section 56-3.01C(2)(a) with:**

07-15-16

Do not erect standards, poles, pedestals, or posts until the concrete foundation has cured for at least 7 days.

**Replace the 14th paragraph in section 56-3.01C(2)(a) with:**

07-15-16

The Engineer selects either the plumbing or raking technique for standards, poles, pedestals, and posts. Plumb or rake by adjusting the leveling nuts before tightening nuts. Do not use shims or similar devices. After final adjustments of both top nuts and leveling nuts on anchorage assemblies have been made and each standard, pole, pedestal, and post on the structure is properly positioned, tighten nuts as follows:

1. Tighten leveling nuts and top nuts, following a crisscross pattern, until bearing surfaces of all nuts, washers, and base plates are in firm contact.
2. Use an indelible marker to mark the top nuts and base plate with lines showing relative alignment of the nut to the base plate.
3. Tighten top nuts following a crisscross pattern:
  - 3.1. Additional 1/6 turn for anchor bolts greater than 1-1/2 inches in diameter.
  - 3.2. Additional 1/3 turn for other anchor bolts.
  - 3.3. Tightening tolerance for all top nuts is  $\pm 1/8$  turn.

**Replace the 1st sentence of the 4th paragraph of section 56-3.01C(2)(b) with:**

07-15-16

If shown, use sleeve nuts on Type 1 standards.

**Add to section 56-3.01C(2)(b):**

07-15-16

Spiral reinforcement must be continuous above the bottom of the anchor bolts. The top termination must be either:

1. 1'-6" lap beyond the end of pitch with a 90-degree hook extending to the opposite side of the cage, or
2. 1'-6" lap beyond the end of pitch with 2 evenly spaced authorized mechanical couplers

**Replace the 1st sentence of the paragraph in section 56-3.02A(4)(b) with:**

07-15-16

For cast slip bases for standards and poles with shaft lengths of 15 feet or more, perform RT on 1 casting from each lot of a maximum of 50 castings under ASTM E94.

**Replace the 2nd paragraph of section 56-3.02B(1) with:**

07-15-16

Material for push button posts, pedestrian barricades, and guard posts must comply with ASTM A53/A53M or ASTM A500/A500M.

**Add to section 56-3.02B(1):**

07-15-16

Steel pipe standards and mast arms must be hot dip galvanized after manufacturing. Remove spikes from galvanized surfaces.

**Replace the 2nd paragraph of section 56-3.02B(2) with:**

07-15-16

HS anchor bolts, nuts, and washers must comply with section 55-1.02D(1) and the following:

1. Bolt threads must be rolled
2. Hardness of HS anchor bolts must not exceed 34 HRC when tested under ASTM F606
3. Galvanization must be by mechanical deposition
4. Nuts must be heavy-hex type
5. Each lot of nuts must be proof load tested

**Replace the 8th paragraph of section 56-3.02B(2) with:**

07-21-17

HS cap screws for attaching arms to standards must comply with ASTM F3125 Grade A325 or ASTM A449, and the mechanical requirements in Grade A325 after galvanizing. Coat threads of cap screws with a colored lubricant that is clean and dry to the touch. The lubricant color must contrast the zinc coating color on the cap screw such that the presence of the lubricant is visually obvious. The lubricant must be insoluble in water or the fastener components must be shipped to the job site in a sealed container.

**Replace the 2nd sentence of the 9th paragraph of section 56-3.02B(2) with:**

07-15-16

During manufacturing, properly locate the position of the luminaire arm on the arm plate to avoid interference with the cap screw heads.

**Add to section 56-3.02B(3)(a):**

07-15-16

Steel having a nominal thickness greater than 2 inches that is used for tube-to-transverse plate connections must have a minimum CVN impact value of 20 ft-lb at 20 degrees F when tested under ASTM E23.

**Add to section 56-3.02B(3)(c):**

07-15-16

The length of telescopic slip-fit splices must be at least 1.5 times the inside diameter of the exposed end of the female section.

For welds connecting reinforced handholes or box-type pole plate connections to a tubular member, the start and stop points must be at points located on a longitudinal axis of symmetry of the tube coinciding with the axis of symmetry of the hand hole or pole plate.

**Replace the table in the 1st paragraph of section 56-3.02C with:**

07-15-16

**Slip Base Bolt Tightening Requirements**

Standard type	Torque (ft-lb)
15-SB	150
15-SBF	150
30	150
31	200

**Replace the 1st sentence of the 2nd paragraph of section 56-3.02C with:**

07-15-16

Bolted connections attaching signal or luminaire arms to standards, poles, and posts are considered slip critical.

**Add to section 56-3.06B:**

07-15-16

Manufacture the mast arm from standard pipe, free from burrs. Each mast arm must have an insulated wire inlet and wood pole mounting brackets for the mast arm and tie-rod cross arm. Manufacture tie rod from structural steel and pipe.

**Delete the 2nd paragraph of section 56-3.06C.**

07-15-16



**64-3.01B Definitions**

Reserved

**64-3.01C Submittals**

If an or equal slotted plastic pipe is being considered, it must be submitted 30 days before installation for approval.

If RSC is used for concrete backfill for slotted plastic pipe, submit the concrete mix design and test data from an authorized laboratory 10 days before excavating the pipe trench. The laboratory must specify the cure time required for the concrete mix to attain 2,000 psi compressive strength when tested under California Test 521.

Heel-resistant grates if specified must be submitted 30 days before installation for approval. Anchorage details must be included in the submittal.

**64-3.01D Quality Assurance**

Reserved

**64-3.02 MATERIALS**

**64-3.02A General**

Not Used

**64-3.02B Slotted Plastic Pipes**

Slotted plastic pipe must be one of the following or equal:

**Slotted Plastic Pipe**

12" diameter	18" diameter
Zurn Z888-12	Zurn Z888-18
ACO Qmax 350	ACO Qmax 365
ADS Duraslot-12	ADS Duraslot-18

**64-3.02C Concrete Backfill**

Concrete for concrete backfill for slotted plastic pipe must comply with the specifications for minor concrete. You may use RSC instead of minor concrete for concrete backfill.

If RSC is used for concrete backfill, the RSC must:

1. Contain at least 590 pounds of cementitious material per cubic yard
2. Comply with section 90-3.02A, except section 90-1 does not apply
3. Comply with section 90-2

**64-3.02D Heel-Resistant Grates**

Heel-resistant grate must:

1. Be designed to carry traffic loadings
2. Comply with ADA requirements
3. Be constructed of steel or cast iron
4. Be provided by the same manufacturer of the slotted plastic pipe
5. Comply with the manufacturer's instructions

**64-3.02E Bar Reinforcement**

Bar reinforcement must comply with ASTM A615/A615M, Grade 60 or ASTM A706/A706M, Grade 60.

**64-3.02F Miscellaneous Metal**

Ductile iron, nuts, bolts, and washers must comply with section 75.

### **64-3.02G Grout**

Grout must be non-shrink grout complying with ASTM C1107/C1107M.

### **64-3.02H Curing Compound**

Non-pigmented curing compound must comply with ASTM C309, Type 1, Class B.

### **64-3.02I End Caps**

End cap must:

1. Be provided by the same manufacturer of the slotted plastic pipe
2. Prevent concrete backfill from entering the pipe

## **64-3.03 CONSTRUCTION**

### **64-3.03A General**

Cover the grate slots with heavy-duty tape or other authorized covering during paving and concrete backfilling activities to prevent material from entering the slots.

### **64-3.03B Preparation**

Pave adjacent traffic lanes before installing slotted plastic pipes.

Excavation must comply with section 19-3.

### **64-3.03C Installation**

Lay and join slotted plastic pipes under the pipe manufacturer's instructions.

Lay pipes to line and grade with sections closely jointed and adequately secured to prevent separation during placement of the concrete backfill. If the pipes do not have a positive interlocking mechanism like a slot and tongue connection, secure the sections together with nuts, bolts, and washers before backfilling.

The top of slotted plastic pipes must not extend above the completed surface. Position the pipes so that the concrete backfill is flush with the surrounding grade and above the top of the grate from 1/8 to 1/4 inch.

Place channels with the male and female ends facing each other.

Place lateral support bar reinforcement on both sides of the grate slots. The support bar reinforcement must run the full length of the slots.

Anchor heel-resistant grates to the concrete backfill under the manufacturer's instructions.

### **64-3.03D Concrete Backfill**

Wherever minor concrete is used for concrete backfill for slotted plastic pipe, do not allow traffic on top of the backfill within 7 days of placement.

Wherever RSC is used for concrete backfill for slotted plastic pipe, do not allow traffic on top of the backfill before the required cure time of 2,000 psi is achieved.

Place concrete backfill where shown.

Consolidate the concrete backfill with high-frequency internal vibrators.

Texture the concrete backfill surface with a broom or burlap drag to produce a durable skid-resistant surface.

Apply a non-pigmented curing compound to the exposed concrete backfill surface whenever the atmospheric temperature is 90 degrees F or greater after placement.

### **64-3.03E Transition Fittings**

Use transition fittings to connect slotted plastic pipes to drainage inlets. The transition fittings must be supplied by the same pipe manufacturer.

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### **70-6.01B Definitions**

Reserved

### **70-6.01C Submittals**

You must submit:

1. Calculations with manufacturer's design documentation verifying that the GLD will meet the discharge capacity required by the data shown for each drainage system location. Calculations must be:
  - 1.1 Based on Manning's equation for discharge capacity using a roughness coefficient (*n*) value of 0.013.
  - 1.2 Sealed and signed by an engineer who is registered as a civil engineer in the State. When grate hold down mechanisms are in the discharge channel, only the unobstructed channel area beneath the hold down will be considered for capacity calculations. If there are more than one drainage system location, a summary table specifying the location, discharge capacity, slope and depth constraints showing that the GLD has sufficient discharge capacity must be submitted with calculations.
2. Certificate of compliance for the GLD frame and grate. If grates are designated for placement within a pedestrian path of travel, the certificate of compliance must also verify compliance with the Americans with Disabilities Act (ADA) with grate spacing no more than 1/2 inch.
3. Method of repair when deficiencies are noted in GLD.
4. Written report of GLD quality control that includes video or photos of GLD.

### **70-6.01D Quality Assurance**

#### **70-6.01D(1) General**

Reserved

#### **70-6.01D(2) Quality Control**

Before contract acceptance, inspect the entire length of the GLD and submit a written report that includes video or photos at intervals of not less than 20 feet per length of GLD. Allow 10 days for the Engineer's review.

### **70-6.02 MATERIALS**

#### **70-6.02A General**

Epoxy must comply with ASTM C881.

End caps must be commercial quality as furnished by the GLD manufacturer.

Joint filler material must comply with section 40-1.02E.

Joint seal material must comply with section 41-5.02.

Shear stud must comply with ASTM A1044.

Steel plate must comply with ASTM A36 and be galvanized under section 75-1.02B.

High strength mechanical rebar connection device must be commercial-quality double-sleeve type that allows overlap of rebar to connect with friction locking screws. Sleeve must be designed to be used with Grade 60 rebar.

#### **70-6.02B Frames and Grates**

Frames and grates must be supplied by the same manufacturer as the GLD channel. GLD formed by using concrete must have a frame and grate that matches the width of the drain being provided.

#### **70-6.02C Reinforcement**

Dowels must comply with section 40.

Reinforcing bars must be Grade 60, complying with section 52.

### **70-6.02D Concrete Backfill**

Concrete backfill must comply with section 61-5, except minor concrete must contain a minimum of 505 pounds of cementitious material per cubic yard.

### **70-6.02E Storage and Handling**

GLD channels must be stored on a flat surface in their original shipping pallets until installation.

## **70-6.03 CONSTRUCTION**

### **70-6.03A General**

Where isolation joint is designated, installation must comply with section 40.

If repairs are necessary; submit the procedure for approval.

### **70-6.03B Preparation**

Excavation and backfill must comply with section 19-3.

Grated line drains must be installed in trenches excavated to the lines and grades established by the Engineer. Grade and prepare the bottom of the trench to provide a firm and uniform bearing throughout the entire length of the grated line drain.

### **70-6.03C Installation**

Grates must fit securely into the frames without rocking.

Grates installed within designated pedestrian paths must be certified as complying with the requirements of the ADA. Designated pedestrian grates must accept inflow of runoff through openings consisting of a minimum of 30 percent of the total top surface area of the grate, with individual openings or slots having a dimension not greater than 0.5 inch measured in the direction of pedestrian travel.

Grated line drains must comply with the manufacturer's joint installation recommendations for overlap. Joints for GLD sections must be closely jointed and secured to ensure no separation during backfilling. With overlapping joints, the upstream segment or section must fit over the top of the downstream one and allow for the required movement without allowing the concrete backfill to leak into the channel. With exterior sleeve joints, the separate sections must be placed to allow for thermal expansion and contraction such that the external sleeve provides sufficient coverage to accommodate joint movement without allowing any leakage during the concrete backfill placement. Exterior sleeves must be centered over each joint.

Sections must not have sidewall extensions. The GLD interior surface, below the level of the frame and grate and associated connections, must be smooth. Environmentally hazardous materials or solvents must not be used to clean any channel segments.

The frame or grate of the GLD must not extend above the level of the surrounding concrete backfill.

Use manufacturer's end caps to prevent concrete backfill from entering the grated line drain. Where no end caps are available, construct and compact earth plugs at the ends of the concrete backfill to contain the concrete within the trench.

Connect grated line drains to new or existing drainage facilities as shown. Drill rebar dowel holes, at least 1/16 inch larger than the dowel diameter, into existing drainage facilities or place dowels into new drainage wall at cast-in-place inlet connection. Use epoxy to secure dowels to existing inlet wall. Install epoxy under the epoxy manufacturer's instructions. Connect rebar with a double barrel mechanical coupler at overlap. Install mechanical coupler under the manufacturer's instructions. Rebuild the removed drainage inlet wall with minor concrete.

For a cast-in-place GLD, all forms must be removed after concrete has cured a minimum of 72 hours. Earlier form removal will be allowed if authorized. Remove forms by methods that will not gouge or mar the concrete surfaces. Any damage during form removal must be repaired.













**78-4.03A(2)(d) Sealing Compound**

Reserved

**78-4.03A(3) Construction**

**78-4.03A(3)(a) General**

Do not paint new concrete until it is at least 28 days old. Anywhere metal is adjacent to a joint, seal the joint between surfaces to be painted and the adjacent metal with a sealing compound before applying the paint.

**78-4.03A(3)(b) Surface Preparation**

Prepare concrete surfaces under SSPC-SP 13/NACE no. 6.

Pressure rinse the prepared surfaces before applying the coating. The surfaces must be thoroughly dry at the time of painting. You may use artificial drying methods if authorized.

**78-4.03A(3)(c) Application**

Apply at least 2 coats under the manufacturer's instructions and SSPC-PA 7. Protect adjacent surfaces during painting using an authorized method.

**78-4.03A(4) Payment**

Not Used

**78-4.03B Simulated Stone Masonry and Textured Concrete**

Reserved

**78-4.03C–78-4.03G Reserved**

**Replace the paragraph of section 78-4.04A(3)(a) with:**

07-21-17

Anywhere metal is adjacent to a joint, seal the joint between the surfaces to be stained and the adjacent metal with a sealing compound before applying the stain.

**Replace the heading of section 78-4.04B(1)(c)(iii) with:**

07-21-17

**Staining Quality Work Plan**

**Replace *an application plan* in the 1st sentence in the paragraph of section 78-4.04B(1)(c)(iii) with:**

07-21-17

a staining quality work plan

**Replace *application* in the 2nd sentence in the paragraph of section 78-4.04B(1)(c)(iii) with:**

07-21-17

work

**Replace *application plan* in the 1st sentence in the paragraph of section 78-4.04B(1)(d)(iii) with:**

07-21-17

staining quality work plan

AA

**80 FENCES**

07-21-17

Replace section 80-4 with:

07-15-16

**80-4 WILDLIFE EXCLUSION FENCES**

**80-4.01 GENERAL**

**80-4.01A General**

Section 80-4 includes specifications for constructing wildlife exclusion fences.

Constructing a wildlife exclusion fence includes the installation of any signs specified in the special provisions.

**80-4.01B Materials**

Each T post must:

- 1. Comply with ASTM A702
- 2. Be metal and have an anchor plate
- 3. Be painted black or galvanized

**80-4.01C Construction**

Not Used

**80-4.01D Payment**

Not Used

**80-4.02 DESERT TORTOISE FENCES**

**80-4.02A General**

Section 80-4.02 includes specifications for constructing desert tortoise fences.

**80-4.02B Materials**

**80-4.02B(1) Permanent Desert Tortoise Fences**

**80-4.02B(1)(a) General**

Each wire tie and hog ring for a permanent desert tortoise fence must comply with section 80-2.02F.

Each hold down pin must:

- 1. Be U-shaped, with 2 minimum 6-inch long legs
- 2. Have pointed ends
- 3. Be at least 11-gauge wire
- 4. Be galvanized
- 5. Be commercial quality

**80-4.02B(1)(b) Hardware Cloth**

The hardware cloth must:

- 1. Comply with ASTM A740
- 2. Be welded or woven galvanized steel wire fabric
- 3. Be made of at least 14-gauge wire
- 4. Be 36 inches wide

**80-4.02B(1)(c) Barbless Wire**

The barbless wire must:

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1. Comply with ASTM A641/A641M
2. Be at least 14-gauge wire
3. Have a Class 1 zinc coating

#### **80-4.02B(1)(d) Posts**

Each post must:

1. Comply with ASTM F1083
2. Be standard weight, schedule 40 steel pipe with a nominal pipe size of 1 inch
3. Be galvanized steel fence post conforming to ASTM A702

#### **80-4.02B(2) Temporary Desert Tortoise Fences**

The materials for a temporary desert tortoise fence must comply with section 80-4.02B(1), except the hardware cloth must be made of at least 16-gauge wire.

#### **80-4.02C Construction**

##### **80-4.02C(1) General**

Extend the hardware cloth a minimum of 24 inches above the ground.

Plumb the posts and pull the hardware cloth taut. Correct any alignment issues.

##### **80-4.02C(2) Permanent Desert Tortoise Fences**

Excavate the ground to form a trench before installing the posts and hardware cloth. Embed the posts at maximum 5-foot intervals into the ground. If T posts are used, use 5-foot lengths and embed the posts to match the above-ground height shown for the posts.

Securely fasten the hardware cloth to the posts with wire ties and to barbless wire with hog rings as shown. Pass the wire ties through the hardware cloth. Encircle the posts and barbless wire with the ties and tie them by twisting a minimum of 3 complete turns.

Bend the twisted ends of the ties down to prevent possible snagging. Close hog rings with their ends overlapping.

Bury the hardware cloth a minimum of 12 inches into the ground. Install the cloth in 1 continuous piece. You may cut the cloth into shorter segments if authorized.

Overlap the hardware cloth segments at posts, with a minimum overlap of 6 inches centered at a post. Wire tie the overlapped cloth to posts as shown. Prevent fraying by threading barbless wire along the vertical edges of the hardware cloth on either side of the post or use 3 equally spaced hog rings (6 hog rings per location) along each wire cloth edge.

Where bedrock or caliche substrate is encountered, use the bent hardware cloth detail if authorized. Transitions from buried-to-bent or bent-to-buried configuration must occur at a post location with a minimum 6-inch overlap of the hardware cloth as shown. The maximum spacing for hold down pins is 24 inches on center. Anchor in place with hold down pins the beginning and end corners of the hardware cloth placed on the ground.

Backfill the removed earth material into the trench created to install the hardware cloth and posts. Use an 8 lb or heavier hand tamper to compact the backfill around the posts and hardware cloth. Install a post at each corner of the cloth segments.

If a gate must be installed, attach the hardware cloth to the gate frame such that there is contact along the entire length of the gate between the finished ground surface and the lower edge of the cloth. Install the gate under section 80-10.

##### **80-4.02C(3) Temporary Desert Tortoise Fences**

Fold the horizontal edge of the hardware cloth at a 90° angle toward the tortoise habitat area. Ensure the clearance to the ground at the bend is from 0 to 2 inches.





**Replace 0.38 lb of thermoplastic per foot of 4-inch-wide solid stripe in the 2nd paragraph of section 84-2.03C(2)(e) with:**

0.57 lb of thermoplastic per foot of 6-inch-wide solid stripe

07-21-17

**Replace 4-inch-wide yellow stripes at each occurrence in section 84-2.03C(3)(a) with:**

6-inch-wide yellow stripes

07-21-17

**Replace 4-inch-wide yellow stripes at each occurrence in section 84-2.04 with:**

6-inch-wide yellow stripes

07-21-17

**Add to the beginning of section 84-8.03A:**

Select the method and equipment for constructing ground-in indentations.

07-15-16

**Replace the 1st paragraph of section 84-8.03A with:**

Do not construct rumble strips:

1. On structures, approach slabs, or concrete weigh-in-motion slabs
2. At intersections
3. Bordering two-way left turn lanes, driveways, or other high-volume turning areas
4. Within 6 inches of any concrete pavement joint

07-15-16

**Add between the 2nd and 3rd paragraphs of section 84-8.03A:**

Modify rumble strip spacing to avoid locating a groove on a concrete pavement joint.

07-15-16

**Replace the 3rd paragraph of section 84-8.03A with:**

Indentations must comply with the dimensions shown and not vary more than:

1. 10 percent in length
2. 0.06 inch in depth
3. 10 percent in width
4. 1 inch in center-to-center spacing between rumble strips

07-15-16

**Add to the end of section 84-8.03A:**

The noise level created by the combined grinding activities must not exceed 86 dBA when measured at a distance of 50 feet at right angles to the direction of travel.

07-15-16

Break rumble strips before and after intersections, driveways, railroad crossings, freeway gore areas, and freeway ramps. Place breaks and break distances as shown. You may adjust breaks and the break distances as needed at low-volume driveways or other locations if authorized.

**Delete *new* in the 1st paragraph of section 84-8.03B.**

07-15-16

**Add to the end of section 84-8.03B:**

07-15-16

Remove grinding residue under section 13-4.03E(7).

**Replace the 1st paragraph of section 84-8.03C with:**

07-15-16

Construct rumble strips in the top layer of HMA and asphalt concrete surfacing by the ground-in method.

**Add between the 2nd and 3rd paragraphs of section 84-8.03C:**

07-15-16

Dispose of the removed material.

**Delete the 2nd paragraph of section 84-8.03C.**

07-15-16

**Replace 37-2 in the 3rd paragraph of section 84-8.03C with:**

07-15-16

37-4.02

**Replace section 84-8.04 with:**

07-15-16

The payment quantity for any type of rumble strip is the length measured by the station along the length of the rumble strip without deductions for gaps between indentations.

**Replace the 2nd paragraph of section 84-9.03B with:**

04-15-16

Completely remove traffic stripes and pavement markings, including any paint in the gaps, by methods that do not remove pavement to a depth of more than 1/8 inch.

**Add between the 2nd and 3rd paragraphs of section 84-9.03B:**

04-15-16

Submit your proposed method for removing traffic stripes and pavement markings at least 7 days before starting the removal work. Allow 2 business days for the review.

Remove pavement marking such that the old message cannot be identified. Make any area removed by grinding rectangular. Water must not puddle in the ground areas. Fog seal ground areas on asphalt concrete pavement.

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**detector:** Detector as defined in the *California MUTCD*.

**electrolier:** Assembly of a lighting standard and luminaire.

07-21-17

**fastening hardware [ICF1]:** Bolts, nuts, washer, fasteners, hex nuts, lock nuts, or other metal components to secure or lock down a device or equipment.

04-15-16

**flasher:** Device for opening and closing signal circuits at a repetitive rate.

**flashing beacon control assembly:** Assembly of switches, circuit breakers, terminal blocks, flasher, wiring, and other necessary electrical components housed in a single enclosure for operating a beacon.

**house side lumens:** Lumens from a luminaire directed to light up areas between the fixture and the pole, such as sidewalks at intersection or areas off the shoulders on freeways.

**illuminance gradient:** Ratio of the minimum illuminance on a 1-foot square of sign panel to that on an adjacent 1-foot square of sign panel.

**inductive loop detector:** Detector capable of being actuated by an inductance change caused by a vehicle passing or standing over the loop. An inductive loop detector includes a loop or group of loops installed in the roadway and a lead-in cable installed and connected inside a controller cabinet.

**junction temperature:** Temperature of the electronic junction of the LED device. The junction temperature is critical in determining photometric performance, estimating operational life, and preventing catastrophic failure of the LED.

**L70:** Extrapolated life in hours of the luminaire when the luminous output depreciates 30 percent from the initial values.

**lighting standard:** Pole and mast arm supporting the luminaire.

**LM-79:** Test method from the Illumination Engineering Society of North America specifying the test conditions, measurements, and report format for testing solid state lighting devices, including LED luminaires.

**LM-80:** Test method from the Illumination Engineering Society of North America specifying the test conditions, measurements, and report format for testing and estimating the long-term performance of LEDs for general lighting purposes.

**luminaire:** Assembly that houses the light source and controls the light emitted from the light source.

**National Voluntary Laboratory Accreditation Program:** U.S. Department of Energy program that accredits independent testing laboratories.

07-21-17

**pedestrian change interval:** Pedestrian change interval as defined in the *California MUTCD*.

04-15-16

**powder coating:** Coating applied electrostatically using exterior-grade, UV-stable, polymer powder.

**power factor:** Ratio of the real power component to the complex power component.

**pretimed controller assembly:** Assembly operating traffic signals under a predetermined cycle length.

**programming mechanism:** Device to program the accessible pedestrian signal operation.

**pull box:** Box with a cover that is installed in an accessible place in a conduit run to facilitate the pulling in of wires or cables.

**push button information message:** Push button information message as defined in the *California MUTCD*.

**push button locator tone:** Push button locator tone as defined in the *California MUTCD*.

**signal face:** Signal face as defined in the *California MUTCD*.

**signal head:** Signal head as defined in the *California MUTCD*.

**signal indication:** Signal indication as defined in the *California MUTCD*.

**signal section:** Signal section as defined in the *California MUTCD*.

**signal standard:** Pole with or without mast arms carrying 1 or more signal faces.

**street side lumens:** Lumens from a luminaire directed to light up areas between the fixture and the roadway, such as traveled ways and freeway lanes.

**surge protection device:** Subsystem or component that protects equipment against short-duration voltage transients in power line.

**total harmonic distortion:** Ratio of the rms value of the sum of the squared individual harmonic amplitudes to the rms value of the fundamental frequency of a complex waveform.

**traffic-actuated controller assembly:** Assembly for operating traffic signals under the varying demands of traffic as registered by detector actuation.

**traffic phase:** Traffic phase as defined in the *California MUTCD*.

**vehicle:** Vehicle as defined in the *California Vehicle Code*.

**vibrotactile pedestrian device:** Vibrotactile pedestrian device as defined in the *California MUTCD*.

#### **86-1.01C Submittals**

##### **86-1.01C(1) General**

Within 15 days after Contract approval, submit a list of equipment and materials you propose to install.

Submit the list before shipping equipment and materials to the job site. The list must include:

1. Manufacturer's name
2. Make and model number
3. Month and year of manufacture
4. Lot and serial numbers
5. Contract number
6. Your contact information

Submit confirmation of the vendor's acceptance of the order for the electrical equipment and materials as an informational submittal.

Submit 3 sets of computer-generated, schematic wiring diagrams for each cabinet.

Diagrams, plans, and drawings must be prepared using graphic symbols in IEEE 315, "Graphic Symbols for Electrical and Electronic Diagrams."

Submit a schedule of values within 15 days after Contract approval.

Do not include costs for the traffic control system in the schedule of values.

Submit a manufacturer's maintenance manual or combined maintenance and operation manual as an informational submittal. The manual must have a master item index that includes:

1. Specifications
2. Design characteristics

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3. General operation theory
4. Function of all controls
5. Troubleshooting procedure
6. Parts list, descriptions, stock numbers, and settings
7. Block circuit diagram
8. Layout of components
9. Schematic diagrams

#### **86-1.01C(2) Pull Boxes**

Submit the manufacturer's installation instructions for pull boxes, including:

1. Quantity and size of entries that can be made without degrading the strength of the pull box below the load rating
2. Locations where side entries can be made
3. Acceptable method for creating the entry

07-21-17

Submit load-rating test reports for pull boxes from a laboratory that is accredited to International Standards Organization/International Electrotechnical Commission 17025 by the American Association for Laboratory Accreditation (A2LA) or the ANSI-ASQ National Accreditation Board (ANAB).

04-15-16

#### **86-1.01C(3) LED Luminaires**

Submit for an LED luminaire:

1. Maximum power in watts
2. Maximum designed junction temperature
3. Heat sink area in square inches
4. Designed junction-to-ambient thermal resistance calculation with thermal resistance components clearly defined
5. L70 in hours when extrapolated for the average nighttime operating temperature
6. Life expectancy based on the junction temperature
7. Manufacturer's data sheet for the power supply, including the rated life

Submit the manufacturer's QC test data for LED luminaires as an informational submittal.

#### **86-1.01C(4) Low-Pressure Sodium Luminaires**

Submit the manufacturer's QC test data for low-pressure sodium luminaires as an informational submittal.

#### **86-1.01C(5) Service Equipment Enclosures**

Submit shop drawings for a service equipment enclosure to METS.

#### **86-1.01C(6) Signal Heads**

Submit a certificate of compliance and the manufacturer's QC test data for signal heads as an informational submittal.

#### **86-1.01C(7) LED Signal Modules**

Submit the manufacturer's QC test data for LED signal modules as an informational submittal.

#### **86-1.01C(8) Visors**

Submit a certificate of compliance and the manufacturer's QC test data for visors as an informational submittal.

#### **86-1.01C(9) LED Countdown Pedestrian Signal Face Modules**

Submit the manufacturer's QC test data for LED countdown pedestrian signal face modules as an informational submittal.

**86-1.01C(10) Accessible Pedestrian Signals**

Submit the manufacturer's QC test data for accessible pedestrian signals as an informational submittal.

**86-1.01D Quality Assurance**

**86-1.01D(1) General**

Electrical equipment must comply with one or more of the following standards:

- 1. ANSI
- 2. ASTM
- 3. EIA/ECIA
- 4. NEMA
- 5. NETA
- 6. UL/NRTL
- 7. TIA

Materials must comply with:

- 1. FCC rules
- 2. ITE standards
- 3. NEC
- 4. California Electrical Code

**86-1.01D(2) Source Quality Control**

Service equipment enclosures and cabinets must be inspected and tested at the source.

**86-1.01D(3) Department Acceptance**

Deliver material and equipment for testing to METS.

Allow 30 days for testing. The Department notifies you when testing is complete.

If the Department accepts the material or equipment, you must pick it up from the test site and deliver it to the job site.

If the Department rejects material or equipment, remove it within 5 business days after you are notified it is rejected. If it is not removed within that period, the Department may remove it and ship it to you and deduct the costs of labor, material and shipping.

Resubmit a new sample and allow 30 days for retesting. The retesting period starts when the replacement material or equipment is delivered to METS.

**86-1.02 MATERIALS**

**86-1.02A General**

Anchor bolts, anchor bars or studs, and nuts and washers must comply with section 75-1.02.

Bolt threads must accept galvanized standard nuts without requiring tools or causing removal of protective coatings.

**86-1.02B Conduit and Accessories**

**86-1.02B(1) General**

Conduit and fittings must comply with the requirements shown in the following table:

### Conduit and Fitting Requirements

Type	Requirement
1	Must be hot-dip galvanized rigid steel complying with UL 6 and ANSI C80.1. The zinc coating must comply with copper sulfate test requirements in UL 6. Fittings must be electrogalvanized and certified under UL 514B.
2	Must comply with requirements for Type 1 conduit and be coated with PVC or polyethylene. The exterior thermoplastic coating must have a minimum thickness of 35 mils. The internal coating must have a minimum thickness of 2 mils. Coated conduit must comply with NEMA RN 1, or NRTL PVC-001.
3	Must be Type A, extruded, rigid PVC conduit complying with UL 651 or must be HDPE conduit complying with UL 651A.
4	Must have an inner, flexible metal core covered by a waterproof, nonmetallic, sunlight-resistant jacket, and must be UL listed for use as a grounding conductor. Fittings must be certified under UL 514B.
5	Must be intermediate steel complying with UL 1242 and ANSI C80.6. The zinc coating must comply with copper sulfate test requirements specified in UL 1242. Fittings must be electrogalvanized and certified under UL 514B.

Bonding bushings installed on metal conduit must be insulated and either a galvanized or zinc-alloy type.

#### **86-1.02B(2) Structures Accessories**

Steel hangers, steel brackets, and other fittings used to support conduit in or on a wall or bridge superstructure must comply with section 75-3.

Precast concrete cradles for conduit must be made of minor concrete and commercial-quality welded wire fabric. The minor concrete must contain a minimum of 590 lb of cementitious material per cubic yard. The cradles must be moist cured for a minimum of 3 days.

#### **86-1.02C Pull Boxes**

##### **86-1.02C(1) General**

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A pull box cover must have a nonskid surface.

A metal pull box cover must include a fitting for a bonding conductor.

A pull box cover must have a marking on the top that is:

1. Clearly defined
2. Uniform in depth
3. Parallel to the longer side
4. From 1 to 3 inches in height

The cover marking must include CALTRANS and one of the following:

1. *SERVICE* for service circuits between a service point and service disconnect
2. *SERVICE IRRIGATION* for circuits from a service equipment enclosure to an irrigation controller
3. *SERVICE BOOSTER PUMP* for circuits from a service equipment enclosure to the booster pump
4. *TDC POWER* for circuits from a service equipment enclosure to telephone demarcation cabinet
5. *LIGHTING* for a lighting system
6. *SIGN ILLUMINATION* for a sign illumination system
7. *SIGNAL AND LIGHTING* for a signal and lighting system
8. *RAMP METER* for a ramp metering system
9. *TMS* for a traffic monitoring station
10. *FLASHING BEACON* for a flashing beacon system
11. *CMS* for a changeable message sign system
12. *INTERCONNECT* for an interconnect conduit and cable system
13. *CALTRANS* if more than one system is shared in the same pull box

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The following circuits must not include CALTRANS in the cover marking:

1. Electrical service
2. Sprinkler-control
3. Telephone service

The load rating must be:

- 1 Stenciled or stamped on the inside and outside of the pull box
- 2 Stamped on the outside of the cover

If a transformer or other device must be placed in the pull box, include recesses for a hanger.

The hardware must be stainless steel containing 18 percent chromium and 8 percent nickel.

04-15-16

### **86-1.02C(2) Nontraffic Pull Boxes**

A nontraffic pull box and cover must comply with ANSI/SCTE 77, "Specification for Underground Enclosure Integrity," for Tier 22 load rating and must be gray or brown.

Each new pull box must have a cover with an electronic marker cast inside.

A pull box extension must be made of the same material as the pull box. The extension may be another pull box if the bottom edge of the pull box fits into the opening for the cover.

07-21-17

The bolts, nuts, and washers must be a captive design. Captive bolts for securing the cover of nontraffic pull boxes must be capable of withstanding a torque from 55 to 60 ft-lb and a minimum pull-out strength of 750 lb.

04-15-16

### **86-1.02C(3) Traffic Pull Boxes**

A traffic pull box and cover must comply with AASHTO HS20-44 and AASHTO M 306.

07-21-17

The frame must be anchored to the box.

04-15-16

Nuts must be vibration-resistant, zinc-plated, carbon steel and have a wedge ramp at the root of the thread.

07-21-17

For a cast iron cover or before galvanizing a steel cover, the manufacturer must apply the cover marking by one of the following methods:

1. Use a cast iron strip at least 1/4 inch thick with letters raised a minimum of 1/16 inch. Fasten the strip to the cover with 1/4-inch, flathead, stainless steel machine bolts and nuts. Peen the bolts after tightening.
2. Use a sheet steel strip at least 0.027 inch thick with letters raised a minimum of 1/16 inch. Fasten the strip to the cover by spot welding, tack welding, or brazing with 1/4-inch stainless steel rivets or 1/4-inch, roundhead, stainless steel machine bolts and nuts. Peen the bolts after tightening.
3. Bead weld the letters on the cover such that the letters are raised a minimum of 3/32 inch.
4. Cast the logo into the cast iron cover.

The steel cover must:

1. Be countersunk approximately 1/4 inch to accommodate the bolt head. When tightened, the hold down bolt head must be no more than 1/8 inch above the top of the cover.

2. Have slot holes for lifting with a guard under the cover to prevent entry of more than 3 inches below the bottom surface of the cover without deflection to protect the pull box contents.

#### **86-1.02C(4) Tamper Resistant Pull Boxes**

Reserved

04-15-16

#### **86-1.02D Tapes**

##### **86-1.02D(1) General**

Reserved

##### **86-1.02D(2) Pull Tape**

Pull tape must be a flat, woven, lubricated, soft-fiber, polyester tape with a minimum tensile strength of 1,800 lb. The tape must have sequential measurement markings every 3 feet.

##### **86-1.02D(3) Reserved**

07-21-17

#### **86-1.02E Piezoelectric Axle Sensors**

Reserved

04-15-16

#### **86-1.02F Conductors and Cables**

##### **86-1.02F(1) Conductors**

##### **86-1.02F(1)(a) General**

Reserved

##### **86-1.02F(1)(b) Reserved**

##### **86-1.02F(1)(c) Copper Conductors**

##### **86-1.02F(1)(c)(i) General**

Copper wire must comply with ASTM B3 and B8.

Conductor must be clearly and permanently marked the entire length of its outer surface with:

1. Manufacturer's name or trademark
2. Insulation-type letter designation
3. Conductor size
4. Voltage
5. Temperature rating
6. Number of conductors for a cable

The minimum insulation thickness and color code requirements must comply with NEC.

A conductor must be UL listed or NRTL certified and rated for 600 V(ac).

Insulation for no. 14 to no. 4 conductors must be one of the following:

1. Type TW PVC under ASTM D2219
2. Type THW PVC
3. Type USE, RHH, or RHW cross-linked polyethylene

The insulation for no. 2 and larger conductors must be one of the above or THWN.

Conductors must be identified as shown in the following table:

**Conductor Identification**

Circuit	Signal phase or function	Identification			Size
		Insulation color <sup>d</sup>		Band symbols	
		Base	Stripe <sup>a</sup>		
Signals (vehicle) <sup>a, b</sup>	2, 6	Red, yel, brn	Blk	2, 6	14
	4, 8	Red, yel, brn	Ora	4, 8	14
	1, 5	Red, yel, brn	None	1, 5	14
	3, 7	Red, yel, brn	Pur	3, 7	14
	Ramp meter 1	Red, yel, brn	None	NBR	14
	Ramp meter 2	Red, yel, brn	Blk	NBR	14
Pedestrian signals	2p, 6p	Red, brn	Blk	2p, 6p	14
	4p, 8p	Red, brn	Ora	4p, 8p	14
	1p, 5p	Red, brn	None	1p, 5p	14
	3p, 7p	Red, brn	Pur	3p, 7p	14
Pedestrian push buttons	2p, 6p	Blu	Blk	P-2, P-6	14
	4p, 8p	Blu	Ora	P-4, P-8	14
	1p, 5p	Blu	None	P-1, P-5	14
	3p, 7p	Blu	Pur	P-3, P-7	14
Traffic signal controller cabinet	Ungrounded circuit conductor	Blk	None	CON-1	6
	Grounded circuit conductor	Wht	None	CON-2	6
Highway lighting pull box to luminaire	Ungrounded - line 1	Blk	None	NBR	14
	Ungrounded - line 2	Red	None	NBR	14
	Grounded	Wht	None	NBR	14
Multiple highway lighting	Ungrounded - line 1	Blk	None	ML1	10
	Ungrounded - line 2	Red	None	ML2	10
Lighting control	Ungrounded - PEU	Blk	None	C1	14
	Switching leg from PEU unit or SM transformer	Red	None	C2	14
Service	Ungrounded - line 1 (signals)	Blk	None	NBR	6
	Ungrounded - line 2 (lighting)	Red	None	NBR	8
Sign lighting	Ungrounded - line 1	Blk	None	SL-1	10
	Ungrounded - line 2	Red	None	SL-2	10
Flashing beacons	Ungrounded between flasher and beacons	Red or yel	None	F-Loc. <sup>c</sup>	14
Grounded circuit conductor	Pedestrian push buttons	Wht	Blk	NBR	14
	Signals and multiple lighting	Wht	None	NBR	10
	Flashing beacons and sign lighting	Wht	None	NBR	12
	Lighting control	Wht	None	C-3	14
	Service	Wht	None	NBR	14
Railroad preemption		Blk	None	R	14
Spares		Blk	None	NBR	14

NBR = No band required PEU=Photoelectric unit

<sup>a</sup>On overlaps, the insulation is striped for the 1st phase in the designation, e.g., phase (2+3) conductor is striped as for phase 2.

<sup>b</sup>Band for overlap and special phases as required

<sup>c</sup>Flashing beacons having separate service do not require banding.

<sup>d</sup>Color Code: Yel-Yellow, Brn-Brown, Blu-Blue, Blk-Black, Wht-White, Ora-Orange, Pur-Purple

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The insulation color must be homogeneous throughout the full depth of the insulation. The identification stripe must be continuous throughout the length of the conductor.

**86-1.02F(1)(c)(ii) Bonding Jumpers and Equipment Grounding Conductors**

A bonding jumper must be copper wire or copper braid of the same cross-sectional area as a no. 8 conductor or larger.

An equipment grounding conductor may be bare or insulated.

**86-1.02F(1)(c)(iii) Inductive Loop Conductors**

Inductive loop conductor must comply with the requirements shown in the following table:

**Conductor Requirements for Inductive Loop Detectors**

Loop wire	Requirement
Type 1	Type RHW-USE neoprene-jacketed or Type USE cross-linked polyethylene, insulated, no. 12, stranded copper wire with a minimum 40-mils insulation thickness at any point.
Type 2	Type THWN or Type XHHW, no. 14, stranded copper wire in a plastic tubing. The plastic tubing must be polyethylene or vinyl rated for use at 105 °C and resistant to oil and gasoline. The outside diameter of the tubing must be at most 0.27 inch with a wall thickness of at least 0.028 inch.

**86-1.02F(1)(d) Reserved**

Reserved

**86-1.02F(2) Cables**

**86-1.02F(2)(a) General**

Reserved

**86-1.02F(2)(b) Reserved**

Reserved

**86-1.02F(2)(c) Reserved**

**86-1.02F(2)(d) Copper Cables**

**86-1.02F(2)(d)(i) General**

The conductor wire size for a detector lead-in cable must comply with the requirements of ASTM B286.

Cable, except a detector lead-in cable, must be clearly and permanently marked the entire length of its outer surface with:

1. Manufacturer's name or trademark
2. Insulation-type letter designation
3. Conductor size
4. Voltage
5. Temperature rating
6. Number of conductors for a cable

**86-1.02F(2)(d)(ii) Conductors Signal Cables**

A conductors signal cable must have a black polyethylene jacket with an inner polyester binder sheath. The cable jacket must be rated for 600 V(ac) and 75 degrees C. Filler material, if used, must be polyethylene.

The individual conductors in the cable must be solid copper complying with ASTM B286 with Type THWN insulation. The minimum thickness of insulation must comply with NEC for conductor sizes no. 14 to no.10. The minimum thickness of the nylon jacket must be 4 mils.

Cable must comply with the requirements shown in the following table:

Cable type <sup>a</sup>	Conductor quantity and type	Cable jacket thickness (mils)		Maximum nominal outside diameter (inch)	Conductor color code
		Average	Minimum		
3CSC	3 no. 14	44	36	0.40	Blue/black, blue/orange, white/black stripe
5CSC	5 no. 14	44	36	0.50	Red, yellow, brown, black, white
9CSC	8 no. 14 1 no. 12	60	48	0.65	No. 12 - white, no. 14 - red, yellow, brown, black, and red/black, yellow/black, brown/black, white/black stripe
12CSC	11 no. 14 1 no. 12	60	48	0.80	No. 12 - white, no. 14 - red, yellow, brown, red/black stripe, yellow/black stripe, brown/black stripe, black/red stripe, black/white stripe, black, red/white stripe, brown/white stripe
28CSC	27 no. 14 1 no. 10	80	64	0.90	No. 10 - white no. 14 - red/black stripe, yellow/black stripe, brown/black stripe, red/orange stripe, yellow/orange stripe, brown/orange stripe, red/silver stripe, yellow/silver stripe, brown/silver stripe, red/purple stripe, yellow/purple stripe, brown/purple stripe, red/2 black stripes, brown/2 black stripes, red/2 orange stripes, brown/2 orange stripes, red/2 silver stripes, brown/2 silver stripes, red/2 purple stripes, brown/2 purple stripes, blue/black stripe, blue/orange stripe, blue/silver stripe, blue/purple stripe, white/black stripe, black/red stripe, black

**86-1.02F(2)(d)(iii) Detector Lead-in Cables**

Conductors for a loop detector lead-in cable must be two no. 16, 19-by-29, stranded, tinned copper wires with calculated cross-sectional areas complying with ASTM B286, table 1 and must comply with the requirements shown in the following table:

**Conductor Requirements for Loop Detector Lead-In Cables**

Lead-in cable	Requirement
Type B	Insulated with 20 mils of high-density polyethylene. Conductors must be twisted together with at least 2 turns per foot, and the twisted pair must be protected with a copper or aluminum polyester shield. A minimum no. 20 copper drain wire must be connected to the equipment ground within the cabinet. Cable must have a high-density polyethylene or high-density polypropylene outer jacket with a nominal thickness of 32 mils. Include an amorphous, interior, moisture penetration barrier of nonhydroscopic polyethylene or polypropylene fillers.
Type C	Comply with International Municipal Signal Association Specification no. 50-2. A minimum no. 20 copper drain wire must be connected to the equipment ground within the cabinet.

**86-1.02F(2)(d)(iv) Reserved**

**86-1.02F(2)(d)(v) Signal Interconnect Cables**

A signal interconnect cable must be a 6-pair type with stranded, tinned, copper no. 20 conductors. The insulation for each conductor must be color-coded polypropylene with a minimum 13-mils nominal thickness. The conductors must be in color-coded, twisted pairs. Each pair must be wrapped with an aluminum polyester shield and have a no. 22 or larger, stranded, tinned, copper drain wire inside the shielded pair.

The cable jacket must be black HDPE rated for a minimum of 300 V(ac) and 60 degrees C. The jacket must have a minimum nominal wall thickness of 40 mils.

**86-1.02F(2)(e) Reserved**

**86-1.02G Equipment Identification Characters**

Equipment identification characters must be 2-1/2 inch, series D lettering, except on wood poles, they must be 3-inch lettering.

The characters must be self-adhesive reflective labels or paint, except on wood poles, they must be embossed on aluminum.

**86-1.02H Splicing Materials**

Splicing materials include:

1. Connectors
2. Electrical insulating coating
3. PVC electrical tape
4. Butyl rubber stretchable tape
5. PVC pressure-sensitive adhesive tape
6. Heat shrink tubing

Connectors must be C-shaped compression or butt type.

Electrical insulating coating must be a fast drying sealant with low nontoxic fumes.

PVC electrical tape must have a minimum thickness of 80 mils.

Butyl rubber stretchable tape with liner must have a minimum thickness of 120 mils.

PVC pressure-sensitive adhesive electrical tape must have a minimum thickness of 6 mils.

Electrical tapes must be self-fusing, oil- and flame-resistant, synthetic rubber and be UL listed or NRTL certified.

Heat-shrink tubing must be made of irradiated polyolefin tubing with a minimum wall thickness of 40 mils before contraction and an adhesive mastic inner wall. When heated, the inner wall must melt and fill the crevices and interstices of the covered splice area and the outer wall must shrink to form a waterproof insulation.

Heat-shrink tubing must comply with the requirements for extruded, insulating tubing at 600 V(ac) specified in UL Standard 468D and ANSI C119.1 and the requirements shown in the following table:

**Heat-Shrink Tubing Requirements**

Quality characteristic	Requirement
Shrinkage ratio of supplied diameter <sup>a</sup> (max, %)	33
Dielectric strength (min, kV/in)	350
Resistivity (min, Ω/in)	25 x 10 <sup>13</sup>
Tensile strength (min, psi)	2,000
Operating temperature (°C)	-40–90 (135 °C in emergency)
Water absorption (max, %)	0.5

<sup>a</sup>When heated to 125 °C and allowed to cool to 25 °C

**86-1.02I Connectors and Terminals**

A connector and terminal must comply with SAE-AS7928 and be a crimp type, rated for 600 V(ac) and either UL listed or NRTL certified.

**86-1.02J Standards, Poles, Pedestals, and Posts**

Standards for signals, lighting, and flashing beacons, poles for closed circuit television, pedestals for cabinets, posts for extinguishable message sign and posts for pedestrian push button assemblies must comply with section 56-3.

**86-1.02K Luminaires**

**86-1.02K(1) General**

Luminaire must be either LED or low-pressure-sodium type.

**86-1.02K(2) LED Luminaires**

LED luminaire must be on the Authorized Material List for LED luminaires and must:

1. Be self-contained, not requiring assembly.
2. Comply with UL 1598 for luminaires in wet locations.
3. Have a power supply with:
  - 3.1. ANSI/IEC rating of at least IP65.
  - 3.2. 2 leads to accept standard 0-10 V(dc).
  - 3.3. Dimming control compatible with IEC 60929, Annex E. If the control leads are open or the analog control signal is lost, the circuit must default to 100-percent power.
  - 3.4. Case temperature self rise of 77 degrees F or less above ambient temperature in free air with no additional heat sinks.
4. Weigh no more than 35 lb.
5. Have a minimum operating life of 63,000 hours when operated for an average time of 11.5 hours at an average temperature of 70 degrees F.
6. Be designed to operate over a temperature range from -40 to 130 degrees F.
7. Be operationally compatible with photoelectric controls.
8. Have a correlated color temperature range from 3,500 to 6,500 K and a color rendering index of 65 or greater.
9. Have a maximum-effective projected area of 1.4 sq ft when viewed from either side or end.
10. Have a housing color that matches a color no. 26152 to 26440, 36231 to 36375, or 36440 of FED-STD-595.

11. Have an ANSI C136.41-compliant, locking-type, photocontrol receptacle with dimming connections and a watertight shorting cap.
12. Comply with LM-79, LM-80 and California Test 611.

The individual LEDs must be connected such that a catastrophic loss or a failure of 1 LED does not result in the loss of more than 20 percent of the luminous output of the luminaire.

The luminaire must be permanently marked inside the unit and outside of its packaging box. Marking consists of:

1. Manufacturer's name or trademark
2. Month and year of manufacture
3. Model, serial, and lot numbers
4. Rated voltage, wattage, and power in VA

An LED luminaire's onboard circuitry must include a surge protection device to withstand high-repetition noise transients caused by utility line switching, nearby lightning strikes, and other interferences. The device must protect the luminaire from damage and failure due to transient voltages and currents as defined in Tables 1 and 4 of ANSI/IEEE C64.41.2 for location category C-High. The surge protection device must comply with UL 1449 and ANSI/IEEE C62.45 based on ANSI/IEEE C62.41.2 definitions for standard and optional waveforms for location category C-High.

An LED luminaire and its associated onboard circuitry must comply with the Class A emission limits under 47 CFR 15(B) for the emission of electronic noise.

The fluctuations of line voltage must have no visible effect on the luminous output.

The operating voltage may range from 120 to 480 V(ac), 60 ± 3 Hz. Luminaire must operate over the entire voltage range or the voltage range must be selected from one of the following:

1. Luminaire must operate over a voltage range from 95 to 277 V(ac). The operating voltages for this option are 120 V(ac) and 240 V(ac).
2. Luminaire must operate over a voltage range from 347 to 480 V(ac). The operating voltage for this option is 480 V(ac).

LED luminaire must have a power factor of 0.90 or greater. The total harmonic distortion, current, and voltage induced into a power line by a luminaire must not exceed 20 percent. The L70 of the luminaire must be the minimum operating life or greater. Illuminance measurements must be calibrated to standard photopic calibrations.

The maximum power consumption and maintained illuminance of the LED luminaires must comply with the isofootcandle curves as shown.

LED luminaire must not allow more than 10 percent of the rated lumens to project above 80 degrees from vertical and 2.5 percent of the rated lumens to project above 90 degrees from vertical.

Luminaire must have passive thermal management with enough capacity to ensure proper heat dissipation and functioning of the luminaire over its minimum operating life. The maximum junction temperature for the minimum operating life must not exceed 221 degrees F.

The junction-to-ambient thermal resistance must be 95 degrees F per watt or less. The use of fans or other mechanical devices is not allowed for cooling the luminaire. The heat sink must be made of aluminum or other material of equal or lower thermal resistance. The luminaire must contain circuitry that automatically reduces the power to the LEDs so the maximum junction temperature is not exceeded when the ambient temperature is 100 degrees F or greater.

The luminaire's housing must be fabricated from materials designed to withstand a 3,000-hour salt spray test under ASTM B117. All aluminum used in housings and brackets must be made of a marine-grade alloy with less than 0.2 percent copper. All exposed aluminum must be anodized. A chromate conversion undercoating must be used underneath a thermoplastic polyester powder coat.

The housing must be designed to prevent the buildup of water on its top surface. Exposed heat sink fins must be oriented to allow water to 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 to at least an UL 60529 rating of IP66. The power supply enclosure must be protected to at least an UL 60529 rating of IP43.

The housing must have a slip fitter capable of being mounted on a 2-inch-diameter pipe tenon. Slip fitter must:

1. Fit on mast arms with outside diameters from 1-5/8 to 2-3/8 inches
2. Be adjustable to a minimum of  $\pm 5$  degrees from the axis of the tenon in a minimum of 5 steps: +5, +2.5, 0, -2.5, -5
3. Have clamping brackets that:
  - 3.1. Are made of corrosion-resistant materials or treated to prevent galvanic reactions
  - 3.2. Do not bottom out on the housing bosses when adjusted within the designed angular range
  - 3.3. Do not permanently set in excess of 1/32 inch when tightened

Each refractor or lens must be made of UV-inhibiting high-impact plastic, such as acrylic or polycarbonate, or heat- and impact-resistant glass. The refractor or lens must be resistant to scratching. Polymeric materials, except for the lenses of enclosures containing either the power supply or electronic components of the luminaire, must be made of UL94 V-0 flame-retardant materials.

An LED luminaire and its internal components must be able to withstand mechanical shock and vibration.

If the components are mounted on a down-opening door, the door must be hinged and secured to the luminaire's housing separately from the refractor or flat lens frame. The door must be secured to the housing to prevent accidental opening. A safety cable must mechanically connect the door to the housing.

An LED luminaire must have a barrier-type terminal block secured to the housing to connect field wires. The terminal screws must be captive and equipped with wire grips for conductors up to no. 6.

The conductors and terminals must be identified and marked.

### **86-1.02K(3) Low-Pressure Sodium luminaires**

A low-pressure sodium luminaire must be an enclosed cutoff or semi-cutoff type and be self-contained, not requiring assembly.

The housing must be either (1) a minimum 1/16-inch-thick, corrosion-resistant, die-cast aluminum sheet and plate with concealed continuous welds or (2) a minimum 3/32-inch-thick, acrylonitrile-butadiene-styrene sheet material on a cast aluminum frame. The housing must provide mounting for all electrical components and a slip fitter. The housing must be divided into optical and power compartments that are individually accessible for service and maintenance.

The painted exterior surface of the luminaire must be finished with a fused coating of electrostatically applied polyester powder paint or other UV-inhibiting film. The color must be aluminum gray.

A sealing ring must be installed in the pipe tenon opening to prevent the entry of water and insects into the power and optical compartments. The ring must be made of high-temperature neoprene or equal material.

The power unit assembly must be accessible through a weather-tight, hinged cover secured to the housing with spring latches or captive screws.

The luminaire's hardware must be stainless steel or cadmium plated. Removable components must be secured with machine screws or bolts instead of sheet metal screws.

A semi-cutoff luminaire or a molded refractor-style cutoff luminaire must include a refractor. Other cutoff luminaires must include a flat lens. The refractor assembly and flat lens assembly must be designed to rigidly maintain their shape and be hinged and secured to the housing with spring latches.

The refractor must be either a 1-piece injection-molded polycarbonate with a minimum thickness of 3/32 inch or a 1-piece injection-molded acrylic with a minimum thickness of 1/8 inch. Alternate methods of manufacturing the refractor may be authorized provided minimum specified thicknesses are maintained.

The flat lens must be a 1-piece polycarbonate with a minimum thickness of 3/32 inch, mounted to a metal frame.

The lamp socket must be made of high-temperature, flame-retardant, thermoset material with self-wiping contacts or an equal. The socket must be rated for 660 W and 1,000 V(ac). The position of the socket and support must maintain the lamp in the correct relationship with the reflector and refractor for the designed light distribution pattern. The reflector may be an integral part of the housing.

The luminaire must comply with the isofootcandle curves as shown.

Low-pressure sodium lamp must:

1. Be a 180 W, single-ended, bayonet-base, tubular, gas-discharge lamp
2. Maintain a minimum of 93 percent of its initial lumens over its rated life
3. Reach 80 percent of its light output within 10 minutes
4. Restrike within 1 minute after a power outage or voltage drop at the lamp socket
5. Have ANSI L74/E designation

The lamp operating position must be at ±20 degrees from the horizontal.

Lamp must comply with the minimum performance requirements shown in the following table:

<b>Minimum Performance Requirements</b>	
Quality characteristic	Requirement
Initial lumens (lm)	33,000
Rated average life at 10 h/start (h)	18,000

The low-pressure sodium lamp ballast must be an autotransformer or high-reactance type. The power factor must be not less than 90 percent when the ballast is operated at the nominal line voltage with a nominally-rated reference lamp. The lamp wattage regulation spread must not vary by more than ±6 percent for ±10 percent input voltage variation from nominal through life.

At the line voltage, the ballast must have a lamp current crest factor not exceeding 1.8 and ballast loss not exceeding 24 percent for a 180 W ballast.

The ballast must include a multi-circuit connector for quick disconnection.

**86-1.02K(4) Reserved**

**86-1.02L Reserved**

**86-1.02M Photoelectric Controls**

Photoelectric control types are as shown in the following table:

<b>Photoelectric Control Types</b>	
Control type	Description
I	Pole-mounted photoelectric unit. Test switch housed in an enclosure.
II	Pole-mounted photoelectric unit. Contactor and test switch located in a service equipment enclosure.
III	Pole-mounted photoelectric unit. Contactor and a test switch housed in an enclosure.
IV	A photoelectric unit that plugs into a NEMA twist-lock receptacle, integral with the luminaire.
V	A photoelectric unit, contactor, and test switch located in a service equipment enclosure.

The pole-mounted adaptor for Type I, II, and III photoelectric controls must include a terminal block and cable supports or clamps to support the wires.

The enclosure for Type I and III photoelectric controls must be a NEMA 3R type. The enclosure must have a factory-applied, rust-resistant prime coat and finish coat. The enclosure must be hot-dip galvanized or painted to match the color of the lighting standard.

Photoelectric unit must:

1. Have a screen to prevent artificial light from causing cycling.
2. Have a rating of 60 Hz, 105-130 V(ac), 210-240 V(ac), or 105-240 V(ac).
3. Operate at a temperature range from -20 to 55 degrees C.
4. Consume less than 10 W.
5. Be a 3-prong, twist-lock type with a NEMA IP 65 rating, ANSI C136.10-compliant
6. Have a fail-on state
7. Fit into a NEMA-type receptacle
8. Turn on from 1 to 5 footcandles and turn off from 1.5 to 5 times the turn-on level. Measurements must be made by procedures in *EEI-NEMA Standards for Physical and Electrical Interchangeability of Light-Sensitive Control Devices Used in the Control of Roadway Lighting*.

Type I, II, III, and V photoelectric controls must have a test switch to allow manual operation of the lighting circuit. Switch must be:

1. Single-hole mounting, toggle type
2. Single pole and single throw
3. Labeled *Auto-Test* on a nameplate

Photoelectric control's contactor must be:

1. Normally open
2. Mechanical-armature type with contacts of fine silver, silver alloy, or equal or better material
3. Installed to provide a minimum space of 2-1/2 inches between the contactor terminals and the enclosure's sides

The terminal blocks must be rated at 25 A, 600 V(ac), molded from phenolic or nylon material, and be the barrier type with plated-brass screw terminals and integral marking strips.

#### **86-1.02N Fused Splice Connectors**

The fused splice connector for 240 and 480 V(ac) circuits must simultaneously disconnect both ungrounded conductors. The connector must not have exposed metal parts except for the head of the stainless steel assembly screw. The head of the assembly screw must be recessed a minimum of 1/32 inch below the top of the plastic boss that surrounds the head.

The connector must protect the fuse from water or weather damage. Contact between the fuse and fuse holder must be spring loaded.

Fuses must:

1. Be standard, midget, ferrule type
2. Have a nontime-delay feature
3. Be 3/32 by 1-1/2 inches

#### **86-1.02O Grounding Electrodes**

Grounding electrode must be:

1. 1 piece
2. Minimum 10-foot length of one of the following:
  - 2.1. Galvanized steel rod or pipe not less than 3/4 inch in diameter
  - 2.2. Copper clad steel rod not less than 5/8 inch in diameter



## **86-1.02P Enclosures**

### **86-1.02P(1) General**

The enclosures must be rated NEMA 3R and include a dead front panel and a hasp with a 7/16-inch-diameter hole for a padlock.

The enclosure's machine screws and bolts must not protrude outside the cabinet wall.

The fasteners on the exterior of an enclosure must be vandal resistant and not be removable. The exterior screws, nuts, bolts, and washers must be stainless steel.

### **86-1.02P(2) Service Equipment Enclosures**

A service equipment enclosure must be factory wired and manufactured from steel and galvanized or have factory-applied, rust-resistant prime and finish coats, except Types II and III.

Type II and III service equipment enclosures must:

1. Be made of 0.125-inch minimum thickness 5052-H32 aluminum sheet complying with ASTM B209.
2. Be manufactured using gas metal arc welding with bare aluminum welding electrodes. The electrodes must comply with AWS A5.10 Class ER5356.
3. Be manufactured using welding procedures, welders, and welding operators that comply with the requirements for welding procedures, welders, and welding operators in in AWS B2.1, "Specification for Welding Procedure and Performance Qualification."
4. Have full-seal weld exterior seams.
5. Exterior welds must be ground smooth and edges filed to a radius of at least 0.03 inch.
6. Have a surface finish that complies with MIL-A-8625 for a Type II, Class I coating, except the anodic coating must have a minimum thickness of 0.0007 inch and a minimum coating weight of 0.001 oz/sq in.

If a Type III enclosure houses a transformer of more than 1 kVA, the enclosure must have effective screened ventilation louvers of no less than 50 sq. in for each louver. The framed screen must be stainless no. 304 with a no. 10 size mesh and secured with at least 4 bolts.

The dead front panel on a Type III service equipment enclosure must have a continuous stainless steel or aluminum piano hinge. The panel must be secured with a latch or captive screws. No live part must be mounted on the panel.

The enclosure must be watertight and marked as specified in NEC to warn of potential electric-arc flash hazards.

Internal conductors for the photoelectric control unit must be 600 V(ac), 14 AWG (THHN) stranded machine tool wire. Where subject to flexing, 19 stranded wire must be used.

The meter area must be have a sealable, lockable, weather-tight cover that can be removed without the use of tools.

For Type III-A, III-B, and III-C enclosures, the meter socket must be a 5-clip type, and the landing lug must be suitable for multiple conductors.

For a Type III-D enclosure, the meter socket must be a 7-clip type, and the landing lug must be suitable for multiple conductors. The pedestal must comply with the Electric Utility Service Equipment Requirements Committee drawing no. 308 or 309.

Landing lugs must be (1) sized for the incoming service utility conductors, (2) compatible with either copper or aluminum conductors, and (3) made of copper or tin-plated aluminum. Live parts of the electrical equipment must be guarded against accidental contact.

The main and neutral busses of the enclosure must be made of tin-plated copper, be rated for 125 A, and be suitable for copper or aluminum conductors.

Each service equipment enclosure must have up to 2 main circuit breakers that will simultaneously disconnect ungrounded service-entrance conductors.

Circuit breaker for a service equipment enclosure must:

1. Be quick-break on either automatic or manual operation
2. Be trip indicating
3. Be internal-trip type
4. Be UL listed or NRTL certified and comply with UL 489 or equal
5. Be clearly marked with the frame size
6. Have an operating mechanism that is enclosed and trip-free from the operating handle on overload
7. Have the trip rating clearly marked on the operating handle
8. Have an interior made of copper

Circuit breakers used as disconnects must have a minimum interrupting capacity of 10,000 A, rms.

The interior of the enclosure must accept plug-in circuit breakers. A minimum of 6 standard single-pole circuit breakers, 3/4" nominal, must be provided for branch circuits.

Identify each circuit breaker and component by description using an engraved phenolic nameplate attached with stainless steel rivets or screws.

Nameplate must be installed:

1. Adjacent to the breaker on the dead front panel. The characters must be a minimum of 1/8 inch high.
2. Adjacent to the component on the back panel. The characters must be a minimum of 1/8 inch high.
3. At the top exterior of the door panel. The nameplate must include the system number, voltage, and number of phases engraved in minimum 3/16-inch-high characters.

A plastic-laminated wiring diagram must be attached inside the enclosure with brass eyelets by a UL-listed or NRTL-certified method.

### **86-1.02P(3) Lighting and Sign Illumination Enclosures**

A lighting and sign illumination enclosure must be manufactured from steel and either galvanized, cadmium plated, or powder coated.

### **86-1.02Q Cabinets**

#### **86-1.02Q(1) General**

Cabinets must be factory wired except for battery backup system cabinets.

The fasteners on the exterior of a cabinet, except for battery backup system cabinets, must be removable and vandal resistant. The exterior screws, nuts, bolts, and washers must be stainless steel.

Terminal blocks, circuit breakers, and a power supply must be UL approved.

#### **86-1.02Q(2) Department-Furnished Controller Cabinets**

A Department-furnished controller assembly consists of a Model 170E or 2070E controller unit, a wired controller cabinet, and all auxiliary equipment required to operate the system. The Department does not furnish anchor bolts.

#### **86-1.02Q(3) Controller Cabinets**

The controller cabinet must be a Model 334L, comply with TEES, and be on the Authorized Material List for traffic signal control equipment. The cabinet must have 3 drawer shelves. Each shelf must be attached to the tops of 2 supporting angles with 4 screws.

#### **86-1.02Q(4) Telephone Demarcation Cabinets**

##### **86-1.02Q(4)(a) General**

The doors of a telephone demarcation cabinet must be attached using stainless steel piano hinges.

Diamond Springs Parkway – Phase 1A – SR-49 Realignment

**CIP No. 72375, Contract No. 2720**

December 18, 2018

07-21-17

County of El Dorado

**Appendix A**

AA-224

**86-1.02Q(4)(b) Type A Telephone Demarcation Cabinets**

Reserved

**86-1.02Q(4)(c) Type B Telephone Demarcation Cabinets**

A Type B telephone demarcation cabinet consists of a mounting panel, outlets, circuit breaker, fan, dead front plates, and fuse.

The mounting panel must be made of 3/4-inch-thick ACX-grade plywood.

The mounting panel must be fastened to the cabinet with nuts, lock washers, and flat washers to 10 welded studs.

The cabinet must be made of 0.125-inch-thick anodized aluminum.

The cabinet door must be hung and secured with drawn latches, lockable with a padlock. The padlock latches must each have a minimum 7/16-inch-diameter hole.

Ventilation louvers must be located on the door.

The fan must be located in a ventilator housing and be controlled thermostatically. The thermostat control must have a range from 80 to 130 degrees F.

The thermostat and fan circuit must be protected with a fuse rated for 175 percent of the motor capacity. The fan capacity must be a minimum 25 cfm.

**86-1.02Q(4)(d) Type C Telephone Demarcation Cabinets**

Reserved

**86-1.02Q(5) Battery Backup System Cabinets**

The cabinet for a battery backup system must comply with TEES and be on the Authorized Material List for traffic signal control equipment.

**86-1.02R Signal Heads****86-1.02R(1) General**

A signal head consists of a signal mounting assembly, backplate, and signal face.

The head must have a terminal block attached to the back of one housing. The terminal block must have enough positions to accommodate all indications. Each position must be permanently labeled for the indications used.

The metal signal heads must not fracture or deflect more than half the lens diameter when tested under California Test 666.

The plastic signal heads must not fracture or deflect when tested under California Test 605.

The deflection must not be more than 10 degrees in either the vertical or horizontal plane after the wind load has been removed from the front of the signal face or more than 6 degrees in either the vertical or horizontal plane after the wind load has been removed from the back of the signal face.

**86-1.02R(2) Signal Mounting Assemblies**

Signal mounting assembly must include:

1. 1-1/2-inch-diameter steel pipe or galvanized conduit
2. Pipe fitting made of ductile iron, galvanized steel, bronze, or aluminum alloy, Type AC-84B, no. 380
3. Mast arm and post-top slip fitters and terminal compartments made of cast bronze or hot-dip galvanized ductile iron

The horizontal distance between the vertical centerlines of the terminal compartment or slip fitter and of each signal face must not exceed 11 inches except where required for proper signal face alignment or to allow programming of programmed visibility signal sections.

The mounting assembly must be watertight and free of sharp edges or protrusions that might damage conductor insulation. The assembly must have positive-locking serrated fittings that prevent signal faces from rotating when the fittings are mated with similar fittings on the faces.

Each terminal compartment must be fitted with a terminal block having a minimum of 12 positions, each with 2 screw-type terminals. Each terminal must accommodate at least five no. 14 conductors. The terminal compartment must have a cover for easy access to the terminal block.

### **86-1.02R(3) Backplates**

The backplate material must be a homogeneous black color with a lusterless finish.

A metal backplate must be made of a minimum 1/16-inch-thick 3001-14 aluminum.

A plastic backplate must have a minimum thickness of 1/16 inch and be formed from sheet plastic or assembled from extruded, molded, or cast plastic sections. Sections must be factory joined using one of the following:

1. Appropriate solvent cement.
2. Aluminum rivets and washers painted or permanently colored to match the backplate.
3. No. 10 machine screws with flat washers, lock washers, and nuts painted to match the backplate.

Each plastic backplate must be secured to the plastic signal face such that it resists removal or permanent deformation.

### **86-1.02R(4) Signal Faces**

Signal face consists of signal sections with signal housings, LED modules, and visors.

Signal face must:

1. Be adjustable and allow for 360-degree rotation about the vertical axis
2. Comply with ITE publications ST-052-E, *Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Circular Signal Supplement* and ST-054, *Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Supplement*
3. Be sealed with a neoprene gasket at the top opening

A metal signal face must have a metal backplate and visor.

A plastic signal face must have a plastic backplate and visor.

If a signal face is supported by a Type MAS slip fitter, spacers are required between the 2 sections. The spacers must be made of the same material as the housing. The vertical dimension of the spacers must allow proper seating of the serrations between the slip fitter and the 2 sections. The 2 sections must be joined with at least two no. 10 minimum machine screws through holes near the front of the housing and the spacers and matching holes in a reinforcing plate installed in the housing.

### **86-1.02R(4)(a) Signal Sections**

#### **86-1.02R(4)(a)(i) General**

Signal section must have:

1. Opening at the top and bottom for a 1-1/2-inch pipe
2. Maximum height of 10-1/4 inches for an 8-inch section and 14-3/4 inches for a 12-inch section
3. Hinge pins, door-latching devices, and other exposed hardware manufactured of Type 304/304L or 305 stainless steel
4. Interior screws and fittings manufactured of stainless steel or steel with a corrosion-resistant plating or coating

5. Gaskets made of a material that is not degraded if installed in a section with metal or plastic housing

Sections must be capable of being joined together to form a signal face in any combination. This interchangeability is not required between metal and plastic sections.

Each section must be joined to an adjacent section by one of the following:

1. Minimum of 3 machine screws for 8-inch sections and 4 machine screws for 12-inch sections, installed through holes near the front and back of the housing. Each screw must be a no. 10 and have a nut, flat washer, and lock washer.
2. 2 machine screws, each with a nut, flat washer, and lock washer, installed through holes near the front of the housing and a fastener through the 1-1/2-inch pipe opening. The fastener must have 2 large, flat washers to distribute the load around the pipe's opening and 3 carriage bolts, each with a nut and lock washer. The minimum screw size must be no. 10, and the carriage bolt size must be 1/4 inch.

The holes for the machine screws must be either cast or drilled during signal section fabrication. Each hole must be surrounded by a minimum 1/8-inch-wide boss to allow contact between signal sections about the axis of the hole.

A serrated nylon washer must be inserted between each plastic signal section and the metal mounting assembly. Each serrated nylon washer must be from 3/16 to 1/4 inch thick. The serrations must match those on the signal section and the mounting assembly.

#### **86-1.02R(4)(a)(ii) Programmed Visibility Signal Sections**

Programmed visibility signal section must have:

1. Nominal 12-inch-diameter circular or arrow indication
2. Cap visor
3. Adjustable connection that:
  - 3.1. Provides incremental tilting from 0 to 10 degrees above or below the horizontal
  - 3.2. Maintains a common vertical axis through couplers and mountings

The terminal connection must allow external adjustment about the mounting axis in 5-degree increments.

The visibility of each signal section must be capable of adjustment or programming within the section.

The adjustment for the section must be preset at 4 degrees below the horizontal.

#### **86-1.02R(4)(a)(iii) Signal Housings**

The signal housing must:

1. Be die-cast aluminum, permanent mold-cast aluminum, or if specified, structural plastic
2. Comply with ITE publications ST-052-E, *Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Circular Signal Supplement* and ST-054, *Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Supplement* if made of die-cast or permanent mold-cast aluminum
3. Have a 1-piece, hinged, square-shaped door that is:
  - 3.1. Designed to allow access for replacement of modules without the use of tools
  - 3.2. Secured such that it remains closed during loading tests
4. Have a watertight module or lens mounted in the door
5. Have a terminal block attached to the back, with the terminals permanently labeled for conductors to facilitate field wiring

Each housing must have reinforcement plates. Reinforcement plates must be either sheet aluminum, galvanized steel, or cast aluminum. Each plate must have a minimum thickness of 0.11 inch and a hole concentric with a 1-1/2-inch pipe-mounting hole in the housing. Reinforcement plates must be placed as specified in the following table:

### Reinforcement Plate Placement

Material	Placement
Sheet aluminum	Inside and outside of housing
Galvanized steel	Inside of housing
Cast aluminum	Outside of housing

Reinforcement plates placed outside of the housing must be finished to match the signal housing color and be designed to allow a proper serrated coupling between the signal face and the mounting hardware. A minimum of three no. 10 machine screws must be installed through holes in each plate and matching holes in the housing. Each screw must have a round or binder head, a nut, and a lock washer.

A metal housing must have a metal visor.

Plastic housing must:

1. Be molded in a single piece or fabricated from 2 or more pieces joined into a single piece
2. Be a black color throughout, including the door, matching color no. 17038, 27038, or 37038 of FED-STD-595
3. Have UV stability
4. Be self-extinguishing

If reinforcing webs are used to connect the back of the housing to the top, bottom, and sides of the adjacent housing, reinforcement plates are not required.

The exterior of the housing must be painted as specified in sections 78-4.08 and 59.

#### **86-1.02R(4)(b) LED Signal Modules**

An LED signal module must be on the Authorized Material List for LED traffic signal modules.

An LED signal module must comply with ITE publications ST-052-E, *Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Circular Signal Supplement* and ST-054, *Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Supplement*, except:

1. Maximum module weight must be 4 lb
2. Module must be a sealed unit with:
  - 2.1. 2 color-coded conductors for the power connection except lane control modules must use 3 color-coded conductors
  - 2.2. Printed circuit board that complies with TEES, chapter 1, section 6
  - 2.3. Lens that is:
    - 2.3.1. Convex or flat with a smooth outer surface
    - 2.3.2. Made of UV-stabilized plastic or glass
  - 2.4. 1-piece EPDM gasket
3. Module must include 3-foot-long conductors with attached quick-disconnect terminals
4. Identification must include:
  - 4.1. Month and year of manufacture
  - 4.2. 1-inch-diameter symbol of the module type with the module color written adjacent to the symbol in 0.50-inch-high letters
5. LED must be the ultra-bright type rated for 100,000 hours of continuous operation
6. Module must have an integral power supply

Individual LEDs must be wired such that a loss or failure of 1 LED will not result in a loss of more than 5 percent of the module's light output. Failure of an individual LED in a string must not result in a loss of an entire string or other indication.

The symbol for a 12-inch U-turn section must be a 15/16-inch-wide inverted *U* with an arrow on the left end.

A lane control section must be a combination module with a red X and green arrow. The conductor function and color code must be as shown in the following table:

**Conductor Function and Color Code**

Function	Color
Neutral	White
Red X	Red
Green arrow	Brown

The minimum power consumption for an LED signal module must be 5 W.

The maximum power consumption for an LED signal module must be as shown in the following table:

**Maximum Power Consumption**

LED signal module type	Power consumption (W)					
	Red		Yellow		Green	
	25 °C	74 °C	25 °C	74 °C	25 °C	74 °C
8-inch circular	8	13	13	16	12	12
12-inch circular	11	17	22	25	15	15
12-inch arrow	9	12	10	12	11	11
12-inch U-turn	9	12	10	12	11	11
Bicycle	11	17	22	25	15	15
Programmed visibility	11	17	22	25	15	15
Lane control (X)	9	12	--	--	--	--
Lane control (Arrow)	--	--	--	--	11	11

Red and green LED signal modules operating over a temperature range from -40 to 74 degrees C and yellow LED signal modules operating at 25 degrees C must maintain the minimum illumination values for 48 months as shown in the following tables:

**Minimum Maintained Intensities for Circular Indications**

Angle (v,h)	Intensities (cd)					
	8-inch			12-inch		
	Red	Yellow	Green	Red	Yellow	Green
2.5, ±2.5	133	267	267	339	678	678
2.5, ±7.5	97	194	194	251	501	501
2.5, ±12.5	57	113	113	141	283	283
2.5, ±17.5	25	48	48	77	154	154
7.5, ±2.5	101	202	202	226	452	452
7.5, ±7.5	89	178	178	202	404	404
7.5, ±12.5	65	129	129	145	291	291
7.5, ±17.5	41	81	81	89	178	178
7.5, ±22.5	18	37	37	38	77	77
7.5, ±27.5	10	20	20	16	32	32
12.5, ±2.5	37	73	73	50	101	101
12.5, ±7.5	32	65	65	48	97	97
12.5, ±12.5	28	57	57	44	89	89
12.5, ±17.5	20	41	41	34	69	69
12.5, ±22.5	12	25	25	22	44	44
12.5, ±27.5	9	16	16	16	32	32
17.5, ±2.5	16	32	32	22	44	44
17.5, ±7.5	14	28	28	22	44	44
17.5, ±12.5	10	20	20	22	44	44
17.5, ±17.5	9	16	16	22	44	44
17.5, ±22.5	6	12	12	20	41	41
17.5, ±27.5	4	9	9	16	32	32

**Minimum Maintained Luminance for Indications**

Indication type	Luminance (fL)		
	Red	Yellow	Green
Arrow	1,610	3,210	3,210
U-turn	1,610	3,210	3,210
Bicycle	1,610	1,610	1,610
Lane control (X)	1,610	--	--
Lane control (Arrow)	--	--	1,610

**Minimum Maintained Luminance for Programmed Visibility Indications**

Indication type	Luminance (cd)		
	Red	Yellow	Green
PV at angle v=2.5, h=±2.5	314	314	314

Conductors must be prewired to the terminal block.

**86-1.02R(4)(c) Visors and Directional Louvers**

The visor must be a tunnel type.

The visor must have a downward tilt from 3 to 7 degrees with a minimum length of 9-1/2 inches for nominal 12-inch round lenses and 7 inches for nominal 8-inch round lenses.

A metal visor must be formed from minimum 0.050-inch-thick aluminum alloy sheet.



A plastic visor must be either formed from sheet plastic or blow-molded. The plastic must be a black homogeneous color with a lusterless finish. A visor must withstand a wind load applied to its side for 24 hours without permanent deformation or removal from its door when tested under California Test 605 for plastic visors and California Test 666 for metal visors.

If directional louvers are used, the louvers must fit into full-circular signal visors. Louvers must consist of one of the following:

1. Outside cylinder constructed of sheet steel with a minimum nominal thickness of 0.030 inch and vanes constructed of sheet steel with a minimum nominal thickness of 0.016 inch.
2. Outside cylinder and vanes constructed of 5052-H32 aluminum alloy of equal thickness.

## **86-1.02S Pedestrian Signal Heads**

### **86-1.02S(1) General**

A pedestrian signal head consists of a pedestrian signal mounting assembly and a pedestrian signal face comprising of a pedestrian signal housing, an LED countdown pedestrian signal face module, and a front screen.

### **86-1.02S(2) Pedestrian Signal Mounting Assemblies**

A pedestrian signal mounting assembly must comply with the specifications for a signal mounting assembly in section 86-1.02R, except mast arm slip fitters are not required.

### **86-1.02S(3) Pedestrian Signal Faces**

#### **86-1.02S(3)(a) General**

Each pedestrian signal face must include a light-duty terminal block rated at 5 A and have 12 positions with no. 6-by-1/8-inch binder head screws. Each position must have 1 screw-type terminal.

The wiring and terminal block must comply with ITE publication ST-055-E, *Pedestrian Traffic Control Signal Indicators: Light Emitting Diode (LED) Signal Modules*.

#### **86-1.02S(3)(b) Pedestrian Signal Housings**

Pedestrian signal housing must comply with the specifications for a signal housing in 86-1.02R(4)(a)(iii), except the maximum overall dimensions must be 18-1/2 inches wide, 19 inches high, and 11-1/2 inches deep and without:

1. Visor
2. Watertight module or lens mounted in the door
3. Reinforcement plates

The housing must have a terminal block attached to the back. The terminal block must have enough positions to accommodate all indications. Each position must be permanently labeled for the indications used.

#### **86-1.02S(3)(c) LED Countdown Pedestrian Signal Face Modules**

An LED countdown PSF module must comply with ITE publication ST-055-E, *Pedestrian Traffic Control Signal Indicators: Light Emitting Diode (LED) Signal Modules*, except the material must comply with ASTM D3935 and the module must have:

1. Ultra-bright-type LED rated for 100,000 hours of continuous operation.
2. Lot number and month and year of manufacture permanently marked on the back of the module
3. Prominent and permanent vertical markings for accurate indexing and orientation within the pedestrian signal housing if a specific mounting orientation is required. Markings must be a minimum of 1 inch in height and include an up arrow and the word *up* or *top*.
4. Circuit board complying with TEES, chapter 1, section 6.

Individual LEDs must be wired such that a loss or failure of 1 LED will not result in a loss of more than 5 percent of the module's light output. Failure of an individual LED in a string must not result in a loss of an entire string or other indication.

Each symbol must be at least 9 inches high and 5-1/4 inches wide. The 2-digit countdown timer, *Upraised Hand*, and *Walking Person* indications must be electronically isolated from each other. The 3 indications must not share a power supply or interconnect circuitry.

The module must operate over the specified ambient temperature and voltage range and be readable both day and night at distances up to the full width of the area to be crossed. Upon initial testing at 25 degrees C, the module must have at least the luminance values shown in the following table:

<b>Luminance Values</b>	
PSF module symbol	Luminance
Upraised hand and 2-digit countdown timer (fL)	1,094
Walking person (fL)	1,547

The module must not exceed the power consumption requirements shown in the following table:

<b>Maximum Power Consumption Requirements</b>		
PSF module display	At 24 °C	At 74 °C
<i>Upraised Hand</i>	10.0 W	12.0 W
<i>Walking Person</i>	9.0 W	12.0 W
2-digit countdown timer	6.0 W	8.0 W

**86-1.02S(3)(d) Front Screen**

Pedestrian signal face must have a front screen that is one of the following types:

1. 3/8-inch-thick aluminum honeycomb screen with 0.2-inch-wide cells or a 1/2-inch-thick plastic screen with 3/8-inch-wide squares with 1/16-inch wall thickness that:
  - 1.1. Is installed so it tilts downward at an angle of 15 ± 2 degrees from the top and completely covers the message plate.
  - 1.2. Includes a clear front cover made of either a minimum 1/8-inch-thick acrylic plastic sheet or a minimum 1/16-inch-thick polycarbonate plastic.
  - 1.3. Is held firmly in place, including the cover, with stainless steel or aluminum clips or stainless steel metal screws.
2. Polycarbonate screen that:
  - 2.1. Has a nominal thickness of 1/32 inch.
  - 2.2. Is a 1-1/2-inch-deep eggcrate or Z-crate type.
  - 2.3. Is mounted in a frame constructed of aluminum alloy or polycarbonate with a minimum thickness of 0.040 inch.
  - 2.4. Is held in place with stainless steel screws.

The screen and frame of a pedestrian signal face must be made of either (1) plastic that is a flat black color or (2) anodized aluminum that is a flat black color or finished with lusterless, black, exterior-grade latex paint formulated for application to metal surfaces.

**86-1.02T Accessible Pedestrian Signals**

Accessible pedestrian signal must comply with the *California MUTCD*, chapter 4E, and have:

1. Audible speech message that plays when the push button is actuated. The message must include the name of the street to be crossed. The accessible pedestrian signal must have at least 5 audible message options.
2. Push button locator tone that clicks or beeps.

3. Feature that activates the pedestrian phase during a failure of the audible message, locator tone, or vibrotactile device.

An accessible pedestrian signal must function with the Department-furnished Model 170E/2070E controller assembly.

No part of the accessible pedestrian signal must be installed inside the controller cabinet. Power for the accessible pedestrian signal must be from the pedestrian signal housing terminal block.

The housing for the signal assembly must be made of corrosion-resistant material. Theft-proof bolts used for mounting the housing to the standard must be stainless steel with a content of 17 percent chromium and 8 percent nickel. The housing must be shaped to fit the pole's curvature.

The color of a metallic housing must match color no. 33538 of FED-STD-595.

The color of a plastic housing must match color no. 17038, 27038, or 37038 of FED-STD-595.

Accessible pedestrian signal must:

1. Have electronic switches, a potentiometer, or an access port for a device for controlling and programming the volume level and messaging
2. Be weatherproof and shockproof

Enclosure for the accessible pedestrian signal must:

1. Weigh less than 7 lb
2. Measure less than 16 by 6 by 5 inches
3. Have a wiring hole with a diameter not exceeding 1-1/8 inches
5. Have a switch for a push button
6. Have a vibrotactile device on the push button or on the arrow
7. Have an internal weatherproof speaker and microphone that senses the ambient sound level

The separation between adjacent holes used for conductors and mounting must be at least twice the diameter of the larger hole.

The speaker grills must be located on the surface of the enclosure. The speakers must not interfere with the housing or its mounting hardware.

The conductor cable between the accessible pedestrian signal assembly and the pedestrian signal head must be a 9 no. 20 conductor cable complying with MIL-W-16878D.

#### **86-1.02U Push Button Assemblies**

The housing for a push button assembly must be made of die-cast aluminum, permanent mold-cast aluminum, or UV-stabilized self-extinguishing structural plastic. The plastic housing must have a color throughout that matches color no. 17038, 27038, or 37038 of FED-STD-595.

If the push button is to be attached to a pole, the housing must be shaped to fit the pole's curvature.

The assembly must be waterproof and shockproof.

The push button's switch must be a single-pole, double-throw switching unit with screw-type terminals rated 15 A at 125 V(ac).

Switch for the push button must have:

1. Plunger actuator and a U frame to allow recessed mounting in the push button housing
2. Operating force of 3.5 lb
3. Maximum pretravel of 5/64 inch
4. Minimum overtravel of 1/32 inch
5. Differential travel from 0.002 to 0.04 inch
6. Minimum 2-inch diameter actuator

**86-1.02V Reserved**

**86-1.02W Loop Detector Sealants**

**86-1.02W(1) General**

Sealant for filling loop detector slots must be one of the following:

1. Asphaltic emulsion
2. Elastomeric sealant
3. Epoxy sealant for inductive loops
4. Hot-melt rubberized asphalt

**86-1.02W(2) Asphaltic Emulsion Sealant**

Asphaltic emulsion sealant must comply with the State Specification 8040-41A-15.

**86-1.02W(3) Elastomeric Sealant**

Elastomeric sealant must be a polyurethane material that cures only in the presence of moisture if used within the stated shelf life. The sealant must be suitable for use in both asphalt concrete and concrete pavement.

The cured elastomeric sealant must comply with the requirements shown in the following table:

**Cured Elastomeric Sealant Requirements**

Quality characteristic	Test method	Requirement
Hardness	ASTM D2240 <sup>a</sup>	65–85
Tensile strength (min, MPa)	ASTM D412 <sup>b</sup>	3.45
Elongation (min, %)		400
Flex at -40 °C <sup>c</sup>	--	No cracks
Weathering resistance	ASTM D822 <sup>d</sup>	Slight chalking
Salt spray resistance:	ASTM B117 <sup>e</sup>	
Tensile strength (min, MPa)		3.45
Elongation (min, %)		400
Dielectric constant (%)	ASTM D150 <sup>f</sup>	<25

<sup>a</sup>Indentation at 25 °C and 50% relative humidity (Rex. Type A, Model 1700 only)

<sup>b</sup>Die C pulled at 508 mm/minute

<sup>c</sup>0.6-mm free film bend (180°) over 13-mm mandrel

<sup>d</sup>Weatherometer 350 h, cured 7 days at 25 °C and 50% relative humidity

<sup>e</sup>28 days at 38 °C with 5% NaCl, Die C, and pulled at 508 mm/minute)

<sup>f</sup>Change over a temperature range from -30 to 50 °C

**86-1.02W(4) Hot-Melt Rubberized Asphalt Sealant**

Hot-melt rubberized asphalt sealant must:

1. Be in solid form at room temperature and fluid at an application temperature range from 190 to 205 degrees C
2. Not produce toxic fumes
3. Be suitable for use in both asphalt concrete and concrete pavement
4. Be packaged in containers clearly marked *Detector Loop Sealant* with the manufacturer's batch and lot number.

The cured hot-melt rubberized asphalt sealant must comply with the requirements shown in the following table:

**Cured Hot-Melt Rubberized Asphalt Sealant Requirements**

Quality characteristic	Test method	Requirement
Cone penetration (max, 1/10 mm)	ASTM D5329, sec. 6 <sup>a</sup>	35
Flow (max, mm)	ASTM D5329, sec. 8 <sup>b</sup>	5
Resilience (min, %)	ASTM D5329, sec. 12 <sup>c</sup>	25
Softening point (min, °C)	ASTM D36	82
Ductility (min, cm)	ASTM D113 <sup>d</sup>	30
Flash point, Cleveland Open Cup (min, °C)	ASTM D92	288
Viscosity (Pa·s)	ASTM D4402 <sup>e</sup>	2.5–3.5

<sup>a</sup>At 25 °C, 150 g, 5 s

<sup>b</sup>At 60 °C

<sup>c</sup>At 25 °C

<sup>d</sup>At 25 °C, 5 cm/minute

<sup>e</sup>Brookfield Thermosel, no. 27 spindle, 20 rpm, 190 °C

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**86-1.02X Electronic Markers and Locators**

Reserved

04-15-16

**86-1.02Y Transformers**

A transformer must be single-phase and may be a nonsubmersible or submersible type.

A transformer must be a dry type designed for operation on a 60 Hz supply. The transformer must have a decal showing a connection diagram. The diagram must show either color coding or wire tagging with primary (H1, H2) or secondary (X1, X2) markers and the primary and secondary voltage and volt-ampere rating. A transformer must comply with the electrical requirements shown in the following table:

**Transformer Electrical Requirements**

Quality characteristic	Requirement
Rating (V(ac))	120/480, 120/240, 240/480, or 480/120
Efficiency (%)	> 95
Secondary voltage regulation and tolerance from half load to full load (%)	±3

Secondary 240 and 480 V(ac) windings must be center tapped.

The transformer must withstand the application of 2,200 V(ac) from core to coils and from coil to coil for a 1-minute period when tested immediately after operation of the transformer at full load for 24 hours.

The external leads for the secondary connections must be no. 10 Type USE rated for 600 V(ac).

The transformer's leads must extend a minimum of 12 inches from the case.

The transformer's insulation must be NEMA 185 C or better.

Each transformer must:

1. Include metal half-shell coil protection.
2. Have moisture-resistant, synthetic-varnish-impregnated windings.
3. Be waterproof and suitable for outdoor operation.

Each submersible transformer must:

1. Include a handle and a hanger.
2. Be securely encased in a rugged, corrosion-resistant, watertight case.

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3. Have leads that extend out through 1 or more sealed hubs.
4. Be manufactured to withstand a 5-day test with 12-hour on and off periods submerged in 2 feet of salt water that is 2 percent salt by weight. The operating periods must be at full load.

#### **86-1.02Z Batteries**

Battery must:

1. Be deep-cycle, sealed, prismatic, lead-calcium-based, absorbed-glass-mat, valve-regulated, lead-acid type
2. Be rated for 12 V
3. Be rated for a temperature range from -25 to 60 degrees C
4. Be group size 24
5. Be commercially available and stocked locally
6. Be marked with a date code, maximum recharge data, and recharge cycles
7. Be new and fully charged when furnished
8. Be free from damage or deformities
9. Have a carrying handle
10. Have 2 top-mounted, threaded-stud posts that include all washers and nuts
11. Include insulating rubber covers for protecting the lugs, posts, and wiring: red for the positive terminal and black for the negative terminal

If a battery is used for a battery backup system, it must accommodate 3/8-inch ring lugs of a Department-furnished battery harness.

#### **86-1.03 CONSTRUCTION**

Not Used

#### **86-1.04 PAYMENT**

Not Used

**Replace section 87 with:**

04-15-16

### **87 ELECTRICAL SYSTEMS**

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#### **87-1 GENERAL**

##### **87-1.01 GENERAL**

###### **87-1.01A Summary**

Section 87 includes general specifications for constructing and installing electrical systems.

The Department deducts the cost for maintenance performed by the Department on new or portions of existing systems modified under the Contract.

###### **87-1.01B Definitions**

Reserved

###### **87-1.01C Submittals**

Reserved

###### **87-1.01D Quality Assurance**

###### **87-1.01D(1) General**

Reserved

###### **87-1.01D(2) Quality Control**

Before shipping the material to the job site, submit to METS test samples of:

1. Accessible pedestrian signals

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2. LED countdown pedestrian signal face modules
3. LED signal modules
4. LED luminaires

Submit a sample size as shown in the following table:

**Electrical Material Sampling**

Contract quantity	Test sample size
1–8	1
9–15	2
16–25	3
26–90	5
91–150	8
151–280	13
281–500	20
501–1200	32

Before starting operation of an electrical system, perform a conductor test in the presence of the Engineer.

Conductor test consists of testing each conductor and the conductors in cables for:

1. Continuity
2. Grounds
3. Attainment of minimum insulation resistance of 100 MΩ on circuits

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Start the operational test of the system on any day except Friday or the day before a holiday. The operational test for signals must start from 9:00 a.m. to 2:00 p.m. Notify the Engineer 48 hours before starting the test.

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An operational test consists of a minimum of 5 business days of continuous, satisfactory operation of the system. If the system fails, correct the problem and retest the system. A shutdown of the system caused by traffic, a power interruption, or unsatisfactory performance of Department-furnished materials does not constitute discontinuity of the test.

**87-1.02 MATERIALS**

Not Used

**87-1.03 CONSTRUCTION**

**87-1.03A General**

The Engineer determines the final locations of electrical systems.

Verify the locations of electrical systems and the depths of existing detectors, conduits, and pull boxes.

Notify the Engineer before performing work on the existing system.

You may shut down the system for alteration or removal.

Where an existing Department underground facility is shown within 10 feet of any excavation, locate and field mark the facility before performing work that could damage or interfere with the existing facility.

If an existing facility is within 2 feet of an excavation, determine the exact location of the facility by excavating with hand tools before using any power-operated or power-driven excavating or boring equipment. A vacuum excavator may be used if authorized.

Notify the Engineer immediately if an existing facility is damaged by your activities.

If existing underground conduit is to be incorporated into a new system, clean it with a mandrel or cylindrical wire brush and blow it clean with compressed air.

Limit the shutdown of traffic signal systems to normal working hours. Notify the local traffic enforcement agency before shutting down the signal.

Place temporary W3-1 and R1-1 signs in each direction to direct traffic through the intersection during shutdown of the signal. Place two R1-1 signs for 2-lane approaches. The signs must comply with part 2 of the *California MUTCD*.

Cover signal faces when the system is shut down overnight. Cover temporary W3-1 and R1-1 signs when the system is turned on.

If you work on an existing lighting system and the roadway is to remain open to traffic, ensure the system is in operation by nightfall.

Replace detectors you damage within 72 hours, or the Department replaces them and deducts the cost.

Work performed on an existing system not described is change order work.

Do not use electrical power from existing highway facilities unless authorized.

Maintain a minimum 48-inch clearance for a pedestrian pathway when placing equipment.

Except for service installation or work on service equipment enclosures, do not work above ground until all materials are on hand to complete the electrical work at each location.

Bond all metal components to form a continuous grounded system as specified in NEC.

Ground metallic equipment mounted less than 8 feet above the ground surface on a wood pole.

If you damage any portion of a concrete curb, sidewalk, curb ramp, driveway, or gutter depression, replace the entire section between contraction or expansion joints under section 73.

Apply equipment identification characters.

Orient louvers, visors, and signal faces such that they are clearly visible to approaching traffic from the direction being controlled.

Test loops and the detector lead-in cable circuit for continuity, ground, and insulation resistance at the controller cabinet before connecting detector lead-in cable to the terminal block.

Perform an operational test of the systems.

Before starting the operational test for systems that impact traffic, the system must be ready for operation, and all signs, pavement delineation, and pavement markings must be in place at that location.

### **87-1.03B Conduit Installation**

#### **87-1.03B(1) General**

The installation of conduit includes installing caps, bushings, and pull tape and terminating the conduit in pull boxes, foundations, poles, or a structure.

Limit the number of bends in a conduit run to no more than 360 degrees between pull points.



Use conduit to enclose conductors except where they are installed overhead or inside standards or posts.

You may use a larger size conduit than specified for the entire length between termination points. Do not use a reducing coupling.

Extend an existing conduit using the same material. Terminate conduits of different materials in a pull box.

Install 2 conduits between a controller cabinet and the adjacent pull box.

Use a minimum trade size of conduit of:

1. 1-1/2 inches from an electrolier to the adjacent pull box
2. 1 inch from a pedestrian push button post to the adjacent pull box
3. 2 inches from a signal standard to the adjacent pull box
4. 3 inches from a controller cabinet to the adjacent pull box
5. 2 inches from an overhead sign to the adjacent pull box
6. 2 inches from a service equipment enclosure to the adjacent pull box
7. 1-1/2 inches if unspecified

Use Type 1 conduit:

1. On all exposed surfaces
2. In concrete structures
3. Between a structure and the nearest pull box

Ream the ends of shop-cut and field-cut conduit to remove burrs and rough edges. Make the cuts square and true. Do not use slip joints and running threads to couple conduit. If a standard coupling cannot be used for metal-type conduit, use a threaded union coupling. Tighten the couplings for metal conduit to maintain a good electrical connection.

Cap the ends of conduit to prevent debris from entering before installing the conductors or cables. Use a plastic cap for Type 1, 2, and 5 conduits and a standard pipe cap for all other types of conduit.

For Type 1, 2, and 5 conduits, use threaded bushings and bond them using a jumper. For other types of conduit, use nonmetallic bushings.

Do not install new conduit through foundations.

Cut Type 2 conduit with pipe cutters; do not use hacksaws. Use standard conduit-threading dies for threading conduit. Tighten conduit into couplings or fittings using strap wrenches or approved groove joint pliers.

Cut Type 3 conduit with tools that do not deform the conduit. Use a solvent weld for connections.

Protect shop-cut threads from corrosion under the standards shown in the following table:

Conduit	Standard
Types 1 and 2	ANSI C80.1
Type 5	ANSI C80.6

Apply 2 coats of unthinned, organic zinc-rich primer to metal conduit before painting. Use a primer on the Authorized Material List for organic zinc-rich primers. Do not use aerosol cans. Do not remove shop-installed conduit couplings.

For conduits, paint:

1. All exposed threads
2. Field-cut threads, before installing conduit couplings to metal conduit

3. Damaged surfaces on metal conduit

If a Type 2 conduit or conduit coupling coating is damaged:

1. Clean the conduit or fitting and paint it with 1 coat of rubber-resin-based adhesive under the manufacturer's instructions
2. Wrap the damaged coating with at least 1 layer of 2-inch-wide, 20 mils-minimum-thickness, PVC tape under ASTM D1000 with a minimum tape overlap of 1/2 inch

You may repair damaged spots of 1/4 inch or less in diameter in the thermoplastic coating by painting with a brushing-type compound supplied by the conduit manufacturer.

If factory bends are not used, bend the conduit to a radius no less than 6 times its inside diameter without crimping or flattening it. Comply with the bending requirements shown in the following table:

**Conduit-Bending Requirements**

Type	Requirement
1	Use equipment and methods under the conduit manufacturer's instructions.
2	Use a standard bending tool designed for use on thermoplastic-coated conduit. The conduit must be free of burrs and pits.
3	Use equipment and methods under the conduit manufacturer's instructions. Do not expose the conduit to a direct flame.
5	Use equipment and methods under the conduit manufacturer's instructions.

Install pull tape with at least 2 feet of slack in each end of the conduit that will remain empty. Attach the tape's ends to the conduit.

Install conduit terminating in a standard or pedestal from 2 to 3 inches above the foundation. Slope the conduit toward the handhole opening.

Terminate conduit installed through the bottom of a nonmetallic pull box 2 inches above the bottom and 2 inches from the wall closest to the direction of the run.

**87-1.03B(2) Conduit Installation for Structures**

**87-1.03B(2)(a) General**

Paint exposed Type 1 conduit the same color as the structure.

Install galvanized steel hangers, steel brackets, and other fittings to support conduit in or on a wall or bridge.

**87-1.03B(2)(b) New Structures**

Seal and make watertight the conduits which lead to soffits, wall-mounted luminaires, other lights, and fixtures located below the pull box grade.

If you place a conduit through the side of a nonmetallic pull box, terminate the conduit 2 inches from the wall and 2 inches above the bottom. Slope the conduit toward the top of the box to facilitate pulling conductors.

For ease of installation and if authorized, you may use Type 4 conduit instead of Type 1 conduit for the final 2 feet of conduit entering a pull box in a reinforced concrete structure.

Install an expansion fitting where a conduit crosses an expansion joint in a structure. Each expansion fitting for metal conduit must include a copper bonding jumper having the ampacity as specified in NEC.

Install an expansion-deflection fitting for an expansion joint with a 1-1/2-inch movement rating. The fitting must be watertight and include a molded neoprene sleeve, a bonding jumper, and 2 silicon bronze or zinc-plated iron hubs.

For an expansion joint with a movement rating greater than 1-1/2 inches, install the expansion-deflection fitting as shown.

For conduit installed inside of bridge structures, you must:

1. Install precast concrete cradles made of minor concrete and commercial-quality welded wire fabric. The minor concrete must contain a minimum of 590 lb of cementitious material per cubic yard. The cradles must be moist cured for a minimum of 3 days.
2. Bond precast concrete cradles to a wall or bridge superstructure with one of the following:
  - 2.1. Epoxy adhesive for bonding freshly-mixed concrete to hardened concrete.
  - 2.2. Rapid-set epoxy adhesive for pavement markers.
  - 2.3. Standard-set epoxy adhesive for pavement markers.
3. Use a pipe sleeve or form an opening for a conduit through a bridge superstructure. The sleeve or opening through a prestressed member or conventionally reinforced precast member must be:
  - 3.1. Oriented transverse to the member.
  - 3.2. Located through the web.
  - 3.3. No more than 4 inches in size.
4. Wrap the conduit with 2 layers of asphalt felt building paper and securely tape or wire the paper in place for a conduit passing through a bridge abutment wall. Fill the space around the conduit with mortar under section 51-1, except the proportion of cementitious material to sand must be 1 to 3. Fill the space around the conduits after prestressing is completed.

Thread and cap a conduit installed for future use in structures. Mark the location of the conduit's end in a structure, curb, or wall directly above the conduit with a Y that is 3 inches tall.

#### **87-1.03B(2)(c) Existing Structures**

Run surface-mounted conduit straight and true, horizontal or vertical on the wall, and parallel to walls on ceilings or similar surfaces. Support the conduit at a maximum of 5-foot intervals where needed to prevent vibration or deflection. Support the conduit using galvanized, malleable-iron, conduit clamps, and clamp backs secured with expansion anchorage devices complying with section 75-3.02C. Use the largest diameter of galvanized, threaded studs that will pass through the mounting hole in the conduit clamp.

#### **87-1.03B(3) Conduit Installation Underground**

##### **87-1.03B(3)(a) General**

Install conduit to a depth of:

1. 14 inches for the trench-in-pavement method
2. 18 inches, minimum, under sidewalk and curbed paved median areas
3. 42 inches, minimum, below the bottom of the rail of railroad tracks
4. 30 inches, minimum, everywhere else below grade

Place conduit couplings at a minimum of 6 inches from the face of a foundation.

Place a minimum of 2 inches of sand bedding in a trench before installing Type 2 or Type 3 conduit and 4 inches of sand bedding over the conduit before placing additional backfill material.

If installing conduit within the limits of hazardous locations as specified in NEC for Class I, division 1, install and seal Type 1 or Type 2 conduit with explosion-proof sealing fittings.

##### **87-1.03B(3)(b) Conduit Installation under Paved Surfaces**

You may lay conduit on existing pavement within a new curbed median constructed on top.

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Install conduit under existing pavement by either the horizontal directional drill method or jack and drill method. You may use the trench-in-pavement method for either of the following conditions:

1. If conduit is to be installed behind the curb under the sidewalk
2. If the delay to vehicles will be less than 5 minutes

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Do not use the trench-in-pavement method for conduit installations under freeway lanes or freeway-to-freeway connector ramps.

### **87-1.03B(3)(c) Reserved**

#### **87-1.03B(3)(d) Conduit Installation under Railroad Tracks**

Install Type 1 or Type 2 conduit with a minimum diameter of 1-1/2 inches under railroad tracks. If you use the jacking or drilling method to install the conduit, construct the jacking pit a minimum of 13 feet from the tracks' centerline at the near side of the pit. Cover the jacking pit with planking if left overnight.

### **87-1.03B(4) Reserved**

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#### **87-1.03B(5) Conduit Installation by the Jack and Drill Method**

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Keep the jacking or drilling pit 2 feet away from the pavement's edge. Do not weaken the pavement or soften the subgrade with excessive use of water.

If an obstruction is encountered, obtain authorization to cut small holes in the pavement to locate or remove the obstruction.

You may install Type 2 or Type 3 conduit under the pavement if a hole larger than the conduit's diameter is predrilled. The predrilled hole must be less than one and half the conduit's diameter.

Remove the conduit used for drilling or jacking and install new conduit for the completed work.

#### **87-1.03B(6) Conduit Installation by the Trenching-In-Pavement Method**

Install conduit by the trenching-in-pavement method using a trench approximately 2 inches wider than the conduit's outside diameter but not exceeding 6 inches in width.

Where additional pavement is to be placed, you must complete the trenching before the final pavement layer is applied.

If the conduit shown is to be installed under the sidewalk, you may install it in the street within 3 feet of and parallel to the face of the curb. Install pull boxes behind the curb.

Cut the trench using a rock-cutting excavator. Minimize the shatter outside the removal area of the trench.

Dig the trench by hand to the required depth at pull boxes.

Place conduit in the trench.

Backfill the trench with minor concrete to the pavement's surface by the end of each work day. If the trench is in asphalt concrete pavement and no additional pavement is to be placed, backfill the top 0.10 foot of the trench with minor HMA within 3 days after trenching.

### **87-1.03C Installation of Pull Boxes**

#### **87-1.03C(1) General**

Install pull boxes no more than 200 feet apart.

You may install larger pull boxes than specified or shown and additional pull boxes to facilitate the work except in structures.

Install a pull box on a bed of crushed rock and grout it before installing conductors. The grout must be from 0.5 to 1 inch thick and sloped toward the drain hole. Place a layer of roofing paper between the grout and the crushed rock sump. Make a 1-inch drain hole through the grout at the center of the pull box.

Set the pull box such that the top is 1-1/4 inches above the surrounding grade in unpaved areas and leveled with the finished grade in sidewalks and other paved areas.

Place the cover on the box when not working in it.

Grout around conduits that are installed through the sides of the pull box.

Bond and ground the metallic conduit before installing conductors and cables in the conduit.

Bond metallic conduits in a nonmetallic pull box using bonding bushings and bonding jumpers.

Do not install pull boxes in concrete pads, curb ramps, or driveways.

Reconstruct the sump of a pull box if disturbed by your activities. If the sump was grouted, remove and replace the grout.

#### **87-1.03C(2) Nontraffic Pull Boxes**

If you bury a nontraffic pull box, set the box such that the top is 6 to 8 inches below the surrounding grade. Place a 20-mil-thick plastic sheet made of HDPE or PVC virgin compounds to prevent water from entering the box.

Place mortar between a nontraffic pull box and a pull box extension.

Where a nontraffic pull box is in the vicinity of curb in an unpaved area, place the box adjacent to the back of the curb if practical.

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Where a nontraffic pull box is adjacent to a post or standard, place the box within 5 feet downstream from traffic if practical.

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If you replace the cover on a nontraffic pull box, anchor it to the box.

#### **87-1.03C(3) Traffic Pull Boxes**

Place minor concrete around and under a traffic pull box.

Bolt the steel cover to the box when not working in it.

Bond the steel cover to the conduit with a jumper and bolt it down after installing the conductors and cables.

#### **87-1.03C(4) Structure Pull Boxes**

Bond metallic conduit in a metal pull box in a structure using locknuts, inside and outside of the box, bonding bushings, and bonding jumpers connected to bonding wire running in the conduit system.

#### **87-1.03D Reserved**

#### **87-1.03E Excavating and Backfilling for Electrical Systems**

##### **87-1.03E(1) General**

Notify the Engineer at least 72 hours before starting excavation activities.

Dispose of surplus excavated material.

Restrict closures for excavation on a street or highway to 1 lane at a time unless otherwise specified.

##### **87-1.03E(2) Trenching**

07-21-17

Dig a trench for the electrical conduits. Do not excavate until the installation of the conduit.

04-15-16

Place excavated material in a location that will not interfere with traffic or surface drainage.

07-21-17

After placing the conduit, backfill the trench with the excavated material.

Compact the backfill placed within the hinge points and in areas where pavement is to be constructed to a minimum relative compaction of 95 percent.

Restore the sidewalks, pavement, and landscaping at a location before starting excavation at another location.

### **87-1.03E(3) Concrete Pads, Foundations, and Pedestals**

Construct foundations for standards, poles, metal pedestals, and posts under section 56-3.

Construct concrete pads, foundations, and pedestals for controller cabinets, telephone demarcation cabinets, and service equipment enclosures on firm ground.

Install anchor bolts using a template to provide proper spacing and alignment. Moisten the forms and ground before placing the concrete. Keep the forms in place until the concrete sets for at least 24 hours to prevent damage to the surface.

Use minor concrete for pads, foundations, and pedestals.

In unpaved areas, place the top of the foundation 6 inches above the surrounding grade, except place the top:

1. 1 foot 6 inches above the grade for Type M and 336L cabinets
2. 1 foot 8 inches above the grade for Type C telephone demarcation cabinets
3. 2 inches above the grade for Type G and Type A cabinets and Type III service equipment enclosures

The pad must be 2 inches above the surrounding grade.

In and adjacent to the sidewalk and other paved areas, place the top of the foundation 4 inches above the surrounding grade, except place the top:

1. 1 foot 6 inches above the grade for Type M and 336L cabinets
2. 1 foot 8 inches above the grade for Type C telephone demarcation cabinets
3. Level with the finished grade for Type G and Type A cabinets and Type III service equipment enclosures

The pad must be level with the finished grade.

Apply an ordinary surface finish under section 51-1.03F.

Allow the foundation to cure for at least 7 days before installing any equipment.

### **87-1.03F Conductors and Cable Installations**

#### **87-1.03F(1) General**

The installation of conductors and cables includes splicing conductors and attaching the terminals and connectors to the conductors.

Clean the conduit and pull all conductors and cables as a unit.

If new conductors or cables are to be added in an existing conduit:

1. Remove the content
2. Clean the conduit
3. Pull both old and new conductors and cables as a unit

Wrap conductors and secure cables to the end of the conduit in a pull box.

Seal the ends of conduits with a sealing compound after installing conductors or cables.

Neatly arrange conductors and cables inside pull boxes and cabinets. Tie the conductors and cables together with self-clinching nylon cable ties or enclose them in a plastic tubing or raceway.

Identify conductors and cables by direct labeling, tags, or bands fastened in such a way that they will not move. Use mechanical methods for labeling.

Provide band symbol identification on each conductor or each group of conductors comprising a signal phase in each pull box and near the end of terminated conductors.

Tape the ends of unused conductors and cables in pull boxes to form a watertight seal.

Do not connect the push-button or accessible pedestrian signal neutral conductor to the signal neutral conductor.

**87-1.03F(2) Cables**

**87-1.03F(2)(a) General**

Reserved

**87-1.03F(2)(b) Reserved**

**87-1.03F(2)(c) Copper Cables**

**87-1.03F(2)(c)(i) General**

Reserved

**87-1.03F(2)(c)(ii) Detector Lead-in Cables**

Install a Type B or C detector lead-in cable in conduit.

Waterproof the ends of the lead-in cable before installing it in the conduit to prevent moisture from entering the cable.

Splice loop conductors for each direction of travel for the same phase, terminating in the same pull box, to a separate lead-in cable running from the pull box adjacent to the loop detector to a sensor unit mounted in the controller cabinet. Install the lead-in cable without splices except at the pull box.

Verify in the presence of the Engineer that the loops are operational before making the final splices between loop conductors and the lead-in cable.

Identify and tag each lead-in cable with the detector designation at the cabinet and pull box adjacent to the loops.

**87-1.03F(2)(c)(iii) Conductors Signal Cables**

Do not splice signal cables except for a 28-conductor cable.

Provide identification at the ends of terminated conductors in a cable as shown.

Provide identification for each cable in each pull box showing the signal standard to which it is connected except for the 28-conductor cable.

Connect conductors in a 12-conductor cable as shown in the following table:

**12CSC Color Code and Functional Connection**

Color code	Termination	Phase
Red	Red signal	2, 4, 6, or 8
Yellow	Yellow signal	2, 4, 6, or 8
Brown	Green signal	2, 4, 6, or 8
Red/black stripe	Red signal	1, 3, 5, or 7
Yellow/black stripe	Yellow signal	1, 3, 5, or 7
Brown/black stripe	Green signal	1, 3, 5, or 7
Black/red stripe	Spare or as required for red or <i>DONT WALK</i>	--
Black/white stripe	Spare or as required for yellow	--
Black	Spare or as required for green or <i>WALK</i>	--
Red/white stripe	Pedestrian signal <i>DONT WALK</i>	--
Brown/white stripe	Pedestrian signal <i>WALK</i>	--
White	Terminal block	Neutral

Provide identification for each 28-conductor cable C1 or C2 in each pull box. The cable labeled C1 must be used for signal phases 1, 2, 3, and 4. The cable labeled C2 must be used for signal phases 5, 6, 7, and 8.

Connect conductors in a 28-conductor cable as shown in the following table:



**28CSC Color Code and Functional Connection**

Color code	Termination	Phase
Red/black stripe	Red signal	2 or 6
Yellow/black stripe	Yellow signal	2 or 6
Brown/black stripe	Green signal	2 or 6
Red/orange stripe	Red signal	4 or 8
Yellow/orange stripe	Yellow signal	4 or 8
Brown/orange stripe	Green signal	4 or 8
Red/silver stripe	Red signal	1 or 5
Yellow/silver stripe	Yellow signal	1 or 5
Brown/silver stripe	Green signal	1 or 5
Red/purple stripe	Red signal	3 or 7
Yellow/purple stripe	Yellow signal	3 or 7
Brown/purple stripe	Green signal	3 or 7
Red/2 black stripes	Pedestrian signal <i>DONT WALK</i>	2 or 6
Brown/2 black stripes	Pedestrian signal <i>WALK</i>	2 or 6
Red/2 orange stripes	Pedestrian signal <i>DONT WALK</i>	4 or 8
Brown/2 orange stripes	Pedestrian signal <i>WALK</i>	4 or 8
Red/2 silver stripes	Overlap A, C	OLA <sup>a</sup> , OLC <sup>a</sup>
Brown/2 silver stripes	Overlap A, C	OLA <sup>c</sup> , OLC <sup>c</sup>
Red/2 purple stripes	Overlap B, D	OLB <sup>a</sup> , OLD <sup>a</sup>
Brown/2 purple stripes	Overlap B, D	OLB <sup>c</sup> , OLD <sup>c</sup>
Blue/black stripe	Pedestrian push button	2 or 6
Blue/orange stripe	Pedestrian push button	4 or 8
Blue/silver stripe	Overlap A, C	OLA <sup>b</sup> , OLC <sup>b</sup>
Blue/purple stripe	Overlap B, D	OLB <sup>b</sup> , OLD <sup>b</sup>
White/black stripe	Pedestrian push button common	--
Black/red stripe	Railroad preemption	--
Black	Spare	--
White	Terminal block	Neutral

OL = Overlap; A, B, C, and D = Overlapping phase designation

<sup>a</sup>For red phase designation

<sup>b</sup>For yellow phase designation

<sup>c</sup>For green phase designation

Use the neutral conductor only with the phases associated with that cable. Do not intermix neutral conductors from different cables except at the signal controller.

**87-1.03F(2)(c)(iv) Signal Interconnect Cable**

For a signal interconnect cable, provide a minimum of 6 feet of slack inside each controller cabinet.

Do not splice the cable unless authorized.

If splices are authorized, insulate the conductor splices with heat-shrink tubing and overlap the insulation at least 0.6 inch. Cover the splice area of the cable with heat-shrink tubing and overlap the cable jacket at least 1-1/2 inches. Provide a minimum of 3 feet of slack at each splice.

**87-1.03F(3) Conductors**

**87-1.03F(3)(a) General**

Do not run conductors to a terminal block on a standard unless they are to be connected to a signal head mounted on that standard.

Provide 3 spare conductors in all conduits containing ramp metering and traffic signal conductors.

Install a separate conductor for each terminal of a push button assembly and accessible pedestrian signal.

Provide conductor slack to comply with the requirements shown in the following table:

Location	Slack (feet)
Signal standard	1
Lighting standard	1
Signal and lighting standard	1
Pull box	3
Splice	3
Standards with slip base	0

**87-1.03F(3)(b) Reserved**

**87-1.03F(3)(c) Copper Conductors**

**87-1.03F(3)(c)(i) General**

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Install a minimum no. 8, bare, grounding copper conductor in conduit and connect it to all-metal components.

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Where conductors from different service points occupy the same conduit or standard, enclose the conductors from one of the services in flexible or rigid metal conduit.

**87-1.03F(3)(c)(ii) Inductive Loop Conductors**

Install a Type 1 or 2 inductive loop conductor except use Type 2 for Type E loop detectors.

Install the conductor without splices except at the pull box.

**87-1.03F(4) Manual Installation Method**

Use an inert lubricant for placing conductors and cables in conduit.

Pull the conductors and cables into the conduit by hand using pull tape.

**87-1.03G Equipment Identification Characters**

The Engineer provides you with a list of the equipment identification characters.

Stencil the characters or apply the reflective self-adhesive labels to a clean surface.

Treat the edges of self-adhesive characters with an edge sealant.

Place the characters on the side facing traffic on:

1. Front doors of cabinets and service equipment enclosures.
2. Wood poles, fastened with 1-1/4-inch aluminum nails, for pole mounted enclosures
3. Adjacent bent or abutment at approximately the same station as an illuminated sign or soffit luminaire
4. Underside of the structure adjacent to the illuminated sign or soffit luminaire if no bent or abutment exists nearby
5. Posts of overhead signs
6. Standards

Before placing new characters on existing or relocated equipment, remove the existing characters.

## **87-1.03H Conductor and Cables Splices**

### **87-1.03H(1) General**

You may splice:

1. Grounded conductors in a pull box
2. Accessible pedestrian signal and push bottom conductors in a pull box
3. Ungrounded signal conductors in a pull box if signals are modified
4. Ungrounded signal conductors to a terminal compartment or a signal head on a standard with conductors of the same phase in the pull box adjacent to the standard
5. Ungrounded lighting circuit conductors in a pull box if lighting circuits are modified

07-21-17

Solder all copper conductor splices using the hot iron, pouring, or dipping method. Do not perform open-flame soldering.

04-15-16

### **87-1.03H(2) Splice Insulation Methods**

Insulate splices in a multiconductor cable to form a watertight joint and to prevent moisture absorption by the cable.

Use heat-shrink tubing or Method B to insulate a splice.

Use heat-shrink tubing as follows:

1. Cover the splice area completely with an electrical insulating coating and allow it to dry.
2. Place mastic around each conductor before placing them inside the tubing. Use the type of mastic specified in the tubing manufacturer's instructions.
3. Heat the area under the manufacturer's instructions. Do not perform open-flame heating. After contraction, each end of the heat-shrink tubing or the open end of the tubing's end cap must overlap the conductor insulation at least 1-1/2 inches.
4. Cover the entire splice with an electrical insulating coating and allow it to dry.

Use Method B as follows:

1. Cover the splice area completely with an electrical insulating coating and allow it to dry.
2. Apply 3 layers of half-lapped, 80-mils, PVC tape.
3. Apply 2 layers of 120-mils, butyl-rubber, stretchable tape with liner.
4. Apply 3 layers of half-lapped, 6-mils, PVC, pressure-sensitive, adhesive tape.
5. Cover the entire splice with an electrical insulating coating and allow it to dry.

### **87-1.03I Connectors and Terminals**

Apply connectors and terminals to cables and conductors using a crimping compression tool under the manufacturer's instructions. The tool must prevent opening of the handles until the crimp is completed.

Install crimp-style terminal lugs on stranded conductors smaller than no. 14.

07-21-17

Solder no. 8 and smaller copper conductors to connectors and terminal lugs.

04-15-16

### **87-1.03J Standards, Poles, Pedestals, and Posts**

Install standards, poles, pedestals, and posts under section 56-3.

Ground standards with a handhole by attaching a bonding jumper from the bolt or lug inside the standard to a metal conduit or to the grounding wire in the adjacent pull box. The bonding jumper must be visible when the handhole cover is removed.

Ground standards without a handhole or standards with a slip base by attaching a bonding jumper to all anchor bolts using ground clamps and connecting it to a metal conduit or to the grounding wire in the adjacent pull box. The bonding jumper must be visible after mortar has been placed on the foundation.

#### **87-1.03K Reserved**

#### **87-1.03L Utility Service**

##### **87-1.03L(1) General**

Install the service equipment early enough to allow the utility to complete its work before completion of the electrical work.

At least 15 days before permanent electrical and telecommunication service is required, request the service connections for permanent installations. The Department arranges with the utilities for completion of the connections and pays all costs and fees required by the utilities.

##### **87-1.03L(2) Electric Service**

###### **87-1.03L(2)(a) General**

If service equipment is to be installed on a utility-owned pole, furnish and install the conduit, conductors, pull boxes, and other necessary material to complete the service installation. The service utility decides the position of the riser and equipment on the pole.

###### **87-1.03L(2)(b) Electric Service for Irrigation**

Establishing electric service for irrigation includes installing conduit, conductors, and pull boxes and making connections from the service point to the irrigation controllers.

###### **87-1.03L(2)(c) Electric Service for Booster Pumps**

Establishing electric service for a booster pump includes installing conduit, conductors, and pull boxes and making connections from the service point to the booster pump enclosure.

##### **87-1.03L(3) Telecommunications Service**

Establishing telecommunication service includes installing conduit, conductors, and pull boxes and making connections from the service point to the telephone demarcation cabinet.

#### **87-1.03M Photoelectric Controls**

Mount the photoelectric unit on the top of the pole for Type I, II, and III photoelectric controls. Use mounting brackets where pole-top mounting is not possible. Orient the photoelectric unit to face north.

Mount the enclosure at a height of 6 feet above finished grade on the same standard as the photoelectric unit.

Install a minimum 100 VA, 480/120 V(ac) transformer in the contactor enclosure to provide 120 V(ac) for the photoelectric control unit when switching 480 V(ac), 60 Hz circuits.

#### **87-1.03N Fused Splice Connectors**

Install a fuse splice connector with a 5 A fuse in each ungrounded conductor for luminaires mounted on standards. The connector must be located in the pull box adjacent to the standard.

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Crimp the connector terminals onto the ungrounded conductors using a tool under the manufacturer's instructions. Insulate the terminals and make them watertight.

04-15-16

#### **87-1.03O Grounding Electrodes**

Install a grounding electrode for each cabinet, service equipment enclosure, and transformer.

Attach a grounding conductor from the electrode using either a ground clamp or exothermic weld. Connect the other end of the conductor to the cabinet, service equipment enclosure, and transformer.

### **87-1.03P Service Equipment Enclosures**

Installing a service equipment enclosure includes constructing the foundation and pad and installing conduit, adjacent pull boxes, and grounding electrode.

Locate the foundation such that the minimum clearance around the front and back of the enclosure complies with NEC, article 110.26, "Spaces About Electrical Equipment, (600 V, nominal or less)."

Bond and ground metal conduit as specified in NEC and by the service utility except the grounding electrode conductor must be no. 6 or larger.

If circuit breakers and components do not have a description on engraved phenolic nameplates, install them using stainless steel rivets or screws under section 86-1.02P(2).

### **87-1.03Q Cabinets**

#### **87-1.03Q(1) General**

Installing a cabinet includes constructing the foundation and pad and installing conduit, adjacent pull boxes, and grounding electrode.

Apply a mastic or caulking compound before installing the cabinet on the foundation to seal the openings.

Connect the field wiring to the terminal blocks in the cabinet. Neatly arrange and lace or enclose the conductors in plastic tubing or raceway. Terminate the conductors with properly sized captive or spring spade terminals. Apply a crimp-style connector and solder them.

Install and solder a spade-type terminal on no. 12 and smaller field conductors and a spade-type or ring-type terminal on conductors larger than no. 12.

#### **87-1.03Q(2) Department-Furnished Controller Cabinets**

Arrange for the delivery of Department-furnished controller cabinets.

#### **87-1.03Q(3) Reserved**

#### **87-1.03Q(4) Telephone Demarcation Cabinets**

Installing a telephone demarcation cabinet includes installing conduit, cable, and pull boxes to the controller cabinet.

Install the cabinet with the back toward the nearest lane of traffic.

### **87-1.03R Signal Heads**

#### **87-1.03R(1) General**

Installing a signal head includes mounting the heads on standards and mast arms, installing backplates and visors, and wiring conductors to the terminal blocks.

Keep the heads covered or direct them away from traffic until the system is ready for operation.

#### **87-1.03R(2) Signal Faces**

Use the same brand and material for the signal faces at each location.

Program the programmable visibility signal faces under the manufacturer's instructions. The indication must be visible only in those areas or lanes to be controlled.

#### **87-1.03R(3) Backplates**

Install backplates using at least six 10-24 or 10-32 self-tapping and locking stainless steel machine screws and flat washers.

If a plastic backplate requires field assembly, attach each joint using at least four no.10 machine screws. Each machine screw must have an integral or captive flat washer, a hexagonal head slotted for a standard screwdriver, and either a locking nut with an integral or captive flat washer or a nut, flat washer, and lock washer. Machine screws, nuts, and washers must be stainless steel or steel with a zinc or black oxide finish.

If a metal backplate has 2 or more sections, fasten the sections with rivets or aluminum bolts peened after assembly to avoid loosening.

Install the backplate such that the background light is not visible between the backplate and the signal face or between sections.

#### **87-1.03R(4) Signal Mounting Assemblies**

Install a signal mounting assembly such that its members are arranged symmetrically and plumb or level. Orient each mounting assembly to allow maximum horizontal clearance to the adjacent roadway.

For a bracket-mounted assembly, bolt the terminal compartment or pole plate to the pole or standard.

In addition to the terminal compartment mounting, attach the upper pipe fitting of Type SV-1-T with 5 sections or a SV-2-TD to the standard or pole using the mounting detail for signal heads without a terminal compartment.

Use a 4-1/2-inch slip fitter and set screws to mount an assembly on a post top.

After installing the assembly, clean and paint the exposed threads of the galvanized conduit brackets and bracket areas damaged by the wrench or vise jaws. Use a wire brush to clean and apply 2 coats of unthinned, organic zinc-rich primer. Do not use an aerosol can to apply the primer.

Install the conductors in the terminal compartment and secure the cover.

#### **87-1.03S Pedestrian Signal Heads**

Installing a pedestrian signal head includes mounting the heads on standards and wiring conductors to the terminal blocks.

Install the pedestrian signal mounting assembly under section 87-1.03R(4).

Use the same brand and material for the pedestrian signal faces at each location.

Install a pedestrian signal face such that its members are arranged symmetrically and plumb or level.

#### **87-1.03T Accessible Pedestrian Signals**

Use the same brand for the accessible pedestrian signals at each location.

Install an accessible pedestrian signal and the R10 series sign on the crosswalk side of the standard.

Attach the accessible pedestrian signal to the standard with self-tapping screws.

Attach the sign to the standard using 2 straps and saddle brackets.

Point the arrow on the accessible pedestrian signal in the same direction as the corresponding crosswalk.

Furnish the equipment and hardware to set up and calibrate the accessible pedestrian signal.

Arrange to have a manufacturer's representative at the job site to program the accessible pedestrian signal with an audible message or tone.

#### **87-1.03U Push Button Assemblies**

Install the push button assembly and the R10 series sign on the crosswalk side of the standard.

Attach the sign to the assembly for Type B assemblies.

Attach the sign to the standard using 2 straps and saddle brackets for Type C assemblies.

You may use straps and saddle brackets to secure the push button to the standard.

Use a slip fitter to secure the assembly on top of a 2-1/2-inch-diameter post.

## **87-1.03V Detectors**

### **87-1.03V(1) General**

Installing a detector includes installing inductive loop conductors, sealant, conduit, and pull boxes.

Center the detectors in the traffic lanes.

Do not splice the detector conductor.

### **87-1.03V(2) Inductive Loop Detectors**

Mark the location of the inductive loop detectors such that the distance between the side of the loop and a lead-in saw cut from an adjacent detector is at least 2 feet. The distance between lead-in saw cuts must be at least 6 inches.

Saw cut the slots under section 13-4.03E(7). The bottoms of the slots must be smooth with no sharp edges. For Type E detector loops, saw the slots such that the sides are vertical.

Wash the slots clean using water and blow dry them with compressed air to remove all moisture and debris.

Identify the start of the conductor.

Waterproof the ends of a Type 2 loop conductor before installing it in the conduit to prevent moisture from entering the cable.

Install the loop conductor in the slots and lead-in saw cuts using a 3/16- to 1/4-inch-thick wood paddle. Hold the conductors in place at the bottom of the slot with wood paddles during placement of the sealant.

Wind adjacent loops on the same sensor unit channel in opposite directions.

Twist the conductors for each loop into a pair consisting of a minimum of 2 turns per foot before placing them in the lead-in saw cut and the conduit leading to the pull box. Do not install more than 2 twisted pairs of conductors per lead-in saw cut.

Provide 5 feet of slack in the pull box.

Test each loop for continuity, circuit resistance, and insulation resistance before filling the slots with sealant.

Remove excess sealant from the adjacent road surface before it sets. Do not use solvents to remove the excess.

Identify the loop conductor pair in the pull box, marking the start with the letter *S* and the end with the letter *F*. Band conductors in pairs by lane in the pull box adjacent to the loops and in the cabinet. Identify each pair with the detector designation and loop number.

Install the conductors in a compacted layer of HMA immediately below the uppermost layer if more than one layer will be placed. Install the loop conductors before placing the uppermost layer of HMA. Fill the slot with a sealant flush to the surface.

Install the conductors in the existing pavement if one layer of HMA is to be placed. Install the loop conductors before placing the layer of HMA. Fill the slot with a sealant flush to the surface.

### **87-1.03V(3) Preformed Inductive Loop Detectors**

Construct a preformed inductive loop detector consisting of 4 turns in the loop and a lead-in conductor pair twisted at least 2 turns per foot all encased in conduit and sealed to prevent water penetration. The detector must be 6-foot square unless shown otherwise.

Construct the loop detector using a minimum 3/8-inch Schedule 40 or Schedule 80 PVC or polypropylene conduit and no. 16 or larger conductor with Type THWN or TFFN insulation.

In new roadways, place the detector in the base course with the top of the conduit flush with the top of the base. Cover with HMA or concrete pavement. Protect the detector from damage before and during pavement placement.

In new reinforced concrete bridge decks, secure the detector to the top of the uppermost layer of reinforcing steel using nylon wire ties. Hold the detector parallel to the bridge deck using PVC or polypropylene spacers where necessary. Place conduit for lead-in conductors between the uppermost 2 layers of reinforcing steel.

Do not install detectors in existing bridge decks unless authorized.

Install a detector in existing pavement before placement of concrete or HMA as follows:

1. Saw cut slots at least 1-1/4 inches wide into the existing pavement.
2. Place the detector in the slots. The top of the conduit must be at least 2 inches below the top of the pavement.
3. Test each loop circuit for continuity, circuit resistance, and insulation resistance.
4. Fill saw cuts with elastomeric or hot melt rubberized asphalt sealant for asphalt concrete pavement and with epoxy sealant or hot melt rubberized asphalt sealant for concrete pavement.

### **87-1.03W Sealants**

#### **87-1.03W(1) General**

Reserved

#### **87-1.03W(2) Elastomeric Sealant**

Apply an elastomeric sealant with a pressure feed applicator.

#### **87-1.03W(3) Asphaltic Emulsion Sealant**

Asphaltic emulsion sealant must:

1. Be used for filling slots in asphalt concrete pavement of a maximum width of 5/8 inch
2. Not be used on concrete pavement or where the slope causes the material to run from the slot
3. Be thinned under the manufacturer's instructions
4. Be placed when the air temperature is at least 45 degrees F

#### **87-1.03W(4) Hot-Melt Rubberized Asphalt Sealant**

Melt the sealant in a jacketed, double-boiler-type, melting unit. The temperature of the heat transfer medium must not exceed 475 degrees F.

Apply the sealant with a pressure feed applicator or a pour pot when the surface temperature of the pavement is greater than 40 degrees F.

#### **87-1.03X Reserved**

#### **87-1.03Y Transformers**

Installing a transformer includes placing the transformer inside a pull box, a cabinet, or an enclosure.

Wire the transformer for the appropriate voltage.

Ground the secondary circuit of the transformer as specified in the NEC.

#### **87-1.03Z Reserved**

#### **87-1.04 PAYMENT**

Not Used



## 87-2 LIGHTING SYSTEMS

### 87-2.01 GENERAL

#### 87-2.01A Summary

Section 87-2 includes specifications for constructing lighting systems.

Lighting system includes:

1. Foundations
2. Pull boxes
3. Conduit
4. Conductors
5. Standards
6. Luminaires
7. Service equipment enclosure
8. Photoelectric control
9. Fuse splice connectors
10. High mast lighting assemblies

The components of a lighting system are shown on the project plans.

#### 87-2.01B Definitions

Reserved

#### 87-2.01C Submittals

Submit a certificate of compliance and test data for the high mast lighting luminaires.

#### 87-2.01D Quality Assurance

Reserved

### 87-2.02 MATERIALS

#### 87-2.02A General

Reserved

#### 87-2.02B High Mast Lighting Assemblies

A high mast lighting assembly includes the foundation, pole, lowering device system, luminaires, and control pedestal.

Each luminaire in a high mast lighting assembly must include a housing, an optical system, and a ballast.

The housing must be made of aluminum.

A painted or powder-coated housing for a high mast lighting luminaire must be able to withstand a 1,000-hour salt spray test as specified in ASTM B117.

The optical system, consisting of the reflector, refractor or lens, lamp socket, and lamp, must be in a sealed chamber. The chamber must be sealed by a gasket between the reflector and refractor or lens and a gasket between the reflector and lamp socket. The chamber must have a separate filter or filtering gasket for flow of air.

An asymmetrical luminaire must have a refractor or reflector that is rotatable 360 degrees around a vertical axis to orient the distribution of light.

The luminaire must have a slip fitter for mounting on a 2-inch horizontal pipe tenon and must be adjustable  $\pm 3$  degrees from the axis of the tenon.

The reflector must have a specular surface made of silvered glass or aluminum protected by either an anodized finish or a silicate film. The reflector must be shaped such that a minimum of light is reflected through the arc tube of the lamp.

The refractor and lens must be made of heat-resistant glass.

The lamp socket must be a porcelain-enclosed, mogul-multiple type. The shell must contain integral lamp grips to ensure electrical contact under conditions of normal vibrations. The socket must be rated for 1,500 W, 600 V(ac) and 4,000 V(ac) pulse for a 400 W lamp and 5,000 V(ac) pulse for a 1,000 W lamp.

The luminaire must have a dual fuse holder for 2 fuses rated at 5 A, 480 V(ac). The fuses must be 13/32 inch by 1-1/2 inches, standard midget ferrule type with a nontime-delay feature.

The lamps must be vertical burning, protected from undue vibration, and prevented from backing out of the socket by a stainless steel clamp attached to the luminaire.

A 1,000 W metal halide lamp must have an initial output of 100,000 lumens and an average rated life of 12,000 hours based on 10 hours per start.

A 400 W high-pressure sodium lamp must have an initial output of 50,000 lumens. A 1,000 W high-pressure sodium lamp must have an initial output of 140,000 lumens.

The ballast for the luminaire must be a regulator type and have a core and coils, capacitors, and starting aid.

Ballast must be:

1. Mounted within a weatherproof housing that integrally attaches to the top of a luminaire support bracket and lamp support assembly
2. Readily removable without removing the luminaire from the bracket arm
3. Electrically connected to the optical assembly by a prewired quick disconnect

The ballast for a metal halide luminaire must comply with luminaire manufacturer's specifications.

The wattage regulation spread at any lamp voltage, from nominal through the life of the lamp, must vary no more than 22 percent for a 1,000 W lamp and a  $\pm 10$  percent input voltage variation. The ballast's starting line current must be less than its operating current.

## **87-2.02C Soffit and Wall-Mounted Luminaires**

### **87-2.02C(1) General**

Soffit and wall-mounted luminaires must be weatherproof and corrosion resistant.

Each luminaire must include a 70 W high-pressure sodium lamp with a minimum average rated life of 24,000 hours. The lamp socket must be positioned such that the light center of the lamp is located within 1/2 inch of the designed light center of the luminaire.

Luminaire wiring must be SFF-2.

Flush-mounted soffit luminaire must have:

1. Metal body with two 1-inch-minimum conduit hubs and a means of anchoring the body into the concrete
2. Prismatic refractor made of heat-resistant polycarbonate:
  - 2.1. Mounted in a door frame
  - 2.2. With the street side identified
3. Aluminum reflector with a specular anodized finish
4. Ballast located either within the housing or in a ceiling pull box if shown
5. Lamp socket

The door frame assembly must be hinged, gasketed, and secured to the luminaire body with at least 3 machine screws.

A pendant soffit luminaire must be enclosed and gasketed and have an aluminum finish. Luminaire must have:

1. Aluminum reflector with a specular anodized finish
2. Refractor made of heat-resistant polycarbonate
3. Optical assembly that is hinged and latched for lamp access and a device to prevent dropping
4. Ballast designed for operation in a raintight enclosure
5. Galvanized metal box with a gasketed cover, 2 captive screws, and 2 chains to prevent dropping and for luminaire mounting

Wall-mounted luminaire must have:

1. Cast metal body
2. Prismatic refractor:
  - 2.1. Made of glass
  - 2.2. Mounted in a door frame
3. Aluminum reflector with a specular anodized finish
4. Integral ballast
5. Lamp socket
6. Gasket between the refractor and the body
7. At least 2 mounting bolts of minimum 5/16-inch diameter

A cast aluminum body of a luminaire to be cast into or mounted against concrete must have a thick coat of alkali-resistant bituminous paint on all surfaces to be in contact with the concrete.

### **87-2.02C(2) High-Pressure Sodium Lamp Ballasts**

#### **87-2.02C(2)(a) General**

A high-pressure sodium lamp ballast must operate the lamp for its rated wattage.

Starting aids for a ballast must be interchangeable between ballasts of the same wattage and manufacturer without adjustment.

The ballast must be provided with a heat-generating component to serve as a heat sink. The capacitor must be placed at the maximum practicable distance from the heat-generating components or thermally shielded to limit the case temperature to 75 degrees C.

The transformer and inductor must be resin impregnated for protection against moisture. Capacitors, except for those in starting aids, must be metal cased and hermetically sealed.

The ballast must have a power factor of 90 percent or greater.

For the nominal input voltage and lamp voltage, the ballast design center must not vary more than 7.5 percent from the rated lamp wattage.

#### **87-2.02C(2)(b) Regulator-Type Ballasts**

A regulator-type ballast must be designed such that a capacitance variance of  $\pm 6$  percent does not cause more than  $\pm 8$  percent variation in the lamp wattage regulation.

The ballast must have a current crest factor not exceeding 1.8 for an input voltage variation of  $\pm 10$  percent.

The lamp wattage regulation spread for a lag-type ballast must not vary by more than 18 percent for  $\pm 10$  percent input voltage variations. The primary and secondary windings must be electrically isolated.

The lamp wattage regulation spread for a constant-wattage, autoregulator, lead-type ballast must not vary by more than 30 percent for  $\pm 10$  percent input voltage variations.

#### **87-2.02C(2)(c) Nonregulator-Type Ballasts**

A nonregulator-type ballast must have a current crest factor not exceeding 1.8 for an input voltage variation of  $\pm 5$  percent.

The lamp wattage regulation spread for an autotransformer or high reactance type ballast must not vary by more than 25 percent for  $\pm 5$  percent input voltage variations.

### **87-2.03 CONSTRUCTION**

#### **87-2.03A General**

Set the foundations for standards such that the mast arm is perpendicular to the centerline of the roadway.

Tighten the cap screws of the luminaire's clamping bracket to 10 ft-lb for LED and low-pressure luminaires.

Label the month and year of the installation inside the luminaire housing's door.

Perform the conductor and operational tests for the system.

#### **87-2.03B High Mast Lighting Assemblies**

Mount and connect the luminaires to the accessory support ring. Aim the asymmetrical luminaire to orient the distribution of light.

#### **87-2.03C Soffit and Wall-Mounted Luminaires**

For a flush-mounted soffit luminaire:

1. Prevent concrete from getting into the housing during pouring of the concrete for the structure
2. Install the luminaire with the axis vertical and the street side of the refractor oriented as indicated
3. Locate the luminaire to provide a minimum 2-foot clearance from the inside surface of the girders and 1-foot clearance from the near face of the diaphragm
4. Install the bridge soffit and ceiling pull box over the same lane

For a pendant soffit luminaire:

1. Cast in place the inserts for the no. 8 pull box during concrete placement for a new structure
2. Drill holes for expansion anchors to support the no. 8 pull box on existing structures
3. Bond the suspension conduit and luminaire to the pull box

For a wall-mounted luminaire, provide:

1. Extension junction box or ring on a new structure
2. 4 external mounting taps on an existing structure

Place the soffits or wall-mounted luminaires in operation as soon as practicable after the falsework has been removed from the structure.

If the Engineer orders soffit or wall-mounted luminaires to be activated before permanent power service is available, installing and removing the temporary power service is change order work.

#### **87-2.04 PAYMENT**

Not Used

## **87-3 SIGN ILLUMINATION SYSTEMS**

### **87-3.01 GENERAL**

#### **87-3.01A Summary**

Section 87-3 includes specifications for constructing sign illumination systems.

Sign illumination system includes:

1. Foundations
2. Pull boxes
3. Conduit
4. Conductors

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5. Sign lighting fixtures
6. Enclosure for the disconnect circuit breaker
7. Service equipment enclosure
8. Photoelectric control

The components of a sign illumination system are shown on the project plans.

#### **87-3.01B Definitions**

Reserved

#### **87-3.01C Submittals**

Submit the manufacturer's test data for the induction sign-lighting fixtures.

#### **87-3.01D Quality Assurance**

Reserved

#### **87-3.02 MATERIALS**

An induction sign-lighting fixture must include a housing with a door, reflector, refractor or lens, lamp, socket assembly, power coupler, high-frequency generator, fuse block, and fuses.

The fixture must comply with the isofootcandle curves as shown.

Fixture must weigh no more than 44 lb, be rated for 87 W at 120/240 V(ac), and have a mounting assembly made of one of the following materials:

1. Cast aluminum
2. Hot-dip galvanized steel plate
3. Galvanized steel plate finished with one of the following:
  - 3.1. Polymeric coating
  - 3.2. Same finish used for the housing

Housing must:

1. Be corrosion resistant and suitable for wet locations
2. Be above the top of the mounting rails at a maximum height of 12 inches
3. Have weep holes

Door must:

1. Hold a refractor or lens
2. Open without the use of special tools
3. Have a locking position at 50 degrees minimum from the plane of the door opening
4. Be hinged to the housing on the side of the fixture away from the sign panel
5. Have 2 captive latch bolts or other latching device

When the door is opened, it must lock in the 50 degrees position when an 85 mph, 3-second wind-gust load strikes the door from either side.

The housing and door must be manufactured of sheet or cast aluminum and have a gray powder coat or polyester paint finish. The sheet aluminum must comply with ASTM B209 or B209M for 5052-H32 aluminum sheet. External bolts, screws, hinges, hinge pins, and door closure devices must be corrosion resistant.

The housing and door must be gasketed. The thickness of the gasket must be a minimum of 1/4 inch.

Reflector must not be attached to the outside of the housing and must be:

1. Made of a single piece of aluminum with a specular finish
2. Protected with an electrochemically applied anodized finish or a chemically applied silicate film

3. Designed to drain condensation away from it
4. Secured to the housing with a minimum of 2 screws
5. Removable without removing any fixture parts

Refractor or lens must have a smooth exterior and must be manufactured from the materials shown in the following table:

<b>Refractor and Lens Material Requirements</b>	
Component	Material
Flat lens	Heat-resistant glass
Convex lens	Heat-resistant, high-impact-resistant tempered glass
Refractor	Borosilicate heat-resistant glass

The refractor and convex lens must be designed or shielded such that no luminance is visible if the fixture is approached directly from the rear and viewed from below. If a shield is used, it must be an integral part of the door casting.

Lamp must:

1. Be an 85 W induction type with a fluorescent, phosphor-coated, interior wall
2. Have a minimum 70 percent light output of its original lumen output after 60,000 hours of operation
3. Have a minimum color-rendering index of 80
4. Be rated at a color temperature of 4,000K
5. Be removable with common hand tools

The lamp socket must be rated for 1,500 W and 600 V(ac) and be a porcelain-enclosed mogul type with a shell that contains integral lamp grips to ensure electrical contact under normal vibration conditions. The shell and center contact must be made of nickel-plated brass. The center contact must be spring loaded.

The power coupler must be removable with common hand tools.

High-frequency generator must:

1. Start and operate lamps at an ambient temperature of -25 degrees C or greater for the rated life of the lamp
2. Operate continuously at ambient air temperatures from -25 to 55 degrees C without a reduction in the generator life
3. Have a design life of at least 100,000 hours at 55 degrees C
4. Have an output frequency of 2.65 MHz  $\pm$  10 percent
5. Have radio frequency interference that complies with 47 CFR 18 regulations regarding harmful interference
6. Have a power factor greater than 90 percent and total harmonic distortion less than 10 percent

The high frequency generator must be mounted such that the fixture can be used as a heat sink and be replaceable with common hand tools.

Each fixture must include a barrier-type fuse block for terminating field connections. Fuse block must:

1. Be rated 600 V(ac)
2. Have box terminals
3. Be secured to the housing and accessible without removal of any fixture parts
4. Be mounted to leave a minimum of 1/2 inch of air space from the sidewalls of the housing
5. Be designed for easy removal of fuses with a fuse puller

The fixture's fuses must be 13/32-inch-diameter, 1-1/2-inch-long ferrule type and UL listed or NRTL certified. For a 120 V(ac) fixture, only the ungrounded conductor must be fused and a solid connection must be provided between the grounded conductor and the high frequency generator.

The fixture must be permanently marked with the manufacturer's brand name, trademark, model number, serial number, and date of manufacture on the inside and outside on the housing. The same information must be marked on the package.

If a wire guard is used, it must be made of a minimum 1/4-inch-diameter galvanized steel wire. The wires must be spaced to prevent rocks larger than 1-1/2-inch diameter from passing through the guard. The guard must be either hot-dip galvanized or electroplated zinc-coated as specified in ASTM B633, service condition SC4, with a clear chromate dip treatment.

### **87-3.03 CONSTRUCTION**

Perform the conductor and operational tests for the system.

### **87-3.04 PAYMENT**

Not Used

## **87-4 SIGNAL AND LIGHTING SYSTEMS**

### **87-4.01 GENERAL**

#### **87-4.01A Summary**

Section 87-4 includes specifications for constructing signal and lighting systems.

Signal and lighting system includes:

1. Foundations
2. Pull boxes
3. Conduit
4. Conductors
5. Cables
6. Standards
7. Signal heads
8. Internally illuminated street name signs
9. Service equipment enclosure
10. Department-furnished controller assembly
11. Detectors
12. Telephone demarcation cabinet
13. Accessible pedestrian signals
14. Push button assemblies
15. Pedestrian signal heads
16. Luminaires
17. Photoelectric control
18. Fuse splice connectors
19. Battery backup system
20. Flashing beacons
21. Flashing beacon control assembly

The components of a signal and lighting system are shown on the project plans.

#### **87-4.01B Definitions**

Reserved

#### **87-4.01C Submittals**

Submit shop drawings showing the message for each internally illuminated street sign, including the size of letters, symbols, and arrows.

#### **87-4.01D Quality Assurance**

##### **87-4.01D(1) General**

Reserved

## **87-4.01D(2) Quality Control**

### **87-4.01D(2)(a) General**

Reserved

### **87-4.01D(2)(b) Battery Backup System**

Notify the Engineer 48 hours before testing the battery backup system.

Test the system in the presence of the Engineer by turning off the power to the signal system at the service equipment enclosure. The signal system must run continuously for 30 minutes. If the battery backup system fails, correct the problem and retest the system for another 30 minutes. After successful completion of the test, turn the power on for the signal system.

## **87-4.02 MATERIALS**

### **87-4.02A General**

Reserved

### **87-4.02B Battery Backup System**

A battery backup system includes the cabinet, batteries, and the Department-furnished electronics assembly.

The electronics assembly includes the inverter/charger unit, power transfer relay, and the battery harness.

### **87-4.02C Internally Illuminated Street Name Signs**

An internally illuminated street name sign includes housing, brackets, sign panels, gaskets, ballast, lampholder, terminal blocks, conductors, and fuses.

An internally illuminated street sign must be designed and constructed to prevent deformation or failure when subjected to an 85 mph, 3-second wind-gust load as specified in the AASHTO publication, "Standard Specifications for Structural Supports of Highway Signs, Luminaires and Traffic Signals."

Sign must:

1. Be Types A or B
2. Have galvanized or cadmium-plated ferrous parts
3. Have screened weep holes
4. Have fasteners, screws, and hardware made of passive stainless steel, Type 302 or 304, or aluminum Type 6060-T6
5. Operate at a temperature from -20 to 74 degrees C

Photoelectric unit sockets are not allowed.

The housing must be constructed to resist torsional twist and warp. The housing must be designed such that opening or removing the panels provides access to the interior of the sign for lamp, ballast, and fuse replacement.

The top and bottom of the sign must be manufactured from formed or extruded aluminum and attached to formed or cast aluminum end fittings. The top, bottom, and end fittings must form a sealed housing.

For a Type A sign, both sides of the sign must be hinged at the top to allow installation or removal of the sign panel.

For a Type B sign, the sign panel must be slide mounted into the housing.

The top of the housing must have 2 free-swinging mounting brackets. Each bracket must be vertically adjustable for leveling the sign to either a straight or curved mast arm. The bracket assembly must allow the lighting fixture to swing perpendicular to the sign panel.



The reflectors must be formed aluminum and have an acrylic, baked-white-enamel surface with a minimum reflectance of 0.85.

Sign panel must be translucent, high-impact-resistant, and made of one of the following plastic materials:

1. Glass-fiber-reinforced, acrylated resin
2. Polycarbonate resin
3. Cellulose acetate butyrate

The sign panel must be designed not to crack or shatter if a 1-inch-diameter steel ball weighing 2.4 ounces is dropped from a height of 8.5 feet above the sign panel to any point on the panel. For this test, the sign panel must be lying in a horizontal position and supported within its frame.

The sign panel's surface must be evenly illuminated. The brightness measurements for the letters must be a minimum of 150 foot-lamberts, average. The letter-to-background brightness ratio must be from 10:1 to 20:1. The background luminance must not vary by more than 40 percent from the average background brightness measurement. The luminance of letters, symbols, and arrows must not vary by more than 20 percent from their average brightness measurement.

The sign panel's white or green color must not fade or darken if exposed to an accelerated test of UV light equivalent to 2 years of outdoor exposure.

The sign panel's legend, symbols, arrows, and border on each face must be white on a green background. The background must comply with color no. 14109 of FED-STD-595.

The message must appear on both sides of the sign and be protected from UV radiation. The letters must be 8-inch upper case and 6-inch lower case, series E.

A Type A sign must have a closed-cell, sponge-neoprene gasket installed between the sign panel frame to prevent the entry of water. The gasket must be uniform and even textured.

The sign ballast must be a high-power-factor type for outdoor operation from 110 to 125 V(ac) and 60 Hz and must comply with ANSI C82.1 and C82.2.

The ballast for a Type A sign must be rated at 200 mA. The ballast for a Type B sign must be rated at 430 mA.

Sign lampholder must:

1. Be the spring-loaded type
2. Have silver-coated contacts and waterproofed entrance leads
3. Have a heat-resistant, circular cross section with a partially recessed neoprene ring

Removal of the lamp from the socket must de-energize the primary of the ballast.

The springs for the lampholders must not be a part of the current-carrying circuit.

The sign's wiring connections must terminate on a molded, phenolic, barrier-type, terminal block rated at 15 A, 1,000 V(ac). The connections must have a white, integral, waterproof marking strip. The terminal screws must not be smaller than a no. 10.

The terminal block must be insulated from the fixture to provide protection from the line-to-ground flashover voltage.

A sectionalized terminal block must have an integral barrier on each side and must allow rigid mounting and alignment.

Fixture's conductors must:

1. Be stranded copper wire with a minimum thermoplastic insulation of 28 mils
2. Be rated at 1,000 V(ac) and for use up to 90 degrees C
3. Be a minimum of no. 16

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4. Match the color coding of the ballast leads
5. Be secured with spring cross straps, installed 12 inches apart or less in the chassis or fixture

Stranded copper conductors connected to screw-type terminals must terminate in crimp-type ring connectors.

No splicing is allowed within the fixture.

The sign's fuse must be the Type 3AG, miniature, slow-blow type.

The fuse holder must be a panel-mounting type with a threaded or bayonet knob that grips the fuse tightly for extraction. Each ballast must have a separate fuse.

#### **87-4.03 CONSTRUCTION**

##### **87-4.03A General**

Set the foundations for standards such that the mast arm is perpendicular to the centerline of the roadway.

Tighten the cap screws of the luminaire's clamping bracket to 10 ft-lb for LED and low-pressure luminaires.

Label the month and year of the installation inside the luminaire housing's door.

Perform the conductor and operational tests for the system.

##### **87-4.03B Battery Backup System Cabinets**

Install the battery backup system cabinet to the right of the Model 332L cabinet.

If installation on the right side is not feasible, obtain authorization for installation on the left side.

Provide access for power conductors between the cabinets using:

1. 2" nylon-insulated, steel chase nipple
2. 2" steel sealing locknut
3. 2" nylon-insulated, steel bushing

Remove the jumper between the terminals labeled *BBS-1* and *BBS-2* in the 5 position terminal block in the controller cabinet before connecting the Department-furnished electronics assembly.

##### **87-4.03C Internally Illuminated Street Name Signs**

Mount the internally illuminated street name sign to the signal mast arm using the adjustable brackets. Connect the conductors to the terminal blocks in the signal head mounting terminal block.

#### **87-4.04 PAYMENT**

Not Used

### **87-5 RAMP METERING SYSTEMS**

#### **87-5.01 GENERAL**

Section 87-5 includes specifications for constructing ramp metering systems.

Ramp metering system includes:

1. Foundations
2. Pull boxes
3. Conduit
4. Conductors
5. Standards
6. Signal heads
7. Service equipment enclosure
8. Department-furnished controller assembly

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- 9. Detectors
- 10. Telephone demarcation cabinet

The components of a ramp metering system are shown on the project plans.

**87-5.02 MATERIALS**

Not Used

**87-5.03 CONSTRUCTION**

Connect the field wiring to the terminal blocks in the controller cabinet. The Engineer provides you a list of field conductor terminations for each controller cabinet.

Perform the conductor and operational tests for the system.

**87-5.04 PAYMENT**

Not Used

**87-6 TRAFFIC MONITORING STATION SYSTEMS**

**87-6.01 GENERAL**

Section 87-6 includes specifications for constructing traffic monitoring station systems.

Traffic monitoring station system includes:

- 1. Foundations
- 2. Pull boxes
- 3. Conduit
- 4. Cables
- 5. Conductors
- 6. Service equipment enclosure
- 7. Controller cabinet
- 8. Detectors
- 9. Telephone demarcation cabinet

The components of a traffic monitoring station system are shown on the project plans.

**87-6.02 MATERIALS**

Not Used

**87-6.03 CONSTRUCTION**

Connect the field wiring to the terminal blocks in the controller cabinet. The Engineer provides you a list of field conductor terminations for the controller cabinet.

Perform the conductor and operational tests for the system.

**87-6.04 PAYMENT**

Not Used

**87-7 FLASHING BEACON SYSTEMS**

**87-7.01 GENERAL**

Section 87-7 includes specifications for constructing flashing beacon systems.

Flashing beacon system includes:

- 1. Foundations
- 2. Pull boxes
- 3. Conduit
- 4. Conductors
- 5. Standards

6. Service equipment enclosure
7. Signal heads
8. Flashing beacon control assembly

The components of a flashing beacon system are shown on the project plans.

The flash rate for the flashing beacon must comply with chapter 4L, "Flashing Beacons," of the *California MUTCD*.

The flashing beacon must allow alternating flashing wig-wag operation.

The flashing beacon must have a separate flasher unit installed in the flashing beacon control assembly.

#### **87-7.02 MATERIALS**

Flashing beacon control assembly must:

1. Have a NEMA 3R enclosure with a dead front panel and a hasp with a 7/16-inch hole for a padlock. The enclosure must have one of the following finishes:
  - 1.1. Powder coating.
  - 1.2. Hot-dip galvanized coating.
  - 1.3. Factory-applied, rust-resistant prime coat and finish coat.
2. Have barrier-type terminal blocks rated for 25 A, 600 V(ac), made of molded phenolic or nylon material and have plated-brass screw terminals and integral marking strips.
3. Include a solid state flasher complying with section 8 of NEMA standards publication no. TS 1 for 10 A, dual circuits.

#### **87-7.03 CONSTRUCTION**

Perform the conductor and operational tests for the system.

#### **87-7.04 PAYMENT**

Not Used

### **87-8–87-11 RESERVED**

### **87-12 CHANGEABLE MESSAGE SIGN SYSTEMS**

#### **87-12.01 GENERAL**

Section 87-12 includes specifications for constructing changeable message sign systems.

Changeable message sign system includes:

1. Foundations
2. Pull boxes
3. Conduit
4. Conductors
5. Service equipment enclosure
6. Department-furnished controller cabinet
7. Department-furnished changeable message sign
8. Department-furnished wiring harness
9. Service equipment enclosure
10. Sign disconnect

The components of a changeable message sign system are shown on the project plans.

#### **87-12.02 MATERIALS**

Not Used

#### **87-12.03 CONSTRUCTION**

Install the changeable message sign.

Connect the field wiring to the terminal blocks in the sign assembly and controller cabinet.

The Engineer provides you a list of field conductor terminations for each sign cabinet and controller cabinet.

The Department maintains the sign assemblies.

**87-12.04 PAYMENT**

Not Used

**87-13–87-17 RESERVED**

**87-18 INTERCONNECTION CONDUIT AND CABLE**

**87-18.01 GENERAL**

Section 87-18 includes specifications for constructing interconnection conduit and cable.

Interconnection conduit and cable includes:

1. Pull boxes
2. Conduit
3. Signal interconnect cables

The components of an interconnection conduit and cable are shown.

**87-18.02 MATERIALS**

Not Used

**87-18.03 CONSTRUCTION**

Test the signal interconnect cable.

Connect the signal interconnect cable to the terminal block in the controller cabinets. The Engineer provides you a list of terminations for each controller cabinet.

**87-18.04 PAYMENT**

Not Used

**87-19 RESERVED**

**87-20 TEMPORARY ELECTRICAL SYSTEMS**

**87-20.01 GENERAL**

Section 87-20 includes specifications for providing temporary electrical systems.

Obtain the Department's authorization for the type of temporary electrical system and its installation method.

A temporary system must operate on a continuous, 24-hour basis.

01-20-17

Temporary wood poles must comply with section 48-6.

04-15-16

**87-20.02 MATERIALS**

**87-20.02A General**

Material and equipment may be new or used.

The components of a temporary system are shown on the project plans.

If you use Type UF-B cable, the minimum conductor size must be no. 12.

### **87-20.02B Temporary Flashing Beacon Systems**

A temporary flashing beacon system consists of a flashing beacon system, wood post, generator, and photovoltaic system.

The system must comply with the specifications for a flashing beacon system in section 87-7, except it may be mounted on a wood post or a trailer.

### **87-20.02C Temporary Lighting Systems**

A temporary lighting system consists of a lighting system, generator, and wood poles.

The system must comply with the specifications for a lighting system in section 87-2, except it may be mounted on a wood pole or a trailer.

### **87-20.02D Temporary Signal Systems**

A temporary signal system consists of a signal and lighting system, wood poles and posts, and a generator.

System must comply with the specifications for a signal and lighting system in section 87-4, except:

1. Signal heads may be mounted on a wood pole, mast arm, tether wire, or a trailer
2. Flashing beacons may be mounted on a wood post, or a trailer

## **87-20.03 CONSTRUCTION**

### **87-20.03A General**

Provide electrical and telecommunication services for temporary systems. Do not use existing services unless authorized.

Provide power for the temporary electrical systems under section 12-3.33, except you may use a photovoltaic system for the temporary flashing beacon system.

Install conductors and cables in a conduit, suspended from wood poles at least 25 feet above the roadway, or use direct burial conductors and cables.

You may saw slots across paved areas for burial conductors and cables.

Install conduit outside the paved area at a minimum of 12 inches below grade for Type 1 and 2 conduit and at a minimum of 18 inches below grade for Type 3 conduit.

Install direct burial conductors and cables outside the paved area at a minimum depth of 24 inches below grade.

Place the portions of the conductors installed on the face of wood poles in either Type 1, 2, or 3 conduit between the point 10 feet above grade at the pole and the pull box. The conduit between the pole and the pull box must be buried at a depth of at least 18 inches below grade.

Place conductors across structures in a Type 1, 2, or 3 conduit. Attach the conduit to the outside face of the railing.

Mount the photoelectric unit at the top of the standard or wood post.

You may abandon in place conductors and cables in sawed slots or in conduit installed below the ground surface.

### **87-20.03B Temporary Flashing Beacon Systems**

Install a fused-splice connector in the pull box adjacent to each flashing beacon. Wherever conductors are run overhead, install the splice connector in the line side outside of the control assembly.

### **87-20.03C Temporary Lighting Systems**

Wherever conductors are run overhead, install the fuse splice connectors in the line side before entering the mast arm.

**87-20.03D Temporary Signal Systems**

You may splice conductors that run to a terminal compartment or a signal head on a pole to the through conductors of the same phase in a pull box adjacent to the pole. Do not splice conductors or cables except in a pull box or in a NEMA 3R enclosure.

The Department provides the timing for the temporary signal.

Maintain the temporary signal except for the Department-furnished controller assembly.

**87-20.04 PAYMENT**

Not Used

**87-21 EXISTING ELECTRICAL SYSTEMS**

**87-21.01 GENERAL**

Section 87-21 includes general specifications for performing work on existing electrical systems.

**87-21.02 MATERIALS**

Not Used

**87-21.03 CONSTRUCTION**

**87-21.03A General**

You may abandon unused underground conduit after pulling out all conductors and removing conduit terminations from the pull boxes.

If standards are to be salvaged, remove:

- 1. All components
- 2. Mast arms from the standards
- 3. Luminaires, signal heads, and signal mounting assemblies from the standards and mast arms

If the existing material is unsatisfactory for reuse and the Engineer orders you to replace it with new material, replacing the existing material with new material is change order work.

If the removed electrical equipment is to be reinstalled, supply all materials and equipment, including signal mounting assemblies, anchor bolts, nuts, washers, and concrete, needed to complete the new installation.

**87-21.03B Maintaining Existing Electrical Systems**

**87-21.03B(1) General**

Maintain the existing electrical system in working order during the progress of the work. Conduct your operations to avoid damage to the elements of the systems.

**87-21.03B(2) Maintaining Existing Traffic Management System Elements During Construction**

07-21-17

Section 87-21.03B(2) applies if a bid item for maintaining existing traffic management system elements during construction is shown on the Bid Item List.

04-15-16

Traffic management system elements include:

- 1. Ramp metering system
- 2. Traffic monitoring stations
- 3. Microwave vehicle detection system
- 4. Changeable message sign system
- 5. Extinguishable message sign system
- 6. Highway advisory radio system
- 7. Closed circuit television camera system
- 8. Roadway weather information system





2. Duration and method of curing
3. Concrete temperature monitoring and recording system details
4. Temperature sensor types and locations
5. Measures to ensure compliance with maximum temperature and temperature gain requirements, including maximum concrete temperature at discharge and controlling enclosure temperature

**Replace the list in the 3rd paragraph of section 90-4.01C(3) with:**

01-20-17

1. Concrete plants
2. Material sources
3. Material testing procedures
4. Testing laboratory
5. Procedures and equipment
6. Systems for tracking and identifying PC concrete members
7. QC personnel
8. Methods for controlling internal concrete temperature

**Add to the list in the 2nd paragraph of section 90-4.01C(4):**

01-20-17

7. Daily temperature data for internally monitored tier 1 PC concrete members

**Replace *Temperature* in the 2nd table in the 5th paragraph of section 90-4.01D(2)(c) with:**

01-20-17

Temperature at time of mixing

**Add to section 90-4.01D(2):**

01-20-17

**90-4.01D(2)(d) Temperature Monitoring**

**90-4.01D(2)(d)(i) General**

At a minimum, provide temperature monitoring devices as shown in the following table:

**Temperature Monitoring Requirements**

Component	Steam curing	Other curing methods
Tier 1 PC bridge components except piling and deck panels	1 internal temperature sensor for each individually cast member; 1 internal temperature sensor for every 100 feet of bed length for continuously cast elements <sup>a</sup>	1 internal temperature sensor for each individually cast member; 1 internal temperature sensor for every 100 feet of bed length for continuously cast elements <sup>a</sup>
PC piling, deck panels, and PS pavement	1 enclosure temperature sensor for every 200 feet of bed length for continuously cast elements	Not required
Other PC components	1 enclosure temperature sensor for every 200 feet of bed length for continuously cast elements	Not required

<sup>a</sup>Members not instrumented are represented by the nearest internal temperature probe.

Temperature monitoring devices must provide an accurate, continuous, permanent record of the temperature during curing activities.

**90-4.01D(2)(d)(ii) Tier 1 Bridge Components**

Except for piling and deck panels, provide a temperature monitoring and recording system during concrete placement and curing for tier 1 PC bridge components. The system must consist of temperature sensors connected to a data acquisition system. The system must be capable of recording, printing, and downloading temperature data to a computer. Temperature sensors must be accurate to within ±2 degrees F.

Position each internal concrete temperature sensor as shown in the following table:

<b>Internal Concrete Sensor Locations</b>	
PC component	Sensor location
Wide flange, 'I', and bulb tee girders	6–8 inches below top surface along center line at midpoint
Other girder shapes	6–8 inches below top surface along center line of stem at midpoint
Deck slabs	Center of element at mid-depth
Other elements	Position sensor to provide maximum concrete cover

Record temperature readings automatically at least every 15 minutes. You may discontinue temperature recording (1) when the maximum internal concrete temperature is falling for a minimum of 1 hour, or (2) immediately before stress transfer to the concrete.

Do not allow the ends of temperature sensors to come into contact with concrete supports, forms, or reinforcement.

Correct equipment failures in temperature control and monitoring and recording systems immediately.

**Add to section 90-4.01D(3):**

01-20-17

For tier 1 PC bridge components that are monitored for internal temperature, the Engineer rejects components if at any temperature sensor (1) the maximum internal concrete temperature exceeds 165 degrees F, or (2) the internal temperature gain exceeds 40 degrees F per hour. If the maximum internal concrete temperature is from 161 to 165 degrees F, the Engineer reduces payment for furnish PC concrete member by a percentage equal to 2 times the difference of the maximum measured temperature in degrees F minus 160.

**Add between the 3rd and 4th paragraphs of section 90-4.02:**

01-20-17

For tier 1 PC concrete members with internal temperature monitoring:

1. Maximum internal concrete temperature must not exceed 165 degrees F at any temperature sensor
2. Maximum temperature gain must not exceed 40 degrees F per hour at any temperature sensor

**Replace the 5th paragraph of section 90-4.02 with:**

01-20-17

Portland cement based repair material must be on the Authorized Material List for precast portland cement based repair material.

**Replace the 4th item in the list in the 2nd paragraph of section 90-4.03 with:**

01-20-17

4. Steam at the jets must be at low pressure and in a saturated condition. Steam jets must not impinge directly on the concrete, test cylinders, or forms. During application of the steam, the temperature rise within the enclosure must not exceed 40 degrees F per hour. Except for internally monitored components, the curing temperature throughout the enclosure must not exceed 150 degrees F. Maintain the curing temperature at a constant level for the time necessary to develop the required transfer strength. Cover control cylinders to prevent moisture loss and place them in a location where the temperature is representative of the average enclosure temperature.

01-20-17

**Delete the 5th item in the list in the 2nd paragraph of section 90-4.03.**

**Add to section 90-4.03:**

01-20-17

For internally monitored tier 1 PC bridge components with a maximum internal concrete temperature of 161 to 165 degrees F, the following apply:

1. Do not apply curing compound
2. Cure an additional 7 days using the water cure method
3. After 7 days apply a silane waterproofing treatment under the following conditions:
  - 3.1. Silane waterproofing treatment selected for use must be on the Authorized Material List for silane reactive penetrating sealers
  - 3.2. Concrete surfaces must be completely dry when silane is applied
  - 3.3. Apply a single application of undiluted silane under the manufacturer's application instructions until surfaces are saturated

**Replace section 90-9 with:**

07-15-16

**90-9 RETURNED PLASTIC CONCRETE**

**90-9.01 GENERAL**

**90-9.01A Summary**

Section 90-9 includes specifications for incorporating returned plastic concrete (RPC) into concrete.

RPC must be used only where the specifications allow its use. Do not use RPC in pavement or structural concrete.

**90-9.01B Definitions**

**returned plastic concrete (RPC):** Excess concrete that is returned to a concrete plant in a plastic state and that has not attained initial set.

**hydration stabilizing admixture (HSA):** Extended set retarding admixture that controls and predictably reduces the hydration rate of the cementitious material.

**90-9.01C Submittals**

Submit the following with the weighmaster certificate:

1. Weight or volume of RPC
2. Type, brand, and dosage of HSA
3. Time of adding HSA
4. Copy of the original weighmaster certificate for the RPC
5. Temperature of RPC

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When requested, submit the HSA manufacturer's instructions, including dosage tables.

#### **90-9.01D Quality Assurance**

The material plant producing concrete containing RPC must be authorized under the MPQP.

For volumetric proportioning of RPC:

1. The volumetric container must be imprinted with manufacturer's name, model number, serial number, the as-calibrated volume and date of the last calibration. Cross sectional dimensions of the container must remain the same as those during its calibration.
2. The device must be re-calibrated monthly and at any time when the container shape has been deformed from its original condition or there is evidence of material build-up on the inside of the device.
3. The device must be held in a level condition during filling. Fill the device to the measure or strike-off line. Each measurement must be filled to within 1.0% of the device as-calibrated volume.
4. The device interior must be cleaned after each measurement to maintain a zero condition.

For weight proportioning, proportion RPC with a weigh hopper attached to the plant at a position which allows the addition of the RPC to the mixer truck with the conventional PCC ingredients. The plant process controller must control the proportioning of RPC to within 1.0% of its target weight.

#### **90-9.02 MATERIALS**

##### **90-9.02A General**

The quantity of RPC added to the concrete must not exceed 15 percent.

The cementitious material content of the RPC must be at least that specified for the concrete that allows the use of RPC.

Water must not be added to the RPC after batching, including in the truck mixer.

Use HSA for controlling and reducing the hydration rate of RPC.

Incorporate RPC by mixing into the concrete before arriving at the jobsite.

##### **90-9.02B Returned Plastic Concrete**

The RPC must not exceed 100 degrees F at any time.

If HSA is not used, RPC must be incorporated into the concrete before attaining initial set or within 4 hours after batching of RPC, whichever is earlier.

If HSA is used:

1. Add HSA to RPC within 4 hours after original batching.
2. Measure and record the time, dosage of HSA, and temperature of RPC when HSA is added.
3. Mix the RPC under the HSA manufacturer's instructions after adding HSA or at least 30 revolutions, whichever is greater.
4. Incorporate RPC into the concrete within 4 hours after adding HSA.

RPC must not contain:

1. Accelerating admixture
2. Fiber
3. Pigment
4. Lightweight aggregate
5. Previously returned RPC
6. Any ingredient incompatible with the resultant concrete



Replace the heading of section 96-1.02D(2) with:

07-21-17

**Long Term Allowable Strength**

Replace *LTDS* at each occurrence in section 96-1.02D(2) with:

07-21-17

LTAS

Replace *Apparent opening size, (min, inches)* in the table in the 2nd paragraph of section 96-1.02O with:

01-20-17

Apparent opening size, (max, inches)

**APPENDIX B**

**to the contract documents for  
Diamond Springs Parkway – Phase 1A – SR-49 Realignment  
CIP No. 72375, Contract No. 2720**

**ENVIRONMENTAL PERMITS**

**CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE**  
NORTH CENTRAL REGION  
1701 NIMBUS ROAD, SUITE A  
RANCHO CORDOVA, CA 95670



**STREAMBED ALTERATION AGREEMENT**  
NOTIFICATION No. 1600-2016-0217-R2 REVISION 2  
WEBER CREEK

EL DORADO COUNTY COMMUNITY DEVELOPMENT AGENCY  
DIAMOND SPRINGS PARKWAY PROJECT – PHASE 1A

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (Department) and the El Dorado County Community Development Agency (Permittee), as represented by Mr. Roger Niello, Interim Director.

## **RECITALS**

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified the Department on September 15, 2016 that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, the Department has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement.

## **PROJECT LOCATION**

The project is located within an unnamed tributary to Weber Creek, east of Diamond Road, north of Pleasant Valley Road, and south of Finch Road; within the community of Diamond Springs, County of El Dorado, State of California. The project's approximate southern terminus is located at latitude 38.698726°, longitude -120.810558°, and its approximate northern terminus is located at latitude 38.700612°, longitude -120.811066° (see **Exhibit A, Wetland Delineation Map**).

## **PROJECT DESCRIPTION**

The project consists of the realignment of State Road 49 (SR-49)/Diamond Road from Pleasant Valley Road to north of Lime Kiln Road. SR-49/Diamond Road will be aligned to the west to create a frontage road for residences along the east. The realigned road

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will be improved with two 12-foot lanes and 8-foot shoulders. This project comprises Phase 1A of the larger Diamond Springs Parkway Project, which is a proposed future four-lane divided roadway connecting Missouri Flat Road to SR-49.

The road realignment will require the filling of 0.089 acre of stream channel and removal of 0.212 acre of riparian/upland vegetation. In order to maintain drainage for the realigned roadway and to minimize the impact to biological resources, a new channel will be created and vegetated to the east of the realigned roadway.

## **PROJECT IMPACTS**

Existing fish or wildlife resources the project could substantially adversely affect include: nesting resident and migratory birds, resident reptile species, small arboreal and fossorial mammals, downstream fish species, and riparian/upland habitat.

The adverse effects the project could have on the fish or wildlife resources identified above include: potential disruption of nesting due to increased activity and noise, reduction in nesting and shelter habitat, potential individual injury or mortality caused by heavy equipment, loss of bank stability during construction, and discharge of sediment or other pollutants into Weber Creek.

## **MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES**

### **1. Administrative Measures**

Permittee shall meet each administrative requirement described below.

- 1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to the Department personnel, or personnel from another state, federal, or local agency upon request.
- 1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.
- 1.3 Notification of Conflicting Provisions. Permittee shall notify the Department if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, the Department shall contact Permittee to resolve any conflict.
- 1.4 Project Site Entry. Permittee agrees that the Department personnel may enter the project site at any time to verify compliance with the Agreement.



- 1.5 Does Not Authorize "Take". This Agreement does not authorize "take" of any listed (i.e. threatened, endangered, candidate, or rare) species. The Department defines "take" as hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill. If there is potential for take of any listed species to occur, the Operator shall consult with the Department as outlined in FGC Section 2081 and shall obtain the required State and federal threatened and endangered species permits if necessary.
- 1.6 Nesting Bird Protection. Sections 3503, 3503.5, and 3513 of the FGC stipulate the following: Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by FGC or any regulation made pursuant thereto; Section 3503.5 states that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by FGC or any regulation adopted pursuant thereto; and Section 3513 states that it is unlawful to take or possess any migratory nongame bird except as provided by the rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Bird Treaty Act (MBTA).

## **2. Avoidance and Minimization Measures**

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below.

- 2.1 Nesting Bird Avoidance. If vegetation removal and/or ground disturbing activities are scheduled between February 1 and August 31 then a breeding bird survey will be conducted no more than three (3) days prior to the start of construction by a Department-approved biologist. This will include surveys of the ground, herbaceous, shrub, and canopy vegetation and structures (i.e., bridges, old buildings, etc.). The results of the nest survey shall be submitted to the Department before the start of work. The survey shall be conducted within a minimum ¼-mile radius of project activities. The results of the survey shall include the following information: name of biologist(s) conducting surveys, dates of survey, total field time of survey efforts, map of survey routes, and the type of species nesting. For active nests, a buffer or installation of appropriate barriers shall be established between the project activities and the active nest so that nesting activities are not interrupted. The buffer shall be delineated and shall be in effect throughout project activities or until the nest is no longer active. The size of the non-disturbance buffer and any other restrictions will be determined through consultation with the Department following completion of the survey and prior to the start of project activities. The buffer(s) shall be determined based upon the life history of the individual species, including their sensitivity to noise, vibration, ambient levels of human activity and general disturbance, the current site conditions (screening vegetation, terrain, etc.) and the various project-related activities necessary to implement the project. If a lapse in project-related work of 15 days or longer occurs, another focused survey shall be conducted before



project work can be reinitiated. If, during the course of carrying out the project, an active nest is identified or becomes established, that was not previously identified, the Department shall be notified and consulted before construction may continue. This Agreement does not allow the Permittee, any employees, or agents to destroy or disturb any active bird nest (Section 3503 Fish and Game Code) or any raptor nest (Section 3503.5) at any time of the year.

- 2.2 Updated Plant Surveys. Prior to commencing project activities, Permittee shall conduct protocol-level plant surveys covering the entire project site. The surveys shall be conducted in accordance with the Department's Protocols for *Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities*, which may be found here: <https://www.wildlife.ca.gov/Conservation/Survey-Protocols#377281280-plants>. If one or more special-status plant species is identified within the project area, Permittee shall prepare a Special-Status Plant Avoidance, Minimization, and Mitigation Plan for Department review and approval. Mitigation for unavoidable impacts to special-status plants may include, but is not necessarily limited to, conservation and enhancement of occupied habitat; and seed collection, banking, and planting. If special-status plants are identified on-site, construction activities shall not begin until the Department has approved the Special-Status Plant Avoidance, Minimization, and Mitigation Plan. Please allow at least 30 days for review.
- 2.3 Designated Biologist. At least thirty (30) days before initiating ground- or vegetation-disturbing activities, Permittee shall submit to the Department in writing the name, qualifications, business address, and contact information for a biological monitor (Designated Biologist). Permittee shall obtain the Department's written approval of the Designated Biologist prior to the commencement of project activities. The Designated Biologist shall be knowledgeable and experienced in the biology and natural history of local fish and wildlife resources present at the project site.
- 2.4 On-site Education. Permittee shall conduct an education program for all persons employed or otherwise working on the project site prior to performing any work on-site. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology of the habitats and species identified in this Agreement and present at this site. The Designated Biologist shall also include as part of the education program information about the distribution and habitat needs of any special status species that may be present, legal protections for those species, penalties for violations and project-specific protective measures included in this Agreement. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to their performing work on-site. Permittee shall prepare and distribute wallet-sized cards or a fact sheet that contains this information for workers to carry on-site. Upon completion of the education program, employees shall sign a form stating they attended the program and understand all protection measures. These forms



shall be filed at the worksite offices and submitted as instructed in Contact Information section below. Email notification is preferred.

- 2.5 Work Period. The time period for completing the work within the area of the stream shall be restricted to periods of dry weather and shall be confined to the period of May 1 to October 15. Construction activities shall be timed with awareness of precipitation forecasts and likely increases in stream flow. Construction activities within the area of the stream shall cease until all reasonable erosion control measures, inside and outside of the channel, have been implemented prior to all storm events. Revegetation, restoration and erosion control work is not confined to this time period.
- 2.6 Work Period Extensions. The work period may be extended based on the extent of the work remaining, on site conditions and reasonably anticipated future conditions. If the Permittee finds more time is needed to complete the authorized activity, the Permittee shall submit a written request for a work period time extension to the Department. The work period extension request shall provide the following information: 1) Describe the extent of work already completed; 2) Provide specific detail of the activities, that remain to be completed within the stream zone; and 3) Detail the actual time required to complete each of the remaining activities within the stream zone. The work period extension request should consider the effects of increased stream conditions, rain delays, increased erosion control measures, limited access due to saturated soil conditions, and limited growth of erosion control grasses due to cool weather. Photographs of the work completed and the proposed work areas are helpful in assisting the Department in its evaluation. Time extensions are issued at the discretion of the Department. The Department will have ten calendar days to approve the proposed work period extension. The Department reserves the right to require additional measures designed to protect natural resources.
- 2.7 Work Period in Low Rainfall / Dry Weather Only. The work period within and adjacent to the stream shall be restricted to periods of low rainfall (less than ¼" per 24 hour period) and periods of dry weather (with less than a 20% chance of rain). All erosion control measures shall be initiated prior to all storm events. Revegetation, restoration and erosion control work is not confined to this work period. Permittee shall monitor the National Weather Service (NWS) 72-hour forecast for the project area. No work shall occur during a dry-out period of 24 hours after rainfall of at ½" or greater per 24-hour period. Weather forecasts shall be documented upon request by the Department.
- 2.8 Vegetation Removal. Disturbance or removal of vegetation shall be kept to the minimum necessary to complete project related activities. Vegetation marked for protection may only be trimmed with hand tools to the extent necessary to gain access to the work sites.
- 2.9 Demarcate Work Area to Avoid Vegetation. Demarcation of the work area shall consider and avoid vegetation to the greater extent possible. Vegetation shall not



- be removed or damaged beyond the work area, except for trimming with hand tools to the extent necessary to gain access to the work sites.
- 2.10 Remove Cleared Material from Watercourse. All excavated sediment, vegetation, and any other material shall be removed from the area and deposited where it cannot re-enter the stream and/or pond.
- 2.11 Minimize Vehicle Parking Vehicles may enter and exit the Work Area as necessary for project activities, but may not be parked overnight where mechanical fluid leaks may potentially enter the waters of the state.
- 2.12 Stabilize Areas with Soil. Loose or compacted soil areas in need of stabilization shall be seeded with a locally native seed mix, unless otherwise agreed upon with the Department. Permittee shall apply seed mix to such sites shall be completed as soon as possible after project activities in those areas cease. Following placement of the seed mix, Permittee shall cover the seeded area with broadcast straw, jute netting, coconut fiber blanket or similar erosion control blanket.
- 2.13 Native Plant Materials Required. Revegetation shall include only local plant materials native to the project area, unless otherwise approved by the Department in writing.
- 2.14 Native Genotype. Disturbed areas shall be revegetated only with propagules (seeds, cuttings, divisions) of locally-collected native plants. Disturbed areas shall be protected with correctly installed erosion control materials (jute, straw, coconut fiber erosion control fabric, coir logs, or seed-free straw).
- 2.15 Prohibited Plant Species. Permittee shall not plant, seed or otherwise introduce invasive exotic plant species. Prohibited exotic plant species include those identified in the California Exotic Pest Plant Council's database, which is accessible at: <http://www.cal-ipc.org/paf/>.
- 2.16 Operating Equipment and Vehicle Leaks. Permittee shall check and maintain any equipment or vehicles driven and/or operated within or adjacent to the stream daily to prevent leaks of materials that could be deleterious to aquatic and terrestrial life or riparian habitat.
- 2.17 Clean Equipment Prior to Entering Water. All heavy equipment that will be entering the water shall be cleaned of materials deleterious to aquatic life including oil, grease, hydraulic fluid, soil and other debris. Cleaning of equipment shall take place outside of the area adjacent to the watercourse where runoff may enter the stream or pond, and prior to entering the water.
- 2.18 Stationary Equipment Leaks. Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to the stream/pond shall be positioned over drip pans. Stationary heavy equipment shall have suitable containment to handle a catastrophic spill/leak.



- 2.19 Equipment Maintenance and Fueling. Permittee shall not fuel or maintain equipment within or near any stream channel or lake margin where petroleum products or other pollutants from the equipment may enter these areas.
- 2.20 Equipment Storage. Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall be located outside of the stream channel and banks/pond margins.
- 2.21 No Dumping. Permittee and all contractors, subcontractors, and employees shall not dump any litter or construction debris within the stream, or where it may pass into the stream.
- 2.22 Remove Temporary Flagging, Fencing, and Barriers. Permittee shall remove all temporary flagging, fencing, and/or barriers from the project area and vicinity of the stream immediately upon completion of project activities.
- 2.23 Leave Wildlife Unharmd. If any wildlife is encountered during the course of construction, said wildlife shall be allowed to leave the construction area unharmed.
- 2.24 Special-Status Species Encountered During Work. If during the course of project activity Permittee encounters a species which is listed under the California Endangered Species Act as rare, threatened, or endangered, or which is designated a candidate for listing, work shall be immediately suspended, the Department notified, and conservation measures shall be developed in agreement with the Department prior to re-initiating the activity.
- 2.25 Best Management Practices. Permittee shall actively implement Best Management Practices (BMPs) to prevent erosion and the discharge of sediment and pollutants into streams during project activities. BMPs shall be monitored and repaired if necessary to ensure maximum erosion, sediment, and pollution control. Permittee shall prohibit the use of erosion control materials potentially harmful to fish and wildlife species, such as mono-filament netting (erosion control matting) or similar material, within and adjacent to the work area. All fiber rolls, straw wattles, and/or hay bales utilized within and adjacent to the project site shall be free of nonnative plant seed. **Fiber rolls or erosion control mesh shall be made of loose-weave mesh that is not fused at the intersections of the weave, such as jute, or coconut (coir) fiber, or other products without welded weaves. Non-welded weaves reduce entanglement risks to wildlife by allowing animals to push through the weave, which expands when spread.**
- 2.26 Concrete. If any structure is cast in place, the area poured shall be completely bermed and isolated to contain all and any wet cement, even if water is not present. The pH of hot concrete may be as high as 13 which is toxic to wildlife. The berm may be made of sandbags or dirt, but it shall be lined with plastic to prevent any material from seeping past the berm. Permittee shall maintain the berm in place until the concrete is fully cured.

- 2.27 Wet concrete. No concrete or any cement product may be poured if measurable rain is forecasted within 15 days. If any concrete is poured after October 15, a quick cure ingredient shall be added to the concrete mix to ensure a faster set or drying time.
- 2.28 Concrete – Designated Monitor. At all times when Permittee is pouring or working with wet concrete there shall be a designated monitor to inspect the containment structures and ensure that no concrete or other debris enters into the channel outside of those structures.
- 2.29 Hazardous Materials. Debris, soil, silt, bark, slash, sawdust, rubbish, creosote-treated wood, raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, wildlife, or riparian habitat resulting from the project related activities shall be prevented from contaminating the soil and/or entering the stream.

### **3. Compensatory Measures**

To compensate for adverse impacts to fish and wildlife resources identified above that cannot be avoided or minimized, Permittee shall implement each measure listed below.

- 3.1 Compensatory Mitigation for Loss of Habitat. Permittee shall purchase a minimum of 0.424 acre of credit for the restoration, rehabilitation, and/or creation of riparian habitat from a Department-approved mitigation bank. Mitigation banking receipts confirming the purchase shall be submitted to the Department prior to initiating project activities.

### **4. Reporting Measures**

Permittee shall meet each reporting requirement described below.

- 4.1 Work Notification. Permittee shall notify the Department at least five (5) days prior to project commencement and again at least five (5) days following completion of work. Upon completion of the project activities described in this Agreement, the work area shall be digitally photographed and the photographs shall be submitted to the Department. Notification shall be made as described in the Contact Information section below.
- 4.2 Special-Status Plant Avoidance, Minimization, and Mitigation Plan. If one or more special-status plant species is identified growing within the project area, Permittee shall prepare and submit a Special-Status Plant Avoidance, Minimization, and Mitigation Plan for Department review and approval as described above in Measure 2.2.



- 4.3 Notification to the California Natural Diversity Database. If any special-status species are observed in project surveys, Permittee or designated representative shall submit California Natural Diversity Data Base (CNDDDB) forms to the CNDDDB for all preconstruction survey data within five (5) working days of the sightings, and provide to the Department's Regional office three (3) copies of the CNDDDB forms and survey maps.

### **CONTACT INFORMATION**

Any communication that Permittee or the Department submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or the Department specifies by written notice to the other.

To Permittee:

Mr. Roger Niello  
Interim Director  
El Dorado County Community Development Agency  
2850 Fairlane Court  
Placerville, CA 95667  
(530) 621-5950  
Roger.niello@edcgov.us

CC:

Mr. Jeff Nettleton  
El Dorado County Community Development Agency  
Transportation Division  
2850 Fairlane Court  
Placerville, CA 95667  
(530) 621-3829  
Jeff.nettleton@edcgov.us

To Department:

Department of Fish and Wildlife  
California Department of Fish and Wildlife  
1701 Nimbus Road  
Rancho Cordova, CA 95670  
Attn: Lake and Streambed Alteration Program  
Notification #1600-2016-0217-R2  
Phone: 916-358-2885  
Email: R2LSA@wildlife.ca.gov



## **LIABILITY**

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute the Department's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

## **SUSPENSION AND REVOCATION**

The Department may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before the Department suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before the Department suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused the Department to issue the notice.

## **ENFORCEMENT**

Nothing in the Agreement precludes the Department from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects the Department's enforcement authority or that of its enforcement personnel.

## **OTHER LEGAL OBLIGATIONS**

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but

not limited to, FGC sections 2050 *et seq.* (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

## **AMENDMENT**

The Department may amend the Agreement at any time during its term if the Department determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by the Department and Permittee. To request an amendment, Permittee shall submit to the Department a completed Department "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in the Department's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

## **TRANSFER AND ASSIGNMENT**

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter the Department approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to the Department a completed Department "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in the Department's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

## **EXTENSIONS**

In accordance with FGC section 1605(b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, Permittee shall submit to the Department a completed Department "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in the Department's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). The Department shall process the extension request in accordance with FGC 1605(b) through (e).



If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (FGC section 1605(f)).

### **EFFECTIVE DATE**

The Agreement becomes effective on the date of the Department's signature, which shall be: 1) after Permittee's signature; 2) after the Department complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at <https://www.wildlife.ca.gov/Conservation/CEQA/Fees>.

### **TERM**

This Agreement shall expire on **December 01, 2021**, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

### **EXHIBITS**

The document(s) listed below are included as exhibits to the Agreement and incorporated herein by reference.

- A. Exhibit A: Wetland Delineation Map

**AUTHORITY**

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.


**AUTHORIZATION**

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify the Department in accordance with FGC section 1602.

**CONCURRENCE**

The undersigned accepts and agrees to comply with all provisions contained herein.

**FOR EL DORADO COUNTY COMMUNITY  
DEVELOPMENT AGENCY**

  
\_\_\_\_\_  
Roger Niello  
Interim Director

2/6/17  
\_\_\_\_\_  
Date

**FOR DEPARTMENT OF FISH AND WILDLIFE**

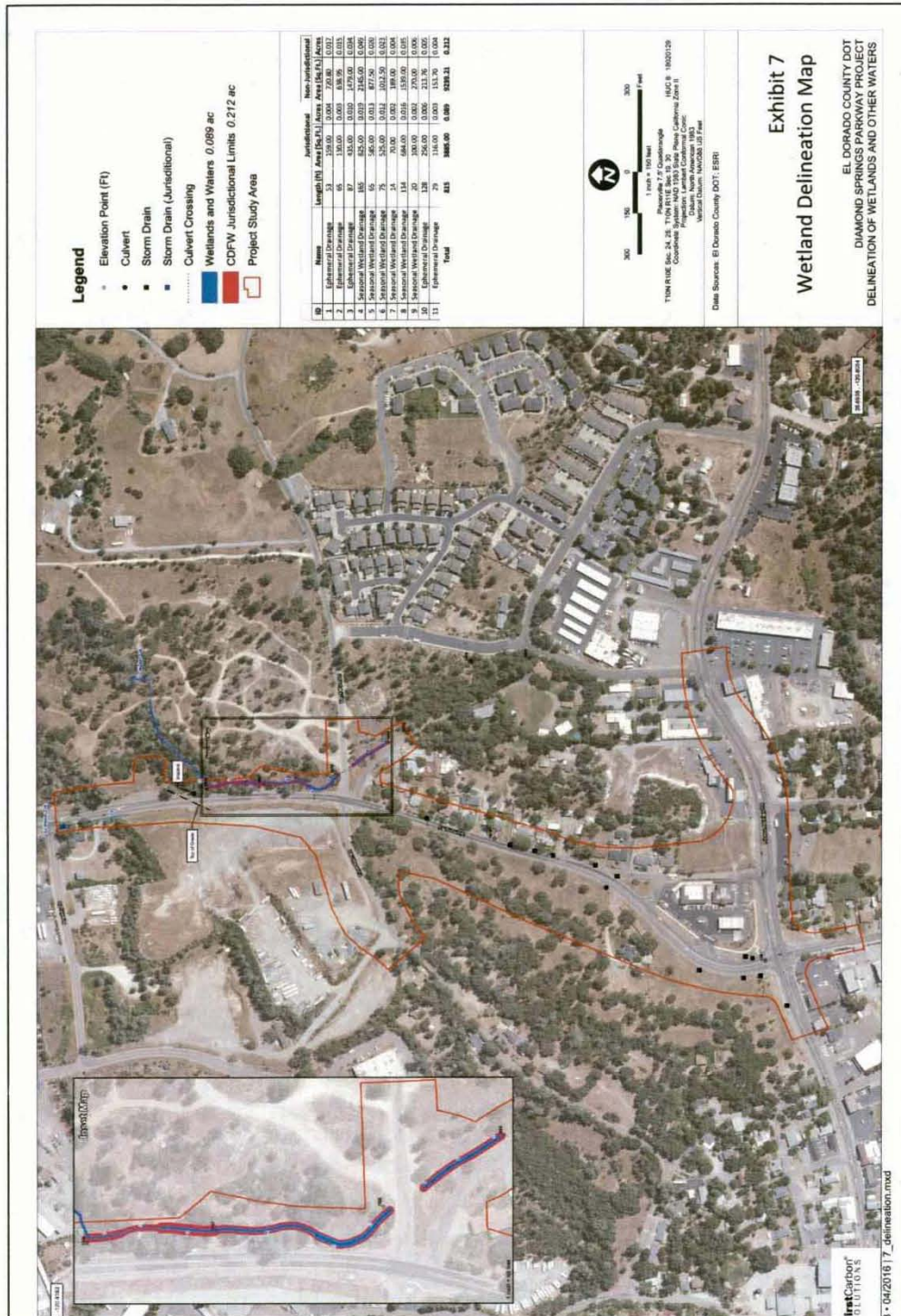
  
\_\_\_\_\_  
p Tina Bartlett  
Regional Manager

2/9/17  
\_\_\_\_\_  
Date

Prepared by: Gabriele (Gabe) Quillman  
Environmental Scientist



Exhibit A: Wetland Delineation Map



Diamond Springs Parkway - Phase 1A - SR-49 Realignment  
 CIP No. 72375, Contract No. 2720  
 December 18, 2018

County of El Dorado  
 Appendix B  
 AB-14



Central Valley Regional Water Quality Control Board

**CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION AND ORDER**

**Effective Date:** 21 July 2017

**Expiration Date:** 18 March 2022

**Program Type:** Fill/Excavation

**Project Type:** Roads and Highways

**Project:** Diamond Springs Parkway-Phase 1A Project (Project)

**Applicant:**

**Applicant Contact:** Jeff Nettleton  
Associate Engineer  
2850 Fairlane Court, Building C  
Placerville, CA 95667  
Phone: (530) 621-5136  
Email: Email Address

**Water Board Staff:** Peter Minkel  
Engineering Geologist  
11020 Sun Center Drive, Suite 200  
Rancho Cordova, CA 95670  
Phone: (916) 464-4684  
Email: PeterG.Minkel@waterboards.ca.gov

Reg. Meas. ID:	409200
Place ID:	828233
WDID:	5A09CR00163
USACOE#:	SPK-2009-00188

**Water Board Contact Person:**

If you have any questions, please call Central Valley Regional Water Quality Control Board (Central Valley Water Board) Staff listed above or (916) 464-3291 and ask to speak with the Water Quality Certification Unit Supervisor.

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**I. Order**

This Clean Water Act (CWA) section 401 Water Quality Certification action and Order (Order) is issued at the request of County of El Dorado Community Development Agency, Transportation Division (herein after Permittee) for the Project. This Order is for the purpose described in the application and supplemental information submitted by the Permittee. The application was received on 15 September 2016. The application was deemed complete on 4 November 2016.

**II. Public Notice**

The Central Valley Water Board provided public notice of the application pursuant to California Code of Regulations, title 23, section 3858 from 16 September 2016 to 7 October 2016. The Central Valley Water Board did not receive any comments during the comment period. Public notice regarding the Environmental Impact Report is described in Attachment C, CEQA Findings of Fact.

**III. Project Purpose**

The purpose of the Project is to improve traffic safety along State Route 49 from Pleasant Valley Road to north of Lime Kiln Road and provide a frontage road for residences east of State Route 49 (see Figures 1 and 2).

**IV. Project Description**

The Project consists of the realignment and widening of a portion of State Route 49/Diamond Road from Pleasant Valley Road to just south of Bradley Drive. State Route 49/Diamond Road will be constructed with two 12-foot wide lanes and 8-foot wide shoulders. The Project includes signal modifications at Pleasant Valley Road/State Route 49 intersection and potential underground utilities.

**V. Project Location**

Address: State Route 49 from Pleasant Valley Road to north of Lime Kiln Road.

County: El Dorado

Assessor's Parcel Number: 051-250-06, -07, -11, -12, -13, -23; 051-461-12, -37, -54; 051-550-47; 054-351-02, -03, -04, -05, -07, -14, -15, -18,-19, -27, -28, -32, -35, -38; 054-342-15, -20, -23, -36, -37, -38

Nearest City: Shingle Springs

Section 19, Township 30 North, Range 11 East, MDB&M.

Latitude: 38°41'57.06"N and Longitude: 120°48'40.74"W

Maps showing the Project location is found in Attachment A of this Order.

**VI. Project Impact and Receiving Waters Information**

The Project is located within the jurisdiction of the Central Valley Water Board. Receiving waters and groundwater potentially impacted by this Project are protected in accordance with the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition, revised April 2016 (Basin Plan). The Basin Plan for the region and other plans and policies may be accessed online at: [http://www.waterboards.ca.gov/plans\\_policies/](http://www.waterboards.ca.gov/plans_policies/). The Basin Plan includes water quality standards, which consist of existing and potential beneficial uses of waters of the state, water quality objectives to protect those uses, and the state and federal antidegradation policies.



Project impact and receiving waters information can be found in Attachment B. Table 1 of Attachment B shows the receiving waters and beneficial uses of waters of the state impacted by the Project. Individual impact location and quantity is shown in Table 2 of Attachment B. No water will be diverted. No cement will be placed in water.

**VII. Description of Direct Impacts to Waters of the State**

The Project will place clean fill material in 0.089 acre/815 linear feet of drainage ditch due to the road and shoulder widening. A new drainage ditch will be created adjacent to the widened road to convey storm water.

The Project will be constructed when the ditch is naturally dry. No dewatering will occur. No cement will be placed within the ditch. Total Project fill/excavation quantities for all impacts are summarized in Table 1. Permanent impacts are categorized as those resulting in a physical loss in area and also those degrading ecological condition.

Table 1: Total Project Fill/Excavation Quantity									
Aquatic Resource Type	Temporary Impact <sup>1</sup>			Permanent Impact					
				Physical Loss of Area			Degradation of Ecological Condition		
	Acres	CY <sup>2</sup>	LF <sup>4</sup>	Acres	CY	LF	Acres	CY	LF
Stream Channel	--	--	--	0.089	28.25	815	--	--	--

**VIII. Avoidance and Minimization**

The Project was designed to avoid as many natural resources as feasible. The impacts to roadside ditches will be completed when the ditches are dry. Hydroseeding will be used to stabilize slopes. In addition, silt fencing and straw waddles/fiber coir logs will be installed where necessary to prevent silt from entering adjacent waters.

**IX. Compensatory Mitigation**

The Permittee has agreed to provide compensatory mitigation for direct impacts, described in section VII for permanent impacts.

**X. California Environmental Quality Act (CEQA)**

On 24 May 2011, the El Dorado County Transportation Department, as lead agency, certified an Environmental Impact Report (EIR) (State Clearinghouse (SCH) No. 2007122033) for the Project and filed a Notice of Determination (NOD) at the SCH on 25 May 2011. Pursuant to CEQA, the Central Valley Water Board has made Findings of Facts (Findings) which support the issuance of this Order and are included in Attachment C.

**XI. Petitions for Reconsideration**

Any person aggrieved by this action may petition the State Water Resources Control Board to reconsider this Order in accordance with California Code of Regulations, title 23, section 3867. A petition for reconsideration must be submitted in writing and received within 30 calendar days of the issuance of this Order.

**XII. Fees Received**

<sup>1</sup> Includes only temporary direct impacts to waters of the state and does not include upland areas of temporary disturbance which could result in a discharge to waters of the state.

<sup>2</sup> Cubic Yards (CY); Linear Feet (LF)

An application fee deposit of \$1,500.00 was received on 16 September 2016. The remaining application fee balance of \$9,503.00 based on total Project impacts was received on 12 January 2017. The fee amount was determined as required by California Code of Regulations, title 23, sections 3833(b)(3) and 2200(a)(3), and was calculated as category A - Fill & Excavation Discharges (fee code 84) with the dredge and fill fee calculator.

### **XIII. Conditions**

The Central Valley Water Board has independently reviewed the record of the Project to analyze impacts to water quality and designated beneficial uses within the watershed of the Project. In accordance with this Order, the Permittee may proceed with the Project under the following terms and conditions:

#### **A. Authorization**

Impacts to waters of the state shall not exceed quantities shown in Table 2.

#### **B. Reporting and Notification Requirements**

The following section details the reporting and notification types and timing of submittals. Requirements for the content of these reporting and notification types are detailed in Attachment D, including specifications for photo and map documentation during the Project. Written reports and notifications must be submitted using the Reporting and Notification Cover Sheet located in Attachment D, which must be signed by the Permittee or an authorized representative.

The Permittee must submit all notifications, submissions, materials, data, correspondence, and reports in a searchable Portable Document Format (PDF). Documents less than 50 MB must be emailed to: [centralvalleysacramento@waterboards.ca.gov](mailto:centralvalleysacramento@waterboards.ca.gov).

In the subject line of the email, include the Central Valley Water Board Contact, Project name, and WDID. Documents that are 50 MB or larger must be transferred to a disk and mailed to the Central Valley Water Board Contact.

#### **1. Project Reporting**

- a. Monthly Reporting:** The Permittee must submit a Monthly Report to the Central Valley Water Board on the 30th day of each month beginning the month after the effective date of this Order. Monthly reporting shall continue until the Central Valley Water Board issues a Notice of Project Complete Letter to the Permittee.

If no sampling is required, the Permittee shall submit a written statement stating, "No sampling was required" within two weeks of initiation of in-water construction, and every month thereafter.

- b. Annual Reporting:** The Permittee shall submit an Annual Report each year on the 1st day of September. Annual reporting shall continue until a Notice of Project Complete Letter is issued to the Permittee.

#### **2. Project Status Notifications**

- a. Commencement of Construction:** The Permittee shall submit a Commencement of Construction Report at least seven (7) days prior to start of initial ground disturbance activities and corresponding Waste Discharge Identification Number (WDID#) issued under the NPDES General Permit for Storm Water Discharges

Associated with Construction and Land Disturbance Activities (Order No. 20009-0009-DWQ; NPDES No. CAS000002).

- b. Request for Notice of Completion of Discharges Letter:** The Permittee shall submit a Request for Notice of Completion of Discharges Letter following completion of active Project construction activities, including any required restoration and permittee-responsible mitigation. This request shall be submitted to the Central Valley Water Board staff within thirty (30) days following completion of all Project construction activities. Upon acceptance of the request, Central Valley Water Board staff shall issue a Notice of Completion of Discharges Letter to the Permittee which will end the active discharge period and associated annual fees.
- c. Request for Notice of Project Complete Letter:** The Permittee shall submit a Request for Notice of Project Complete Letter when construction and/or any post-construction monitoring is complete,<sup>3</sup> and no further Project activities will occur. This request shall be submitted to Central Valley Water Board staff within thirty (30) days following completion of all Project activities. Upon approval of the request, the Central Valley Water Board staff shall issue a Notice of Project Complete Letter to the Permittee which will end the post discharge monitoring period and associated annual fees.
- 3. Conditional Notifications and Reports:** The following notifications and reports are required as appropriate.
- a. Accidental Discharges of Hazardous Materials<sup>4</sup>**  
Following an accidental discharge of a reportable quantity of a hazardous material, sewage, or an unknown material, the following applies (Wat. Code, § 13271):
- i. As soon as (A) Permittee has knowledge of the discharge or noncompliance, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures then:
    - first call – 911 (to notify local response agency)
    - then call – Office of Emergency Services (OES) State Warning Center at:(800) 852-7550 or (916) 845-8911
    - Lastly follow the required OES procedures as set forth in:  
[http://www.caloes.ca.gov/FireRescueSite/Documents/CalOES-Spill\\_Booklet\\_Feb2014\\_FINAL\\_BW\\_Acc.pdf](http://www.caloes.ca.gov/FireRescueSite/Documents/CalOES-Spill_Booklet_Feb2014_FINAL_BW_Acc.pdf)
  - ii. Following notification to OES, the Permittee shall notify Central Valley Water Board, as soon as practicable (ideally within 24 hours). Notification may be

<sup>3</sup> Completion of post-construction monitoring shall be determined by Central Valley Water Board staff and shall be contingent on successful attainment of restoration and mitigation performance criteria.

<sup>4</sup> "Hazardous material" means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. "Hazardous materials" include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment. (Health & Saf. Code, § 25501.)

delivered via written notice, email, or other verifiable means in accordance with section XIV.B.

- iii. Within five (5) working days of notification to the Central Valley Water Board, the Permittee must submit an Accidental Discharge of Hazardous Material Report.
- b. Violation of Compliance with Water Quality Standards:** The Permittee shall notify the Central Valley Water Board of any event causing a violation of compliance with water quality standards. Notification may be delivered via written notice, email, or other verifiable means in accordance with section XIV.B.
  - i. This notification must be followed within three (3) working days by submission of a Violation of Compliance with Water Quality Standards Report.
- c. Modifications to Project**

Project modifications may require an amendment of this Order. The Permittee shall give advance notice to Central Valley Water Board staff if Project implementation as described in the application materials is altered in any way or by the imposition of subsequent permit conditions by any local, state or federal regulatory authority by submitting a Modifications to Project Report. The Permittee shall inform Central Valley Water Board staff of any Project modifications that will interfere with the Permittee's compliance with this Order. Notification may be made in accordance with conditions in the certification deviation section of this Order.
- d. Transfer of Property Ownership:** This Order is not transferable in its entirety or in part to any person or organization except after notice to the Central Valley Water Board in accordance with the following terms:
  - i. The Permittee must notify the Central Valley Water Board of any change in ownership or interest in ownership of the Project area by submitting a Transfer of Property Ownership Report. The Permittee and purchaser must sign and date the notification and provide such notification to the Central Valley Water Board at least 10 days prior to the transfer of ownership. The purchaser must also submit a written request to the Central Valley Water Board to be named as the permittee in a revised order.
  - ii. Until such time as this Order has been modified to name the purchaser as the permittee, the Permittee shall continue to be responsible for all requirements set forth in this Order.
- e. Transfer of Long-Term BMP Maintenance:** If maintenance responsibility for post-construction BMPs is legally transferred, the Permittee must submit to the Central Valley Water Board a copy of such documentation and must provide the transferee with a copy of a long-term BMP maintenance plan that complies with manufacturer or designer specifications. The Permittee must provide such notification to the Central Valley Water Board with a Transfer of Long-Term BMP Maintenance Report at least 10 days prior to the transfer of BMP maintenance responsibility.

### **C. Water Quality Monitoring**

1. **Post-Construction:** Visually inspect the Project site during the rainy season for five years to ensure excessive erosion, stream instability, or other water quality pollution is



not occurring in or downstream of the Project site. If water quality pollution is occurring, contact the Central Valley Water Board staff member overseeing the Project within three (3) working days. The Central Valley Water Board may require the submission of a Violation of Compliance with Water Quality Standards Report. Additional permits may be required to carry out any necessary site remediation.

#### **D. Standard**

1. This Order is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Water Code section 13330, and California Code of Regulations, title 23, chapter 28, Article 6 commencing with sections 3867-3869, inclusive. Additionally, the Central Valley Water Board reserves the right to suspend, cancel, or modify and reissue this Order, after providing notice to the Permittee, if the Central Valley Water Board determines that: the Project fails to comply with any of the conditions of this Order; or, when necessary to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.) or federal Clean Water Act section 303 (33 U.S.C. § 1313). For purposes of Clean Water Act section 401(d), the condition constitutes a limitation necessary to assure compliance with water quality standards and appropriate requirements of state law.
2. This Order is not intended and shall not be construed to apply to any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license, unless the pertinent certification application was filed pursuant to subsection 3855(b) of chapter 28, title 23 of the California Code of Regulations, and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.
3. This Order is conditioned upon total payment of any fee required under title 23 of the California Code of Regulations and owed by the Permittee.
4. In the event of any violation or threatened violation of the conditions of this Order, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under state and federal law. For purposes of Clean Water Act, section 401(d), the applicability of any state law authorizing remedies, penalties, processes, or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this Order.

#### **E. General Compliance**

1. Failure to comply with any condition of this Order shall constitute a violation of the Porter-Cologne Water Quality Control Act and the Clean Water Act. The Permittee and/or discharger may then be subject to administrative and/or civil liability pursuant to Water Code section 13385.
2. Permitted actions must not cause a violation of any applicable water quality standards, including impairment of designated beneficial uses for receiving waters as adopted in the Basin Plans by any applicable Central Valley Water Board or any applicable State Water Board (collectively Water Boards) water quality control plan or policy. The source of any such discharge must be eliminated as soon as practicable.
3. In response to a suspected violation of any condition of this Order, the Central Valley Water Board may require the holder of this Order to furnish, under penalty of perjury,

any technical or monitoring reports the Water Boards deem appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. The additional monitoring requirements ensure that permitted discharges and activities comport with any applicable effluent limitations, water quality standards, and/or other appropriate requirement of state law.

4. The Permittee must, at all times, fully comply with engineering plans, specifications, and technical reports submitted to support this Order; and all subsequent submittals required as part of this Order. The conditions within this Order and Attachments supersede conflicting provisions within Permittee submittals.
5. This Order and all of its conditions contained herein continue to have full force and effect regardless of the expiration or revocation of any federal license or permit issued for the Project. For purposes of Clean Water Act, section 401(d), this condition constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements of state law.
6. The Permittee shall adhere to all requirements in the 10 May 2011 Mitigation Monitoring and Reporting Plan-Diamond Springs Parkway Project, which is incorporated herein by reference and any additional measures as outlined in Attachment C, CEQA Findings of Fact.
7. **Construction General Permit Requirement.** The Permittee shall obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities Order No. 2009-0009-DWQ, as amended, for discharges to surface waters comprised of storm water associated with construction activity, including, but not limited to, demolition, clearing, grading, excavation, and other land disturbance activities of one or more acres, or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres.

#### F. Administrative

1. Signatory requirements for all document submittals required by this Order are presented in Attachment E of this Order.
2. This Order does not authorize any act which results in the taking of a threatened, endangered or candidate species or any act, which is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish & G. Code, §§ 2050-2097) or the federal Endangered Species Act (16 U.S.C. §§ 1531-1544). If a "take" will result from any act authorized under this Order held by the Permittee, the Permittee must obtain authorization for the take prior to any construction or operation of the portion of the Project that may result in a take. The Permittee is responsible for meeting all requirements of the applicable endangered species act for the Project authorized under this Order.
3. The Permittee shall grant Central Valley Water Board staff, or an authorized representative (including an authorized contractor acting as a Water Board representative), upon presentation of credentials and other documents as may be required by law, permission to:
  - a. Enter upon the Project or compensatory mitigation site(s) premises where a regulated facility or activity is located or conducted, or where records are kept.

- b. Have access to and copy any records that are kept and are relevant to the Project or the requirements of this Order.
      - c. Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order.
      - d. Sample or monitor for the purposes of assuring Order compliance.
  4. A copy of this Order shall be provided to any consultants, contractors, and subcontractors working on the Project. Copies of this Order shall remain at the Project site for the duration of this Order. The Permittee shall be responsible for work conducted by its consultants, contractors, and any subcontractors.
  5. A copy of this Order must be available at the Project site(s) during construction for review by site personnel and agencies. All personnel performing work on the Project shall be familiar with the content of this Order and its posted location at the Project site.
  6. Lake and Streambed Alteration Agreement – The Permittee shall submit a signed copy of the Department of Fish and Wildlife’s lake and streambed alteration agreement to the Central Valley Water Board immediately upon execution and prior to any discharge to waters of the state.

**G. Construction**

1. **Dewatering - NOT APPLICABLE**
2. **Directional Drilling – NOT APPLICABLE**
3. **Dredging – NOT APPLICABLE**
4. **Fugitive Dust – NOT APPLICABLE**
5. **Good Site Management “Housekeeping”**
  - a. The Permittee shall develop and maintain onsite a project-specific Spill Prevention, Containment and Cleanup Plan outlining the practices to prevent, minimize, and/or clean up potential spills during construction of the Project. The Plan must detail the Project elements, construction equipment types and location, access and staging and construction sequence. The Plan must be made available to the Central Valley Water Board staff upon request.
  - b. Refueling of equipment within the floodplain or within 300 feet of the waterway is prohibited. If critical equipment must be refueled within 300 feet of the waterway, spill prevention and countermeasures must be implemented to avoid spills. Refueling areas shall be provided with secondary containment including drip pans and/or placement of absorbent material. No hazardous materials, pesticides, fuels, lubricants, oils, hydraulic fluids, or other construction-related potentially hazardous substances should be stored within a floodplain or within 300 feet of a waterway. The Permittee must perform frequent inspections of construction equipment prior to utilizing it near surface waters to ensure leaks from the equipment are not occurring and are not a threat to water quality.
  - c. All materials resulting from the Project shall be removed from the site and disposed of properly.

**6. Hazardous Materials**

- a. The discharge of petroleum products, any construction materials, hazardous materials, pesticides, fuels, lubricants, oils, hydraulic fluids, raw cement, concrete or the washing thereof, asphalt, paint, coating material, drilling fluids, or other substances potentially hazardous to fish and wildlife resulting from or disturbed by project-related activities is prohibited and shall be prevented from contaminating the soil and/or entering waters of the state. In the event of a prohibited discharge, the Permittee shall comply with notification requirements in sections XIV.B.3.a and XIV.B.3.b.
- b. Concrete must be completely cured before coming into contact with waters of the United States and waters of the state. Surface water that contacts wet concrete must be pumped out and disposed of at an appropriate off-site commercial facility, which is authorized to accept concrete wastes.

**7. Invasive Species and Soil Borne Pathogens – NOT APPLICABLE**

**8. In-Water Work**

- a. In-water work shall occur during periods of no precipitation and when the work area is naturally dry.

**9. Post-Construction Storm Water Management – NOT APPLICABLE**

**10. Roads – NOT APPLICABLE**

**11. Sediment Control**

- a. Except for activities permitted by the United States Army Corps of Engineers under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act, soil, silt, or other organic materials shall not be placed where such materials could pass into surface water or surface water drainage courses.
- b. Silt fencing, straw wattles, or other effective management practices must be used along the construction zone to minimize soil or sediment along the embankments from migrating into the waters of the state through the entire duration of the Project.
- c. The use of netting material (e.g., monofilament-based erosion blankets) that could trap aquatic dependent wildlife is prohibited within the Project area.

**12. Special Status Species – NOT APPLICABLE**

**13. Stabilization/Erosion Control**

- a. All areas disturbed by Project activities shall be protected from washout and erosion.
- b. Hydroseeding shall be performed with California native seed mix.

**14. Storm Water**

- a. During the construction phase, the Permittee must employ strategies to minimize erosion and the introduction of pollutants into storm water runoff. These strategies must include the following:



- i. The Permittee must comply with the Statewide Construction Stormwater Permit, including, but not limited to, preparations and implementation of a Storm Water Pollution Prevention Plan; and
- ii. An effective combination of erosion and sediment control Best Management Practices (BMPs) must be implemented and adequately working prior to the rainy season and during all phases of construction.

**H. Site Specific – NOT APPLICABLE**

**I. Total Maximum Daily Load (TMDL) – NOT APPLICABLE**

**J. Compensatory Mitigation for Permanent Impacts<sup>5</sup>**

**1. Permittee-Responsible Compensatory Mitigation Responsibility – NOT APPLICABLE**

**2. Total Required Compensatory Mitigation**

- a. The Permittee is required to provide compensatory mitigation for the authorized impact to 0.089 acre of stream channel (referred to as intermittent channels and seasonal wetlands by the United States Army Corps of Engineers) by purchasing 0.178 acre Aquatic Resource Credits in the National Fish and Wildlife Foundation (NFWF) Sacramento District California In-Lieu Fee Program for the American River Aquatic Resource Service Area.
- b. The Permittee is required to re-establish 0.089 acre stream channel filled by widening of the road.
- c. Total required Project compensatory mitigation information for permanent physical loss of area is summarized in Table 3.

Table 3: Required Project Compensatory Mitigation Quantity for Permanent Physical Loss of Area <sup>6</sup>								
Aquatic Resource Type	Comp Mit. Type <sup>7</sup>	Units	Method <sup>8</sup>					
			Est.	Re-est.	Reh.	Enh.	Pres.	Unknown
Stream Channel	ILF	Acres	0.178	0.089	--	--	--	--

**K. Certification Deviation**

<sup>5</sup> Compensatory Mitigation is for permanent physical loss and permanent ecological degradation of a water of the state.

<sup>6</sup> For Staff use only: Record quantities in CIWQS table side A for Compensatory Mitigation for Permanent Physical Loss of Area.

<sup>7</sup> Compensatory mitigation type may be: In-Lieu-Fee (ILF); Mitigation Bank (MB); Permittee-Responsible (PR)

<sup>8</sup> Methods: establishment (Est.), reestablishment (Re-est.), rehabilitation (Reh.), enhancement (Enh.), preservation (Pres.). Unknown applies to advance credits with an unknown method and or location.

1. Minor modifications of Project locations or predicted impacts may be necessary as a result of unforeseen field conditions, necessary engineering re-design, construction concerns, or similar reasons. Some of these prospective Project modifications may have impacts on water quality. Some modifications of Project locations or predicted impacts may qualify as Certification Deviations as set forth in Attachment F. For purposes of this Certification, a "Certification Deviation" is a Project locational or impact modification that does not require an immediate amendment of the Order, because the Central Valley Water Board has determined that any potential water quality impacts that may result from the change are sufficiently addressed by the Order conditions and the CEQA Findings. After the termination of construction, this Order will be formally amended to reflect all authorized Certification Deviations and any resulting adjustments to the amount of water resource impacts and required compensatory mitigation amounts.
2. A Project modification shall not be granted a Certification Deviation if it warrants or necessitates changes that are not addressed by the Order conditions or the CEQA environmental document such that the Project impacts are not addressed in the Project's environmental document or the conditions of this Order. In this case a supplemental environmental review and different Order will be required.

**XIV. Water Quality Certification**

I hereby issue the Order for the Diamond Springs Parkway-Phase 1A Project, (WDID #5A09CR00163) certifying that as long as all of the conditions listed in this Order are met, any discharge from the referenced Project will comply with the applicable provisions of Clean Water Act sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards). The Central Valley Water Board will file a Notice of Determination (NOD) at the SCH within five (5) working days of issuance of this Order. This discharge is also regulated pursuant to State Water Board Water Quality Order No. 2003-0017-DWQ which authorizes this Order to serve as Waste Discharge Requirements pursuant to the Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.).

Except insofar as may be modified by any preceding conditions, all Order actions are contingent on: (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the conditions of this Order and the attachments to this Order; and, (b) compliance with all applicable requirements of Statewide Water Quality Control Plans and Policies, the Regional Water Boards' Water Quality Control Plans and Policies.

*Original Signed by Adam Laputz for:*

*7-18-17*

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Pamela C. Creedon  
Executive Officer  
Central Valley Regional Water Quality Control Board

Date

- Attachment A** Project Map
- Attachment B** Receiving Waters, Impact, and Mitigation Information
- Attachment C** CEQA Findings of Facts
- Attachment D** Report and Notification Requirements
- Attachment E** Signatory Requirements
- Attachment F** Certification Deviation Procedures



**DEPARTMENT OF THE ARMY**  
**U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT**  
1325 J STREET  
SACRAMENTO CA 95814-2922

April 18, 2018

Regulatory Division (SPK-2009-00188)

El Dorado County Department of Transportation  
Attn: Mr. Jeff Nettleton  
2850 Fairlane Court, Bldg. C  
Placerville, California 95667

Dear Mr. Nettleton:

We are responding to your September 16, 2016, pre-construction notification for a Department of the Army (DA) Nationwide permit for the Diamond Springs Parkway Project. The approximately 27.97-acre project site is located near Weber Creek, Latitude 38.6973°, Longitude -120.8120°, Section 24 and 25, Township 30 North, Range 11 East, and Sections 19 and 30, Township 30 North, Range 11 East, MDB&M, of the Placerville USGS quadrangle Diamond Springs, El Dorado County, California.

Based on the information you provided to this office, the Diamond Springs Parkway project involves the discharge of fill material into 0.089 acre of waters of the U.S. for the construction of road improvements, subject to Section 404 of the Clean Water Act. The specific activities that require DA authorization are construction of a piped road crossing of a seasonal drainage. This activity will result in the permanent effects to 0.089 acre of wetland, including the permanent loss of 0.089 acre of wetland. The proposed activities would be conducted in accordance with the enclosed *Exhibit 8, Phase 1A Proposed Impacts to Waters of the United States* plans dated August 2016.

We have determined that activities in waters of the U.S. associated with the project are authorized by Nationwide Permit Number (NWP) 14.

You must comply with all terms and conditions of the NWP and applicable regional conditions. Information about the NWP terms and conditions and Sacramento District regional conditions for California, excluding the Lake Tahoe Basin, are available on our website at [www.spk.usace.army.mil/Missions/Regulatory/Permitting/NationwidePermits.aspx](http://www.spk.usace.army.mil/Missions/Regulatory/Permitting/NationwidePermits.aspx). You should pay particular attention to General Condition 20(C), and Regional Conditions B(1)(c), C(7), C(8), C(9)(b). In addition, your work must comply with the following special conditions:

1. To ensure your project complies with the Federal Endangered Species Act, you must implement all of the mitigating measures proposed as part of your project description, which are identified in the enclosed *U.S. Fish and Wildlife Service letter of concurrence Number 08ESMF00-2016-I-1769*, dated August 16, 2016. If you are unable to implement any of the proposed measures, you must immediately notify this office, the U.S. Fish and Wildlife Office, so we may consult as appropriate, prior to initiating the work, in accordance with Federal law.
2. Prior to initiation of any construction activities in waters of the U.S. authorized by this verification, you shall install construction best management practices (BMPs). You shall ensure the BMPs are inspected and maintained in good condition while ground disturbing activities are occurring, until construction activities in waters of the U.S. authorized by this verification are complete. All BMPs shall remain until construction activities within waters of the U.S. are completed and all disturbed soils are stabilized.

Diamond Springs Parkway - Phase 1A - SR-49 Realignment  
CIP No. 72375, Contract No. 2720  
December 18, 2018

County of El Dorado  
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3. You shall comply with all terms and conditions of the July 21, 2017, Section 401 Water Quality Certification.

4. At least 10 days prior to initiation of construction activities in waters of the U.S. authorized by this verification, you shall notify this office in writing of the anticipated start date for the work. No later than 30 calendar days following completion of construction activities in waters of the U.S. authorized by this verification, you shall notify this office in writing that construction activities have been completed.

Within 30 days after completion of the authorized work, you must sign the enclosed Compliance Certification and return it to this office with the information required by Sacramento District Regional Condition C(9) for California.

This verification is valid until March 18, 2022, when the existing NWP's are scheduled to be modified, reissued, or revoked. Furthermore, if you commence or are under contract to commence this activity before the date the NWP is modified, reissued, or revoked, you will have 12 months from the date of the modification, reissuance or revocation to complete the activity under the present terms and conditions. Failure to comply with the general and regional conditions of this NWP, or the project-specific special conditions of this authorization, may result in the suspension or revocation of your authorization.

We would appreciate your feedback on this permit action including your interaction with our staff and processes. For more information about our program or to complete our Regulatory Program national customer service survey, visit our website at [www.spk.usace.army.mil/Missions/Regulatory.aspx](http://www.spk.usace.army.mil/Missions/Regulatory.aspx).

If you have any questions, please contact Mr. Jesse Stovall at the letterhead address, Room 1350, by email at, [Jesse.T.Stovall@usace.army.mil](mailto:Jesse.T.Stovall@usace.army.mil), or telephone at 916-557-7506. Please refer to identification number SPK-2009-00188 in any correspondence concerning this project. For program information regarding our Regulatory Program or to complete a survey, visit our website at [www.spk.usace.army.mil/Missions/Regulatory.aspx](http://www.spk.usace.army.mil/Missions/Regulatory.aspx).

Sincerely,



Marc Fugler  
Senior Project Manager  
California South Section

Enclosures

cc: (w/o encls)

Mr. Rick Kuyper, U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Endangered Species Program, [richard\\_kuyper@fws.gov](mailto:richard_kuyper@fws.gov)

Ms. Elizabeth Lee, Storm Water and Water Quality Certification Unit, Central Valley Regional Water Quality Control Board (5S), [Elizabeth.lee@waterboards.ca.gov](mailto:Elizabeth.lee@waterboards.ca.gov)

Ms. Tina Bartlett, California Department of Fish and Wildlife, [R2CEQA@wildlife.ca.gov](mailto:R2CEQA@wildlife.ca.gov)

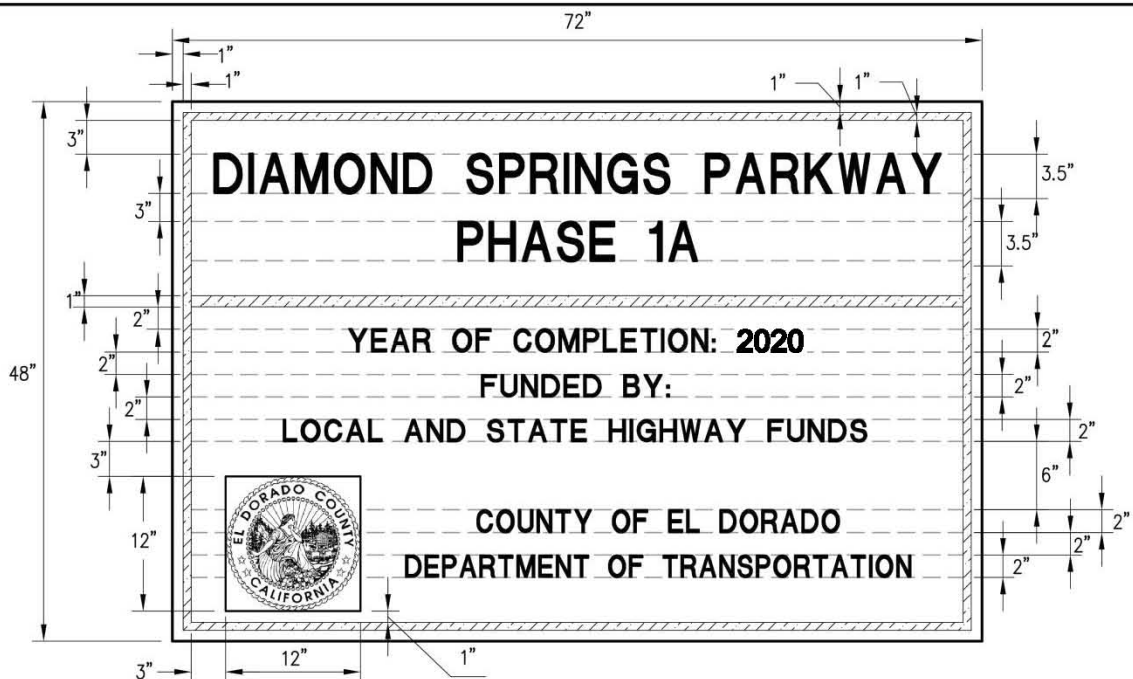
Diamond Springs Parkway - Phase 1A - SR-49 Realignment  
CIP No. 72375, Contract No. 2720  
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**APPENDIX C**

**to the contract documents for  
Diamond Springs Parkway – Phase 1A – SR-49 Realignment  
CIP No. 72375, Contract No. 2720**

**FUNDING SIGN DETAIL**



**NOTES**

1. THE ENGINEER SHALL SUPPLY THE CONTRACTOR WITH THE EL DORADO COUNTY LOGO IN DIGITAL FORMAT. THE IMAGE SHALL BE PRINTED TO THE DIMENSIONS INDICATED, AND PLACED ON THE SIGN IN THE GENERAL LOCATION SHOWN.
2. THE IMAGE OF THE EL DORADO COUNTY LOGO SHALL BE BLACK (NON-REFLECTIVE) ON WHITE BACKGROUND.
3. THE BORDER AND LETTERING OF THE SIGNS SHALL BE BLUE (NON-REFLECTIVE) ON WHITE BACKGROUND.
4. ALL DIMENSIONS SHOWN ARE IN INCHES, UNLESS OTHERWISE INDICATED.

**FUNDING SIGN EXHIBIT**

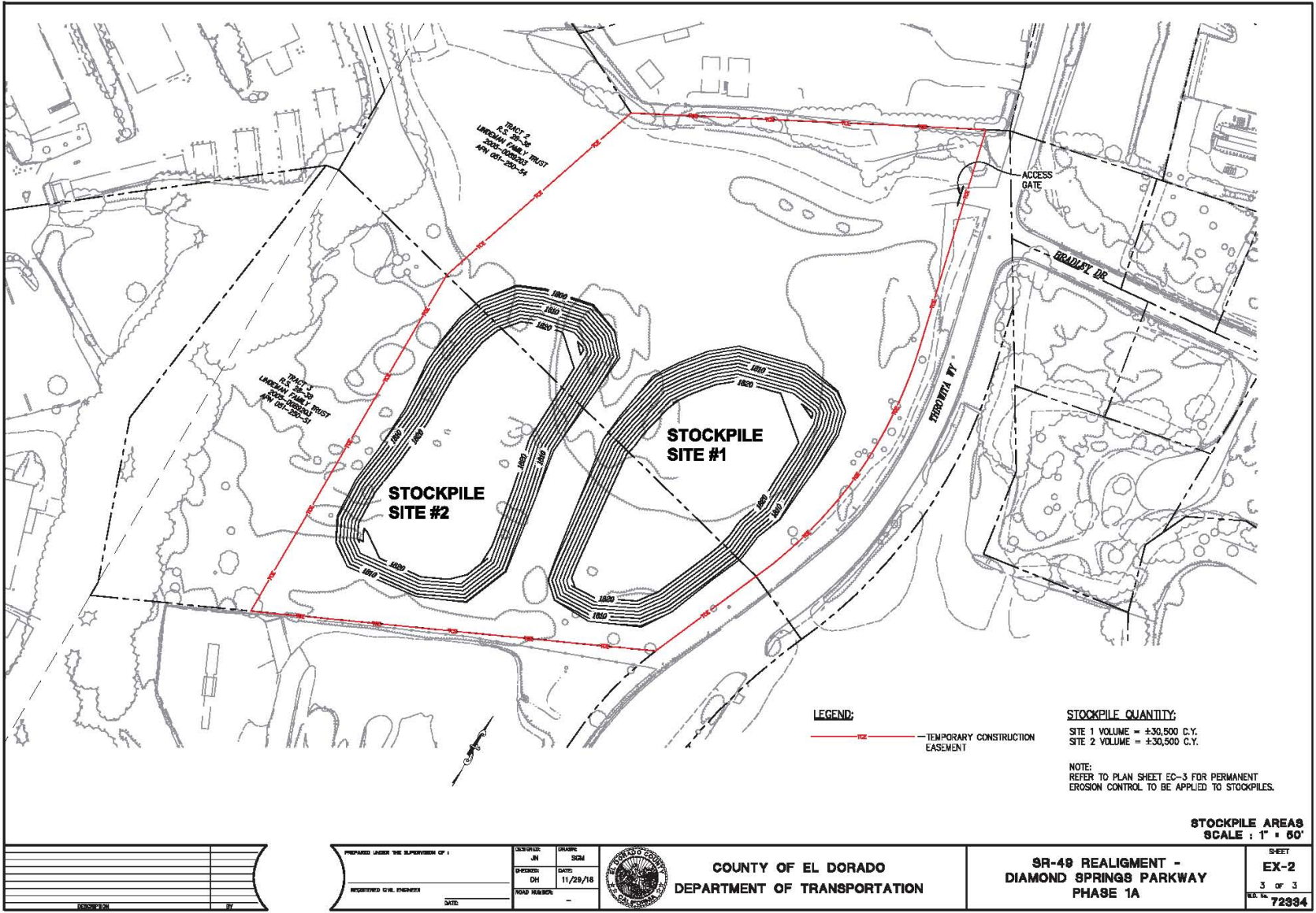
## **APPENDIX D**

**to the contract documents for  
Diamond Springs Parkway – Phase 1A – SR-49 Realignment  
CIP No. 72375, Contract No. 2720**

### **STOCKPILE LOCATIONS**








Diamond Springs Parkway - Phase 1A - SR-49 Realignment  
 CIP No. 72375, Contract No. 2720  
 December 18, 2018

County of El Dorado  
 Appendix D  
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PREPARED UNDER THE SUPERVISION OF	DATE: 11/29/18
REGISTERED CIVIL ENGINEER	ROAD NUMBER: -
DATE:	


**COUNTY OF EL DORADO**  
**DEPARTMENT OF TRANSPORTATION**

**SR-49 REALIGNMENT -**  
**DIAMOND SPRINGS PARKWAY**  
**PHASE 1A**

SHEET	EX-2
3 OF 3	
REA No.	72374

**County of El Dorado, State of California  
Community Development Services  
Department of Transportation**

**P&C No. XXX-XXXX, CIP No. 72375, Contract No. 2720**

**DIAMOND SPRINGS PARKWAY – PHASE 1A – SR-49 REALIGNMENT**

**THIS AGREEMENT** ("Agreement") approved by the Board of Supervisors this \_\_\_\_<sup>st</sup> day of \_\_\_\_\_, in the year of 20\_\_, made and concluded, in duplicate, between the COUNTY OF EL DORADO, a political subdivision of the State of California, by the Community Development Services, Department of Transportation thereof, the party of the first part hereinafter called "County," and [CONTRACTOR], party of the second part hereinafter called "Contractor."

**RECITALS:**

**WHEREAS**, County has caused the above-captioned project to be let to formal bidding process; and

**WHEREAS**, Contractor has duly submitted a bid response for the captioned project upon which County has awarded this Contract;

**NOW, THEREFORE**, the parties hereto have mutually covenanted and agreed, and by these presents do covenant and agree, each with the other, as follows:

**Article 1. THE WORK**

The improvement contemplated in the performance of this Contract is an improvement over which the County shall exercise general supervision. The County, therefore, shall have the right to assume full and direct control over this Contract whenever the County, at its sole discretion, shall determine that its responsibility is so required.

Contractor shall complete the Work as specified or indicated under the Bid Schedule(s) of County's Contract Documents entitled:

**DIAMOND SPRINGS PARKWAY – PHASE 1A – SR-49 REALIGNMENT**

The Project is located along Highway 49, in the community of Diamond Springs, approximately 3 miles south of the City of Placerville in the County of El Dorado. The Work to be done is shown on the Plans, described in the Special Provisions and generally consists of, but is not limited to:

Realignment and widening of State Route 49 (SR-49) from the intersection of Pleasant Valley Road to 2,000 feet north of Lime Kiln Road/Black Rice Road. Roadway improvements on SR-49 include roadway excavation, HMA paving and dike, concrete curb, gutter, and sidewalk, signing and striping, permanent and temporary fence removal and construction, drainage improvements, signal modifications, retaining wall, and underground utility construction. Other items or details not mentioned above, that are required by the plans, Standard Plans, Standard Specifications, or these Special Provisions must be performed, constructed or installed.

**Article 2. CONTRACT DOCUMENTS**

The Contract Documents consist of: the Notice to Bidders; the bid forms which include the accepted Proposal, Bid Price Schedule and Total Bid, Subcontractor List, Section 10285.1 Statement, Section 10162 Questionnaire, Section 10232 Statement, Noncollusion Affidavit, Debarment, Iran Contracting Act Certification, Suspension, Ineligibility, and Voluntary Exclusion Certification, Opt Out of Payment Adjustments for Price Index Fluctuation form, if elected, the Contract which includes this Agreement with all Exhibits thereto, including the Fair Employment Practices Addendum, the Performance Bond, and Payment Diamond Springs Parkway – Phase 1A – SR-49 Realignment

**CIP No 72375, Contract No. 2720**

December 18, 2018

County of El Dorado  
**Agreement**

C-1

Bond, the drawings listed and identified as the Project Plans; the Special Provisions which incorporate by reference the State of California Department of Transportation (Caltrans) Standard Plans 2015, and Standard Specifications 2015, Revised Standard Specifications, and standard drawings from the Design and Improvement Standards Manual of the County of El Dorado, revised March 8, 1994 including Resolution 199-91 and Resolution 58-94 to adopt changes to the Design and Improvement Standards Manual; all Addenda incorporated in those documents before their execution, and all Contract Change Orders issued in accordance with the Contract Documents which may be delivered or issued after the Effective Date of this Agreement and are not attached hereto; the prevailing Labor Surcharge And Equipment Rental Rates (when required) as determined by the Caltrans to be in effect on the date the Work is accomplished; all the obligations of County and of Contractor which are fully set forth and described therein; and all Contract Documents which are hereby specifically referred to and by such reference made a part hereof. All Contract Documents are intended to cooperate so that any Work called for in one and not mentioned in the other is to be executed the same as if mentioned in all Contract Documents. Contractor agrees to perform all of its promises, covenants, and conditions set forth in the Contract Documents, and to abide by and perform all terms and conditions set forth therein. In case of conflict between this Agreement and any other Contract Document, this Agreement shall take precedence.

### **Article 3. COVENANTS AND CONTRACT PRICE**

County hereby promises and agrees with said Contractor to employ, and does hereby employ, said Contractor to provide the material and to do the Work according to the terms and conditions of the Contract Documents herein contained and referred to, for the prices hereinafter set forth, and hereby contracts to pay the same at the time, in the manner and upon the conditions herein set forth; and the said parties for themselves, their heirs, executors, administrators, successors and assigns, do hereby agree to the full performance of the covenants herein contained. County shall pay Contractor for the completion of the Work in accordance with the Contract Documents in current funds the Contract Prices named in Contractor's Bid and Bid Price Schedule, a copy of which is attached hereto as Exhibit A.

### **Article 4. COMMENCEMENT AND COMPLETION**

The Work to be performed under this Contract shall commence on the date specified in the Notice to Proceed issued by County, and the Work shall be fully completed within the time specified in the Notice to Proceed pursuant to Section 8 of the Special Provisions.

County and Contractor recognize that time is of the essence of the Agreement and that County will suffer financial loss if the Work is not completed within the time specified in the Notice to Bidders annexed hereto, plus any extensions thereof allowed in accordance with Section 8 of the Standard Specifications and Special Provisions. They also recognize the delays, expense, and difficulties involved with proving in a legal proceeding the actual loss suffered by County if the Work is not completed on time. Accordingly, instead of requiring any such proof, County and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay County the sum of **Five Thousand Four Hundred Dollars (\$5,400.00)**, as liquidated damages and not as a penalty, for each and every calendar day's delay in finishing the Work in excess of the Contract time prescribed herein.

### **Article 5. INDEMNITY**

To the fullest extent allowed by law, Contractor shall defend, indemnify, and hold County, its (their) officers, directors, and employees, and the State of California (State), its officers, directors, agents (excluding agents who are design professionals), State Contractors doing work within the project limits, and any property owners from whom the County obtained easements associated with this Contract harmless against and from any and all claims, suits, losses, damages, and liability for damages, including attorney's fees and other costs of defense brought for or on account of injuries to or death of any person, including but not limited to, workers and the public, or on account of injuries to or death of County, State, or any property owners from whom the County obtained easements, or damage to property, or any economic, consequential or special damages which are claimed or which shall in any way arise out of or be connected with Contractor's services, operations or performance hereunder, regardless of the existence or degree of fault or negligence on the part of the County, the State of California, or any property owners from whom the County has obtained easements, the Contractor, subcontractors or employees of any of these, except for

the active, or sole negligence of the County, the State of California their officers and employees, or any property owners from whom the County has obtained easements, or where expressly prescribed by statute.

The duty to indemnify and hold harmless the County, the State, and any property owners from whom the County obtained easements associated with this Contract specifically includes the duties to defend set forth in Section 2778 of the Civil Code. The insurance obligations of Contractor are separate, independent obligations under the Contract Documents, and the provisions of this defense and indemnity are not intended to modify nor should they be construed as modifying or in any way limiting the insurance obligations set forth in the Contract Documents.

This indemnification will remain in effect until terminated or modified in writing by mutual agreement.

**Article 6. VENUE**

Any litigation arising out of this Contract shall be brought in El Dorado County and governed by California law.

**Article 7. NOTIFICATION OF SURETY COMPANY**

The surety company shall familiarize itself with all of the conditions and provisions of this Contract, and shall waive the right of special notification of any change or modifications of this Contract or extension of time, or of decreased or increased work, or of the cancellation of the Contract, or of any other act or acts by County or its authorized agents, under the terms of this Contract; and failure to so notify the aforesaid surety company of changes shall in no way relieve the surety company of its obligation under this Contract.

**Article 8. ASSIGNMENT OF ANTITRUST ACTIONS**

In entering into a public works Contract or a Subcontract to supply goods, services, or materials pursuant to a public works Contract, the Contractor offers and agrees and will require all of its subcontractors and suppliers to agree to assign to the awarding body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works Contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to Contractor, without further acknowledgment by the parties.

If an awarding body or public purchasing body receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under Government Code Sections 4550-4554, the assignor shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the public body any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but were not paid by the public body as part of the bid price, less the expenses incurred in obtaining that portion of the recovery. Upon demand in writing by the assignor, the assignee shall, within one year from such demand, reassign the cause of action assigned under Government Code Sections 4550-4554 if the assignor has been or may have been injured by the violation of law for which the cause of action arose and (a) the assignee has not been injured thereby, or (b) the assignee declines to file a court action for the cause of action.

**Article 9. TERMINATION BY COUNTY FOR CONVENIENCE**

County reserves the right to terminate the Contract at any time upon determination by County's representative that termination of the Contract is in the best interest of County. County shall issue Contractor a written notice specifying that the Contract is to be terminated.

Upon receipt of said written notice, Contractor shall stop all Work under the Contract except: (1) Work specifically directed to be completed prior to termination, (2) Work the Inspector deems necessary to secure the project for termination, (3) removal of equipment and plant from the site of the Work, (4) action that is necessary to protect materials from damage, (5) disposal of materials not yet used in the Work as directed by County, and (6) clean-up of the site.

If the Contract is terminated for County's convenience as provided herein, all finished or unfinished Work and materials previously paid for shall, at the option of County, become its property. Contractor shall be paid an amount which reflects costs incurred for Work provided to the date of notification of termination. In addition, Contractor shall be paid the reasonable cost, as solely judged by County, and without profit, for all Work performed to secure the project for termination.

#### **Article 10. TERMINATION BY COUNTY FOR CAUSE**

If Contractor is adjudged as bankrupt or insolvent, or makes a general assignment for the benefit of its creditors or if a trustee or receiver is appointed for Contractor or for any of its property, or if Contractor files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or on more than one occasion fails to supply sufficient skilled workmen or suitable material or equipment, or on more than one occasion fails to make prompt payments to subcontractors for labor, materials, or equipment, or disregards the authority of the County's representative, or the Engineer, if one is appointed, or violates any of the Contract assurances, nondiscrimination provisions or any other Federal or state requirements as identified in Section 7-1.02 of the Special Provisions, or otherwise violates any provision of the Contract Documents, then County may, without prejudice to any other right or remedy and after giving Contractor and its Surety a minimum of ten (10) days from delivery of a written termination notice, terminate the services of Contractor and take equipment and machinery thereon owned by Contractor and finish the Work by whatever method County may deem expedient. In such case, Contractor shall not be entitled to receive any further payment until the Work is finished.

Without prejudice to other rights or remedies County may have, if Contractor fails to begin delivery of materials and equipment, to commence Work within the time specified, to maintain the rate of delivery of material, to execute the Work in the manner and at such locations as specified, or fails to maintain a Work program which will ensure County's interest, or, if Contractor is not carrying out the intent of the Contract, an Inspector's written notice may be served upon Contractor and the Surety on its faithful performance bond demanding satisfactory compliance with the Contract. If Contractor or its Surety does not comply with such notice within five (5) days after receiving it, or after starting to comply, fails to continue, County may exclude it from the premises and take possession of all material and equipment, and complete the Work by County's own forces, by letting the unfinished Work to another Contractor, or by a combination of such methods.

Where Contractor's services have been so terminated by County, said termination shall not affect any right of County against Contractor then existing or which may thereafter accrue. Any retention or payment of monies by County due Contractor will not release Contractor from compliance with the Contract Documents.

If the unpaid balance of the Contract price exceeds the direct and indirect costs of completing the Work, including compensation for additional professional services, such excess shall be paid to Contractor. If the sums under the Contract are insufficient for completion, Contractor or Surety shall pay to County within five (5) days after the completion, all costs in excess of the Contract price. In any event, the cost of completing the Work shall be charged against Contractor and its Surety and may be deducted from any money due or becoming due from County.

The provisions of this Article shall be in addition to all other rights and remedies available to County under law.

If after notice of termination, it is determined for any reason that Contractor was not in default, the rights and obligations of the parties shall be the same as if the notice of termination had not been issued. The Contract shall be equitably adjusted to compensate for such termination.

#### **Article 11. SUCCESSORS AND ASSIGNS**

This Agreement shall bind and inure to the heirs, devisees, assignees, and successors in interest of Contractor and to the successors in interest of County in the same manner as if such parties had been expressly named herein.

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**Article 12. REPORTING ACCIDENTS**

Contractor shall prepare and submit (within 24 hours of such incidents) reports of accidents at the site and anywhere else the Work is in progress in which bodily injury is sustained or property loss in excess of Five Hundred Dollars (\$500.00) occurs.

**Article 13. EMISSIONS REDUCTION**

Contractor shall comply with emission reduction regulations mandated by the California Air Resources Board, and sign a certification of knowledge thereof:

**CERTIFICATE OF KNOWLEDGE – EMISSIONS REDUCTION REGULATIONS**

I am aware of the emissions reduction regulations being mandated by the California Air Resources Board. I will comply with such regulations before commencing the performance of the Work and maintain compliance throughout the duration of this Contract.

Signed: \_\_\_\_\_ Date \_\_\_\_\_

**Article 14. WORKERS' COMPENSATION CERTIFICATION**

Contractor shall comply with Labor Code Sections 3700 et seq., requiring it to obtain Workers' Compensation Insurance, and sign a certificate of knowledge thereof.

**CERTIFICATE OF KNOWLEDGE - LABOR CODE SECTION 3700**

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

Signed: \_\_\_\_\_ Date \_\_\_\_\_

**Article 15. WARRANTY**

Contractor warrants to County that materials and equipment furnished for the Work will be of good quality and new, unless otherwise required or permitted under the Contract Documents, that the Work will be free from defects or flaws and is of the highest quality of workmanship and that the Work will conform with the requirements herein. Work not conforming to these requirements, including substitutions not properly approved and authorized, shall be considered defective.

**Article 16. RETAINAGE**

The retainage from payment is set forth in Section 9-1.16F(1) of the Special Provisions. Contractor may elect to receive one hundred percent (100%) of payments due as set forth in the Contract Documents, without retention, by depositing securities of equivalent value with County, in accordance with, and as set forth in Section 22300 of the Public Contract Code. Securities eligible for deposit hereunder shall be limited to those listed in Section 16430 of the Government Code, or bank or savings and loan certificates of deposit.



## **Article 17. DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM**

The Contractor shall carry out applicable requirements of 2 CFR Part 200.321 in the award and administration of this UNITED STATES DEPARTMENT OF TRANSPORTATION (USDOT)-assisted Contract. The applicable requirements of 2 CFR Part 200.321 are as follows:

- (a) *Contracting with small and minority firms, women's business enterprise and labor surplus area firms.*
- (1) Contractor will take all necessary affirmative steps to assure that minority firms, women's business enterprises, and labor surplus area firms are used when possible.
  - (2) Affirmative steps shall include:
    - (i) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
    - (ii) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
    - (iii) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority business, and women's business enterprises;
    - (iv) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority business, and women's business enterprises;
    - (v) Using the services and assistance of the Small Business Administration, and the Minority Business Development Agency of the Department of Commerce; and
    - (vi) Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in paragraphs (a)(2) (i) through (v) of this section.

Bidder to take affirmative steps to assure that minority firms, women's business enterprises and labor surplus area firms are used when opportunities exist.

## **Article 18. PREVAILING WAGE REQUIREMENTS**

Contractor's attention is directed to the requirements of Division 2 Part 7, Chapter 1 of the California Labor Code, including but not limited to Sections 1773, 1773.1, 1773.2, 1773.6, and 1773.7. The general prevailing rate of wages in the county in which the Work is to be done has been determined by the Director of the California Department of Industrial Relations. Interested parties can obtain the current wage information by submitting their requests to the Department of Industrial Relations, Division of Labor Statistics and Research, PO Box 420603, San Francisco CA 94142-0603, Telephone (415) 703-4708 or by referring to the website at <http://www.dir.ca.gov/OPRL/PWD>. The rates at the time of the bid advertisement date of a project will remain in effect for the life of the project in accordance with the California Code of Regulations, as modified and effective January 27, 1997.

Copies of the general prevailing rate of wages in the county in which the Work is to be done are also on file at the Community Development Services, Department of Transportation's principal office, and are available upon request.

In accordance with the provisions of Labor Code 1810, eight (8) hours of labor constitutes a legal day's work upon all work done hereunder, and Contractor and any Subcontractor employed under this Contract must conform to and be bound by the provisions of Labor Code Sections 1810 through 1815.

This project is subject to the requirements of Title 8, Chapter 8, Subchapter 4.5 of the California Code of Regulations including the obligation to furnish certified payroll records directly to the Compliance Monitoring Unit under the Labor Commissioner within the Department of Industrial Relations Division of Labor Standards Enforcement in accordance with Section 16461.

#### **Article 19. NONDISCRIMINATION**

- A. In connection with its performance under this Contract, Contractor shall comply with all applicable nondiscrimination statutes and regulations during the performance of this Contract including, but not limited to the following: Contractor, its employees, subcontractors and representatives shall not unlawfully discriminate against any employee or applicant for employment because of race, color, sex, sexual orientation, religion, ancestry or national origin, physical disability, medical condition, marital status, political affiliation, family and medical care leave, pregnancy leave or disability leave. Contractor will take affirmative action to ensure that employees are treated during employment, without regard to their race, color, sex, sexual orientation, religion, ancestry or national origin, physical disability, medical condition, marital status, political affiliation, family and medical care leave, pregnancy leave or disability leave. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Contractor shall post in conspicuous places, available to employees for employment, notices to be provided by State setting forth the provisions of this Fair Employment section. Contractor shall, unless exempt, comply with the applicable provisions of the Fair Employment and Housing Act (Government Code, Sections 12900 et seq.) and applicable regulations promulgated thereunder (California Code of Regulations, Title 2, Sections 7285.0 et seq.); the applicable regulations of the Fair Employment and Housing Commission implementing Government Code, Section 12990, set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations incorporated into this Agreement by reference and made a part hereof as if set forth in full; and Title VI of the Civil Rights Act of 1964, as amended. Contractor, its employees, subcontractors and representatives shall give written notice of their obligations under this clause as required by law.
- B. Where applicable, Contractor shall include these nondiscrimination and compliance provisions in any of its subcontracts that affect or are related to the Work performed herein.
- C. The Congress of the United States, the Legislature of the State of California and the Governor of the State of California, each within their respective jurisdictions, have prescribed certain nondiscrimination requirements with respect to contract and other work financed with public funds. Contractor agrees to comply with the requirements of Exhibit B, marked "Fair Employment Practices Addendum" is incorporated herein and made by reference a part hereof. Contractor further agrees that any agreement entered into by Contractor with a third party for the performance of project-related Work shall incorporate Exhibit B (with third party's name replacing Contractor) as essential parts of such agreement to be enforced by that third party as verified by Contractor.
- D. Contractor's signature executing this Contract shall provide any certifications necessary under the Federal laws and the laws of the State of California, including but not limited to Government Code Section 12990 and Title 2, California Code of Regulations, Section 8103.

#### **Article 20. CONTRACTOR ASSURANCES**

By executing this Contract, Contractor certifies that it:

- a. Will abide by all administrative, contractual or legal remedies in instances where Contractor violates or breaches Contract terms, and will comply with sanctions and penalties as the Contract Administrator deems appropriate.

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- b. Will comply with the termination for cause and termination for convenience provisions of the Contract including the manner by which such termination may be effected and the basis for settlement afforded by those provisions.
- c. Will comply with County, State of California and FHWA requirements and regulations pertaining to: (a) reporting; (b) patent rights with respect to any discovery or invention which arises or is developed in the course of or under this Contract; and (c) copyrights and rights in data.
- d. Will comply with: (i) Section 504 of the Rehabilitation Act of 1973 (Rehabilitation Act) which prohibits discrimination on the basis of disability in Federally assisted programs; (ii) the Americans with Disabilities Act (ADA) of 1990 which prohibits discrimination on the basis of disability irrespective of funding; and (iii) all applicable regulations and guidelines issued pursuant to both the Rehabilitation Act and the ADA.
- e. Will comply with the Department of Industrial Relations pursuant to Labor Code sections 1725.5 and 1771.1.

Any Subcontract entered into as a result of this Contract shall contain all of the provisions of this Article.

**Article 21. BUSINESS LICENSE**

The County Business License Ordinance provides that it is unlawful for any person to furnish supplies or services, or transact any kind of business in the unincorporated territory of County of El Dorado without possessing a County business license unless exempt under County Ordinance Code Section 5.08.070. Contractor warrants and represents that it shall comply with all of the requirements of the County Business License Ordinance, where applicable, prior to beginning Work under this Contract and at all times during the term of this Contract.

**Article 22. TAXES**

Contractor certifies that as of today's date, it is not in default on any unsecured property taxes or other taxes or fees owed by Contractor to County. Contractor agrees that it shall not default on any obligations to County during the term of this Agreement.

**Article 23. CONTRACT ADMINISTRATOR**

The County Officer or employee with responsibility for administering this Agreement is Matthew D. Smeltzer, Deputy Director Engineering, Fairlane Unit, Community Development Services, Department of Transportation, or successor.

**Article 24. AUTHORIZED SIGNATURES**

The parties hereto represent that the undersigned individuals executing this Agreement on behalf of their respective parties are fully authorized to do so by law or other appropriate instrument and to bind upon said parties the obligations set forth herein.

**Article 25. PARTIAL INVALIDITY**

If any provision of this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions will continue in full force and effect without being impaired or invalidated in any way.

**Article 26. NO THIRD PARTY BENEFICIARIES**

Nothing in this Agreement is intended, nor will be deemed, to confer rights or remedies upon any person or legal entity not a party to this Agreement.

**Article 27. COUNTERPARTS**

This Agreement may be executed in one or more counterparts, each of which shall be an original and all of which together shall constitute one and the same instrument.

**Article 28. ENTIRE AGREEMENT**

This document and the documents referred to herein or exhibits hereto are the entire Agreement between the parties and they incorporate or supersede all prior written or oral agreements or understandings.

Draft

**IN WITNESS WHEREOF**, the said Community Development Services, Department of Transportation of the County of El Dorado, State of California, has caused this Agreement to be executed by County's Board of Supervisors, on its behalf, and the said Contractor has signed this Agreement the day and year written below.

**COUNTY OF EL DORADO**

Dated: \_\_\_\_\_

Chair, Board of Supervisors

Board Date: \_\_\_\_\_

Attest:  
James S. Mitrising  
Clerk of the Board of Supervisors

Dated: \_\_\_\_\_

Board Date: \_\_\_\_\_

Deputy Clerk

**CONTRACTOR**

Dated: \_\_\_\_\_

License No. \_\_\_\_\_ Federal Employee Identification Number \_\_\_\_\_

By: \_\_\_\_\_  
President

By: \_\_\_\_\_  
Corporate Secretary

NOTE: If Contractor is a corporation, the legal name of the corporation shall be set forth above together with the signature of the officer or officers authorized to sign Contracts on behalf of the corporation; if Contractor is a co-partnership, the true name of the firm shall be set forth above together with the signature of the partner or partners authorized to sign Contracts on behalf of the co-partnership; and if Contractor is an individual, his/her signature shall be placed above. Contractor executing this document on behalf of a corporation or partnership shall be prepared to demonstrate by resolution, article, or otherwise that it is appropriately authorized to act in these regards. For such corporation or partnership, such authority shall be demonstrated to the satisfaction of County. If signature is by an agent, other than officer of a corporation or a member of a partnership, an appropriate Power of Attorney shall be on file with the County prior to signing this document.

Mailing Address: \_\_\_\_\_

Business Address: \_\_\_\_\_

Email Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

**EXHIBIT A**  
**CONTRACTOR'S BID AND BID PRICE SCHEDULE**  
**DIAMOND SPRINGS PARKWAY – PHASE 1A – SR-49 REALIGNMENT**  
**CIP No. 72375, CONTRACT No. 2720**

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (IN FIGURES)	ITEM TOTAL (IN FIGURES)
1	70030	LEAD COMPLIANCE PLAN	LS	1		
2	72007A	EXCAVATION SAFETY	LS	1		
3	80050	PROGRESS SCHEDULE (CRITICAL PATH METHOD)	LS	1		
4	100100	DEVELOP WATER SUPPLY	LS	1		
5	120090	CONSTRUCTION AREA SIGNS	LS	1		
6	120100	TRAFFIC CONTROL SYSTEM	LS	1		
7	120149	TEMPORARY PAVEMENT MARKING (PAINT)	SF	531		
8	120159	TEMPORARY TRAFFIC STRIPE (PAINT)	LF	21,922		
9	120300	TEMPORARY PAVEMENT MARKER	EA	500		
10	128652	PORTABLE CHANGEABLE MESSAGE SIGN (LS)	LS	1		
11	129000	TEMPORARY RAILING (TYPE K)	LF	2,100		
12	129110A	TEMPORARY CRASH CUSHION (ABSORB 350)	EA	4		
13	130100	JOB SITE MANAGEMENT	LS	1		
14	130300	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	1		

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15	130310		RAIN EVENT ACTION PLAN	EA	40	500	20,000
16	130320		STORM WATER SAMPLING AND ANALYSIS DAY	EA	40		
17	130330		STORM WATER ANNUAL REPORT	EA	2	2,500	5,000
18	149001A		PREPARE FUGITIVE DUST CONTROL PLAN	LS	1		
19	153249A		DEMOLISH EXISTING PRESSURE REDUCING STATION VAULT	EA	1		
20	170103		CLEARING AND GRUBBING (LS)	LS	1		
21	190101	F	ROADWAY EXCAVATION	CY	69,500		
22	192037	F	STRUCTURE EXCAVATION (RETAINING WALL)	CY	1,467		
23	193013		STRUCTURE BACKFILL (RETAINING WALL)	CY	1,139		
24	193031		PERVIOUS BACKFILL MATERIAL (RETAINING WALL)	CY	43		
25	194001	F	DITCH EXCAVATION	CY	170		
26	202026A		REMOVE AND RELOCATE AIR RELEASE VALVE	EA	1		
27	202027		RELOCATE WATER METER	EA	4		
28	208430A		INSTALL FIRE HYDRANT	EA	2		
29	208590	P	6" GATE VALVE	EA	3		
30	208591	P	8" GATE VALVE	EA	9		
31	208591A	P	12" GATE VALVE	EA	13		
32	208633A	P	1" AIR RELEASE VALVE	EA	1		

33	208635A	P	2" AIR RELEASE VALVE	EA	1		
34	208640A		4" BLOWOFF VALVE	EA	4		
35	210270		ROLLED EROSION CONTROL PRODUCT (NETTING)	SF	24,900		
36	210280		ROLLED EROSION CONTROL PRODUCT (BLANKET)	SF	134,000		
37	210430		HYDROSEED	SF	201,000		
38	260203		CLASS 2 AGGREGATE BASE (CY)	CY	11,100		
39	390132		HOT MIX ASPHALT (TYPE A)	TON	9,913		
40	390402		RUBBERIZED HOT MIX ASPHALT-OPEN GRADED (OPEN GRADED FRICTION COURSE)	TON	151		
41	394073		PLACE HOT MIX ASPHALT DIKE (TYPE A)	LF	985		
42	394076		PLACE HOT MIX ASPHALT DIKE (TYPE E)	LF	2,085		
43	394090		PLACE HOT MIX ASPHALT (MISCELLANEOUS AREA)	SY	78		
44	398200		COLD PLANE ASPHALT CONCRETE PAVEMENT	SY	4,303		
45	475010A	P-F	RECONSTRUCT RETAINING WALL	LS	1		
46	510060	F	STRUCTURAL CONCRETE, RETAINING WALL	CY	365		
47	510061	F	STRUCTURAL CONCRETE, SOUND WALL	CY	41		
48	511035	F	ARCHITECTURAL TREATMENT	SF	961		
49	520103	P-F	BAR REINFORCING STEEL (RETAINING WALL)	LB	18,977		
50	582001	P-F	SOUND WALL (MASONRY BLOCK)	SF	1,098		

51	600051		REMOVE SOUND WALL (LF)	LF	256		
52	610107	P	15" ALTERNATIVE PIPE CULVERT	LF	106		
53	610108	P	18" ALTERNATIVE PIPE CULVERT	LF	1,388		
54	610300	F	CONCRETE BACKFILL (PIPE TRENCH)	CY	9		
55	641101A		1" PVC (SCHEDULE 80)	LF	307		
56	641101B		6" PVC SEWERLINE	LF	127		
57	641101C		8" PVC WATERLINE (C900 DR14)	LF	617		
58	650012	P	15" REINFORCED CONCRETE PIPE	LF	17		
59	650014	P	18" REINFORCED CONCRETE PIPE	LF	110		
60	665010A	P	12" DUCTILE IRON	LF	2,532		
61	665012	P	12" CORRUGATED STEEL PIPE (.079" THICK)	LF	4		
62	680902	P	6" PERFORATED PLASTIC PIPE UNDERDRAIN	LF	850		
63	680903	P	6" NON-PERFORATED PLASTIC PIPE UNDERDRAIN	LF	23		
64	702016A		8" TO 6" REDUCER	EA	1		
65	702016B		12" TO 8" REDUCER	EA	1		
66	705309		15" ALTERNATIVE FLARED END SECTION	EA	2		
67	705311		18" ALTERNATIVE FLARED END SECTION	EA	2		
68	707117A		DRAINAGE INLET	EA	11		

69	707217A		36" SEWER MANHOLE	EA	2		
70	707225A		STORM DRAIN MANHOLE	EA	1		
71	710114		ABANDON PIPELINE	LF	2,400		
72	710132		REMOVE CULVERT (LF)	LF	38		
73	710136A		REMOVE WATERLINE	LF	650		
74	710150		REMOVE INLET	EA	1		
75	710152		REMOVE HEADWALL	EA	1		
76	710167		REMOVE FLARED END SECTION (EA)	EA	2		
77	710216		ADJUST PIPE INLET TO GRADE	EA	2		
78	710252A		MODIFY EXISTING STORM DRAIN MANHOLE	EA	1		
79	721026	F	ROCK SLOPE PROTECTION (NO. 1, METHOD B) (CY)	CY	36		
80	729011	F	ROCK SLOPE PROTECTION FABRIC (CLASS 8)	SY	120		
81	730010		MINOR CONCRETE (CURB) (LF)	LF	2,958		
82	730040		MINOR CONCRETE (GUTTER) (LF)	LF	135		
83	730040A		MINOR CONCRETE (GUTTER) (RETAINING WALL)	LF	175		
84	731502A		MINOR CONCRETE (CONCRETE PAD)	CY	2		
85	731504		MINOR CONCRETE (CURB AND GUTTER)	LF	562		
86	731521		MINOR CONCRETE (SIDEWALK)	CY	150		



87	731623		MINOR CONCRETE (CURB RAMP)	EA	10		
88	731710		REMOVE CONCRETE CURB (LF)	LF	491		
89	731780		REMOVE CONCRETE SIDEWALK (SQYD)	SY	94		
90	780460	F	ANTI-GRAFFITI COATING	SF	1,672		
91	782120		RELOCATE MAILBOX	EA	3		
92	800002	P	FENCE (TYPE BW, WOOD POST)	LF	766		
93	800051	P	FENCE (TYPE WM, METAL POST)	LF	915		
94	800060A		FENCE (TYPE WOOD, 6 FOOT)	LF	146		
95	800100A		TEMPORARY FENCE (TYPE ESA)	LF	4,054		
96	800360A	P	CHAIN LINK FENCE (TYPE CL-6) (MOD)	LF	1,568		
97	802620		16' CHAIN LINK GATE (TYPE CL-6)	EA	1		
98	802670		24' CHAIN LINK GATE (TYPE CL-6)	EA	2		
99	803020		REMOVE FENCE	LF	4,215		
100	810120		REMOVE PAVEMENT MARKER	EA	199		
101	810180		DELINEATOR (CLASS 2)	EA	15		
102	810250	P	PAVEMENT MARKER (RETROREFLECTIVE-RECESSED)	EA	370		
103	820110		MILEPOST MARKER	EA	5		
104	820112		MARKER (CULVERT)	EA	3		

105	820141		OBJECT MARKER (TYPE K-1)	EA	2		
106	820250		REMOVE ROADSIDE SIGN	EA	7		
107	820530		RESET ROADSIDE SIGN	EA	4		
108	820610		RELOCATE ROADSIDE SIGN	EA	13		
109	820750		FURNISH SINGLE SHEET ALUMINUM SIGN (0.063"-UNFRAMED)	SF	100		
110	820760		FURNISH SINGLE SHEET ALUMINUM SIGN (0.080"-UNFRAMED)	SF	23		
111	820790		FURNISH SINGLE SHEET ALUMINUM SIGN (0.080"-FRAMED)	SF	48		
112	820840		ROADSIDE SIGN - ONE POST	EA	7		
113	820850		ROADSIDE SIGN - TWO POST	EA	2		
114	839521	P-F	CABLE RAILING	LF	177		
115	839701		CONCRETE BARRIER (TYPE 60)	LF	15		
116	839704		CONCRETE BARRIER (TYPE 60D)	LF	175		
117	840502		THERMOPLASTIC TRAFFIC STRIPE (ENHANCED WET NIGHT VISIBILITY)	LF	22,462		
118	840516		THERMOPLASTIC PAVEMENT MARKING (ENHANCED WET NIGHT VISIBILITY)	SF	2,005		
119	846030		REMOVE THERMOPLASTIC TRAFFIC STRIPE	LF	7,225		
120	846035		REMOVE THERMOPLASTIC PAVEMENT MARKING	SF	774		
121	870400A		MODIFY SIGNAL AND LIGHTING	LS	1		

122	995200A		WATER SERVICE	EA	9		
123	995200B		SEWER SERVICE	EA	1		
124	999990		MOBILIZATION	LS	1		
						<b>Total Bid:</b>	

(F) Final Pay Quantity  
(P) Eligible for Partial Payment  
(LS) Lump Sum

Draft

## EXHIBIT B

### FAIR EMPLOYMENT PRACTICES ADDENDUM

1. In the performance of this Agreement, Contractor will not discriminate against any employee for employment because of race, color, sex, sexual orientation, religion, ancestry or national origin, physical disability, medical condition, marital status, political affiliation, family and medical care leave, pregnancy leave or disability leave. Contractor will take affirmative action to ensure that employees are treated during employment, without regard to their race, color, sex, sexual orientation, religion, ancestry or national origin, physical disability, medical condition, marital status, political affiliation, family and medical care leave, pregnancy leave or disability leave. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Contractor shall post in conspicuous places, available to employees for employment, notices to be provided by State setting forth the provisions of this Fair Employment section.
2. Contractor and all Subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code Section 1290-0 et seq.), and the applicable regulations promulgated thereunder (California Code of Regulations, Title 2, Section 7285.0 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code, Section 12900(a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations are incorporated into this Agreement by reference and made a part hereof as if set forth in full. Each of Contractor's contractors and all Subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreements, as appropriate.
3. Contractor shall include the nondiscrimination and compliance provisions of this clause in all contracts and subcontracts to perform Work under this Agreement.
4. Contractor will permit access to the records of employment, employment advertisements, application forms and other pertinent data and records by County, State, the State Fair Employment and Housing Commission or any other agency of the State of California designated by State, for the purposes of investigation to ascertain compliance with the Fair Employment section of this Agreement.
5. Remedies for Willful Violation:
  - (a) County may determine a willful violation of the Fair Employment provision to have occurred upon receipt of a final judgment to that effect from a court in an action to which Contractor was a party, or upon receipt of a written notice from the Fair Employment and Housing Commission that it has investigated and determined that Contractor has violated the Fair Employment Practices Act and had issued an order under Labor Code Section 1426 which has become final or has obtained an injunction under Labor Code Section 1429.
  - (b) For willful violation of this Fair Employment provision, County shall have the right to terminate this Agreement either in whole or in part, and any loss or damage sustained by County in securing the goods or services thereunder shall be borne and paid for by Contractor and by the surety under the performance bond, if any, and County may deduct from any moneys due or thereafter may become due to Contractor, the difference between the price named in the Agreement and the actual cost thereof to County to cure Contractor's breach of this Agreement.

**COUNTY OF EL DORADO**

**PAYMENT BOND**

(Section 3247, Civil Code)

**Bond No.** \_\_\_\_\_

WHEREAS, the County of El Dorado, a political subdivision of the State of California, hereafter referred to as "Obligee", has awarded to Contractor

\_\_\_\_\_ hereafter referred to as "Principal", a Contract for the Work described as follows:

**DIAMOND SPRINGS PARKWAY – PHASE 1A – SR-49 REALIGNMENT**

**CIP No. 72375, CONTRACT No. 2720**

WHEREAS, the State of California, acting through its Department of Transportation is hereafter referred to as "Additional Obligee", both Obligee and Additional Obligee collectively referred to as "Obligees";

AND, WHEREAS, said Principal is required to furnish a bond in connection with said Contract, guaranteeing the faithful performance thereof:

NOW, THEREFORE, we the undersigned Principal and Surety are held and firmly bound unto the Obligees, in the sum of \_\_\_\_\_ Dollars,

(\$ \_\_\_\_\_) to be paid to the Obligees, for which payment we bind ourselves, jointly and severally.

THE CONDITION OF THIS OBLIGATION IS SUCH,

That if said Principal or its Subcontractors shall fail to pay any of the persons named in Civil Code Section 3181, or amounts due under the Unemployment Insurance Code with respect to Work or labor performed by such claimant, or any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board from the wages of employees of the Principal and his Subcontractors pursuant to Section 18806 of the Revenue and Taxation Code, with respect to such Work and labor, that the Surety herein will pay for the same in an amount not exceeding the sum specified in this bond, otherwise the above obligation shall be void. In case suit is brought upon this bond, the Surety will pay a reasonable attorney's fee to be fixed by the court.

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

Dated: \_\_\_\_\_

Correspondence or Claims relating to this bond should be sent to the Surety at the following address:

_____	_____	PRINCIPAL
_____	_____	SURETY
_____	_____	ATTORNEY-IN-FACT

NOTE: Signatures of those executing for the Principal and for the Surety must be properly acknowledged, and a Power of Attorney attached for the Surety.

**NOTARY ACKNOWLEDGMENTS ATTACHED**

# PRINCIPAL

## ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

County of \_\_\_\_\_

On \_\_\_\_\_ before me, \_\_\_\_\_,

(here insert name and title of the officer)

personally appeared \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature \_\_\_\_\_

(Seal)

# SURETY

## ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

County of \_\_\_\_\_

On \_\_\_\_\_ before me, \_\_\_\_\_,

(here insert name and title of the officer)

personally appeared \_\_\_\_\_

\_\_\_\_\_

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature \_\_\_\_\_

(Seal)

**COUNTY OF EL DORADO  
PERFORMANCE BOND**

Bond No. \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that we \_\_\_\_\_

the Contractor in the Contract hereto annexed, as Principal, and \_\_\_\_\_

as Surety, are held firmly bound unto the County of El Dorado, a political subdivision of the State of California, hereinafter called the "Obligee" **and the State of California, acting through its Department of Transportation, hereafter referred to as "Additional Obligee"**, both Obligee and Additional Obligee collectively referred to as "Obligees"

in the sum of \_\_\_\_\_ DOLLARS,

(\$ \_\_\_\_\_) lawful money of the United States, for which payment, well and truly to be made, we bind ourselves, jointly and severally, firmly by these presents.

Signed, sealed and dated: \_\_\_\_\_

The condition of the above obligation is such that if said Principal as Contractor in the Contract hereto annexed shall faithfully perform each and all of the conditions of said Contract to be performed by him, and shall furnish all tools, equipment, apparatus, facilities, transportation, labor and material, other than material, if any, agreed to be furnished by the Obligees, necessary to perform and complete, and to perform and complete in a good and workmanlike manner, the Work of **CIP No. 72375, Contract No. 2720 for the Diamond Springs Parkway – Phase 1A – SR-49 Realignment** in strict conformity with the terms and conditions set forth in the Contract hereto annexed, then this obligation shall be null and void; otherwise this bond shall remain in full force and effect and the said Surety will complete the Contract Work under its own supervision, by Contract or otherwise, and pay all costs thereof for the balance due under terms of the Contract, and the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the Work to be performed thereunder shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the Work.

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

This guarantee shall insure the Obligees during the Work required by any Contract and for a period of one (1) year from the date of acceptance of the Work against faulty or improper materials or workmanship that may be discovered during that time.

No right of action shall accrue under this bond to or for the use of any person other than the Obligees named herein.

Dated: \_\_\_\_\_, 20\_\_\_\_\_.

Correspondence or Claims relating to this bond should be sent to the Surety at the following address:

\_\_\_\_\_  
PRINCIPAL

\_\_\_\_\_  
SURETY

\_\_\_\_\_  
ATTORNEY-IN-FACT

NOTE: Signatures of those executing for the Principal and the Surety must be properly acknowledged, and a Power of Attorney attached for the Surety.

**NOTARY ACKNOWLEDGMENTS ATTACHED**



# PRINCIPAL

## ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

County of \_\_\_\_\_

On \_\_\_\_\_ before me, \_\_\_\_\_,

(here insert name and title of the officer)

personally appeared \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature \_\_\_\_\_

(Seal)

# SURETY

## ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

County of \_\_\_\_\_

On \_\_\_\_\_ before me, \_\_\_\_\_,

(here insert name and title of the officer)

personally appeared \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature \_\_\_\_\_

(Seal)

COMPLETING BID IN PENCIL, ERASURES, OVERWRITES, AND USE OF CORRECTION FLUID OR TAPE ARE NOT ACCEPTABLE. BID PROPOSALS WITH PENCIL, ERASURES, OVERWRITES, OR USE OF CORRECTION FLUID OR TAPE WILL BE REJECTED. ALL CHANGES MUST BE LINED OUT AND CORRECTIONS INSERTED ADJACENT TO AND INITIALED BY THE BIDDER'S AUTHORIZED REPRESENTATIVE.

## PROPOSAL

(to be submitted with Bidder's Security)

TO: COUNTY OF EL DORADO,  
STATE OF CALIFORNIA  
COMMUNITY DEVELOPMENT SERVICES  
DEPARTMENT OF TRANSPORTATION,

for the construction of the

**DIAMOND SPRINGS PARKWAY – PHASE 1A – SR-49 REALIGNMENT  
CIP No. 72375, CONTRACT No. 2720**

NAME OF BIDDER \_\_\_\_\_

MAILING ADDRESS \_\_\_\_\_

CITY, STATE, ZIP \_\_\_\_\_

PHYSICAL ADDRESS \_\_\_\_\_

*(Please include even if Mailing Address used)*

CITY, STATE, ZIP \_\_\_\_\_

TELEPHONE NO:      AREA CODE (      ) \_\_\_\_\_

FAX NO:              AREA CODE (      ) \_\_\_\_\_

EMAIL ADDRESS \_\_\_\_\_

The Work for which this Proposal is submitted is for the construction in accordance with these Contract Documents (including the payment of not less than the State general prevailing wage rates set forth herein), the Project Plans described below, including any addenda thereto, the Contract annexed hereto, and also in accordance with the California Department of Transportation Standard Plans 2015, the Standard Specifications 2015, Revised Standard Specifications, standard drawings from the Design and Improvement Standards Manual of the County of El Dorado, revised March 8, 1994 including Resolutions 199-91 and 58-94 to adopt changes to the Design and Improvement Standards Manual; the Labor Surcharge and Equipment Rental Rates in effect on the date the Work is accomplished, and in accordance with the General Prevailing Wage rates. The Project Plans and Contract Documents for the Work to be done are entitled:

## **DIAMOND SPRINGS PARKWAY – PHASE 1A – SR-49 REALIGNMENT CIP No. 72375, CONTRACT No. 2720**

Bids are to be submitted for the entire Work. The amount of the bid for comparison purposes will be the total of all the items.

The Bidder shall set forth for each unit basis item of work a unit price and a total for the item, and for each lump sum item a total for the item, all in clearly legible figures in the respective spaces provided for this purpose. In the case of unit basis items, the amount set forth under the "Item Total" column shall be the product of the unit price bid and the estimated quantity for the item.

In case of discrepancy between the item price and the total set forth for a unit basis item, the unit price shall prevail, except as provided in (a) or (b), as follows:

- (a) If the amount set forth as a unit price is unreadable or otherwise unclear, or is omitted, or is the same as the amount as the entry in the item total column, then the amount set forth in the total column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price;
- (b) (Decimal Errors) If the product of the entered unit price and the estimated quantity is exactly off by a factor of ten, one hundred, etc., or one-tenth, or one-hundredth, etc., from the entered total, the discrepancy will be resolved by using the entered unit price or item total, whichever most closely approximates percentage wise the unit price or item total in the Community Development Services, Department of Transportation's Final Estimate of cost.

If this Proposal is accepted and the undersigned Bidder shall fail to enter into the Contract and furnish the two bonds in the sums required by the State Contract Act, with surety satisfaction to the County of El Dorado and submit escrow bid documents in accordance with the Special Provisions within ten (10) days, not including Saturdays, Sundays, and legal holidays, of the date of the letter notice from the County of El Dorado that the Contract has been awarded, the County of El Dorado may, at its option, determine that the Bidder has abandoned the Contract, and thereupon this Proposal and the acceptance thereof shall be null and void and the forfeiture of such security accompanying this Proposal shall operate and the same shall be the property of the County of El Dorado.

The undersigned, as Bidder, declares under penalty of perjury under the laws of the State of California that the only persons or parties interested in this Proposal, as principals, are those named herein; that this Proposal is made without collusion with any other person, firm, or corporation; that it has carefully examined the location of the proposed work, the annexed proposed form of Contract, and the Plans therein referred to; and that it proposes, and agrees if this Proposal is accepted, that it will contract with the County of El Dorado, in the form of the copy of the Draft Contract annexed hereto, to provide all necessary machinery, tools, apparatus, and other means of construction, and to do all the work and furnish all the materials specified in the Contract, in the manner and time therein prescribed, and according to the requirements of the Engineer as therein set forth, and that it will take in full payment therefore the following item prices, to wit:

**PROPOSAL PAY ITEMS AND BID PRICE SCHEDULE  
DIAMOND SPRINGS PARKWAY – PHASE 1A – SR-49 REALIGNMENT  
CIP No. 72375, CONTRACT No. 2720**

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (IN FIGURES)	ITEM TOTAL (IN FIGURES)
1	70030	LEAD COMPLIANCE PLAN	LS	1		
2	72007A	EXCAVATION SAFETY	LS	1		
3	80050	PROGRESS SCHEDULE (CRITICAL PATH METHOD)	LS	1		
4	100100	DEVELOP WATER SUPPLY	LS	1		
5	120090	CONSTRUCTION AREA SIGNS	LS	1		
6	120100	TRAFFIC CONTROL SYSTEM	LS	1		
7	120149	TEMPORARY PAVEMENT MARKING (PAINT)	SF	531		
8	120159	TEMPORARY TRAFFIC STRIPE (PAINT)	LF	21,922		
9	120300	TEMPORARY PAVEMENT MARKER	EA	500		
10	128652	PORTABLE CHANGEABLE MESSAGE SIGN (LS)	LS	1		
11	129000	TEMPORARY RAILING (TYPE K)	LF	2,100		
12	129110A	TEMPORARY CRASH CUSHION (ABSORB 350)	EA	4		
13	130100	JOB SITE MANAGEMENT	LS	1		
14	130300	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	1		
15	130310	RAIN EVENT ACTION PLAN	EA	40	500	20,000
16	130320	STORM WATER SAMPLING AND ANALYSIS DAY	EA	40		

17	130330		STORM WATER ANNUAL REPORT	EA	2	2,500	5,000
18	149001A		PREPARE FUGITIVE DUST CONTROL PLAN	LS	1		
19	153249A		DEMOLISH EXISTING PRESSURE REDUCING STATION VAULT	EA	1		
20	170103		CLEARING AND GRUBBING (LS)	LS	1		
21	190101	F	ROADWAY EXCAVATION	CY	69,500		
22	192037	F	STRUCTURE EXCAVATION (RETAINING WALL)	CY	1,467		
23	193013		STRUCTURE BACKFILL (RETAINING WALL)	CY	1,139		
24	193031		PERVIOUS BACKFILL MATERIAL (RETAINING WALL)	CY	43		
25	194001	F	DITCH EXCAVATION	CY	170		
26	202026A		REMOVE AND RELOCATE AIR RELEASE VALVE	EA	1		
27	202027		RELOCATE WATER METER	EA	4		
28	208430A		INSTALL FIRE HYDRANT	EA	2		
29	208590	P	6" GATE VALVE	EA	3		
30	208591	P	8" GATE VALVE	EA	9		
31	208591A	P	12" GATE VALVE	EA	13		
32	208633A	P	1" AIR RELEASE VALVE	EA	1		
33	208635A	P	2" AIR RELEASE VALVE	EA	1		
34	208640A		4" BLOWOFF VALVE	EA	4		

35	210270		ROLLED EROSION CONTROL PRODUCT (NETTING)	SF	24,900		
36	210280		ROLLED EROSION CONTROL PRODUCT (BLANKET)	SF	134,000		
37	210430		HYDROSEED	SF	201,000		
38	260203		CLASS 2 AGGREGATE BASE (CY)	CY	11,100		
39	390132		HOT MIX ASPHALT (TYPE A)	TON	9,913		
40	390402		RUBBERIZED HOT MIX ASPHALT-OPEN GRADED (OPEN GRADED FRICTION COURSE)	TON	151		
41	394073		PLACE HOT MIX ASPHALT DIKE (TYPE A)	LF	985		
42	394076		PLACE HOT MIX ASPHALT DIKE (TYPE E)	LF	2,085		
43	394090		PLACE HOT MIX ASPHALT (MISCELLANEOUS AREA)	SY	78		
44	398200		COLD PLANE ASPHALT CONCRETE PAVEMENT	SY	4,303		
45	475010A	P-F	RECONSTRUCT RETAINING WALL	LS	1		
46	510060	F	STRUCTURAL CONCRETE, RETAINING WALL	CY	365		
47	510061	F	STRUCTURAL CONCRETE, SOUND WALL	CY	41		
48	511035	F	ARCHITECTURAL TREATMENT	SF	961		
49	520103	P-F	BAR REINFORCING STEEL (RETAINING WALL)	LB	18,977		
50	582001	P-F	SOUND WALL (MASONRY BLOCK)	SF	1,098		
51	600051		REMOVE SOUND WALL (LF)	LF	256		
52	610107	P	15" ALTERNATIVE PIPE CULVERT	LF	106		

53	610108	P	18" ALTERNATIVE PIPE CULVERT	LF	1,388		
54	610300	F	CONCRETE BACKFILL (PIPE TRENCH)	CY	9		
55	641101A		1" PVC (SCHEDULE 80)	LF	307		
56	641101B		6" PVC SEWERLINE	LF	127		
57	641101C		8" PVC WATERLINE (C900 DR14)	LF	617		
58	650012	P	15" REINFORCED CONCRETE PIPE	LF	17		
59	650014	P	18" REINFORCED CONCRETE PIPE	LF	110		
60	665010A	P	12" DUCTILE IRON	LF	2,532		
61	665012	P	12" CORRUGATED STEEL PIPE (.079" THICK)	LF	4		
62	680902	P	6" PERFORATED PLASTIC PIPE UNDERDRAIN	LF	850		
63	680903	P	6" NON-PERFORATED PLASTIC PIPE UNDERDRAIN	LF	23		
64	702016A		8" TO 6" REDUCER	EA	1		
65	702016B		12" TO 8" REDUCER	EA	1		
66	705309		15" ALTERNATIVE FLARED END SECTION	EA	2		
67	705311		18" ALTERNATIVE FLARED END SECTION	EA	2		
68	707117A		DRAINAGE INLET	EA	11		
69	707217A		36" SEWER MANHOLE	EA	2		
70	707225A		STORM DRAIN MANHOLE	EA	1		



71	710114		ABANDON PIPELINE	LF	2,400		
72	710132		REMOVE CULVERT (LF)	LF	38		
73	710136A		REMOVE WATERLINE	LF	650		
74	710150		REMOVE INLET	EA	1		
75	710152		REMOVE HEADWALL	EA	1		
76	710167		REMOVE FLARED END SECTION (EA)	EA	2		
77	710216		ADJUST PIPE INLET TO GRADE	EA	2		
78	710252A		MODIFY EXISTING STORM DRAIN MANHOLE	EA	1		
79	721026	F	ROCK SLOPE PROTECTION (NO. 1, METHOD B) (CY)	CY	36		
80	729011	F	ROCK SLOPE PROTECTION FABRIC (CLASS 8)	SY	120		
81	730010		MINOR CONCRETE (CURB) (LF)	LF	2,958		
82	730040		MINOR CONCRETE (GUTTER) (LF)	LF	135		
83	730040A		MINOR CONCRETE (GUTTER) (RETAINING WALL)	LF	175		
84	731502A		MINOR CONCRETE (CONCRETE PAD)	CY	2		
85	731504		MINOR CONCRETE (CURB AND GUTTER)	LF	562		
86	731521		MINOR CONCRETE (SIDEWALK)	CY	150		
87	731623		MINOR CONCRETE (CURB RAMP)	EA	10		
88	731710		REMOVE CONCRETE CURB (LF)	LF	491		

89	731780		REMOVE CONCRETE SIDEWALK (SQYD)	SY	94		
90	780460	F	ANTI-GRAFFITI COATING	SF	1,672		
91	782120		RELOCATE MAILBOX	EA	3		
92	800002	P	FENCE (TYPE BW, WOOD POST)	LF	766		
93	800051	P	FENCE (TYPE WM, METAL POST)	LF	915		
94	800060A		FENCE (TYPE WOOD, 6 FOOT)	LF	146		
95	800100A		TEMPORARY FENCE (TYPE ESA)	LF	4,054		
96	800360A	P	CHAIN LINK FENCE (TYPE CL-6) (MOD)	LF	1,568		
97	802620		16' CHAIN LINK GATE (TYPE CL-6)	EA	1		
98	802670		24' CHAIN LINK GATE (TYPE CL-6)	EA	2		
99	803020		REMOVE FENCE	LF	4,215		
100	810120		REMOVE PAVEMENT MARKER	EA	199		
101	810180		DELINEATOR (CLASS 2)	EA	15		
102	810250	P	PAVEMENT MARKER (RETROREFLECTIVE-RECESSED)	EA	370		
103	820110		MILEPOST MARKER	EA	5		
104	820112		MARKER (CULVERT)	EA	3		
105	820141		OBJECT MARKER (TYPE K-1)	EA	2		
106	820250		REMOVE ROADSIDE SIGN	EA	7		

107	820530		RESET ROADSIDE SIGN	EA	4		
108	820610		RELOCATE ROADSIDE SIGN	EA	13		
109	820750		FURNISH SINGLE SHEET ALUMINUM SIGN (0.063"-UNFRAMED)	SF	100		
110	820760		FURNISH SINGLE SHEET ALUMINUM SIGN (0.080"-UNFRAMED)	SF	23		
111	820790		FURNISH SINGLE SHEET ALUMINUM SIGN (0.080"-FRAMED)	SF	48		
112	820840		ROADSIDE SIGN - ONE POST	EA	7		
113	820850		ROADSIDE SIGN - TWO POST	EA	2		
114	839521	P-F	CABLE RAILING	LF	177		
115	839701		CONCRETE BARRIER (TYPE 60)	LF	15		
116	839704		CONCRETE BARRIER (TYPE 60D)	LF	175		
117	840502		THERMOPLASTIC TRAFFIC STRIPE (ENHANCED WET NIGHT VISIBILITY)	LF	22,462		
118	840516		THERMOPLASTIC PAVEMENT MARKING (ENHANCED WET NIGHT VISIBILITY)	SF	2,005		
119	846030		REMOVE THERMOPLASTIC TRAFFIC STRIPE	LF	7,225		
120	846035		REMOVE THERMOPLASTIC PAVEMENT MARKING	SF	774		
121	870400A		MODIFY SIGNAL AND LIGHTING	LS	1		
122	995200A		WATER SERVICE	EA	9		
123	995200B		SEWER SERVICE	EA	1		
124	999990		MOBILIZATION	LS	1		
<b>Total Bid:</b>							

(F) Final Pay Quantity  
(P) Eligible for Partial Payment  
(LS) Lump Sum

**(NOTICE: Bidders failure to execute the questionnaires and statements contained in this proposal as required by applicable laws and regulations, or the determinations by County of El Dorado based upon those questionnaires and statements, may prohibit award of the subject Contract to the bidder.)**

## SUBCONTRACTOR LIST

The Bidder must list the name, address, license number, and DIR number of each subcontractor to whom the Bidder proposes to subcontract portions of the Work in excess of 0.5% of the total bid, as required by the Contract Documents. The Bidder must also list the Work portion to be performed by each subcontractor by listing the bid item number, bid item description, and portion of the Work to be performed by the subcontractor in the form of a percentage calculated by dividing the Work to be performed by the subcontractor by the respective bid item amount(s) (not by the total bid price).

Firm Name Address City, State, Zip Code	Phone Fax	License No. DIR No.	Bid Item Number Bid Item Description	Percentage of Each Bid Item Subcontracted
<i>Name</i>	<i>Phone</i>	<i>License No.</i>		
<i>Address</i>				
<i>City, State, Zip Code</i>	<i>Fax</i>	<i>DIR No.</i>		
<i>Name</i>	<i>Phone</i>	<i>License No.</i>		
<i>Address</i>				
<i>City, State, Zip Code</i>	<i>Fax</i>	<i>DIR No.</i>		
<i>Name</i>	<i>Phone</i>	<i>License No.</i>		
<i>Address</i>				
<i>City, State, Zip Code</i>	<i>Fax</i>	<i>DIR No.</i>		
<i>Name</i>	<i>Phone</i>	<i>License No.</i>		
<i>Address</i>				
<i>City, State, Zip Code</i>	<i>Fax</i>	<i>DIR No.</i>		

## Public Contract Code Section 10285.1 Statement

In conformance with Public Contract Code Section 10285.1 (Chapter 376, Stats. 1985), the Bidder hereby declares under penalty of perjury under the laws of the State of California that the Bidder has \_\_\_\_\_, has not \_\_\_\_\_ been convicted within the preceding three years of any offenses referred to in that section, including any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or Federal antitrust law in connection with the bidding upon, award of, or performance of, any public works contract, as defined in Public Contract Code Section 1101, with any public entity, as defined in Public Contract Code Section 1100, including the Regents of the University of California or the Trustees of the California State University. The term "Bidder" is understood to include any partner, member, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

**Note:** The Bidder must place a check mark after "has" or "has not" in one of the blank spaces provided. The above Statement is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Statement. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

## Public Contract Code Section 10162 Questionnaire

In conformance with Public Contract Code Section 10162, the Bidder shall complete, under penalty of perjury, the following questionnaire:

Has the Bidder, any officer of the Bidder, or any employee of the Bidder who has a proprietary interest in the Bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes \_\_\_\_\_ No \_\_\_\_\_

If the answer is yes, explain the circumstances in the following space.

## Public Contract Code Section 10232 Statement

In conformance with Public Contract Code Section 10232, the Bidder, hereby states under penalty of perjury under the laws of the State of California, that no more than one final unappealable finding of contempt of court by a Federal Court has been issued against the Bidder within the immediately preceding two year period because of the Bidder's failure to comply with an order of a Federal Court which orders the Bidder to comply with an order of the National Labor Relations Board.

**Note:** The above Statement and Questionnaire are part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Statement and Questionnaire. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

## **NONCOLLUSION AFFIDAVIT**

(Title 23 United States Code Section 112 and  
Public Contract Code Section 7106)

In conformance with Title 23 United States Code Section 112 and Public Contract Code 7106 the Bidder declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the Bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the Contract of anyone interested in the proposed Contract; that all statements contained in the bid are true; and, further, that the Bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

### **NOTE:**

The above Noncollusion Affidavit is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Noncollusion Affidavit.

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.



# IRAN CONTRACTING ACT CERTIFICATION

(Public Contract Code Section 2200 *et seq.*)

As required by California Public Contract Code Section 2204, I certify subject to penalty for perjury that: i) I am duly authorized to execute this certification on behalf of Bidder; and ii) the option checked below relating to my status in regard to the Iran Contracting Act of 2010 (Public Contract Code Section 2200 *et seq.*) is true and correct:

Bidder is not:

(i) identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203; or

(ii) a financial institution that extends, for 45 days or more, credit in the amount of \$20,000,000 or more to any other person or entity identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203, if that person or entity uses or will use the credit to provide goods or services in the energy sector in Iran.

The County has exempted Bidder from the requirements of the Iran Contracting Act of 2010 after making a public finding that, absent the exemption, the County will be unable to obtain the goods and/or services to be provided pursuant to the Agreement.

The amount of the contract payable to Bidder for the work does not exceed \$1,000,000.

Signed \_\_\_\_\_

Titled \_\_\_\_\_

Firm \_\_\_\_\_

Date \_\_\_\_\_

Note: In accordance with Public Contract Code Section 2205, false certification of this form shall be reported to the California Attorney General and may result in civil penalties equal to the greater of \$250,000 or twice the contract amount, termination of the contract and/or ineligibility to bid on public contracts for three years.

**DEBARMENT, SUSPENSION, INELIGIBILITY, AND VOLUNTARY EXCLUSION CERTIFICATION,  
UNITED STATES DEPARTMENT OF TRANSPORTATION(USDOT) 2 CODE OF FEDERAL  
REGULATIONS (CFR) 1200 FEDERAL AGENCY REGULATIONS FOR GRANTS AND  
AGREEMENTS AND EXECUTIVE ORDER 12549**

The Bidder, under penalty of perjury, certifies that, except as noted below, he/she or any other person associated therewith in the capacity of owner, partner, director, officer, or manager:

- is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any Federal agency;
- has not been suspended, debarred, voluntarily excluded or determined ineligible by any Federal agency within the past 3 years;
- does not have a proposed debarment pending; and
- has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions in the following space.

Exceptions will not necessarily result in denial of award, but will be considered in determining Bidder responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action.

Bidder further agrees by submitting this Proposal that it will include this clause without modification in all lower tier transactions, solicitations, proposals, contracts, and subcontracts. Where any lower tier participant is unable to certify to this statement, it shall attach an explanation to its proposal to the prime contractor.

Notes: Providing false information may result in criminal prosecution or administrative sanctions.  
The above certification is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Certification.

# OPT OUT OF PAYMENT ADJUSTMENTS FOR PRICE INDEX FLUCTUATIONS

You may opt out of the payment adjustments for price index fluctuations as specified in "Payment Adjustments for Price Index Fluctuations" of the Standard Specifications. If you elect to opt out of the provisions of this specification, complete this form and submit it with your bid.

Bidder Name: \_\_\_\_\_

Contract No. 2720

I opt out of the payment adjustments for price index fluctuations.

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Accompanying this proposal is \_\_\_\_\_  
(NOTICE: INSERT THE WORDS "CASH(\$\_\_\_),"CASHIER'S CHECK," "CERTIFIED CHECK," OR "BIDDERS BOND," AS THE CASE MAY BE)  
in amount equal to at least ten percent of the amount of the total bid.

**The names of all persons interested in the forgoing Proposal as principals are as follows:**

**IMPORTANT NOTICE:** If the Bidder or other interested person is a corporation, state legal name of corporation and place of incorporation, also names of the president, secretary, treasurer, and executive officer thereof; if a partnership, state name of partnership, also names of all individual partners; if Bidder or other interested person is an individual, state first and last names in full.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Licensed in accordance with an act providing for the registration of Contractors,  
License No. \_\_\_\_\_ Classification(s) \_\_\_\_\_

**(A Copy of the afore-referenced license must be attached hereto.)**

**ADDENDA:** This Proposal is submitted with respect to the changes to the Contract included in addenda number (s) \_\_\_\_\_  
(Fill in addenda numbers if addenda have been received and insert, in this Proposal, any Proposal Pay Items and Bid Price Schedules that were received as part of the addenda)

By my signature on this Proposal I certify, under penalty of perjury under the laws of the State of California, that the foregoing questionnaire and statements of Public Contract Code Sections 10162, 10232, and 10285.1 are true and correct and that the Bidder has complied with the requirements of Sections 4104 of the Subletting and Subcontracting Fair Practices Act and of Section 8103 of the Fair Employment and Housing Commission Regulations (Chapter 5 of Division 4 of Title 2 of the California Code of Regulations). By my signature on this Proposal I further certify, under penalty of perjury under the laws of the State of California and the United States of America, that the Noncollusion Affidavit required by Title 23 United States Code, Section 112 and Public Contract Code Section 7106; Iran Contracting Act Certification, and the Debarment Suspension, Ineligibility and Voluntary Exclusion Certification; the Fair Employment Practice Addendum, and the Opt Out of Payment Adjustments for Price Index Fluctuations, if elected, are true and correct.

The person or persons executing this Proposal on behalf of a corporation or partnership shall be prepared to demonstrate by resolution, article, or otherwise, that such person is or that such persons are appropriately authorized to act in these regards for such corporation or partnership. Such authority shall be demonstrated to the satisfaction of the County of El Dorado.

If the signature is by an agent other than an officer of a corporation or a member of a partnership, a power of attorney authorizing said act by the agent on behalf of his principal shall be submitted with the bid forms; otherwise, the bid may be disregarded as irregular and unauthorized.

The Bidder's execution on the signature portion of this Proposal shall constitute an endorsement and execution of those affidavits, declarations and certifications which are part of this Proposal.

Executed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_  
at \_\_\_\_\_ County, State of \_\_\_\_\_



\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name and Title of Bidder \_\_\_\_\_

Name of Firm \_\_\_\_\_

# Withholding Exemption Certificate

20

(This form can only be used to certify exemption from nonresident withholding under California R&TC Section 18662. This form cannot be used for exemption from wage withholding.)

590

File this form with your withholding agent. (Please type or print)		Withholding agent's name	
Vendor/Payee's name		Vendor/Payee's <input type="checkbox"/> Social security number <input type="checkbox"/> SOS no. <input type="checkbox"/> California corp. no. <input type="checkbox"/> FEIN	<b>Note:</b> Failure to furnish your identification number will make this certificate void.
Vendor/Payee's address (number and street)		APT no.	Private Mailbox no. Vendor/Payee's daytime telephone no. ( )
City	State	ZIP Code	

I certify that for the reasons checked below, the entity or individual named on this form is exempt from the California income tax withholding requirement on payment(s) made to the entity or individual. Read the following carefully and check the box that applies to the vendor/payee:

**Individuals — Certification of Residency:**

I am a resident of California and I reside at the address shown above. If I become a nonresident at any time, I will promptly inform the withholding agent. See instructions for Form 590, General Information D, for the definition of a resident.

**Corporations:**

The above-named corporation has a permanent place of business in California at the address shown above or is qualified through the California Secretary of State to do business in California. The corporation will withhold on payments of California source income to nonresidents when required. If this corporation ceases to have a permanent place of business in California or ceases to be qualified to do business in California, I will promptly inform the withholding agent. See instructions for Form 590, General Information E, for the definition of permanent place of business.

**Partnerships:**

The above-named partnership has a permanent place of business in California at the address shown above or is registered with the California Secretary of State, and is subject to the laws of California. The partnership will file a California tax return and will withhold on foreign and domestic nonresident partners when required. If the partnership ceases to do any of the above, I will promptly inform the withholding agent. **Note:** For withholding purposes, a Limited Liability Partnership is treated like any other partnership.

**Limited Liability Companies (LLC):**

The above-named LLC has a permanent place of business in California at the address shown above or is registered with the California Secretary of State, and is subject to the laws of California. The LLC will file a California tax return and will withhold on foreign and domestic nonresident members when required. If the LLC ceases to do any of the above, I will promptly inform the withholding agent.

**Tax-Exempt Entities:**

The above-named entity is exempt from tax under California R&TC Section 23701 \_\_\_\_\_ (insert letter) or Internal Revenue Code Section 501(c) \_\_\_\_\_ (insert number). The tax-exempt entity will withhold on payments of California source income to nonresidents when required. If this entity ceases to be exempt from tax, I will promptly inform the withholding agent.

**Note:** Individuals cannot be tax-exempt entities.

**Insurance Companies, IRAs, or Qualified Pension/Profit Sharing Plans:**

The above-named entity is an insurance company, IRA, or a federally qualified pension or profit-sharing plan.

**California Irrevocable Trusts:**

At least one trustee of the above-named irrevocable trust is a California resident. The trust will file a California fiduciary tax return and will withhold on foreign and domestic nonresident beneficiaries when required. If the trustee becomes a nonresident at any time, I will promptly inform the withholding agent.

**Estates — Certification of Residency of Deceased Person:**

I am the executor of the above-named person's estate. The decedent was a California resident at the time of death. The estate will file a California fiduciary tax return and will withhold on foreign and domestic nonresident beneficiaries when required.

**CERTIFICATE:** Please complete and sign below.

Under penalties of perjury, I hereby certify that the information provided herein is, to the best of my knowledge, true and correct. If conditions change, I will promptly inform the withholding agent.

Vendor/Payee's name and title (type or print) \_\_\_\_\_

Vendor/Payee's signature ► \_\_\_\_\_ Date \_\_\_\_\_

# Instructions for Form 590

## Withholding Exemption Certificate

References in these instructions are to the California Revenue and Taxation Code (R&TC).

### General Information

#### A Purpose

Use Form 590 to certify an exemption from nonresident withholding. Complete and present Form 590 to the withholding agent. The withholding agent will then be relieved of the withholding requirements if the agent relies in good faith on a completed and signed Form 590 unless told by the Franchise Tax Board (FTB) that the form should not be relied upon.

**Important – This form cannot be used for exemption from wage withholding. Any questions regarding wage withholding should be directed to the California Employment Development Department.**

Do not use Form 590 if you are a seller of California real estate. Sellers of California real estate should use Form 593-C, Real Estate Withholding Certificate.

#### B Law

R&TC Section 18662 requires withholding of income or franchise tax on payments of California source income made to nonresidents of California.

Withholding is required on:

- Payments to nonresidents for services rendered in California;
- Distributions of California source income made to domestic nonresident partners and members and allocations of California source income made to foreign partners and members;
- Payments to nonresidents for rents if the payments are made in the course of the withholding agent's business;
- Payments to nonresidents for royalties for the right to use natural resources located in California;
- Distributions of California source income to nonresident beneficiaries from an estate or trust; and
- Prizes and winnings received by nonresidents for contests in California.

For more information on withholding and waiver requests, get FTB Pub. 1017, Nonresident Withholding Partnership Guidelines, and FTB Pub. 1023, Nonresident Withholding Independent Contractor, Rent and Royalty Guidelines. To get a withholding publication see General Information G.

#### C Who can Execute this Form

Form 590 can be executed by the entities listed on this form.

**Note:** In a situation where payment is being made for the services of a performing entity, this form can only be completed by the performing entity or the performing entity's partnership or corporation. It **cannot** be completed by the performing entity's agent or other third party.

**Note:** The grantor of a revocable/grantor trust shall be treated as the vendor/payee for withholding purposes. Therefore, if the vendor/payee is a revocable/grantor trust and one or more of the grantors is a nonresident, withhold-

ing is required. If all of the grantors of a revocable/grantor trust are residents, no withholding is required. Resident grantors can check the box on Form 590 labeled "Individuals — Certification of Residency."

#### D Who is a Resident

A California resident is any individual who is in California for other than a temporary or transitory purpose or any individual domiciled in California who is absent for a temporary or transitory purpose.

An individual domiciled in California who is absent from California for an uninterrupted period of at least 546 consecutive days under an employment-related contract is considered outside California for other than a temporary or transitory purpose.

**Note:** Return visits to California that do not total more than 45 days during any taxable year covered by the employment contract are considered temporary.

This provision does not apply if an individual has income from stocks, bonds, notes, or other intangible personal property in excess of \$200,000 in any taxable year in which the employment-related contract is in effect.

A spouse who is absent from California for an uninterrupted period of at least 546 days to accompany a spouse who is under an employment-related contract is considered outside of California for other than a temporary or transitory purpose.

Generally, an individual who comes to California for a purpose which will extend over a long or indefinite period will be considered a resident. However, an individual who comes to perform a particular contract of short duration will be considered a nonresident. For assistance in determining resident status, get FTB Pub. 1031, Guidelines for Determining Resident Status, or call the Franchise Tax Board at (800) 852-5711 or (916) 845-6500 (not toll-free).

#### E What is a Permanent Place of Business

A corporation has a permanent place of business in California if it is organized and existing under the laws of California or if it is a foreign corporation qualified to transact intrastate business by the California Secretary of State. A corporation that has not qualified to transact intrastate business (e.g., a corporation engaged exclusively in interstate commerce) will be considered as having a permanent place of business in California only if it maintains a permanent office in California that is permanently staffed by its employees.

#### F Withholding Agent

Keep Form 590 for your records. Do not send this form to the FTB unless it has been specifically requested.

**Note:** If the withholding agent has received Form 594, Notice to Withhold Tax at Source, only the performing entity can complete and

sign Form 590 as the vendor/payee. If the performing entity completes and signs Form 590 indicating no withholding requirement, you must send a copy of Form 590 with Form 594 to the FTB.

For more information, contact the Withholding Services and Compliance Section. See General Information G.

The vendor/payee must notify the withholding agent if:

- The individual vendor/payee becomes a nonresident;
- The corporation ceases to have a permanent place of business in California or ceases to be qualified to do business in California;
- The partnership ceases to have a permanent place of business in California;
- The LLC ceases to have a permanent place of business in California; or
- The tax-exempt entity loses its tax-exempt status.

The withholding agent must then withhold. Remit the withholding using Form 592-A, Nonresident Withholding Remittance Statement, and complete Form 592, Nonresident Withholding Annual Return, and Form 592-B, Nonresident Withholding Tax Statement.

#### G Where to get Publications, Forms, and Additional Information

You can download, view, and print FTB Publications 1017, 1023, 1024, and nonresident withholding forms, as well as other California tax forms and publications not related to nonresident withholding from our Website at: [www.ftb.ca.gov](http://www.ftb.ca.gov)

To have publications or forms mailed to you or to get additional nonresident withholding information, please contact the Withholding Services and Compliance Section.

WITHHOLDING SERVICES AND  
COMPLIANCE SECTION  
FRANCHISE TAX BOARD  
PO BOX 942867  
SACRAMENTO CA 94267-0651

Telephone: (888) 792-4900  
(916) 845-4900 (not toll-free)  
FAX: (916) 845-9512

**Assistance for persons with disabilities:**  
We comply with the Americans with Disabilities Act. Persons with hearing or speech impairments please call TTY/TDD (800) 822-6268.

**Asistencia bilingüe en español**  
Para obtener servicios en español y asistencia para completar su declaración de impuestos/formularios, llame al número de teléfono (anotado arriba) que le corresponde.



# County of El Dorado

## OFFICE OF AUDITOR-CONTROLLER

360 FAIR LANE  
PLACERVILLE, CALIFORNIA 95667  
Phone: (530) 621-5487 FAX: (530) 295-2535

**JOE HARN, CPA**  
Auditor-Controller

**BOB TOSCANO**  
Assistant Auditor-Controller

### PAYEE DATA RECORD

(Required in lieu of IRS W-9 when receiving payment from the County of El Dorado) Version: April 2014

<b>PAYEE DATA RECORD</b>	<b>INSTRUCTIONS:</b> Complete all information on this form. Sign, date, and return to the address shown at the bottom of this page. Prompt return of the <b>fully completed</b> form will prevent delays in processing payments. Information provided in this form will be used by the County of El Dorado to prepare Information Returns (Forms 1099), for withholding on payments to nonresident payees, and for reporting to the Employment Development Department (EDD).				
<b>NAME AND ADDRESS</b>	Name (as shown on your income tax return)				
	Business name/Doing business as/Disregarded entity name, if different from above				
	Physical address (number, street, and apt. or suite)			Remittance address (if different than physical)	
	City, state, zip code			City, state, zip code	
	Phone number		Fax number (optional)		Email (optional)
<b>FEDERAL TAX CLASSIFICATION &amp; EXEMPTIONS</b>	<b>Check appropriate federal tax classification</b> <input type="radio"/> Individual / sole proprietor <input type="radio"/> Partnership <input type="radio"/> Trust / estate <input type="radio"/> Other (see instructions) ▶ _____ <input type="radio"/> C Corporation <input type="radio"/> S Corporation              If you are a corporation, do you provide legal or medical services? <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Limited liability company. Enter the tax classification (C=C Corporation, S=S Corporation, P=Partnership) _____				
	<b>NOTE: IF YOU ARE A SINGLE MEMBER LLC (DISREGARDED ENTITY), ENTER THE TAX CLASSIFICATION OF THE OWNER IDENTIFIED ON THE NAME LINE.</b>				
	Exempt payee code (if any) – see instructions _____ Exemption from FATCA reporting code (if any) – see instructions _____				
<b>TAX IDENTIFICATION NUMBER</b>	<b>Tax identification number (TIN)</b> Enter your TIN in the appropriate box. If you are an individual or sole proprietor, you must enter your SSN. You may choose to provide your EIN in addition to, but not instead of, the SSN. Single member LLCs (disregarded entities) must enter the TIN of the owner identified on the Name line.				
			Social Security Number       -       -		
<b>RESIDENCY STATUS</b>	<b>Check appropriate box for residency status</b> <input type="radio"/> California resident / exempt from nonresident withholding – qualified to do business in California or maintains a permanent place of business in California (attach CA Form 590) <input type="radio"/> California nonresident (see instructions)				
	<b>NOTE:</b> Payments to California <b>nonresidents</b> for services performed in California and for certain rents derived from properties located in California that exceed \$1,500 in a calendar year will be subject to 7% nonresident withholding unless you have obtained a waiver or have been approved for reduced withholding by the Franchise Tax Board. There is no withholding on payments for product and for services performed outside of California.				
	<input type="checkbox"/> Obtained Franchise Tax Board waiver of State withholding (attach a copy if applicable) <input type="checkbox"/> Obtained Franchise Tax Board approval for reduced withholding (attach a copy if applicable)				
	California sales tax permit number (required only for California nonresident vendors that charge California sales tax)				
<b>CERTIFICATION</b>	<b>Under penalties of perjury, I certify that:</b> <b>1) the TIN shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me) and</b> <b>2) I am not subject to backup withholding and 3) I am a U.S. citizen or other U.S. person and 4) the FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.</b>				
	Authorized Payee Representative's Name (Type or Print)			Title	
	Signature	Date	Telephone		
<b>RETURN FORM TO</b>	Should my residency status or any other information provided above change, I will promptly notify County of El Dorado at the address listed above.				
	<b>Please return completed form to:</b>				
	<b>Department/office:</b>		Community Development Agency		
	<b>Mailing address:</b>		2850 Fairlane Court, Placerville, California 95667		
<b>Phone:</b>	530.621.5150	<b>Fax:</b>	530.626.0387	<b>Email:</b> kady.leitner@edcgov.us	

Diamond Springs Parkway - Phase 1A - SR-49 Realignment  
**CIP No. 72375, Contract No. 2720**  
 December 18, 2018

County of El Dorado  
**Proposal**  
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COUNTY OF EL DORADO, PAYEE DATA RECORD (REVERSE)

<b>PAYEE DATA RECORD</b>	<p>A completed Payee Data Record is required for payments to all entities and will be kept on file at the County of El Dorado Auditor-Controller's Office. Payees who do not wish to complete the Payee Data Record may elect to not do business with the County of El Dorado. If the payee does not complete the form and the required payee data is not otherwise provided, payment may be reduced for federal backup withholding, California backup withholding and California nonresident withholding.</p>
<b>FEDERAL TAX CLASSIFICATION</b>	<p>Check the applicable federal tax classification. Note that if an LLC is disregarded as an entity separate from its owner, enter the appropriate tax classification of the owner identified on the "Name" line.</p> <p><b>Individual:</b> Enter the name shown on your income tax return. If the account is in joint names, list first, and then circle, the name of the person or entity whose SSN you entered on the form.</p> <p><b>Sole proprietor:</b> Enter your individual name as shown on your income tax return on the "Name" line. You may enter your business, trade, or "doing business as" name on the "Business name/Doing business as/Disregarded entity name" line.</p> <p><b>Partnership, C Corporation, or S Corporation:</b> Enter the entity's name on the "Name" line and any business, trade, or "doing business as" name on the "Business name/Doing business as/Disregarded entity name" line.</p> <p><b>Disregarded entity:</b> Enter the owner's name on the "Name" line. The name of the entity entered on the "Name" line should never be a disregarded entity. The name on the "Name" line must be the name shown on the income tax return on which the income should be reported. Check the appropriate box for the U.S. federal tax classification of the person whose name is entered on the "Name" line (individual/sole proprietor, partnership, C corporation, S corporation, trust/estate).</p> <p><b>Limited liability company (LLC):</b> If the person identified on the "Name" line is an LLC, check the "Limited Liability Company" box only and enter the appropriate code for the U.S. federal tax classification.</p> <p><b>Other entities:</b> Enter your business name as shown on required U.S. federal tax documents on the "Name" line. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade or DBA name on the "Business name/Doing business as/Disregarded entity name" line.</p>
<b>EXEMPTIONS</b>	<p><b>Exemptions:</b> If you are exempt from backup withholding and/or FATCA reporting, enter in the exemptions box any code(s) that may apply to you. Generally, individuals (including sole proprietors) are not exempt from backup withholding. Corporations are exempt from backup withholding for certain payments, such as interest and dividends. Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions. The following codes identify payees that are exempt from backup withholding: <b>1</b> – an organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2); <b>2</b> – The United States or any of its agencies or instrumentalities; <b>3</b> – A state, the District of Columbia, a possession of the United States, or any of their political subdivisions or instrumentalities; <b>4</b> – A foreign government or any of its political subdivisions, agencies, or instrumentalities; <b>5</b> – A corporation; <b>6</b> – A dealer in securities or commodities required to register in the United States, the District of Columbia, or a possession of the United States; <b>7</b> – A futures commission merchant registered with the Commodity Futures Trading Commission; <b>8</b> – A real estate investment fund; <b>9</b> – An entity registered at all times during the tax year under the Investment Company Act of 1940; <b>10</b> – A common trust fund operated by a bank under section 584(a); <b>11</b> – A financial institution; <b>12</b> – A middleman known in the investment community as a nominee or custodian; <b>13</b> – A trust exempt from tax under section 664 or described in section 4947.</p> <p><b>Exemption from FATCA reporting.</b> The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. <b>A</b>—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37); <b>B</b>—The United States or any of its agencies or instrumentalities; <b>C</b>—A state, the District of Columbia, a possession of the United States, or any of their political subdivisions or instrumentalities; <b>D</b>—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Reg. section 1.1472-1(c)(1)(i); <b>E</b>—A corporation that is a member of the same expanded affiliated group as a corporation described in Reg. section 1.1472-1(c)(1)(i); <b>F</b>—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state.</p>
<b>TAX IDENTIFICATION NUMBER</b>	<p>Enter your tax identification number (TIN) in the appropriate box. If you are a single member LLC that is disregarded as an entity separate from its owner, enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN. <b>The TIN for individuals and sole proprietors is the Social Security Number (SSN).</b> Sole proprietors may provide their EIN in addition to but not instead of a SSN.</p> <p>The County of El Dorado requires that all parties entering into business transactions that may lead to payment(s) from the County provide their Taxpayer Identification Number (TIN). The TIN is also required by the California Revenue and Taxation Code Section 18646 to facilitate tax compliance enforcement activities and the preparation of Form 1099 and other information returns as required by the Internal Revenue Code Section 6109(a).</p>
<b>RESIDENCY STATUS</b>	<p><b>Are you a California resident or nonresident?</b></p> <p>A <b>corporation</b> will be defined as a "resident" if it has a permanent place of business in California or is qualified through the Secretary of State to do business in California. A <b>partnership</b> is considered a resident partnership if it has a permanent place of business in California. An <b>estate</b> is a resident if the decedent was a California resident at time of death. A <b>trust</b> is a resident if at least one trustee is a California resident. For <b>individuals</b> and <b>sole proprietors</b>, the term "resident" includes every individual who is in California for other than a temporary or transitory purpose and any individual domiciled in California who is absent for a temporary or transitory purpose. Generally, an individual who comes to California for a purpose that will extend over a long or indefinite period will be considered a resident. However, an individual who comes to perform a particular contract of short duration will be considered a nonresident.</p> <p><b>Payments to all nonresidents may be subject to withholding.</b> Nonresident payees performing services in California or receiving certain rent, lease, or royalty payments from property (real or personal) located in California will have 7% of their total payments withheld for State income taxes. However, no withholding is required if total payments to the payee are \$1,500 or less for the calendar year or if payment is for product. Nonresidents who have been granted a waiver on payments of California source income from the California Franchise Tax Board must submit a copy of the waiver. For information on Nonresident Withholding, contact the Franchise Tax Board at the numbers listed below:</p> <p style="text-align: center;">Withholding Services and Compliance Section:      1-888-792-4900      E-mail address:      wscs.gen@ftb.ca.gov      For hearing impaired with TDD, call:      1-800-822-6268      Website:      www.ftb.ca.gov</p> <p>California nonresidents charging California sales tax are required to provide their California sales tax number.</p>
<b>CERTIFICATION</b>	<p>Provide the name, title, signature, and telephone number of the authorized individual completing this form. Provide the date the form was completed. <b>NOTE:</b> You must cross out item 2 in the certification block if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return.</p>



COUNTY OF EL DORADO

BIDDER'S BOND

**this form MUST be used**

KNOW ALL PEOPLE BY THESE PRESENTS, THAT WE \_\_\_\_\_

\_\_\_\_\_ as **PRINCIPAL**, and

as Surety are held and firmly bound unto the County of El Dorado, a political subdivision of the State of California (hereinafter referred to as "Obligee"), in the penal sum of **TEN (10) PERCENT OF THE AMOUNT OF THE TOTAL BID PRICE** of the Principal above named, submitted by said Principal to the Obligee for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made to the Obligee, we the Principal and Surety bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents. In no case shall the liability of the Surety hereunder exceed the sum of

**TEN PERCENT (10%) OF THE AMOUNT OF THE TOTAL BID PRICE**

**THE CONDITION OF THIS OBLIGATION IS SUCH, THAT:**

**WHEREAS**, the Principal has submitted the above-mentioned Bid to the Obligee, as aforesaid, for certain construction specifically described as follows, for which bids are to be opened at Placerville, El Dorado County, California, for the construction of the

**DIAMOND SPRINGS PARKWAY – PHASE 1A – SR-49 REALIGNMENT  
CIP No. 72375, CONTRACT No. 2720**

**NOW, THEREFORE**, if the aforesaid Principal is awarded the Contract and, within the time and manner required under the Contract Documents, after the prescribed forms are presented to it for signature, enters into a written contract, in the prescribed form, in accordance with the Bid, and files two bonds with the Obligee, one to guarantee faithful performance and the other to guarantee payment for labor and materials, as required by law, then this obligation shall be null and void; otherwise, it shall remain in full force and virtue.

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

IN WITNESS WHEREOF, we have set our hands and seals on this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_

**Bond No.** \_\_\_\_\_

(seal) \_\_\_\_\_  
Principal

(seal) \_\_\_\_\_  
Surety

Address: \_\_\_\_\_  
\_\_\_\_\_

**(NOTE: Signature of those executing for the Surety shall be properly acknowledged, and accompanied by a Certificate of Acknowledgment.)**

# SURETY

## ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

County of \_\_\_\_\_

On \_\_\_\_\_ before me, \_\_\_\_\_,  
(here insert name and title of the officer)

personally appeared \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature \_\_\_\_\_

(Seal)